



**Integrated Natural Resources Management Plan  
Naval Air Station Whiting Field Complex  
Milton, Florida**

**2014  
Update**

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**2014 Update**

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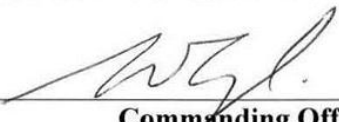
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NAVAL AIR STATION WHITING FIELD COMPLEX  
MILTON, FLORIDA


INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN  
(INRMP) – 2013 OPERATIONS AND EFFECT CONCURRENCE

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The Sikes Act and Department of Defense instruction require that annual and 5-year operation and effect reviews of INRMPs occur with federal and state partners. Representatives of the Navy, U.S. Fish & Wildlife Service, Florida Fish and Wildlife Conservation Commission, and the Alabama Department of Conservation participate annually in the Naval Air Station Whiting Field INRMP and Natural Resources Metric review. The last operation and effect review of this INRMP was completed in June 2008. We have revised the installation INRMP with input from the signatory partners as part of the required 5-year review process. By signing below, the partner's concur that the management actions prescribed in the INRMP and implemented, will contribute to the conservation and rehabilitation of installation natural resources.

  
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Commanding Officer,  
Naval Air Station Whiting Field

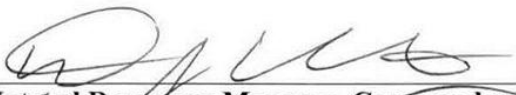
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Natural Resources Manager,  
Naval Air Station Whiting Field

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\_\_\_\_\_  
U.S. Navy Regional Environmental Coordinator

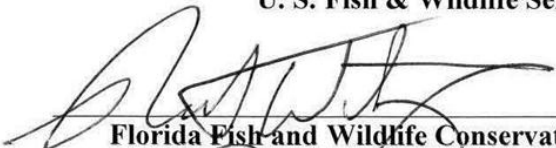
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Natural Resources Manager, Commander Navy Region SE

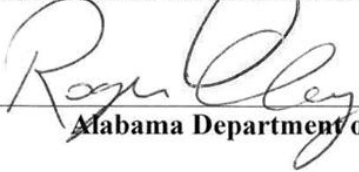
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U. S. Fish & Wildlife Service

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Florida Fish and Wildlife Conservation Commission

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\_\_\_\_\_  
Alabama Department of Conservation

6/18/13  
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## List of Acronyms

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ABD	Applied Biology Department
ADCNR	Alabama Department of Conservation and Natural Resources
ADECA	Alabama Department of Economic and Community Affairs
ADEM	Alabama Department of Environmental Management
ALFA	Activity, Land, and Facility Assets
AICUZ	Air Installation Compatible Use Zone
ASN	Assistant Secretary of the Navy
ATV	All-Terrain Vehicle
BAHWG	Bird/Animal Hazard Working Group
BASH	Bird/Animal Aircraft Strike Hazard
BGS	Below Ground Surface
BMP	Best Management Practice
BOS	Base Operating Services
CA	Conservation Associate
CAA	Clean Air Act
CCCL	Coastal Construction Control Line
CCMP	Comprehensive Conservation Management Plan
CEQ	Council of Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CID	Center for Information Dominance
CIP	Capital Improvements Plan
CMDCM	Command Master Chief
CNO	Chief of Naval Operations
CO	Commanding Officer
CRAC	Coastal Resources Advisory Committee
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
DCA	Department of Community Affairs
DoD	Department of Defense
DoDINST	Department of Defense Instruction
DoN	Department of the Navy
DOT	Department of Transportation
EA	Environmental Assessment
EFH	Essential Fish Habitat
EO	Executive Order
EPA	United States Environmental Protection Agency
ESA	Endangered Species Act of 1973
° F	Degrees Fahrenheit
FCMP	Florida Coastal Management Program
FDACS	Florida Department of Agriculture and Consumer Services
FDEP	Florida Department of Environmental Protection
FEMA	Federal Emergency Management Agency

**LIST OF ACRONYMS (CONT.)**

FWC	Florida Fish and Wildlife Conservation Commission
FIFRA	Federal Insecticide, Fungicide and Rodenticide Act
FMIS	Forest Management Information System
FNAI	Florida Natural Areas Inventory
FY	Fiscal Year
GIS	Geographic Information System
GPS	Global Positioning System
HW	Hazardous Waste
HWMP	Hazardous Waste Management Plan
ICRMP	Integrated Cultural Resources Management Plan
INRMP	Integrated Natural Resources Management Plan
IPM	Integrated Pest Management
IRP	Installation Restoration Program
JPATS	Joint Primary Aircraft Training System
Ldn	Day/Night Average Sound Level
LGP	Low Ground Pressure
LMD	Land Management Department
MATSG	Marine Aviation Training Support Group
MWR	Morale, Welfare, and Recreation Division
NAAQS	National Ambient Air Quality Standards
NAS	Naval Air Station
NASP	Naval Air Station Pensacola
NASWF	Naval Air Station Whiting Field
NAVFAC SE	Naval Facilities Engineering Command, Southeast
NAWCSD	Naval Air Warfare Center Training System Division
NEPA	National Environmental Policy Act
NETSAFA	Naval Education and Training Security Assistance Field Activity
NOAA	National Oceanic and Atmospheric Administration
NOLF	Navy Outlying Landing Field
NPDES	National Pollution Discharge Elimination System
NRCS	Natural Resources Conservation Service, United States Department of Agriculture
NRM	Natural Resources Manager
NTTC	Naval Technical Training Center
NWFWMD	North West Florida Water Management District
NWI	National Wetlands Inventory
O & M(N)	Navy Operations and Maintenance
OFW	Outstanding Florida Water
OSHA	Occupational Safety and Health Administration
OPNAVINST	Chief of Naval Operations Instruction
P2	Pollution Prevention
PMP	Pest Management Plan
PTO	Power Take-Off
ROICC	Resident Officer In Charge of Construction
RPMA	Real Property Management Activities
RSIP	Regional Shore Infrastructure Plan
SAIA	Sikes Act Improvement Act
SARA	Superfund Amendments and Reauthorization Act
SCA	Student Conservation Association
SCORP	State Comprehensive Outdoor Recreation Plan
SJRWMD	St. Johns River Water Management District

**LIST OF ACRONYMS (CONT.)**

SMP	Smoke Management Plan
SPCC	Spill Prevention Control and Countermeasures
SSURGO	Soil Survey Geographic
SWEAT	Stormwater Environmental Awareness Team
SWPPP	Stormwater Pollution Prevention Plan
TIMS	Training Integration Management System
TNC	The Nature Conservancy
TSD	Treatment, Storage, or Disposal
TSI	Timber Stand Improvement
USACE	United States Army Corps of Engineers
USAF	United States Air Force
USDA	United States Department of Agriculture
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
WMP	Watershed Management Plan
WRAP	Wetland Rapid Assessment Procedure

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# Executive Summary

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## ES.1 TYPE OF DOCUMENT

This is an Integrated Natural Resources Management Plan (INRMP).

## ES.2 PURPOSE OF DOCUMENT

The purpose of this document is to meet statutory requirements under the Sikes Act Improvement Act (SAIA), Public Law 105-85, Div. B. Title XXIX, Nov. 18, 1997, 111 Stat 2017-2019, 2020-2022. In November 1997, the Sikes Act, 16 U.S.C. § 670a et seq., was amended to require the Secretary of Defense to carry out a program to provide for the conservation and rehabilitation of natural resources on military Installations. To facilitate this program, the amendments require the Secretaries of the military departments to prepare and implement integrated natural resources management plans for each military Installation in the United States unless the absence of significant natural resources on a particular Installation makes preparation of a plan for the Installation inappropriate. The SAIA mandates that these military Installations prepare and implement their INRMPs by November 17, 2001. The United States Department of the Navy (DoN) has prepared this INRMP for the Naval Air Station Whiting Field (NASWF) Complex, Milton, Florida.

## ES.3 GOALS AND OBJECTIVES OF THE INRMP

The goal of the INRMP is to implement an ecosystem-based conservation program that: provides for conservation and rehabilitation of natural resources in a manner consistent with the military mission; integrates and coordinates all natural resources; provides for sustainable multipurpose uses of natural resources; and provides public access for use of natural resources subject to safety and military security considerations. This INRMP covers a period of ten years and will be reviewed annually. Five Complex-wide ecosystem management goals and 17 objectives have been identified for the NASWF Complex. The objectives developed to implement each goal are related to natural resources issues facing the Installation. Following are the goals, issues, and objectives for the NASWF Complex.

**Goal 1: Protect and maintain natural resources within the NASWF Complex by continuing and enhancing ecologically-appropriate and beneficial land uses and management practices, while ensuring the continuation of the military mission.**

**Issue:** As development and training activities have a significant potential to affect land area at the NASWF Complex, land management decisions and practices will become increasingly important aspects of ecosystem management. The use and management of lands for military mission needs, and the decision-making process regarding such land use, directly affects the sustainability of the ecosystem. To protect and maintain natural resources while ensuring the continuation of the military mission, the NASWF Complex will implement practices to meet the following objectives:

- Objective 1.1: Continue existing and establish new programs and procedures to monitor, maintain, and enhance wetlands and water quality.
- Objective 1.2: Reduce and control noxious, invasive, and exotic species.
- Objective 1.3: Maintain the attenuation capacity of the remaining undisturbed acreage within the 100-year floodplain.
- Objective 1.4: Ensure that land management and land use decisions comply with all applicable laws, executive orders, regulations, directives, and instructions, and that adverse impacts to the natural environment are minimized.
- Objective 1.5: Implement environmentally beneficial landscaping, grounds maintenance, and urban forestry practices.

**Goal 2: Protect and enhance forest resources by practicing ecologically-sound forest management leading to sustained yield of quality forest products, watershed protection, and wildlife habitat.**

**Issue:** The NASWF Complex manages approximately 2,700 acres of forestland. Ecologically-sound stewardship involves managing forestland for various components, including forest products (i.e. timber), wildlife habitat, aesthetic value, and recreation. Components of the annual work plan generally include firebreak management, prescribed burning, timber sales, timber inventory management, site preparation and reforestation, forest road work, and equipment operation and maintenance. To protect and enhance forest resources, the Complex will implement programs to address the following objectives:

- Objective 2.1: Practice the ecosystem management concept for sustained yield of forest products and forest health.
- Objective 2.2: Manage forests in an ecologically-sound way to provide habitat for wildlife.
- Objective 2.3: Manage forest stands for watershed protection.

**Goal 3: Protect, maintain, and restore native vegetative communities and plant and wildlife populations, while improving the quality of life and ensuring the continuation of the military mission.**

**Issue:** The biological environment of the NASWF Complex and surrounding area was considerably different prior to colonization and development. Historically, the area was dominated by natural communities that today are found scattered throughout the Complex. Areas representing the following communities remain in relatively small patches within the Complex: floodplain swamp, sandhill, baygall, seepage stream, depression marsh, dome swamp, wet prairie, mesic flatwood, wet flatwood, and bottomland forest. These remaining natural



communities provide good quality habitat for both plant and animal life and will be protected and enhanced.

Occasionally, nuisance wildlife species (e.g. rodents and some birds) become overpopulated or congregate in areas creating a threat to human health and/or the military mission. In such cases, these wildlife species must be controlled to prevent problems. To protect, maintain, and restore native communities for plant and animal life, while preventing nuisance wildlife from negatively impacting quality of life and the military mission, the NASWF Complex will implement programs to address the following objectives:

Objective 3.1: Maintain ecological integrity of wetland and upland natural communities to protect the communities and their native plant and animal species, including numerous federally and state listed species.

Objective 3.2: Preserve and protect threatened and endangered species and species of special concern to ensure no reduction in population sizes.

Objective 3.3: Control nuisance wildlife and wildlife diseases that may adversely affect human health or welfare, the health of the ecosystem, and/or the military mission.

**Goal 4: Provide facilities and implement programs that encourage recreational and educational uses of natural resources and result in positive effects to these natural resources, while improving the quality of life.**

**Issue:** The SAIA requires that military Installations evaluate the potential for providing outdoor recreational resources to the general public. In general, access for outdoor recreation is limited to: active duty and reserve military personnel assigned to work at the Installation, their dependents and accompanied guests; federal civilian employees, their dependents and accompanied guests; and military retirees. However, at the NASWF Complex, the general public is allowed access to the Clear Creek Nature Trail, the Military Heritage Trail, and the Sandhill Pine Bike and Hike Trail, located at the main Installation. The CO authorizes access for educational and outdoor natural resources recreational activities consistent with the military mission and security levels. The following objectives were developed to address Goal 4:

Objective 4.1: Maintain existing and develop additional outdoor recreational trails, interpretive centers, and/or facilities to support present and future natural resources-based outdoor recreation at the NASWF Complex.

Objective 4.2: Implement existing and further develop (where needed) natural resources-based outdoor recreation programs to support present and future outdoor recreation at the NASWF Complex.

**Goal 5: Protect and conserve the ecological value and diversity of natural resources by fostering knowledge of, and participation in, adaptive ecosystem management.**

**Issue:** Existing programs and plans for maintaining and managing natural resources within the NASWF Complex do not currently consider the inter-relationships among resources on the Complex or in the region. Instead, existing programs and plans have typically focused on the management of individual resources in accordance with federal or state laws. To participate in adaptive ecosystem

management, the NASWF Complex will implement programs to meet the following objectives:

- Objective 5.1: Provide adequate staffing, equipment, technology, and training for the Natural Resources Program to ensure proper implementation of this INRMP.
- Objective 5.2: Incorporate the concept of ecosystem management into all planning and management processes.
- Objective 5.3: Implement training, education and stewardship initiatives for ecosystem management.
- Objective 5.4: Establish a planning team to review and update the INRMP in accordance with OPNAVINST 5090.1D, 12-3.4(c)(4) and 12-3.4(c)(12).

#### **ES.4 FUNCTIONAL AREAS AND MANAGEMENT FOCUSES**

To achieve Complex-wide goals and objectives, the NASWF Complex has been divided into functional areas. Functional areas reflect the use of the area for its military purpose and the potential for natural resources management. Within each functional area, natural resources management focuses are identified. The management focus for an area may include: land management, forestry, fish and wildlife, and/or outdoor recreation. A management focus includes the primary practices necessary to achieve the long-term goals and objectives of the INRMP.

The NASWF Complex is composed of the main Installation (NASWF), Whiting Pines Housing, Whiting Park, and 14 Navy outlying landing fields (NOLFs). Based on geography, land use, and natural resources, the NASWF Complex is divided into 20 functional areas: 13 Operational Protected areas; 6 Protected areas; and 1 Mixed-Use area. Due to the recent hurricane activity, especially Hurricane Ivan and Dennis in 2004 and 2005, many of the buildings and structures on the Whiting Field complex have been damaged. Many of these damaged buildings are currently in various stages of repair or are planned to be repaired at some future time.

- *Operational Protected areas (OP)* include areas vital to the continuance of the military mission and highly developed areas.
- *Protected areas (P)* include land protected due to the unique natural, cultural or aesthetic value.
- *Mixed Use areas (MU)* include areas where non-timber values such as wildlife habitat, water quality (wetland, stormwater and floodplains protection), recreational potential or urban management is the basis for management decisions.

NASWF is divided into three functional areas. Whiting Pines Housing and Whiting Park are each a functional area, but are not further subdivided. The NOLFs are composed of either one

or two functional areas, depending on the requirements of the military mission and the presence of unique natural resources. Functional areas are described below for each NASWF Complex property.

### ***NAS Whiting Field***

The three functional areas at NASWF are OP-1, P-1, and MU-1. OP-1 includes the majority of land area at NASWF, with the exception of undeveloped areas adjacent to Clear Creek and the golf course. This area is designated as Operational Protected due to the developed condition of the land, and its intensive use for fulfilling mission requirements at NASWF. OP-1 includes North Field, South Field, clear zones, administrative and classroom areas, the historic district, and scattered forest stands along the periphery of the site. Rare species found in OP-1 include the gopher tortoise, Henslow's sparrow, and Eastern diamondback rattlesnake. The management focus objectives of OP-1 are land management and forestry.

P-1 includes areas along the southeast edge of NASWF, adjacent to Clear Creek. This area is designated as Protected due to the presence of a high quality floodplain swamp, other wetlands, several rare plants, and excellent opportunities for nature study. The Clear Creek Nature Trail, which winds through portions of P-1, is designated as a Watchable Wildlife Area. The management focus of P-1 is fish and wildlife due to its unique and high quality natural communities and close proximity to Clear Creek.

MU-1 is located north of North Field and includes the NASWF golf course and several small forest stands. This area is designated as Mixed-Use Management because it has the potential to yield significant natural resources-based benefits through effective management practices. The golf course is managed by the MWR Department. The management focus objectives of MU-1 are land management and forestry due to the amount of improved and semi-improved grounds at the golf course and existing forest stands.

### ***Whiting Park***

Whiting Park consists of one functional area, P-2. The boundaries of P-2 are consistent with the boundaries of the property. This area is designated as Protected due to its habitat sensitivity and high recreational potential. The 15-acre site is located along the southeastern bank of the Blackwater River, within the 100-year floodplain. Rare species found within this area include the west Florida cow lily, primrose-flowered butterwort, and white-top pitcher plant. The site includes rental facilities for canoes, rowboats, motor boats, and fishing gear, and a small sandy beach for swimming. Use of this area is generally restricted to active duty, reserve, retiree, DoD civilian employees, and their dependents. Due to the outstanding

recreational opportunities associated with the existing facilities, and access to the Blackwater River, the management objective of P-2 is outdoor recreation.

### ***Whiting Pines Housing***

Whiting Pines Housing consists of one functional area, OP-2. The boundaries of OP-2 are consistent with Whiting Pines Housing, an approximately 98-acre housing development for officers and enlisted personnel. This area is designated as Operational Protected due to its developed condition and intensive use by the Installation resident population. Land management is the focus of OP-2.

### ***NOLF Spencer***

NOLF Spencer consists of one functional area, OP-3. The boundaries of OP-3 are consistent with the boundaries of NOLF Spencer. OP-3 is designated as Operational Protected due to its intensive use and maintenance for helicopter training. The area is primarily grassed. There is one building that houses the crash crew and equipment, and there are eight old parallel runways, 1,800 feet long and 200 feet wide, that are now used for helicopter landing pads. The management focus of OP-3 is land management due to the military mission requirements of the land.

### ***NOLF Pace***

NOLF Pace consists of one functional area, OP-4. The boundaries of OP-4 are consistent with the boundaries of NOLF Pace. OP-4 is designated as Operational Protected due to its intensive use and maintenance. This area, which is used for helicopter training, is primarily cleared and grassed. The management focus of OP-4 is land management due to the military mission requirements of the land.

### ***NOLF Harold***

NOLF Harold is divided into two functional areas, OP-5 and P-3. OP-5 includes areas at NOLF Harold utilized for helicopter training. OP-5 is designated as Operational Protected due to its intensive use and maintenance. Land area within OP-5 is primarily cleared and grassed. The management objective of this functional area is land management due to the military mission requirements of the land.

P-3 includes natural areas at NOLF Harold surrounding OP-5. P-3 is designated as Protected due to the presence of high quality natural communities (e.g. sandhill, baygall, and seepage stream) and several threatened and endangered species. This area is bordered to the north by the Blackwater River State Forest and on the east, south, and west by lands managed for natural resources. The sandhill community, which occurs throughout P-3, is characterized by a

longleaf pine, turkey oak, and wiregrass community. Several rare species have been documented within P-3. Management objectives of P-3 are fish and wildlife and forestry.

### **NOLF Santa Rosa**

NOLF Santa Rosa consists of one functional area, OP-6. The boundaries of OP-6 are consistent with the boundaries of NOLF Santa Rosa. OP-6 is designated as Operational Protected due to its intensive use and maintenance. There is one permanent crash facility structure and four runways used for landings; they are 4,500 feet in length by 150 feet in width. Drainage consists of a combination of storm sewers and open ditches. The eastern portion of the site is primarily forested, and a relatively high quality depression marsh (approximately 0.7 acre) occurs in the northwest portion of the site. Gully erosion exists in the southeastern portion of the site directly east of the longleaf pine-scrub oak forest. The management focus of OP-6 is land and forest management due to the military mission requirements of the land and the presence of forest resources.

### **NOLF Holley**

NOLF Holley is divided into two functional areas, OP-7 and P-4. OP-7 includes the airfield and planted forest stands north of the airfield at NOLF Holley. This area is designated as Operational Protected due to its intensive use and maintenance. The management focus objectives of OP-7 are land management and forestry.

P-4 is located within the southern half of NOLF Holley and contains wet prairie, dome swamp, mesic flatwoods, and wet flatwoods natural communities. This area is designated as Protected due to the presence of high quality natural communities and threatened and endangered species. Rare species known to occur within P-4 include: gopher tortoise, reticulated flatwoods salamander, coal skink, Florida black bear, and several protected plants adapted to wet prairie habitats. There are several reticulated flatwoods salamander breeding ponds within P-4. The focus of P-4 is fish and wildlife.

### **NOLF Site 8-A**

NOLF Site 8-A is divided into two functional areas, OP-8 and P-5. OP-8 includes the existing helicopter landing field at NOLF Site 8-A. This area is designated as Operational Protected due its intensive use and maintenance. Gopher tortoises have been documented in this area, which is maintained as a grassy field. The management focus of OP-8 is land management due to the military mission requirements of the land.

P-5 includes four distinct areas at NOLF Site 8-A. These areas are designated as Protected due to unique natural resources, including a baygall natural community, a gopher tortoise

population (3 to 8 individuals), and many rare plants. The focus of P-5 is fish and wildlife and forestry.

### **NOLF Wolf**

NOLF Wolf consists of one functional area, OP-9. The boundaries of OP-9 are consistent with the boundaries of NOLF Wolf. OP-9 is designated as Operational Protected due to its intensive use and maintenance. Currently, the airfield is not being utilized for training operations; however, it may be reactivated in the future. NOLF Wolf contains three runways surrounded primarily by open land, much of which is outleased for hay production. There is a strip of timber along the northwest boundary. The management objective of OP-9 is land management in the vicinity of the airfield and the agricultural outlease areas, and forestry in the forested areas.

### **NOLF Barin**

NOLF Barin is divided into two functional areas. OP-10 includes most of NOLF Barin, except for the northeast portion, which is designated as P-6. OP-10 is designated as Operational Protected due to its intensive use and maintenance. NOLF Barin contains two runways surrounded primarily by open land, with forest stands along its periphery. No state or federally listed species are known to occur within OP-10. The management objectives of OP-10 are land management and forestry.

P-6 includes the northeastern corner of NOLF Barin. P-6 is designated as protected due to the presence of high quality natural communities and several rare species. Sandy Creek, a high quality seepage stream, flows southeast through P-6. The management objective of P-6 is fish and wildlife and outdoor recreation.

### **NOLF Summerdale**

NOLF Summerdale consists of one functional area, OP-11. The boundaries of OP-11 are consistent with the boundaries of NOLF Summerdale. OP-11 is designated as Operational Protected due to its intensive use and maintenance. NOLF Summerdale contains two runways surrounded primarily by lands outleased for hay and row crop production. Land area directly adjacent to the airfield is maintained by the Navy. The area surrounding the airfield consists primarily of agricultural fields, with a few occasional low moist spots. In addition, there are forested areas along the southern and western portions of the site, including longleaf pine and forested wetlands. The management objective of OP-11 is land management in the vicinity of the airfield and in agricultural outleased areas, and forestry in forested areas.

### ***NOLF Silverhill***

NOLF Silverhill consists of one functional area, OP-12. The boundaries of OP-12 are consistent with the boundaries of NOLF Silverhill. OP-12 is designated as Operational Protected due to its intensive use and maintenance. NOLF Silverhill contains three runways surrounded primarily by lands outleased for hay production. The southwest portion of NOLF Silverhill is forested. Also, there is a small stand of longleaf pine-scrub oak along the eastern edge of the site. A population of gopher tortoises (approximately 8 to 14 individuals) has been documented at NOLF Silverhill; habitat included the mowed airfield clear zone, hayfield, and upland forests (FNAI 1997). The management objective of OP-12 is land management in the vicinity of the airfield and in agricultural outleased areas, forestry in forested areas, and fish and wildlife management where gopher tortoise habitat exists.

### ***NOLF Evergreen***

NOLF Evergreen consists of 308 acres leased from the City of Evergreen, Alabama. The Navy is in the process of acquiring other parcels in the clear zones.

NOLF Evergreen consists of one functional area, OP-13. OP-13 makes up all of the approximately 22 acres within the clear zone. NOLF Evergreen is designated as Operational Protected due to its intensive use and maintenance. The management focus at NOLF Evergreen is land management. Presently, there is no active management on the property other than oversight.

### ***Tower Properties***

The NAS Whiting Field Complex is also responsible for three small-acreage tower locations. These include Allentown, a 2.54-acre property in Santa Rosa County with a small building that is no longer operational. The second is Foley Tower, a 1.06-acre property in Baldwin County, Alabama, with an operational tower. The third is Very High Frequency (VHF) Omni-Directional Radio Range Tactical Air Navigation Aid (VORTAC) Gateswood, a 1.38-acre privately-owned property in Baldwin County that has a Navy-owned tower. None of these properties have sufficient natural resources to warrant inclusion in this INRMP and will not be discussed further.

## **ES.5 SPECIES MANAGEMENT**

The natural resource actions described in this INRMP are for the benefit of the plants, animals, and ecosystems occurring on this installation. Special attention is given to rare, threatened, and endangered (RTE) species, and their habitats, through management actions referenced in Table 1. These actions are long-term conservation measures that provide benefits for terrestrial and aquatic habitats on the installation. Management actions such as soil

conservation and storm water management, for example, control sediment and pollutant runoff to protect water quality for species such as alligators and salamanders. Forestry actions such as prescribed burning, thinning, and reforestation help to establish longleaf pine stands and herbaceous low-lying vegetation that provide habitat and resources for gopher tortoises, as another example.

<b>Table 1. Habitat Management Actions at the NAS Whiting Field Complex</b>	
<b>Habitat Management Actions</b>	<b>Section</b>
Wetland Management	5.1.1
Noxious, Invasive, and Exotic Species and Pests	5.1.2
Soil Conservation and Erosion Control	5.1.3
Stormwater and Water Quality Control	5.1.4
Landscaping and Grounds Maintenance	5.1.5
Floodplain Management	5.1.6
Urban Forestry	5.1.7
Agricultural Outleasing	5.1.8
Silvicultural Activities (i.e. Thinning, Prescribed Burns)	5.2.1
Forest Protection	5.2.2
Fisheries Management	5.3.1
Threatened and Endangered Species	5.3.2
Wildlife Damage and Diseases and Nuisance Wildlife	5.3.3

The “Wildlife Habitat Management and Threatened and Endangered Species, and Natural Communities” section of this INRMP (Section 5.3.2) includes additional goals, objectives, strategies, and projects for the benefit and long-term conservation of RTE species found, or potentially found, on the installation. Animal and plant species explicitly accounted for in this INRMP are:

- Alabama Pearlshell (mussel)
- Alabama Shad (fish)
- Alligator Snapping Turtle
- American Alligator
- American Eel
- Chapman's Butterwort (plant)
- Crested Fringed Orchid (plant)
- Curtiss' Sandgrass
- Eastern Diamondback Rattlesnake
- Florida Black Bear
- Florida Pine Snake
- Gopher Frog
- Gopher Tortoise
- Gulf Sturgeon (fish)
- Hairy Wild Indigo (plant)
- Le Conte's Sparrow (bird)



- Parrot Pitcher Plant
- Primrose-flowered Butterwort (plant)
- Purple Pitcher Plant
- Red Knot (bird)
- Rose Pogonia (plant)
- Southern Red Lily (plant)
- Spoon-leaf Sundew (plant)
- Sweetshrub (plant)
- White-top Pitcher Plant
- Yellow-fringed Orchid (plant)

## ES.6 PROJECTS OF THE INRMP

The projects to be implemented by the NASWF Complex are shown in Table A-1 (Appendix A). Projects were identified by the NASWF Complex NRM and the Area Navy NRM in consultation with foresters, fish and wildlife biologists, and soil conservationists with the Land Management Department of Southern Division, as well as with federal, state, and county wildlife biologists, foresters, and land managers.

It is the intent of the NASWF Complex to implement the projects to the greatest extent possible. The implementation of projects is largely dependent upon availability of funds. Funding for implementation of the INRMP will come from the Installation, Commander Navy Installations (CNIC; Major Claimant), or Naval Facilities Engineering Command natural resources fund sources. The natural resources programs and projects described here are divided into mandatory and stewardship categories to reflect implementation priorities. Every effort will be made to acquire O & M (N) Environmental, or other funding to implement DoD mandatory projects in the timeliest manner possible. Stewardship projects will be funded through forestry, agricultural outlease, fish and wildlife, Legacy, or other fund sources as funding and personnel resources become available. Table A-1 (Appendix A) summarizes the projects.

## ES.7 MISSION SUSTAINABILITY

The goal at the NASWF Complex is to maintain and enhance the capability of military lands to support the training mission, while conserving the area's natural resources. Implementation of the INRMP will primarily focus on enhancing and sustaining the military mission but, at the same time, the resource managers will implement projects designed to enhance and protect the natural resources within the NASWF Complex since the natural habitat is necessary for success of the military mission. Issues such as uncontrolled erosion and downstream public sedimentation, inappropriate use of herbicides, and unplanned public use of aquatic resources must be addressed to ensure that enforcement actions by regulatory agencies do not affect the military training mission.

Table 2 provides a cross reference of the discussions presented in this INRMP and the April 2006 Navy Guidance for INRMPs. Sections that are not applicable for the NASWF Complex are also identified.

<b>Table 2. Cross-Reference of Navy Guidance to Format Used in this INRMP</b>	
<b>Recommended INRMP format from Navy Guidance</b>	<b>Cross reference to required information in this document</b>
Cover Page	Cover Page
Signature Page	Signature Page
Executive Summary	Executive Summary
Table of Contents	Table of Contents
Chapter 1 - Overview	Chapter 1.0 – Introduction
1.a – Purpose	1.1 – Purpose and Organization
1.b – Scope	1.4 – Scope
1.c – Goals and Objectives Summary	1.5 – Goals and Objectives
1.d – Responsibilities of Stakeholders	1.3 – Responsibilities
1.e – Commitment of Regulatory Agencies	1.7 – Commitment of Regulatory Agencies
1.f – Authority	1.2 – Authority
1.g – Stewardship of Compliance Statement	1.6 – Stewardship and Compliance
1.h – Review and Revision Process	1.8 – Review and Revision Process
1.i – Management Strategies	1.9 – Management Strategy
1.j – Integration with other Plans	Not applicable
Chapter 2 – Current Conditions and Use	Chapter 2.0 – Current Conditions and Use
2.0 – Installation Information	2.1 – Installation Information
2.a.1 – Location Statement (concise)	2.1.1 – General Description
2.a.2 – Regional Land Use	2.1.6 – Regional Land Use
2.a.3 – History and Pre-Military Land Use (abbreviated)	2.1.5 – Abbreviated History and Pre-Military Land Use
2.a.4 – Military Mission (concise)	2.1.2 – Military Mission
2.a.5 – Operations and Activities	2.1.1 – General Description
2.a.6 – Constraints Map	2.1.3 – Constraints Map
2.a.7 – Opportunities Map	2.1.4 – Opportunities Map
2.b – General Physical Environment and Ecosystems	2.2 – General Physical Environment and Ecosystems
2.c – General Biotic Environment	2.3 – Biological Environment
2.c.1 – Threatened and Endangered Species and Species of Concern	2.3.2 – Rare, Threatened and Endangered Species
2.c.2 – Wetlands and Deep Water Habitats	2.2.5.6 – Wetlands
2.c.3 – Fauna	2.3.1 – Natural Communities
2.c.4 – Flora	2.3.1 – Natural Communities
Chapter 3 – Environmental Management Strategy and Mission Sustainability	Chapter 3.0 – Environmental Management Strategy and Mission Sustainability
3.a – Supporting Sustainability of the Military Mission and the Natural Environment	3.1 – Supporting Sustainability of the Military Mission and the Natural Environment
3.a.1 – Integrate Military Mission and Sustainability Land Use	3.1.1 – Military and Mission and Sustainable Land Use
3.a.2 – Define Impact to the Military Mission	3.1.2 – Defining Impact on the Military Mission
3.a.3 – Describe Relationship to Range Complex Management Plan or other Operational Area Plans	3.1.3 – Relationship to the Gulf of Mexico Range Complex and Pensacola Operational Area Management Plans

<b>Table 2. Cross-Reference of Navy Guidance to Format Used in this INRMP</b>	
<b>Recommended INRMP format from Navy Guidance</b>	<b>Cross reference to required information in this document</b>
3.b – Natural Resources Consultation Requirements (Section 7, EFH)	3.2 – Natural Resource Consultation Requirements
3.c – NEPA Compliance	3.3 – Planning for National Environmental Policy Act Compliance
3.d – Opportunities for Beneficial Partnerships and Collaborative Resource Planning	3.4 – Beneficial Partnerships and Collaborative Resource Planning
3.e – Public Access and Outreach	3.5 – Public Access and Outreach
3.e.1 – Public Access and Outdoor Recreation	3.5 – Public Access and Outreach
3.e.2 – Public Outreach	3.5 – Public Access and Outreach
3.e.3 – Encroachment Partnering	3.6 – Encroachment Partnering
3.e.4 – State Comprehensive Wildlife Plans (SCWP) Integration	3.7 – Florida and Alabama’s State Wildlife Action Plan
Chapter 4 – Program Elements	Chapter 5.0 – Program Elements
4.a – Threatened and Endangered Species and Species Benefit, Critical Habitat, Species of Concern Management	5.3.3 –Threatened and Endangered Species
4.b – Wetlands and Deep Water Habitats	5.1.1 – Wetlands
4.c – Law Enforcement	Not Applicable
4.d – Fish and Wildlife	5.3 – Fish and Wildlife
4.e – Forestry	5.2 – Forest Management
4.f – Vegetation	5.1 – Land Management
4.g – Migratory Birds	5.3.2 – Migratory Birds
4.h – Invasive Species	5.1.6 – Invasive, Exotic, and Noxious Species
4.i – Pest Management	5.3.4 – Nuisance Wildlife and BASH
4.j – Land Management	5.1 – Land Management
4.k – Agricultural Outleasing	5.1.8 – Agricultural Outleasing
4.l – GIS Management, Data Integration, Access, and Reporting	5.5.2 – Geographical Information Systems, Data Integration, and Reporting
4.m – Outdoor Recreation	5.4 – Outdoor Recreation
4.n – Bird Aircraft Strike Hazard	5.3.4 – Nuisance Wildlife and BASH
4.o – Wildland Fire	5.2.2 – Forest Protection
4.p – Training of Natural Resource Personnel	5.5.1 – Training of Natural Resource Personnel
4.q – Coastal/Marine	Not Applicable
4.r – Floodplains	5.1.4 – Floodplain Management
4.s – Other Leases	Not Applicable
Chapter 5 - Implementation	Chapter 6 – Implementation
5.a – Summary of Project Prescription Development Process	Appendix A – NASWF Complex Projects
5.b – Achieving No Net Loss	6.2 – Planning and Mission Sustainability
5.c – Use of Cooperative Agreements	6.3 - Partnerships
5.d – Funding Process	6.4 - Funding
Appendix 1. Acronyms	List of Acronyms

<b>Table 2. Cross-Reference of Navy Guidance to Format Used in this INRMP</b>	
<b>Recommended INRMP format from Navy Guidance</b>	<b>Cross reference to required information in this document</b>
Appendix 2. Detailed Natural Resources Prescriptions	2.3. – Biological Environment
Appendix 3. List of Projects	Appendix A. NASWF Complex Projects
Appendix 4. Surveys: Results of Planning Level Surveys	Not Applicable
Appendix 5. Research Requirements	Not Applicable
Appendix 6. Migratory Bird Management	5.3.2 – Migratory Birds
Appendix 7. Benefits for Endangered Species	5.3.3 – Threatened and Endangered Species
Appendix 8. Critical Habitat	2.3.2.1 – Critical Habitat

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# Introduction

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## 1.1 PURPOSE AND ORGANIZATION

This document meets statutory requirements under the Sikes Act Improvement Act (SAIA), Public Law 105-85, Div. B. Title XXIX, November 18, 1997, 111 Stat 2017-2019, 2020-2022. The Sikes Act, 16 U.S.C. § 670a et seq., was amended in November 1997 to require the Secretary of Defense to carry out a program to provide for the conservation and rehabilitation of natural resources on military installations. The amendments require the secretaries of the military departments to prepare and Implement Integrated Natural Resources Management Plans (INRMPs) for each military installation in the United States unless the absence of significant natural resources on a particular installation makes preparation of a plan inappropriate. The SAIA mandated all military installations with significant natural resources to prepare and implement an INRMP by November 17, 2001.

The primary purpose of the INRMP is to ensure natural resources conservation measures and military operations on Naval Air Station Whiting Field Complex, Florida (NASWF Complex) are integrated and consistent with stewardship and legal requirements. This INRMP was developed to balance the use of resources on NASWF Complex utilizing an ecosystem management approach, taking into account mission requirements and other land use activities affecting the installation. This INRMP was prepared in cooperation with the United States Fish and Wildlife Service (USFWS) and Florida Fish and Wildlife Conservation Commission (FWC) to reflect mutual agreement on the fish and wildlife management aspects of the plan.

The United States Department of the Navy (DON) is updating this INRMP for the NASWF Complex to comply with the SAIA and with Department of Defense Instruction (DODINST 4715.3). This INRMP also complies with the Office of the Chief of Naval Operations Instruction (OPNAVINST) 5090.1D, Chapter 12, ASN (I&E) Memorandum of 12 August 1998, OUSD Memorandum of 21 September 1998, Chief of Naval Operations (CNO) Itr Ser N45D/8U589016 of 25 September 1998, and CNO letter Ser N456F/8U589129 of 30 November 1998.

The first three sections of this INRMP establish the existing conditions at the NASWF Complex. Section 1 provides a general overview of the purpose and intent of the INRMP and processes for review, implementation, and revision of the plan. Section 2 establishes the importance of the military mission within the DON, discusses the organization of the NASWF Complex, provides a brief overview of the natural resources program, and identifies installation partnerships and stakeholders with a particular interest in the protection of installation and regional natural resources. Section 3 discusses the existing physical and biological characteristics of the local and regional environment. Physical characteristics include climate, topography, geology, soils, hydrology, groundwater, and land use. Biological characteristics include wetlands, wildlife, threatened and endangered species, coastal zone issues, and natural vegetative communities.

The remaining sections of the INRMP identify issues pertaining to the long-term management of the Complex ecosystem and land management programs and practices for achieving desired conditions. Section 4 discusses ecosystem management goals, objectives, strategies, initiatives, and projects that comprise a logical sequence of actions for achieving the long-range aim of ecosystem management. Section 5 discusses ecosystem management at the NASWF Complex. Appendix A describes the projects that will be implemented by the NASWF Complex. The NASWF Complex Forest Management Plan is provided as Appendix B and Appendix C provides information pertaining to outdoor recreation at the Complex.

## **1.2 AUTHORITY**

The NASWF Complex INRMP is written to meet the requirements of the SAIA of 1997 (16 U.S.C. § 670a et seq.), and the requirements of the DoD Environmental Conservation Program (DoDINST 4715.3). It also incorporates guidance given in OPNAVINST 5090.1D, the Navy Environmental Protection and Natural Resources Manual, and the NAVFAC Real Estate Procedural Manual (NAVFAC P-73).

## **1.3 RESPONSIBILITIES**

The Commander, Navy Region Southeast (CNRSE) is responsible for ensuring the NASWF Complex INRMP complies with DoD, Navy, and CNO policy on the INRMP and associated NEPA document preparation, revision, and implementation; ensuring the NASWF Complex INRMP undergoes annual and formal 5-year reviews; ensuring the programming of resources necessary to maintain and implement the NASWF Complex INRMP; and participating in the development and revision of the NASWF Complex INRMP.

The NASWF Complex Commanding Officer (CO) is responsible for the preparation, completion, and implementation of this INRMP and associated NEPA documents for the NASWF Complex

and systematically applying the conservation practices set forth in this INRMP. The CO's role is to act as the steward of natural resources under his or her jurisdiction and integrate natural resources management requirements into the daily decision making process; ensure natural resources management and this INRMP comply with all natural resource-related legislation, Executive Orders (EO) and Executive Memorandums, and DoD, Secretary of the Navy (SECNAV), Navy, and CNO directives, instructions and policies; involve appropriate tenant, operational, training, or research and development (R&D) commands in the INRMP review process to ensure no net loss of military mission; designating a Natural Resources Manager (NRM) that is responsible for the management efforts related to the preparation, revision, implementation and funding for this INRMP, as well as coordination with installation trainers, subordinate commands and installations; involve appropriate Navy Judge Advocate General (JAG) or Office of the General Counsel (OGC) Legal Counsel to provide advice and counsel with respect to legal matters related to natural resources management and this INRMP; and, endorse this INRMP via CO signature.

#### **1.4 SCOPE**

The NASWF Complex is spread across 14 properties in the western Florida panhandle and southwestern Alabama. It is associated with several watersheds, including those for Pensacola Bay, Mobile Bay, Perdido Bay, Perdido River, Escambia River, Blackwater River, Yellow River, and Santa Rosa Sound . The scope of the INRMP includes all 14 properties currently managed by the NASWF Complex, which are NAS Whiting Field, Navy Outlying Landing Field (NOLF) Harold, NOLF Holley, NOLF Santa Rosa, NOLF Spencer, NOLF Pace, NOLF Site 8-A, NOLF Wolf, NOLF Barin, NOLF Silverhill, NOLF Summerdale, and NOLF Evergreen, Whiting Park, and Whiting Pines Housing (Figure 1). This INRMP creates the framework for the implementation of a natural resources management program to conserve and rehabilitate natural resources across the entire Complex. Appropriate and effective management of natural resources on Navy lands will be achieved in accordance with the principles and practices of ecosystem management. Ecosystem management initiatives include the following steps, which do not necessarily take place in a particular sequence and often occur in parallel with each other and can be repeated as the process evolves:

- Recognizing and defining the problems or opportunities;
- Delineating boundaries;
- Identifying and involving participants;
- Establishing a common vision;
- Assessing ecological, economical, and social constraints and opportunities;
- Acquiring funding;
- Making decisions and implementing solutions; and

- Monitoring progress, evaluating impacts, and adapting based on new information (The Keystone Center, 1996).

The INRMP does not substitute for a pest management plan, hazardous waste plan, stormwater retention plan, or integrated cultural resources management plan (ICRMP). It has the dual purpose of complying with various natural resources related laws while supporting the military mission of the NASWF Complex.

## 1.5 GOALS AND OBJECTIVES

The development and implementation of the INRMP is a dynamic, multidisciplinary planning process that incorporates as its primary goal supporting and sustaining the military mission while managing, protecting, and enhancing the biological integrity of military lands and waters. The military's use of land and water resources must comply with legal mandates and will, to the extent practicable, be integrated with ecosystem-level goals, plans, and use of lands and waters inside and outside the boundaries of military installations. The INRMP creates an ecosystem-based conservation program that provides for conservation and rehabilitation of natural resources in a manner that is consistent with the military mission, integrates and coordinates all natural resources management activities, provides for sustainable multipurpose uses of natural resources; and provides for military personnel access for use of natural resources subject to safety and military security considerations. The management objectives are to integrate wetland management, soil conservation, water quality control, floodplain management, grounds maintenance, land management, forest management, wildland fire management, vegetative management, fish and wildlife management, migratory bird management, and management for outdoor recreational opportunities, as practicable and consistent with the military mission and established land uses. Specific goals and objectives are discussed in detail in Section 4.

The NASWF Complex has developed a mission statement that provides the standard by which to measure the effects and effectiveness of INRMP decisions.

The primary mission of the NASWF Complex is to provide support to naval air training, tenants, and other customers through continuous improvement in quality of life, workforce, environment, and public image. The mission of the Navy's natural resources program is to support the Navy mission through responsible stewardship of the Installation's natural resources utilizing integrated natural resources management and principles of ecosystem management to ensure ecosystem viability and biodiversity. The primary goal of the INRMP is to restore, develop, and maintain balanced ecosystems supporting the DON mission in an appropriate, sustainable, multiple-use environment. This goal is accomplished through a combination of careful planning and implementation of management prescriptions.



## **1.6 STEWARDSHIP AND COMPLIANCE**

The responsibilities of the natural resources management program at the NASWF Complex can be classified as either meeting stewardship needs or mandatory requirements. Stewardship projects (e.g., watchable wildlife projects, urban forestry) are based upon the land management responsibility of the Navy, and are not required to be implemented to meet regulatory needs. Mandatory projects (e.g., endangered and threatened species surveys) are required to be implemented to meet legal requirements that apply to the operations of the NASWF Complex.

Legal requirements are laws, executive orders, regulations, and memoranda regarding the protection and management of natural resources (see Table 3). This INRMP will be updated as legal requirements change. Relevant legal requirements for natural resources management are also presented throughout Section 5.

Funding for implementation of the INRMP will come from the installation, CNIC, and NAVFAC natural resources stewardship. The natural resources programs and projects described in this INRMP are divided into stewardship and mandatory categories to reflect implementation priorities. Stewardship projects will be funded through forestry, agricultural outlease, fish and wildlife, Legacy, installation funds, and other fund sources as funding and personnel resources become available. Every effort will be made to fund mandatory projects through Navy Operations and Maintenance (O & M [N]) Environmental.

## **1.7 COMMITMENT OF REGULATORY AGENCIES**

The USFWS and FWC are integral parts of the INRMP development, review, and revision process for the NASWF Complex, under a cooperative agreement with the DON, as outlined in the Sikes Act. The USFWS and FWC cooperate in the development of the INRMP and participate in the annual reviews and revisions, as well as the formal 5-year review of the NASWF Complex INRMP.

Other government agencies outside the DON that have provided technical support to natural resources management at the NASWF Complex include The Nature Conservancy (TNC), with which the DON also has a cooperative agreement, the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS), United States Forest Service (USFS), Gulf Coastal Plain Ecosystem Partnership (GCPEP), Florida Department of Agriculture and Consumer Services (FDACS), Florida Forest Service, Florida Department of Environment Protection (FDEP), The Longleaf Alliance, and Escambia County land management professionals.

**Table 3. Legal Drivers for Natural Resources Management**

<b>Name/Description</b>	<b>Citation</b>
Addresses off-road vehicle use	Executive Order 12608
Bald Eagle Protection Act of 1940	16 U.S.C. 668
Clean Air Act	42 U.S.C. 7401
Clean Water Act	33 U.S.C. 1251, 33 USC 1341
Coastal Zone Management Act	16 U.S.C. 1456
Coral Reef Protection	Executive Order 13089
Endangered Species Act	16 U.S.C. 1531 & 1536
Environmental Conservation Program	DODINST 4715.3
Erosion Protection Act	33 U.S.C. 426
Estuary Protection Act of 1968	16 U.S.C. 1221
Farm Land Protection Policy	7 CFR 658
Farmland Protection Policy Act of 1981	7 U.S.C. 4201
Federal Insecticide, Fungicide, and Rodenticide Act	7 U.S.C. 136
Federal Land Policy and Management Act of 1976	43 U.S.C. 1701
Federal Leadership in Environmental, Energy, and Economic Performance	Executive Order 13514
Federal Noxious Weed Act of 1974	7 U.S.C. 2801
Federal Pest Plant Act	7 U.S.C. 150
Fish and Wildlife Conservation Act	16 U.S.C. 2901
Fish and Wildlife Coordination Act, as amended	16 U.S.C. 661-666c
Floodplain Management	Executive Order 11988
Greening the Government through Environmental Management	Executive Order 13148
Invasive Species	Executive Order 13112
Magnuson-Stevens Fisheries Conservation and Management Act, as amended	Public Law 94-265
Management of Undesirable Plants of Federal lands	7 U.S.C. 2814
Marine Mammal Protection Act of 1972	16 U.S.C. 1361
Migratory Bird Treaty Act	16 U.S.C. 703
Military Construction and Authorization Act – Leases, Non-excess property	10 U.S.C. 2667
Military Reservations and Facilities – Hunting, Fishing, and Trapping	10 U.S.C. 2671
Multiple-Use Sustained Yield Act of 1960	16 U.S.C. 528
National Environmental Policy Act of 1969	42 U.S.C. 4321
Natural Resources Management Program	32 CFR 190
North American Wetland Conservation Act	16 U.S.C. 2912, 4401, 4808
Outdoor Recreation – Federal/State Program Act	16 U.S.C. 460 P-3
Protection and Enhancement of Environmental Quality	Executive Order 11514
Protection of Wetlands	Executive Order 11990
Recreational Fisheries	Executive Order 12962
Rivers and Harbors Act of 1899	33 U.S.C. 401
Sikes Act Improvement Act of 1997	16 U.S.C. 670
Soil and Water Conservation Act of 1977	16 U.S.C. 2001
Soil Conservation Act	16 U.S.C. 590
Timber Sales on Military Lands	10 U.S.C. 2665
Use of Off-Road Vehicles on DOD Lands	Executive Order 11989
Water Resources Planning Act	42 U.S.C. 1962
Watershed Protection and Flood Prevention Act	16 U.S.C. 1001, 33 USC 701

## **1.8 REVIEW AND REVISION PROCESS**

The NASWF Complex must complete an evaluation of the effectiveness of this INRMP annually. The evaluation can be readily completed using the web-based Metrics Builder tool on the Environmental Management Systems website (EMS Web). The Metrics Builder provides the means to evaluate performance in seven areas:

- INRMP Implementation
- Partnership/Cooperation and Effectiveness
- Team Adequacy
- INRMP Impact on the Installation Mission
- Status of Federally Listed Species and Critical Habitat
- Ecosystem Integrity
- Fish and Wildlife Management and Public Use

Annual reviews of the NASWF Complex INRMP will include annual revisions, so that the review and revision processes are integrated.

## **1.9 MANAGEMENT STRATEGIES**

The DoD takes an ecosystem approach to natural resources management. Ecosystem management is a goal-driven approach to managing natural resources that support present and future mission requirements, preserves ecosystem integrity, is at a scale compatible with natural processes, is cognizant of nature's time frames, recognizes social and economic viability within functioning ecosystems, is adaptable to complex and changing requirements, and is realized through effective partnerships among private, local, state, tribal, and Federal interests. Ecosystem management is a process that considers the environment as a complex system functioning as a whole, not as a collection of parts, and recognizes that people and their social and economic needs are a part of the whole. The INRMP and the implementation of its management plans and projects provides for ecosystem management at NASWF Complex. The INRMP takes into account specific projects and management techniques that serve to manage the ecosystem and maintain biological diversity at a landscape scale.

Ecosystem management at the NASWF Complex is achieved through adaptive and cooperative management strategies. Adaptive management is a systematic approach for continually improving management practices by learning from the outcome of projects, programs and other experiences. Adaptive management involves testing, monitoring, and evaluating applied strategies, and incorporating new knowledge into management approaches that are based on scientific findings and the needs of society. Results are used to modify management policy, strategies, and practices. The Metrics Builder provides the means to evaluate performance in

INRMP reviews and updates for the NASWF Complex. The Metrics Builder can be applied to completed and ongoing projects, natural resource practices, and new proposals.

The NASWF Complex manages its natural resources cooperatively with government agencies for responsible resource stewardship. In cooperative management, representatives of government agencies share information, resources, and responsibility. At the NASWF Complex, the USFWS, FWC, and Navy cooperatively manage the natural resources and strive to meet the military mission while conserving and enhancing the natural resources of the base.

Ecosystem-based management and cooperative natural resources management are holistic strategies that benefit individual species in the ecosystem, most notably federally-listed and state-listed threatened and endangered species. The DoD is obligated to comply with the Endangered Species Act of 1973 (ESA), and federally-listed species on the NASWF Complex receive full protection under the ESA, enhanced by the Complex's effective cooperative relationship with the regulatory agencies. Ecosystem management protects and enhances habitats for listed species. Management actions such as erosion control and stormwater management, for example, control sedimentation and pollution runoff to adjacent rivers, protecting water quality for the threatened Gulf sturgeon (*Acipenser oxyrinchus desotoi*), federally-petitioned Alabama shad (*Alosa alabamae*), and listed mussels such as the endangered Alabama pearlshell (*Margaritifera marrianae*). Forestry actions such as prescribed burning, thinning, and reforestation help maintain longleaf pine stands and herbaceous vegetation that provide habitat and resources for gopher tortoises (*Gopherus polyphemus*), as another example.

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## 2

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## Current Conditions and Use

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### 2.1 INSTALLATION INFORMATION

#### 2.1.1 General Description

The NASWF Complex is located in the western Florida panhandle and southwestern Alabama and is comprised of the following fourteen properties, encompassing approximately 10,300 total acres, all controlled by the NAS Whiting Field Commanding Officer (CO). The main installation (NAS Whiting Field) is located in Florida's northwest coastal area, approximately 6 miles north of Milton, in Santa Rosa County (Figure 1). NAS Whiting Field, approximately 4,460 acres in size, is located near the Blackwater River and north of Blackwater Bay. NAS Whiting Field is accessible from Interstate 10 and US and State Highways 90, 87, and 191. Other properties included in the NASWF Complex are located in Escambia and Santa Rosa counties, Florida, and Baldwin and Conecuh counties, Alabama. See Table 4 for a summary of the properties and their acreages, locations, driving directions, and military operations and activities.

#### 2.1.2 Military Mission

Naval Air Station (NAS) Whiting Field's present mission is to train student naval aviators in the primary and intermediate phases of fixed-wing aviation, and in the advanced phases of helicopter training. The NAS, including its 13 Navy Outlying Landing Fields is known as "the world's busiest and most efficient naval air complex." On average, more than 500 flights a day are launched at NAS Whiting Field North and South, resulting in the mission support of over 1.5 million flight operations per year. NAS Whiting Field supports approximately 30 tenant commands and customers, including Training Air Wing FIVE (TRAWING-FIVE), Training Squadron TWO (VT-2), Training Squadron THREE (VT-3), Training Squadron SIX (VT-6), Fixed-Wing Instructor Squadron (FITU), Helicopter Training Squadron EIGHT (HT-8), Helicopter Training Squadron EIGHTEEN (HT-18), Helicopter Training Squadron TWENTY-EIGHT (HT-28), Rotary-Wing Instructor Squadron (HITU), Naval Reserve Detachment 282, Marine Aviation Training Support Group (MATSG) Administrative Detachment, Naval Education and Training Security Assistance Field Activity (NETSAFA) Detachment, Naval Air Warfare Center Training System Division (NAWCTSD), Public Works Department, and MWR.

**Table 4. NASWF Complex Property Location and Mission/Function**

<b>PROPERTY</b>	<b>ACRES</b>	<b>LOCATION</b>	<b>DIRECTIONS</b>	<b>MISSION/FUNCTION</b>
Naval Air Station (NAS) Whiting Field	4,021	Santa Rosa Co., FL	6 mi. N of Milton.	To train student naval aviators in the primary and intermediate phases of fixed-wing aviation, and in the advanced phases of helicopter training.
Whiting Park	7	Santa Rosa Co., FL	2 mi. E of downtown Milton, accessible from US Hwy 90 and northward on River Road.	Supports picnicking and boating activities. Ski boats, pontoon boats, canoes, and kayaks are available for rent.
Whiting Pines Housing	98	Santa Rosa Co., FL	Intersection of State Highway 87 and Berryhill Road, Milton.	Consists of 329 officer and enlisted units.
Navy Outlying Landing Field (NOLF) Spencer	640	Santa Rosa Co., FL	1.5 mi. N of Pace, FL and Hwy 90.	Used for helicopter training operations.
NOLF Pace	207	Santa Rosa Co., FL	1.5 mi. N of Wallace, FL on Hwy 197.	Used for helicopter training operations, including touch-and-go, autorotations and low hover work.
NOLF Harold	573	Santa Rosa Co., FL	2 mi. N of US 90E at Harold, FL.	Used for helicopter training operations.
NOLF Santa Rosa	690	Santa Rosa Co., FL	1 mi. S of I-10 on State Hwy 197.	Used primarily for day to night helicopter flight training operations.
NOLF Holley	662	Santa Rosa Co., FL	1 mi. W of State Hwy 87 on State Hwy 399.	Used for touch-and-go and Practice Precautionary Emergency Landing (PPEL) operations.
NOLF Site 8-A	640	Escambia Co., FL	2 mi. W of I-10 exit 1 on US 90 W.	Used for helicopter operations including tactical operations, normal operations, cold refueling, crew change, and low work.
NOLF Wolf	311	Baldwin Co., AL	8 mi. S of US 98 on State Hwy 95.	Formerly used for touch-and-go and PPEL operations. Currently runways are not being utilized.
NOLF Barin	690	Baldwin Co., AL	2 mi. W of Elberta, AL on US 98.	Used for touch-and-go operations and PPELs.
NOLF Summerdale	560	Baldwin Co., AL	3.5 mi. E of Hwy 59, S of Robertsedale, AL.	Used for dual touch-and-go operations and PPELs.
NOLF Silverhill	352	Baldwin Co., AL	6 mi. W of Robertsedale, AL on Hwy 54.	Used for dual touch-and-go operations and PPELs.
NOLF Evergreen (clear zone)	22	Conecuh Co., AL	3 mi. W of I-65, Hwy 84, Evergreen, AL.	Used for dual and solo touch-and-go operations.



Figure 1. Naval Air Station Whiting Field Complex

Combined workforces of approximately 3,240 personnel make up the population of NAS Whiting Field. The workforce consists of approximately 1,805 military members, 531 civilians, 895 contract workers, and 9 individuals from private industry.

### **2.1.3 Constraints Map**

The future expansion of properties at the NASWF Complex would be limited or impractical, depending upon the property (see Figure 2).

Over 97% of the NOLF Harold's perimeter abuts public lands. All of the airfield boundaries adjoin Blackwater River State Forest or other State-owned lands. A canoe rental business is situated at the far north end of NOLF Harold's eastern boundary, and a small portion of a residential lot abuts the point forming its southeast corner.

The general area surrounding NOLF Holley is predominantly residential subdivisions having a typical lot size of one-half acre. No agricultural activities are present but some forested lots could be harvested for timber.

The area surrounding NOLF Pace is predominantly rural and agriculture in character. Market pressures to provide more housing for a growing population in Santa Rosa County is introducing residential neighborhoods within the vicinity of the Pace Study Area.

The area surrounding NOLF Santa Rosa is predominantly single family residential lots to the north, east, and southeast and agriculture to the south and west. Major roadways adjacent to the property include Interstate 10 (I-10) to the north, State Road 87 to the west, and Nichols Lake Road (County Road 184) to the south.

The area surrounding NOLF Spencer is predominantly characterized by residential subdivision on lots between one-quarter acre and five acres. Other land uses occurring within the study area include institutional and commercial uses. Pace High School is located a short distance southwest of NOLF Spencer. A few agricultural plots are in the vicinity, but are increasingly being converted to residential lots.

Most of the land around NOLF Site 8-A is occupied by single family or commercial owners; land on the east side is owned by the Navy Federal Credit Union.



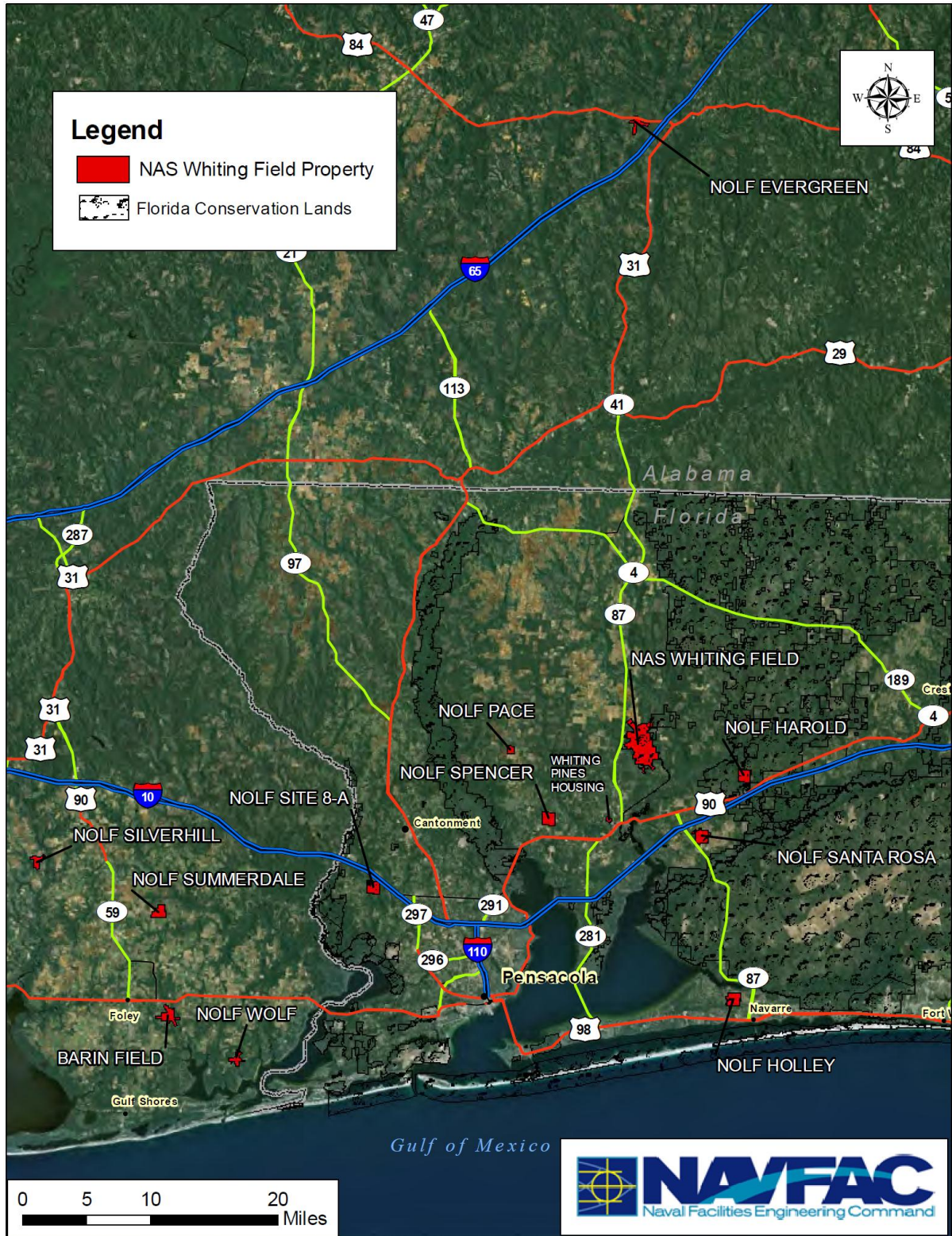


Figure 2. Constraints Map of NAS Whiting Field Complex

#### **2.1.4 Opportunities Map**

The NASWF Complex is considered by the Florida Natural Areas Inventory (FNAI) to be Conservation Lands. Other entities whose holdings constitute Conservation Lands near and adjacent to the NASWF Complex include the Nature Conservancy, Florida Forest Service, and Eglin Air Force Base (Figure 2). Partnership with these organizations and others, such as the Longleaf Alliance and Gulf Coastal Plain Ecosystem Partnership, will facilitate cross-boundary management of natural resources at the Complex.

#### **2.1.5 Abbreviated History and Pre-Military Land Use**

The western Florida panhandle was settled by the Spanish in about 1700. Early settlers encountered tenuous environmental conditions; the soil was poor and irregularly resupplied, and the area was unpopular due to disease and extreme heat. The British acquired control of the area in 1763 but Spain wrested it back at the conclusion of the American Revolution, in 1781. Spanish Florida was transferred to the United States four decades later, in 1821.

Milton, six miles north of present-day NAS Whiting Field, was incorporated in 1844 along the banks of the Blackwater River, which was vital for transporting timber, lumber, brick, and naval stores to the port at Pensacola. The origin of the name Milton was likely a derivation of "Milltown," indicating the early importance of the timber industry to the area. Timber harvest resulted in cleared land for cotton and peanut farming, which contributed prominently to the area's economy from the late 1800's through the early 1900's.

Timber income waned in the years leading up to World War II as harvestable trees became scarce. The local economy was lifted, however, during World War II, as the nation's need for well-trained aviators prompted the Navy to commission Naval Auxiliary Air Station Whiting Field six miles north of Milton in 1943. The site was named in honor of Captain Kenneth Whiting, who was taught to fly by Orville Wright. The Station provided various operational services and aviation training. During World War II, cadets and officer flight students received instrument and radio training at Whiting Field and, for a time, the Station was used as a prisoner-of-war camp. At the end of World War II, it was designated as a Naval Air Station, and medium and heavy bombers were based at the site. During 1948 and 1950, the Blue Angels flight demonstration team was based at Whiting Field, as was the Navy's first jet training unit. In 1959, multi-engine training formerly conducted at NAS Pensacola was moved to Whiting Field. In 1974, the Navy's helicopter training program moved from Pensacola's Ellyson Field to NAS Whiting Field.

### **2.1.6 Regional Land Use**

Regional land uses around the properties of the NASWF Complex are governed by several local government policies. Every county in Florida must prepare and adopt a Comprehensive Plan (CP) pursuant to Chapter 163, Part II, Florida Statutes, to establish goals, objectives, and policies for managing land use, transportation facilities, public facilities, environmental resources, recreation and open space, intergovernmental coordination, and capital improvements. They must also prepare and adopt a Land Development Code (LDC) to implement the objectives and policies set forth in CP. Airfield Influence Planning Districts are established around military and public airfields to promote an orderly transition and rational organization of land uses, protect the health, safety and welfare of the public, and maintain military missions. County-specific Joint Land Use Studies (JLUS) as a guide for land use decisions and promotion of land use compatibility. Open space is preserved as necessary by the Conservation Land Use District to protect water resources, preserve scenic areas, preserve historic sites, provide parklands and wilderness reserves, conserve endemic vegetation, and prevent flood damage and soil erosion. Such areas are protected from development pursuant to site plan review. The *Escambia/Santa Rosa Coastal Resource Management Plan* requires coordination between local governments and agencies to reduce or minimize adverse impacts in the region due to development. Non-conforming land uses incompatible or inconsistent with the City's *Future Land Use Plan* will not be allowed to expand, to be enlarged, or to be rebuilt or reopened if destroyed.

## **2.2 GENERAL PHYSICAL ENVIRONMENT AND ECOSYSTEMS**

### **2.2.1 Climate**

The climate of northwest Florida's is classified as subtropical marine, and is characterized by mild winters and hot, humid, breezy summers. The Milton area has an average temperature of 66.8 degrees Fahrenheit (° F) and receives an average of 66.5 inches of rainfall per year (see Table 5). January is typically the coldest month of the year, with an average temperature of 50.7° F and an average minimum temperature of 39.5° F. July is typically the hottest month of the year with an average temperature of 81.0° F and an average maximum temperature of 91.4° F; however, high temperatures also occur in the other summer months.

Rainfall may be influenced by three types of weather disturbances that result in unpredictable weather patterns: cold fronts, thunderstorms, and hurricanes. Hurricanes are the most destructive of these. Hurricane season extends from June through November, and the frequency of hurricanes in the Gulf of Mexico is greatest during August through October. A hurricane strikes the Florida Panhandle once every 17 years, an average, and fringe effects are experienced once every 5 years. In 1995, western Florida panhandle was directly affected by two major hurricanes within two months of each other, Hurricanes Erin (5 August 1995) and Opal (5 October 1995). The area was decimated

by category 3 Hurricane Ivan in 2004 (16 September 2004) and was hit the very next year by category 3 Hurricane Dennis (10 July 2005). Both of these storms caused damage to the natural resources at NAS Whiting Field and its NOLFs.

<b>Month</b>	<b>Average Temp (°F)</b>	<b>Average Low Temp (°F)</b>	<b>Average High Temp (°F)</b>	<b>Average Rainfall (inches)</b>
January	50.7	39.5	61.9	5.3
February	53.7	42.0	65.4	5.0
March	59.7	47.8	71.6	6.2
April	66.4	54.4	78.4	4.8
May	73.8	62.0	85.6	4.2
June	79.2	68.2	90.2	7.3
July	81.0	70.5	91.4	7.8
August	80.7	70.1	91.3	6.6
September	77.0	66.1	87.8	6.0
October	67.8	55.2	80.4	3.8
November	58.7	46.3	71.1	4.6
December	52.7	41.3	64.1	4.9
<b>Average/Total</b>	<b>66.8</b>	<b>55.3</b>	<b>78.3</b>	<b>66.5</b>

Source: Southeast Regional Climate Center (<http://www.sercc.com>)

### **2.2.1.1 Climate Change**

Climate change is causing rising sea level, altering precipitation patterns, and changing ecological systems, and will shape strategic, infrastructure, and natural resources considerations for the foreseeable future. The NASWF Complex must have the land, air, and water necessary to train and operate to successfully execute its military mission. The frequent and intense heat extremes projected to occur with climate change may limit outdoor training, strain personnel efficiency, degrade air quality through elevated ozone caused by higher temperature, and strain electricity supply due to the increased demand on the grid for cooling. Changes in precipitation patterns will reduce water supply, increase the frequency and intensity of wildfires, damage local ecosystems, and cause shifts in species composition or geographic range.

### **2.2.2 Air Quality**

The Clean Air Act (CAA) is the primary federal statute governing the control of air pollution. The CAA requires the Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) for six criteria pollutants considered harmful to public health and the environment. These pollutants are respirable particulate matter (PM<sup>10</sup>), carbon monoxide, sulfur dioxide (SO<sup>2</sup>), nitrogen

dioxide (NO<sup>2</sup>), lead, and ozone (O<sup>3</sup>), and the levels of these pollutants must not exceed limits set by the NAAQS.

Air pollutant emissions at the NASWF Complex are generated from stationary and mobile sources. Stationary sources include surface coating, fuel storage and handling, and firefighting training facilities and miscellaneous small stationary combustion sources. Mobile sources include aircraft, motor vehicles, and ground support equipment. Military aircraft operations are the most significant source of air pollutant emissions at NAS Whiting Field. The NASWF Complex is located within the Mobile-Pensacola-Panama City-Southern Mississippi air quality control region. The EPA classifies this region as “in attainment” for the six NAAQS criteria pollutants.

Prescribed burning, which is an essential management tool at the NASWF Complex, can contribute to higher concentrations of PM<sub>10</sub> in the air. Smoke is a mixture of carbon particles and water vapor. If air quality in an area was approaching the NAAQS limit for PM<sub>10</sub>, prescribed burning could potentially cause the region to exceed the daily limit. However, prescribed burning on the NASWF Complex is limited, with two-to-five burns each year, each consisting of 50-to-300 acres. The Complex will coordinate with the Florida Forest Service (FFS) to avoid potential adverse impacts from prescribed burns on regional air quality. A Smoke Management Plan (SMP) was submitted to the EPA by the FFS that describes prescribed burn activities, sets guidelines, and authorizes prescribed fires in the state. In addition, the Florida Fire Management Information System, a GIS-based system for recording smoke sensitive areas, weather, and prescribed fires (University of Florida Cooperative Extension Service; <http://edis.ifas.ufl.edu/FR058>), has been established and is utilized for prescribed burns on the NASWF Complex. The NASWF Complex is subject to the prescribed burning laws and requirements of Florida.

### **2.2.3 Geology, Topography, and Soils**

The NASWF Complex is in the Coastal Plain Province, which consists mainly of unconsolidated sands, silts, limestones, and clays deposited before the shoreline of the continental mainland reached its present position. The Coastal Plain Province is divided into districts. NASWF Complex properties in Escambia and Santa Rosa Counties lie within the Western Highlands District, with the exception of NOLF Holley, which lies within the Coastal Lowlands District (DON, 1986). NOLF Wolf, in Baldwin County, Alabama, also lies within the Coastal Lowlands District. NOLF Evergreen, in Conecuh County, Alabama, lies within the Dougherty Plain, and NOLFs Silverhill, Summerdale, and Barin (all in Baldwin County) lie within the Southern Pine Hills District (Geological Survey of Alabama 1975).

The Coastal Lowlands comprise the southern portion of Santa Rosa and Escambia Counties and are characterized by poorly dissected, nearly level plains. The Western Highlands, which lie in the

northern portion of Santa Rosa and Escambia counties, form a southwardly sloping plateau with numerous streams. The Dougherty Plain is composed of undifferentiated limestone residuum, bedded sand and clay, and surficial terrace material (Geological Survey of Alabama, 1975). The Southern Pine Hills District is an area of thick sediments. The northern-most, highest parts of the district are sculptured by streams; the intermediate elevations consist of ridges formed by coastal sediments and the areas along the coast consist of relic lagoon and barrier island features (<http://www.sfrc.ufl.edu/Extension/ffws/soils.htm>).

Soils at the NASWF Complex are listed in Table 6 and presented in Figures 3 to 14. Soils maps and additional soils information for NASWF Complex properties in Santa Rosa County may be obtained from the Soil Survey of Santa Rosa County (1980). Soils data for properties in Escambia County may be obtained from the Soil Survey of Escambia County (1960). In addition, more current soils data for Escambia County can be obtained electronically through the Soil Survey Geographic (SSURGO) Database (<http://www.ncgc.nrcs.usda.gov/products/datasets/ssurgo/>). Soil maps for Baldwin County were developed in 1963 by the USDA Soil Conservation Service, the Alabama Department of Agriculture and Industries, and the Alabama Agriculture Experiment Station. Soil survey maps and tables may be obtained from the NRCS office in Bay Minnette, Alabama. Soils maps and additional soils information for Conecuh County may be obtained from the Soil Survey of Conecuh County (1989).

<b>Table 6. Soils of NAS Whiting Field and its NOLFs</b>			
<b>Map unit</b>	<b>Soil</b>	<b>Hydric?</b>	<b>Series Description</b>
<b>NAS Whiting Field</b>			
5	Bonifay loamy sand, 0-5% slopes	----	Loamy, siliceous, thermic Grossarenic Pinthic Paleudults. Nearly level to gently sloping and well drained.
8	Dothan fine sandy loam, 0-2% slopes	----	Fine-loamy, siliceous, thermic Pinthic Paleudults. Nearly level to sloping and well drained.
9	Dothan fine sandy loam, 0-2% slopes	----	Fine-loamy, siliceous, thermic Pinthic Paleudults. Nearly level to sloping and well drained.
14	Fuquay loamy sand, 0-5% slopes	----	Loamy, siliceous, thermic Arenic Plinthic Paleudults. Nearly level to sloping and well drained.
17	Gullied land	----	No description.
21	Lakeland sand, 0-5% slopes	----	Thermic, coated Typic Quartzipsamments. Nearly level to steep, excessively drained, and sandy.
25	Lucy loamy sand, 0-5 % slopes	----	Loamy, siliceous, thermic Arenic Paleudults. Nearly level to sloping and well drained.
30	Orangeburg sandy loam, 0-2% slopes	----	Fine-loamy, siliceous, thermic Typic Paleudults. Nearly level to strongly sloping, well drained, and loamy.
36	Pits	----	No description.

<b>Table 6. Soils of NAS Whiting Field and its NOLFs</b>			
<b>Map unit</b>	<b>Soil</b>	<b>Hydric?</b>	<b>Series Description</b>
38	Red bay sandy loam, 0-2 % slopes	----	Fine-loamy, siliceous, thermic Phodic Paleudults. Nearly level to gently sloping, well drained and loamy.
42	Tifton sandy loam 2-5% slopes	----	Fine-loamy, siliceous, thermic plinthic Paleudults. Nearly level to sloping and well drained.
44	Troup loamy sand, 0-5% slopes	----	Loamy, siliceous, thermic Grossarenic Paleudults. Nearly level to steep and well drained.
45	Troup loamy sand, 5-8% slopes	----	Loamy, siliceous, thermic Grossarenic Paleudults. Nearly level to steep and well drained.
48	Urban land	----	No description.
<b>Whiting Park</b>			
3	Bibb-Kinston Association	Hydric	Level, poorly drained soils characteristic of a floodplain.
<b>NOLF Spencer</b>			
5	Bonifay loamy sand, 0-5% slopes	----	Loamy, siliceous, thermic Grossarenic Pinthic Paleudults. Nearly level to gently sloping and well drained.
14	Fuquay loamy sand, 0-5% slopes	----	Loamy, siliceous, thermic Arenic Plinthic Paleudults. Nearly level to sloping and well drained.
44	Troup loamy sand, 0-5% slopes	----	Loamy, siliceous, thermic Grossarenic Paleudults. Nearly level to steep and well drained.
48	Urban land	----	No description.
<b>NOLF Pace</b>			
5	Bonifay loamy sand	----	Loamy, siliceous, thermic Grossarenic Pinthic Paleudults. Nearly level to gently sloping and well drained.
8	Dothan fine sandy loam, 0-2% slopes	----	Fine-loamy, siliceous, thermic Pinthic Paleudults. Nearly level to sloping and well drained.
9	Dothan fine sandy loam, 2-5% slopes	----	Fine-loamy, siliceous, thermic Pinthic Paleudults. Nearly level to sloping and well drained.
14	Fuquay loamy sand, 0-5% slopes	----	Loamy, siliceous, thermic Arenic Plinthic Paleudults. Nearly level to sloping and well drained.
25	Lucy loamy sand, 0-5 % slopes	----	Loamy, siliceous, thermic Arenic Paleudults. Nearly level to sloping and well drained.
31	Orangeburg sandy loam, 2-5% slopes	----	Fine-loamy, siliceous, thermic Typic Paleudults. Nearly level to strongly sloping, well drained, and loamy.
41	Tifton sandy loam, 0-2% slopes	----	Fine-loamy, siliceous, thermic Plinthic Paleudults. Nearly level to sloping and well drained.
44	Troup loamy sand, 0-5% slopes	----	Loamy, siliceous, thermic Grossarenic Paleudults. Nearly level to steep and well drained.
<b>NOLF Harold</b>			
10	Dothan fine sandy loam, 5-8% slopes	----	Fine-loamy, siliceous, thermic Plinthic Paleudults. Nearly level to sloping and well drained.
21	Lakeland sand, 0-5% slopes	----	Thermic, coated Typic Quartzipsamments. Nearly level to steep, excessively drained, and sandy.

<b>Table 6. Soils of NAS Whiting Field and its NOLFs</b>			
<b>Map unit</b>	<b>Soil</b>	<b>Hydric?</b>	<b>Series Description</b>
22	Lakeland sand, 5-12% slopes	----	Thermic, coated Typic Quartzipsamments. Nearly level to steep, excessively drained, and sandy.
44	Troup loamy sand, 0-5% slopes	----	Loamy, siliceous, thermic Grossarenic Paleudults. Nearly level to steep and well drained.
47	Troup-Orangeburg-Cowarts Complex	----	Sloping to strongly sloping, well drained soils on side slopes.
<b>NOLF Santa Rosa</b>			
21	Lakeland sand, 0-5% slopes	----	Thermic, coated Typic Quartzipsamments. Nearly level to steep, excessively drained, and sandy.
22	Lakeland sand, 5-12% slopes	----	Thermic, coated Typic Quartzipsamments. Nearly level to steep, excessively drained, and sandy.
44	Troup loamy sand, 0-5% slopes	----	Loamy, siliceous, thermic Grossarenic Paleudults. Nearly level to steep and well drained.
48	Urban land	----	No description.
<b>NOLF Holley</b>			
20	Kureb sand, 0-8 % slopes	----	Excessively drained, nearly level to sloping.
21	Lakeland sand, 0-5% slopes	----	Thermic, coated Typic Quartzipsamments. Nearly level to steep, excessively drained, and sandy.
24	Leon sand, 0-2% slopes	Hydric	Sandy siliceous, thermic Aeric Haplaquods. Nearly level, poorly drained, and sandy.
33	Ortega sand, 0-5% slopes	----	Thermic, uncoated Typic Quartzipsamments. Nearly level to gently sloping, moderately well drained, and sandy.
34	Pactolus loamy sand, 0-5 % slopes	----	Thermic coated Aquic Quartzipsamments. Nearly level to gently sloping, moderately well drained to somewhat poorly drained, and sandy.
35	Pickney loamy sand	Hydric	Sandy, siliceous, thermic Cumulix Humaquepts. Nearly level and very poorly drained.
40	Rutlege loamy sand	Hydric	Sandy, siliceous, thermic Typic Humaquepts. Nearly level and very poorly drained.
48	Urban land	----	No description.
<b>NOLF Site 8-A<sup>a</sup></b>			
16	Arents-Urban land Complex	----	No description.
38	Bonifay loamy sand, 0-5% slopes	----	Loamy, siliceous, thermic Grossarenic Pinthic Paleudults. Nearly level to gently sloping and well drained.
39	Bonifay loamy sand, 5-8% slopes	----	Loamy, siliceous, thermic Grossarenic Pinthic Paleudults. Nearly level to gently sloping and well drained.
12	Croatan muck, depressional	Hydric	Loamy soils with a relatively thick (0-14 in) dark surface.
49	Doravan muck and fluvaquents, frequently flooded	Hydric	Poorly drained soils bordering streams.
28	Grady loam, 0-2% slopes	Hydric	Poorly drained soils occurring in depressions of Coastal Plain uplands. Developed from clayey marine sediments.
35	Lucy loamy sand, 0-2% slopes	----	Loamy, siliceous, thermic Arenic Paleudults. Nearly level to sloping and well drained.



<b>Table 6. Soils of NAS Whiting Field and its NOLFs</b>			
<b>Map unit</b>	<b>Soil</b>	<b>Hydric?</b>	<b>Series Description</b>
60	Notcher fine sandy loam, 2-5 % slopes	----	Well drained and moderately permeable in the subsoil.
51	Pelham loamy sand, 0-2% slopes	Hydric	Poorly drained acid soils.
18	Pits	----	No description.
24	Poarch sandy loam, 0-2% slopes	----	Well drained and moderately to slowly permeable in the subsoil.
32	Troup sand, 0-5 % slopes	----	Somewhat excessively drained sandy soils.
54	Troup-Poarch Complex, 8-12 % slopes	----	Well-drained to somewhat excessively well drained soils.
<b>NOLF Wolf</b>			
TfB	Tifton very fine sandy loam, 2-5% slopes	----	Fine-loamy, siliceous, thermic Plinthic Paleudults. Nearly level to sloping and well drained.
ScA	Scranton loamy fine sand, 0-2% slopes.	----	No description <sup>b</sup> .
LaB	Lakeland loamy fine sand, 0-5% slopes	----	Thermic, coated Typic Quartzipsamments. Nearly level to steep, excessively drained, and sandy.
KIB	Klej loamy fine sand, 0-5% slopes	----	Developed from thick beds of sands or loamy sands. Somewhat poorly drained.
Gr	Grady soils	Hydric	Poorly drained soils occurring in depressions of Coastal Plain uplands.
GAO	Goldsboro fine sandy loam, 0-5% slopes	----	No description <sup>b</sup> .
gob	Goldsboro fine sandy loam, 2-5% slopes	----	No description <sup>b</sup> .
<b>NOLF Barin</b>			
Gr	Grady soils	Hydric	Poorly drained soils occurring in depressions of Coastal Plain uplands.
Hb	Hyde and Bayboro soils and Muck	Hydric	No description <sup>b</sup> .
KIB	Klej loamy fine sand, 0-5% slopes	----	Developed from thick beds of sands or loamy sands. Somewhat poorly drained.
LaB	Lakeland loamy fine sand, 0-5% slopes	----	Thermic, coated Typic Quartzipsamments. Nearly level to steep, excessively drained, and sandy.
LaC	Lakeland loamy fine sand, 5-8% slopes	----	Thermic, coated Typic Quartzipsamments. Nearly level to steep, excessively drained, and sandy.
NoA	Norfolk fine sandy loam, 0-2% slopes	----	Well-drained acid soils developed from sandy loam to sandy clay materials.
NoC	Norfolk fine sandy loam, 5-8% slopes	----	Well-drained acid soils developed from sandy loam to sandy clay materials.
NoC	Norfolk fine sandy loam, 5-8% slopes	----	Well-drained acid soils developed from sandy loam to sandy clay materials.
PmB	Plummer loamy sand, 0-5% slopes	Hydric	Poorly drained soils developed from thick beds of acid sand and loamy sand.
RaA	Rains fine sandy loam, 2-5% slopes	Hydric	Fine, loamy, siliceous, thermic Typic Paleaquults. Nearly level and poorly drained.
RuA	Ruston fine sandy loam, 0-2% slopes	----	Well-drained soils formed from acid sandy loam to sandy clay materials.

<b>Table 6. Soils of NAS Whiting Field and its NOLFs</b>			
<b>Map unit</b>	<b>Soil</b>	<b>Hydric?</b>	<b>Series Description</b>
ScA	Scranton loamy fine sand, 0-2% slopes	----	No description <sup>b</sup> .
ScB	Scranton loamy fine sand, 2-5% slopes.	----	No description <sup>b</sup> .
<b>NOLF Summerdale</b>			
EuB	Eustis loamy fine sand, 0-5% slopes	----	Sandy soils that are somewhat excessively drained.
FaB2	Faceville fine sandy loam, 2-5% slopes, eroded	----	Well-drained soils developed from unconsolidated sandy clay loams and sandy clays.
Gr	Grady soils	Hydric	Poorly drained soils occurring in depressions of Coastal Plain uplands.
LaB	Lakeland loamy fine sand, 5-8% slopes	----	Thermic, coated Typic Quartzipsamments. Nearly level to steep, excessively drained, and sandy.
MgA	Magnolia fine sandy loam, 0-2% slopes	----	No description <sup>b</sup> .
MrA	Marboro very fine sandy loam, 0-2% slopes	----	No description <sup>b</sup> .
NoA	Norfolk fine sandy loam, 0-2% slopes	----	Well-drained acid soils developed from sandy loam to sandy clay materials.
NoB	Norfolk fine sandy loam, 2-5% slopes	----	Well-drained acid soils developed from sandy loam to sandy clay materials.
OrA	Orangeburg fine sandy loam, 0-2% slopes	----	Fine-loamy, siliceous, thermic Typic Paleudults. Nearly level to strongly sloping, well drained, and loamy.
RbA	Red Bay fine sandy loam, 0-2% slopes	----	Fine-loamy, siliceous, thermic Phodic Paleudults. Nearly level to gently sloping, well drained and loamy.
RbB	Red Bay fine sandy loam, 2-5% slopes	----	Fine-loamy, siliceous, thermic Phodic Paleudults. Nearly level to gently sloping, well drained and loamy.
Rr	Robertsdale loam	----	Somewhat poorly drained soils with plinthite. Formed from loamy marine sediments.
RuA	Ruston fine sandy loam, 0-2% slopes	----	Well-drained soils formed from acid sandy loam to sandy clay materials.
<b>NOLF Silverhill</b>			
BwD2	Bowie, Lakeland, and Cuthbert soils, 8-12% slopes, eroded	----	No description <sup>b</sup> .
EuB	Eustis loamy fine sand, 0-5% slopes	----	Sandy soils that are somewhat excessively drained.
Gr	Grady soils	Hydric	Poorly drained soils occurring in depressions of Coastal Plain uplands.
Hb	Hyde and Bayboro soil and Muck	Hydric	No description <sup>b</sup> .
LaB	Lakeland loamy fine sand, 0-5% slopes	----	Thermic, coated Typic Quartzipsamments. Nearly level to steep, excessively drained, and sandy.
NoA	Norfolk fine sandy loam, 0-2% slopes	----	Well-drained acid soils developed from sandy loam to sandy clay materials.
RbA	Red Bay fine sandy loam, 0-	----	Fine-loamy, siliceous, thermic Phodic Paleudults.

<b>Table 6. Soils of NAS Whiting Field and its NOLFs</b>			
<b>Map unit</b>	<b>Soil</b>	<b>Hydric?</b>	<b>Series Description</b>
	2% slopes		Nearly level to gently sloping, drained and loamy.
RuA	Ruston fine sandy loam, 0-2% slopes	-----	Well-drained soils formed from acid sandy loam to sandy clay materials.
TfB2	Tifton very fine sandy loam, 2-5% slopes, eroded	-----	Fine-loamy, siliceous, thermic Plinthic Paleudults. Nearly level to sloping and well drained.
<b>NOLF Evergreen</b>			
YoA	Yonges loam, 0-1% slopes, frequently flooded.	Hydric	Deep, poorly drained soils on floodplains and stream terraces. Formed in loamy alluvial sediment.
ToE	Troup-Orangburg association, 8-25% slopes.	-----	Deep, well drained soils on uplands, ridges and sideslopes. Formed from thick sandy and loamy marine deposits.
GrB	Greenville sandy loam, 1-5% slopes	-----	Deep, well drained soils on uplands. Formed from clayey marine sediment.
MaB	Malbis sandy loam, 1-6% slopes	-----	Deep, well drained soils that have plinthite on ridges and toe slopes throughout Conecuh County.
OrB	Orangeburg sandy loam, 1-6% slopes.	-----	Deep, well drained soil on ridges and slopes. Formed from loamy marine sediment.
RbB	Red Bay sandy loam, 1-5% slopes.	-----	Deep, well drained soils on uplands. Formed from loamy marine deposits.
OcC	Oktibbeha-Cadeville Complex, 1-8% slopes.	-----	Deep, moderately well drained soils on uplands of the Coastal Plain. Formed from clayey marine sediment.

Sources: USDA 1960; USDA, 1962; USDA 1980a; USDA 1989; and USDA 1980b (only used to obtain soil series descriptions).

<sup>a</sup> Soils in Escambia County have been remapped, but a new Soil Survey has not been published. Soil descriptions are adaptations from similar soils mapped in the 1960 Escambia County Soil Survey.

<sup>b</sup> Soil descriptions for Baldwin County are not provided in the soil survey.

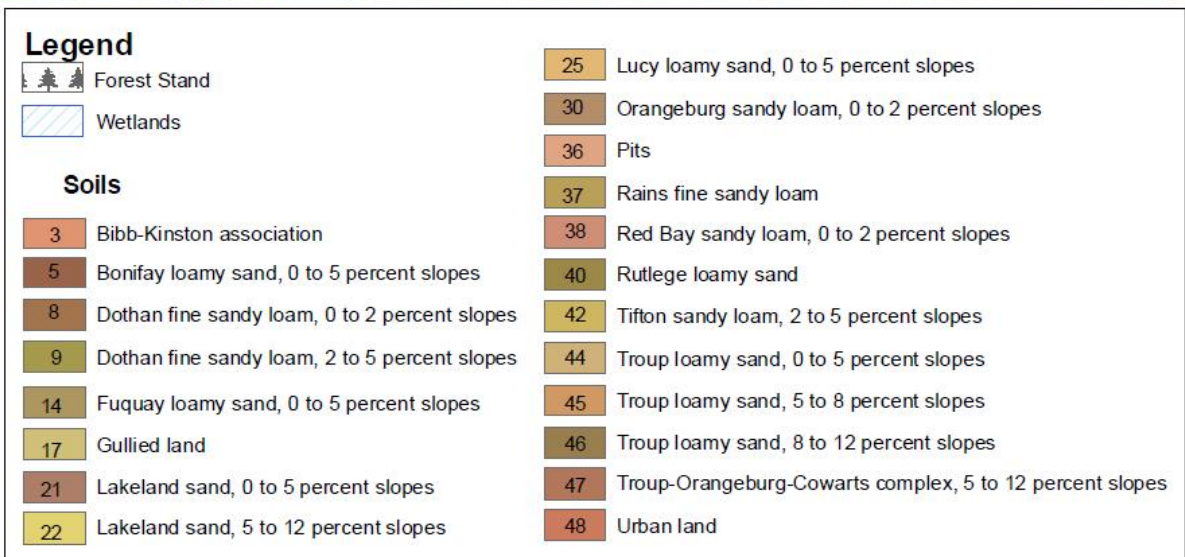
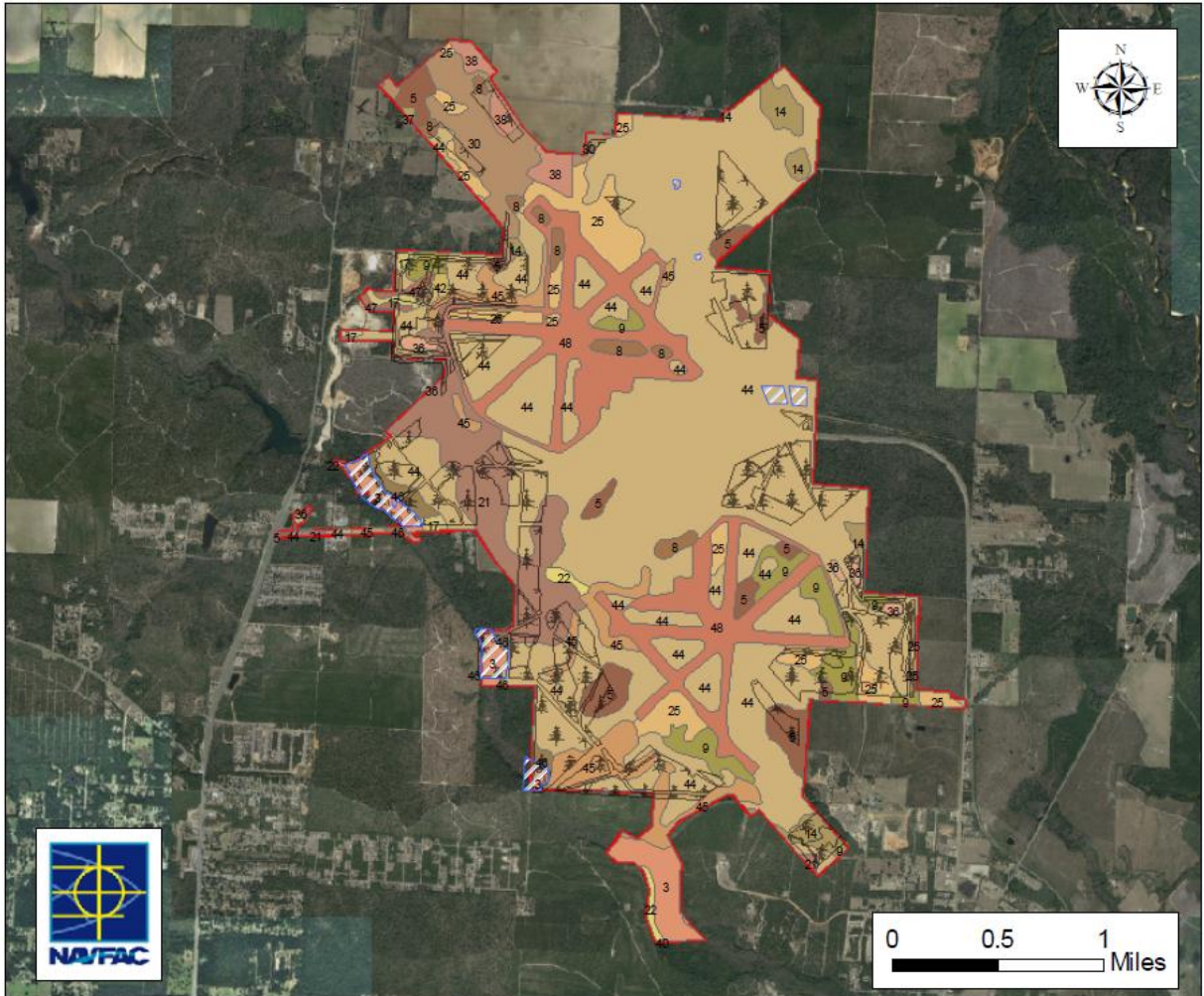
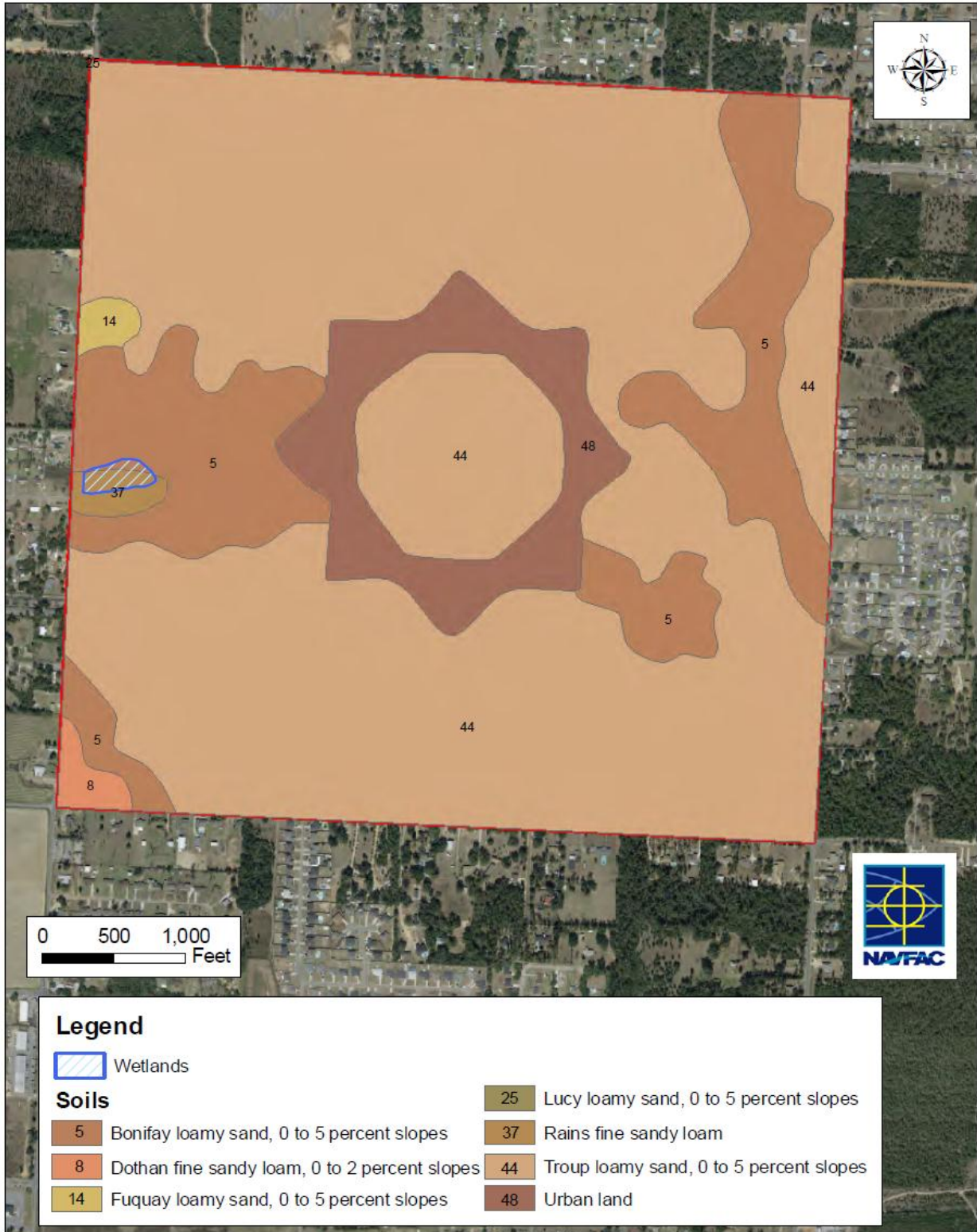
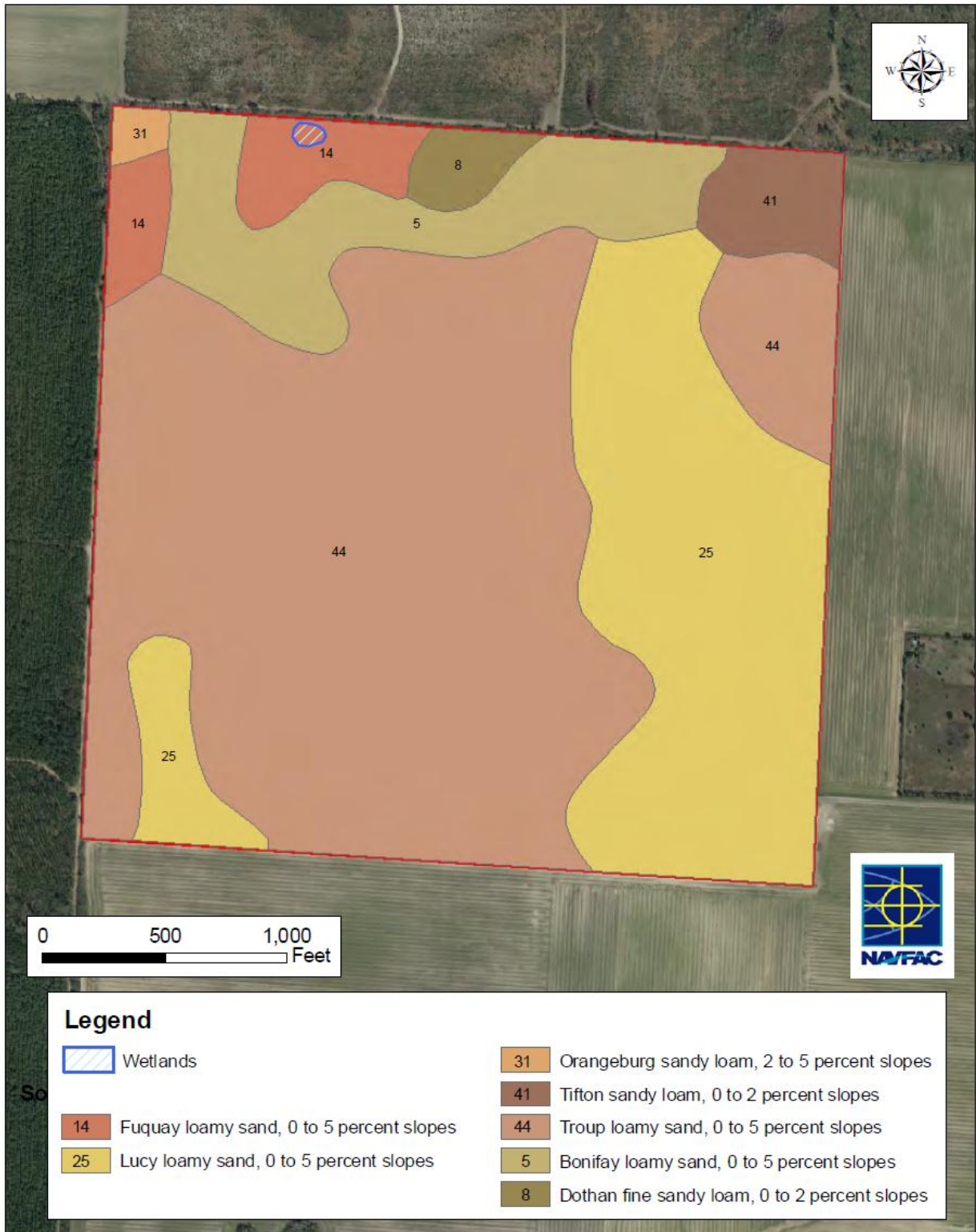


Figure 3. Soils, Wetlands, and Forest Stands at Naval Air Station Whiting Field



**Figure 4. Soils and Wetlands at NOLF Spencer**



**Figure 5. Soils and Wetlands at NOLF Pace**

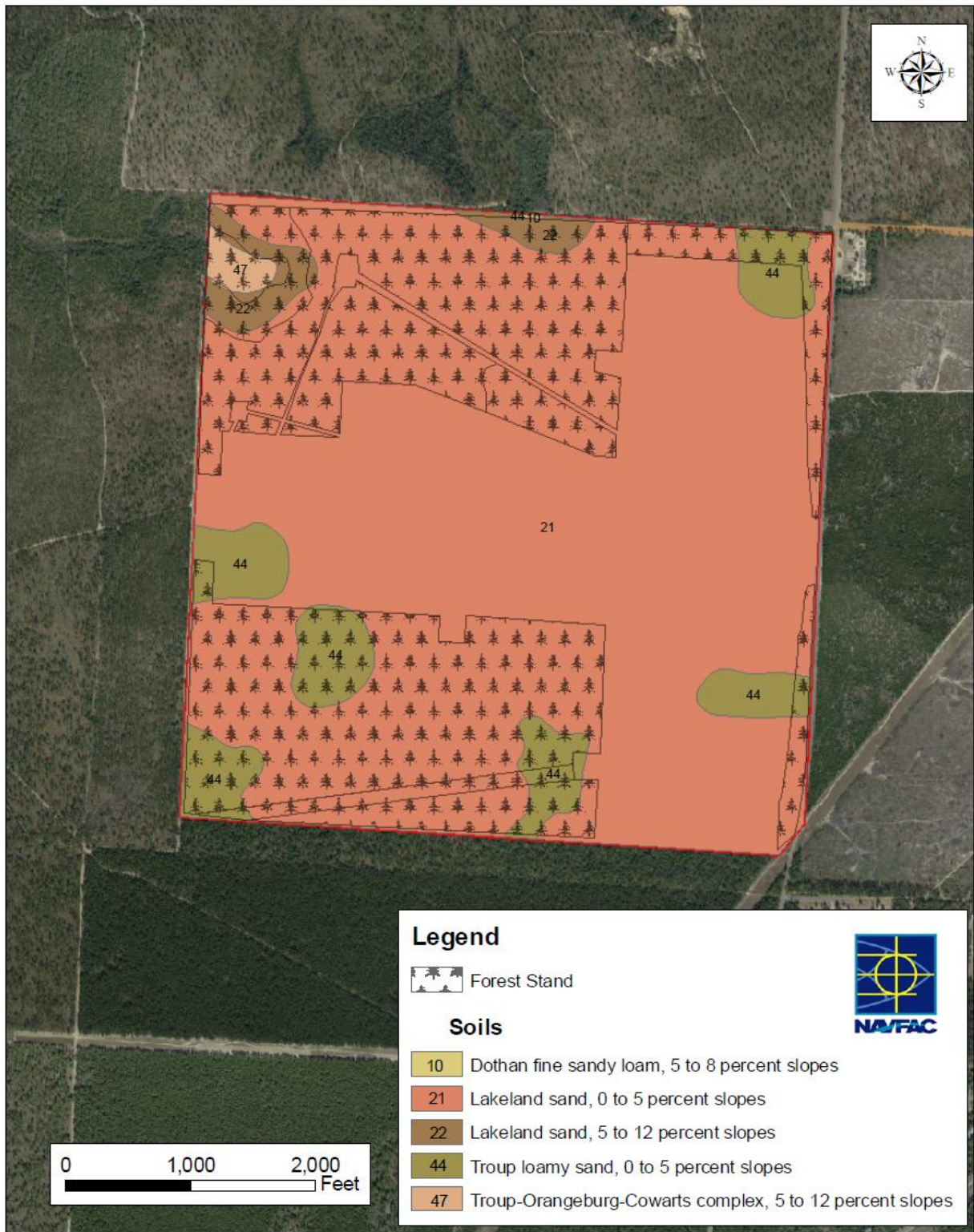


Figure 6. Soils and Forest Stands at NOLF Harold

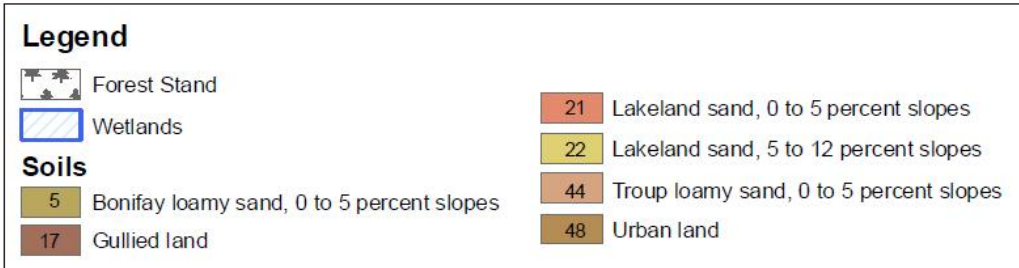
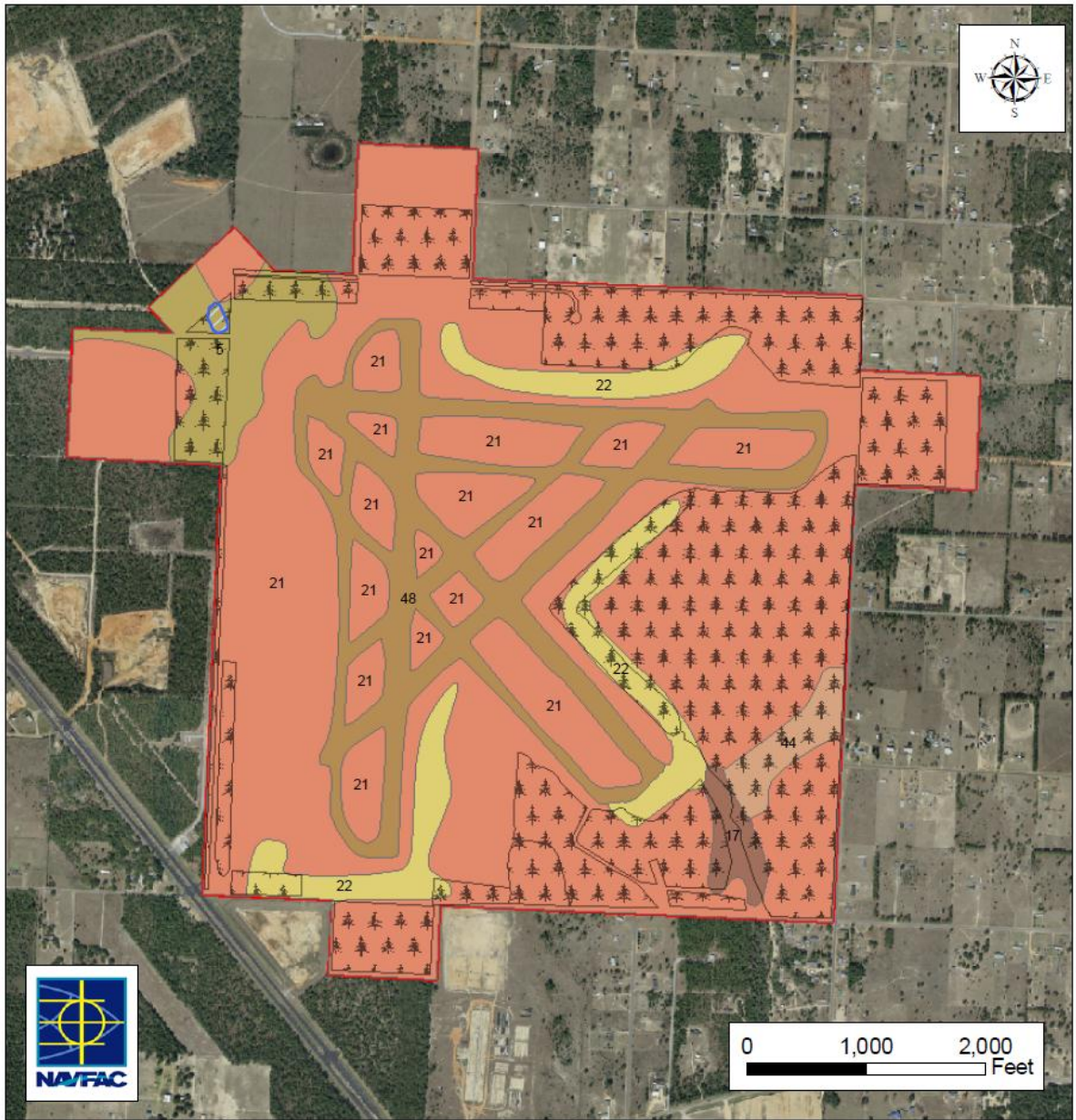


Figure 7. Soils, Wetlands, and Forest Stands at NOLF Santa Rosa



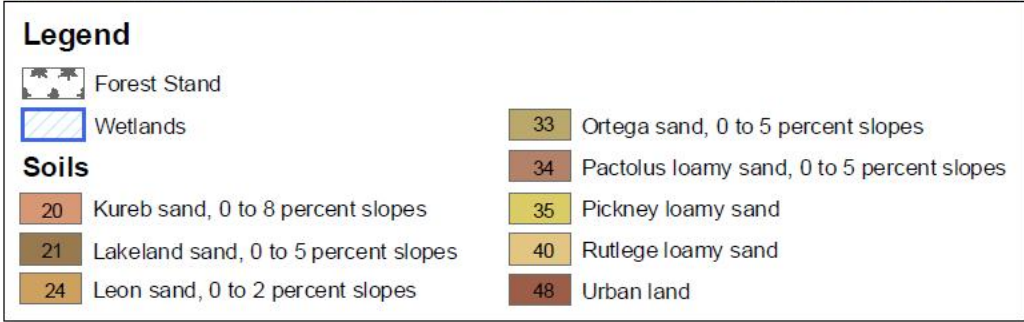
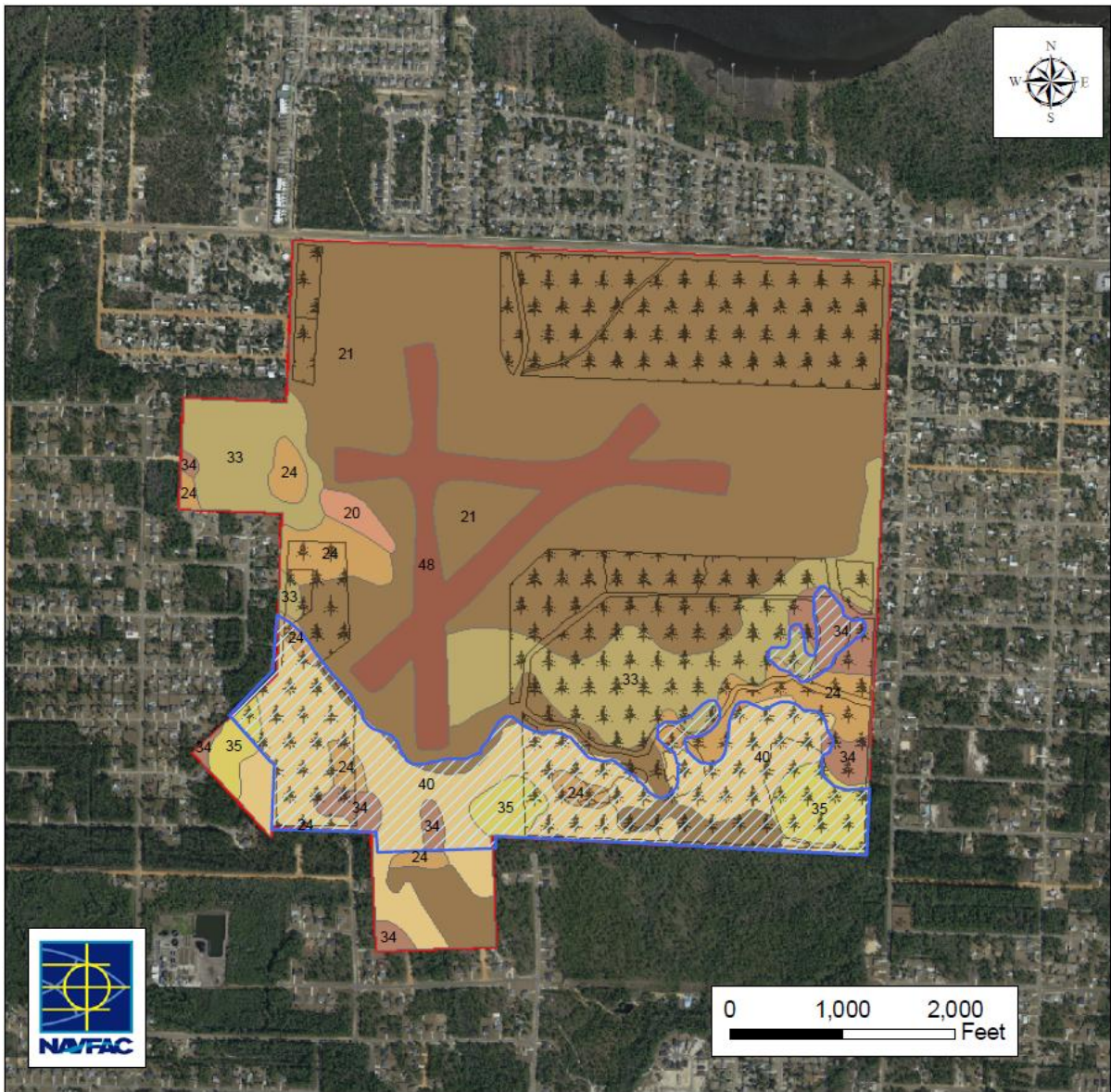


Figure 8. Soils, Wetlands, and Forest Stands at NOLF Holley

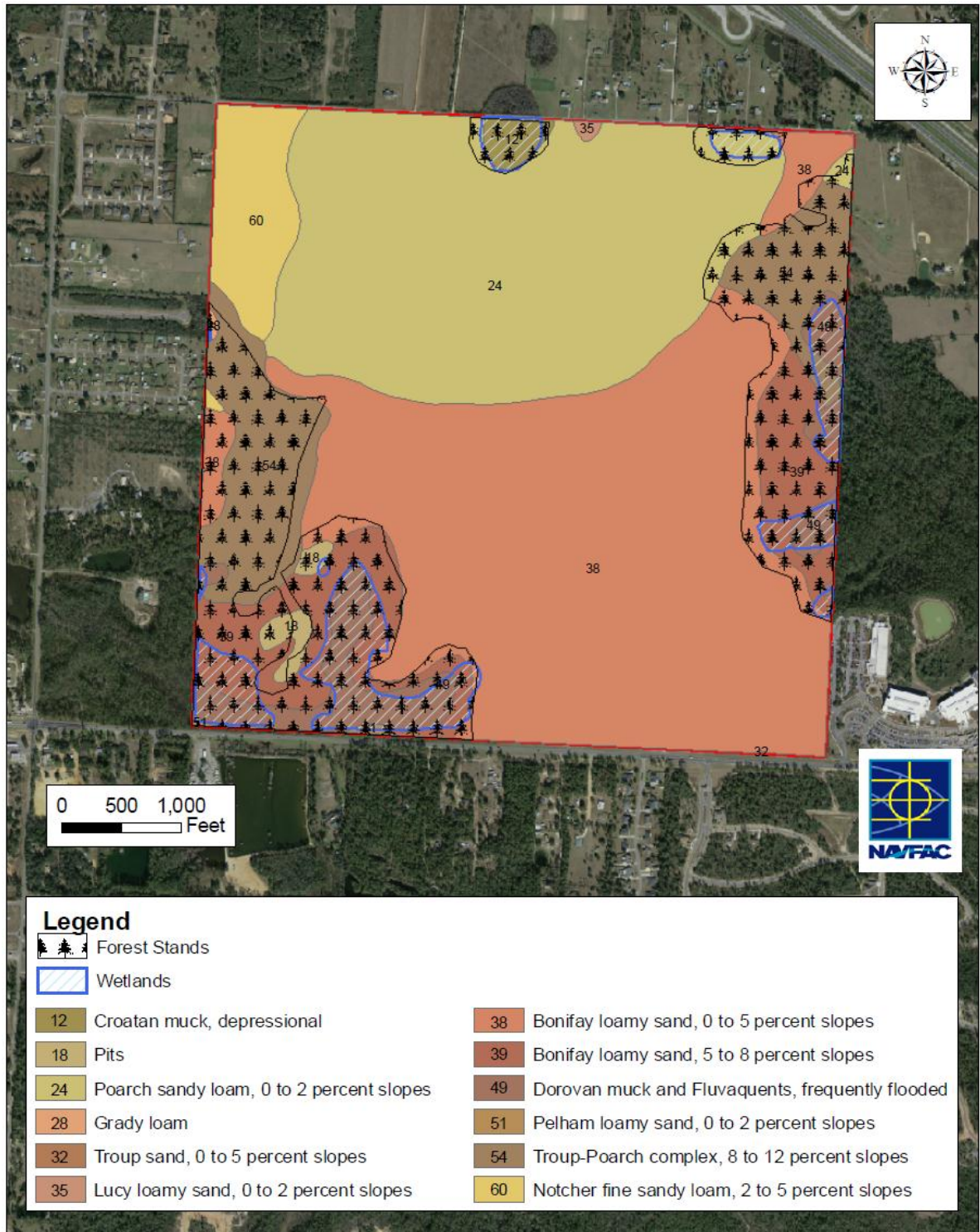


Figure 9. Soils at NOLF Site 8-A

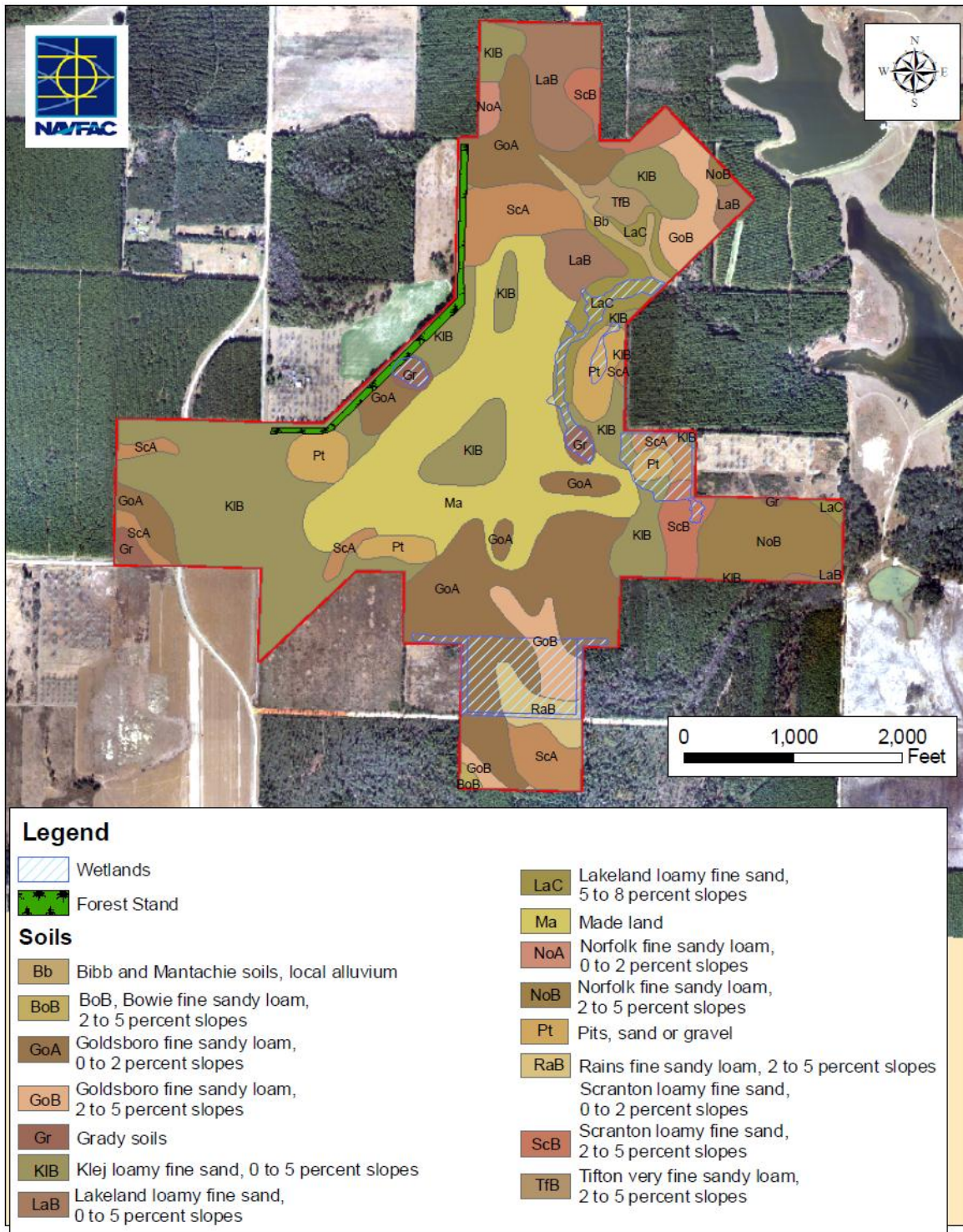


Figure 10. Soils, Wetlands, and Forest Stands at NOLF Wolf

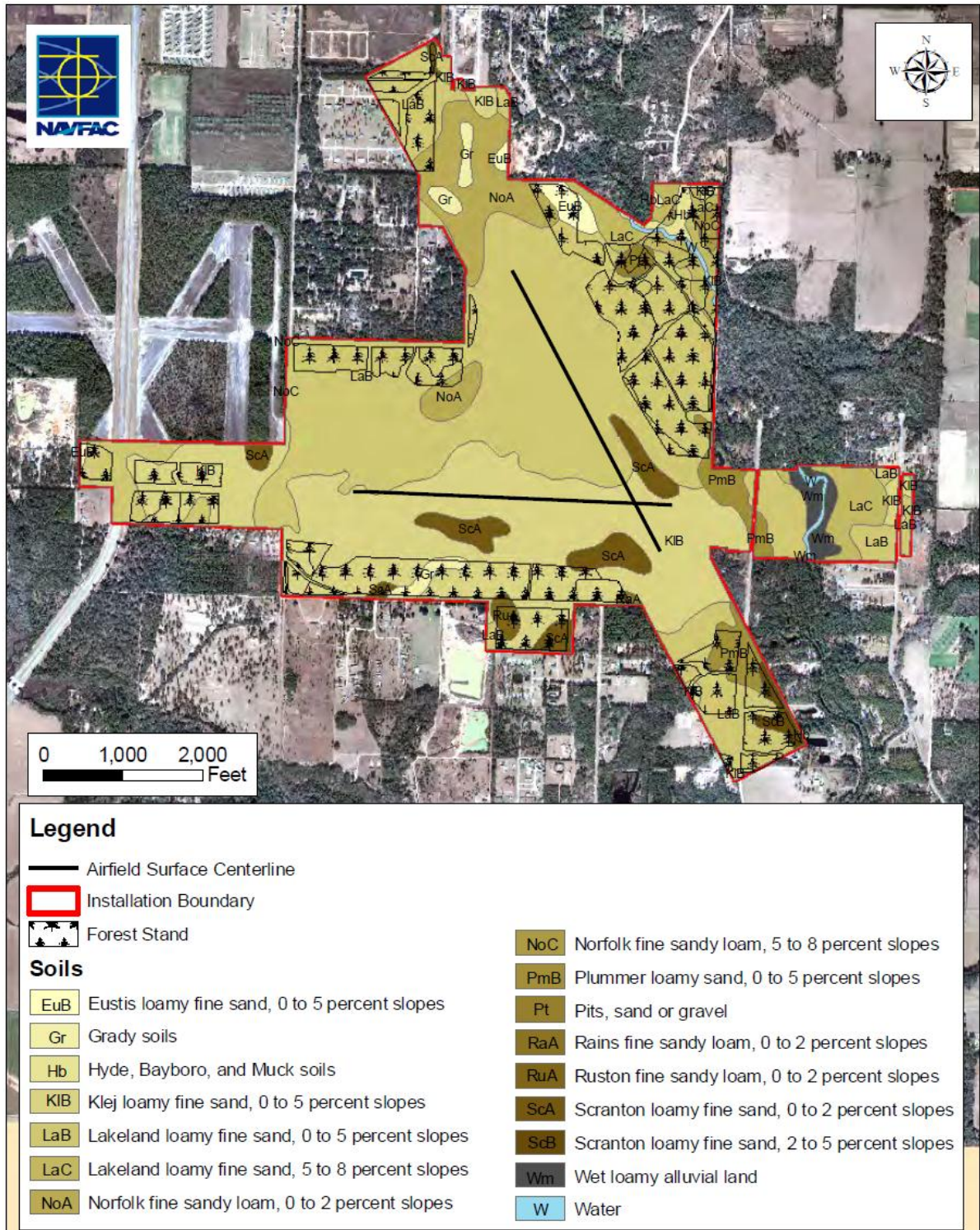


Figure 11. Soils and Forest Stands at NOLF Barin



Figure 12. Soils, Wetlands, and Forest Stands at NOLF Summerdale

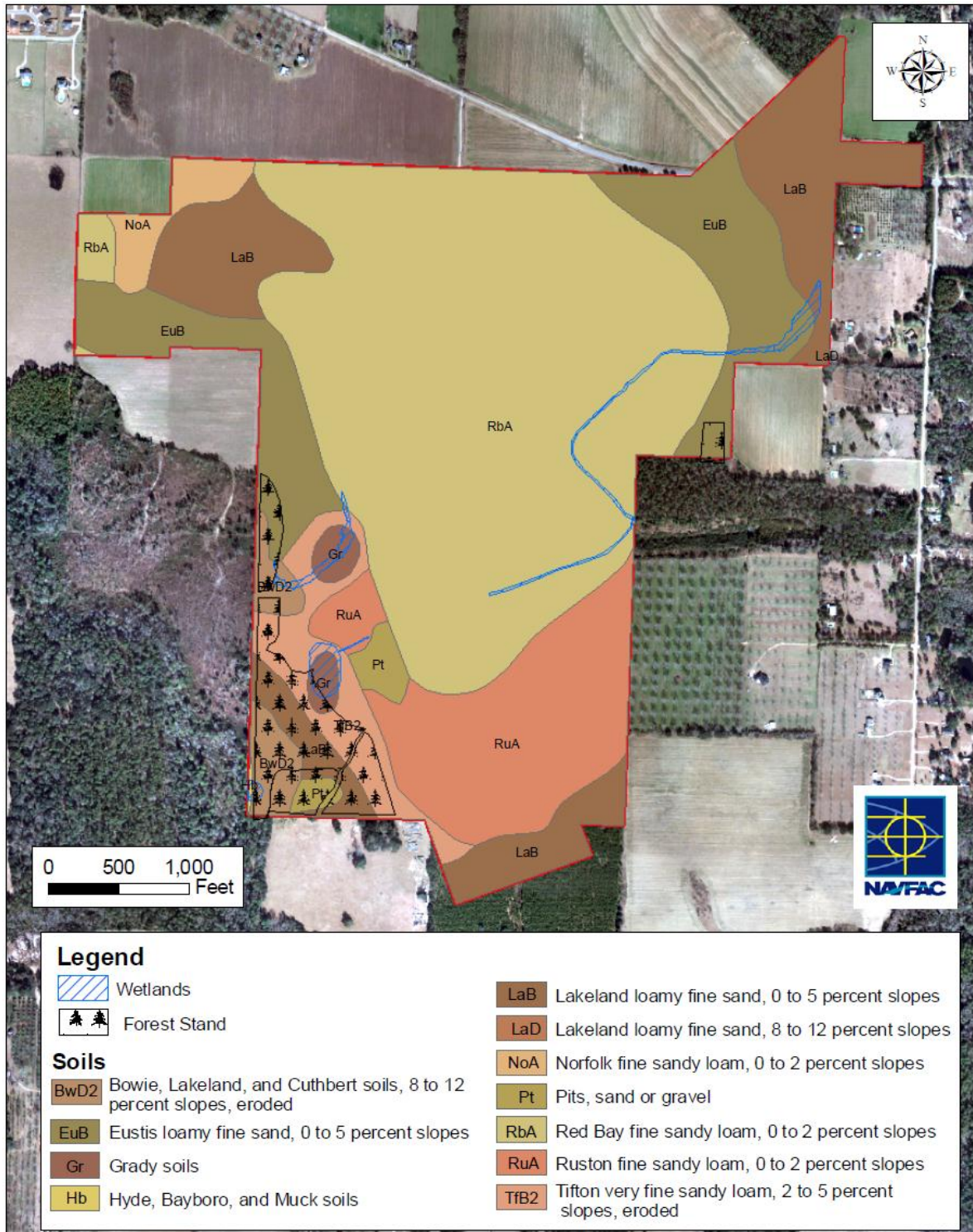


Figure 13. Soils , Wetlands, and Forest Stands at NOLF Silverhill

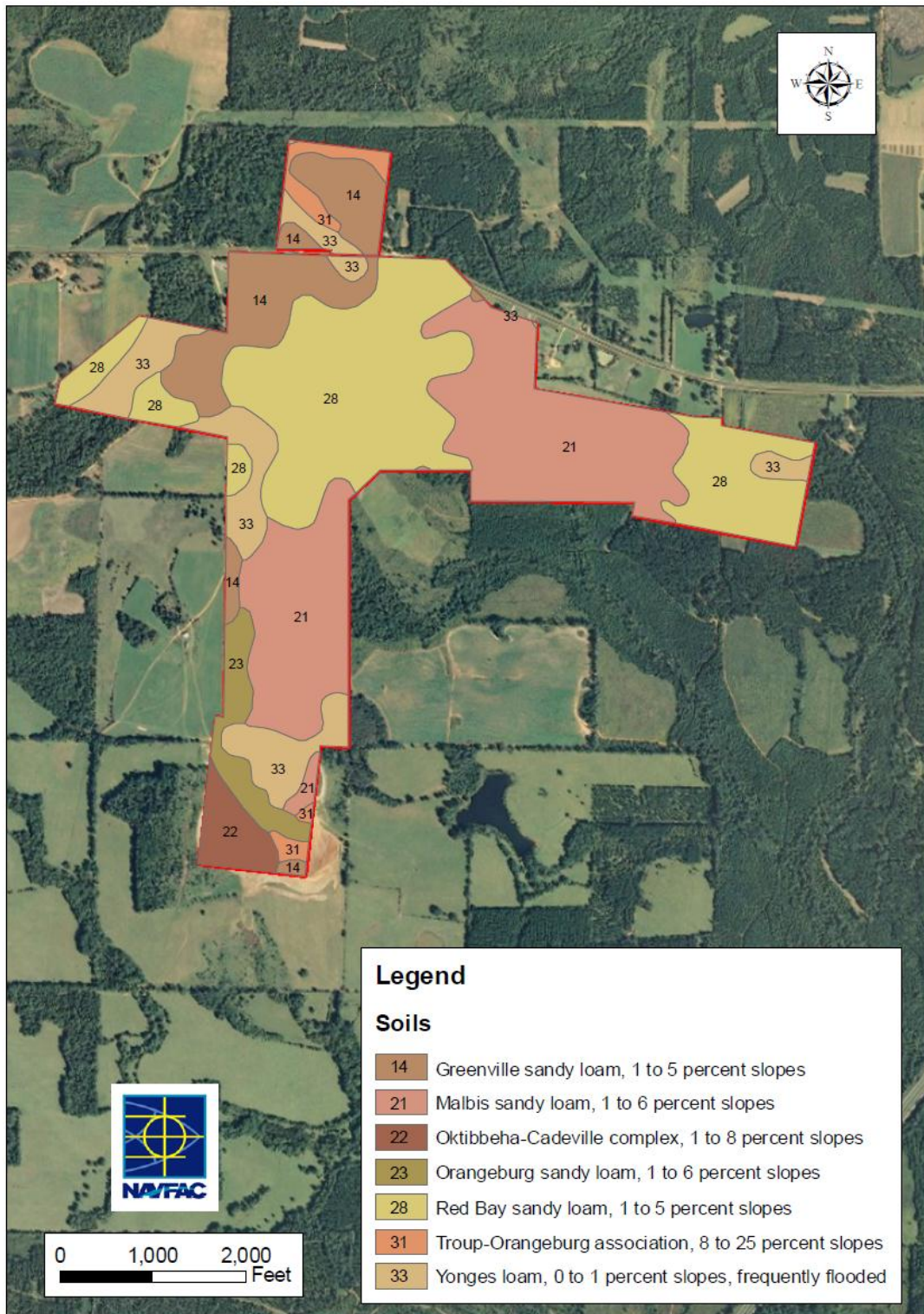


Figure 14. Soils at NOLF Evergreen

#### **2.2.4 Coastal Resources**

The NASWF Complex is not located adjacent to coastal environments, but NOLF Holley, NOLF Wolf, and NOLF Barin are situated near coastal systems, including East Bay, Santa Rosa Sound, Wolf Bay, and Perdido Bay.

The Coastal Zone Management Act (CZMA) requires federal facilities to carry out activities in a manner consistent with the state's coastal zone management program. The Florida Coastal Management Program (FCMP) was approved by the National Oceanic and Atmospheric Administration (NOAA) in 1981. The FCMP compiles 23 Florida statutes, which are administered by 11 state agencies and four of the five state water management districts. The entire state is included in Florida's Coastal Zone, and it is therefore under the purview of the FCMP. The FCMP is designed to ensure the wise use and protection of the state's aquatic, cultural, historical and biological resources; minimize the state's vulnerability to coastal hazards; ensure compliance with the state's growth management laws; protect the state's transportation system; and protect the state's proprietary interest as the owner of sovereign submerged lands (Florida Department of Community Affairs (DCA), 1999).

Coastal zones also are regulated by the FDEP under the Florida Coastal Zone Protection Act (1985), which requires permits for any erosion control devices, excavations, or erection of structures seaward of the coastal construction control line (CCCL). The CCCL occurs only on mainland or barrier island coasts bordering the Gulf of Mexico or the Atlantic Ocean. The actual CCCL is determined separately for each county in Florida. Construction in the Coastal Building Zone is also subject to stricter requirements than structures built farther inland. The Coastal Building Zone extends 1,500 feet landward of the CCCL for mainland coasts and 5,000 feet (or the entire island, whichever is less) for barrier islands. No properties of the NASWF Complex are affected by the CCCL or the Coastal Building Zone.

Alabama began working on a coastal area management plan in 1976, and NOAA approved the Alabama Coastal Area Management Program in 1979. The goal of the program is to protect and enhance Alabama's coastal resources in concert with a sustainable economy through a comprehensive and cooperative management program. The responsibilities of the Alabama Coastal Area Management Program are divided between the Alabama Department of Economic and Community Affairs (ADECA) and ADEM, which are advised by the Coastal Resources Advisory Committee (CRAC). This program includes lands seaward of the 10-foot continuous elevation contour. Portions of NOLF Barin and NOLF Wolf are within the 10-foot continuous elevation contour, and, therefore, are included in this program (ADECA, 2000).



This INRMP was reviewed by the State of Florida and the State of Alabama for Coastal Zone Consistency/Federal Consistency in compliance with the Federal CZMA.

## **2.2.5 Hydrology and Water Quality**

### **2.2.5.1 Watersheds**

The FDEP and ADEM developed a Unified Watershed Assessment and priority list for their respective states in accordance with the Clean Water Action Plan. Watersheds were categorized as:

- Category IA – Cataloging units containing significant waters (>15%) that do not meet water quality standards;
- Category IB – Cataloging units that contain some waters (<15%) that do not meet water quality standards and that sustain a rate of development of urban, agricultural or other interests which pose a threat to water quality if efforts to control polluted runoff are not maintained;
- Category II – Cataloging units that contain some waters (<15%) that do not meet water quality standards but which do not represent areas considered as highly vulnerable to further water quality degradation;
- Category III – Cataloging units containing significant waters which are considered to be pristine such as Outstanding National Resources Waters or National Wild and Scenic; or
- Category IV – Cataloging units for which insufficient data exists for categorization under the Unified Watershed Assessment process.

The NASWF Complex lies within four watersheds: Pensacola Bay, Perdido Bay, Mobile Bay, and Lower Conecuh Watersheds. The Pensacola Bay watershed is in Florida, the Perdido Bay Watershed is in Florida and Alabama, and the Mobile Bay and Lower Conecuh Watersheds are in Alabama. FDEP classified Pensacola Bay and Perdido Bay watersheds as Category I basins. The ADEM classified Mobile Bay, Perdido Bay, and Lower Conecuh Watersheds as Category II basins. Implementation of this INRMP will work towards the objectives of the Clean Water Action Plan to improve water quality in the watersheds.

The Pensacola Bay Watershed includes Escambia Bay, East Bay, Blackwater Bay, and Pensacola Bays,. The Escambia, Blackwater, and Yellow Rivers are the major tributaries to the system. The watershed's total surface area is 144 square miles and it drains 6,778 square miles of land in Florida and Alabama. The Pensacola Bay Watershed has been impacted by numerous non-point and point sources, such as urban stormwater runoff, agricultural runoff, effluents from industrial plants, and effluents from municipal-private domestic wastewater treatment plants. As a result, the Pensacola Bay System does not have the natural biodiversity and productivity of a system with its complexity. Under the Unified Watershed Assessment and priority list for Florida, Pensacola Bay is considered a Category I watershed. NAS Whiting Field, Whiting Park, Whiting Pines Housing, NOLF Spencer,

NOLF Pace, NOLF Harold, NOLF Santa Rosa, and NOLF Holley are within the Pensacola Bay Watershed.

The Perdido Bay Watershed includes Perdido Bay and portions of the Gulf of Mexico and the Intracoastal Waterway. The Perdido River, Elevenmile Creek, Styx River, and Blackwater River (in Baldwin County, Alabama) are the major tributaries to the system. The watershed's total surface area is approximately 1,250 square miles. The Perdido Bay Watershed has been classified as a Category I basin by FDEP and a Category II basin by ADEM. Site 8-A, NOLF Wolf, NOLF Barin, and NOLF Summerdale are within this watershed.

The Mobile Bay watershed includes Mobile Bay and drainage basins east and west of Mobile Bay. The major tributaries on the eastern side of Mobile Bay, where NASWF Complex properties are located, include the Magnolia and Fish Rivers. The watershed's total surface area is approximately 479 square miles. The Mobile Bay Watershed has been classified as a Category II basin by ADEM. Mobile Bay was designated a National Estuary under the National Estuary Program in March 1995. This program is tasked to develop a Comprehensive Conservation and Management Plan (CCMP) for estuaries of national significance that are threatened by pollution, development, or overuse. NOLF Silverhill is in the Mobile Bay Watershed

The Lower Conecuh Watershed includes the tributaries of Burnt Corn Creek, Cane Creek, Conecuh River, Dean Creek, Hall Creek, Little Escambia Creek, Murder Creek, Narrow Gap Creek, Panther Creek, and Smith Creek. The watershed's total surface area is approximately 1,009 square miles. The Lower Conecuh Watershed has been classified as a Category II basin by ADEM. NOLF Evergreen is within this watershed.

#### **2.2.5.2 Freshwater Streams and Ponds**

NAS Whiting Field is situated most closely to Clear Creek (west and south of the base) and Big Coldwater Creek (east of the base), both of which flow into the Blackwater River. Whiting Park is located on the south bank of the Blackwater River, two miles east of Milton. The Blackwater River is a Class III Outstanding Florida Water (OFW), with intended uses being recreation and the propagation and maintenance of healthy populations of fish and wildlife. Water quality in this river has been characterized as excellent, although health advisories have been issued concerning the bioaccumulation of mercury in largemouth bass (FDEP 1998). Other threats to water quality have been noted, such as those from coliform bacteria from agricultural stormwater runoff.

#### Florida NOLFs

No freshwater streams occur within or near NOLF Spencer boundaries, but a small pond is located on the western side of the landing field. A small pond on the northwestern portion of NOLF Pace

drains into a tributary of Tenmile Creek, which terminates near the Escambia River. Wetlands in the northwest corner of NOLF Harold drain into a tributary of Ninemile Creek, which flows into wetlands near the Blackwater River. No surface waters are located on NOLF Santa Rosa; the closest surface waters, approximately 0.5 miles to the southeast, are tributaries to the Dead River, which flows into the Yellow River. The Yellow River is a Class III water body and has excellent water quality (FDEP, 1998). Williams Creek is located within the southern boundary of NOLF Holley; the creek flows south into Santa Rosa Sound. There are intermittent drainages near the southwestern and eastern sides of NOLF Site 8-A that flow into Elevenmile Creek, which is a tributary of Perdido Bay.

#### Alabama NOLFs

Approximately 0.5 mile to the east and south of NOLF Wolf are tributaries to Spring Branch and Roberts Bayou, both of which flow into Perdido Bay. Sandy Creek flows southeast through the northeastern portion of NOLF Barin and drainage on the southwestern portion of NOLF Barin flows into Wolf Creek. Sandy Creek and Wolf Creek flow into both Wolf Bay and Perdido Bay. NOLF Summerdale has no creeks within its boundaries, but tributaries of the Blackwater River are north and south of the field. The southwestern corner NOLF Silverhill is adjacent to Caney Branch, which flows into Fish River, and another tributary of Fish River is on the eastern side of the property. Fish River flows into Mobile Bay via Weeks Bay. Navy-owned property at NOLF Evergreen does not contain any surface waters, but runoff from NOLF Evergreen flows north and west into Hunter Creek or south and east into tributaries of Autrey Creek, which flows into Murder Creek.

#### **2.2.5.3 Estuarine and Marine Waters**

Estuaries are semi-enclosed coastal bodies of water in which the ocean water is significantly diluted by fresh water from land runoff. Marine waters are tidally influenced with increased salinity (Thurman, 1988).

NAS Whiting Field is within the Pensacola Bay Watershed, which includes Escambia, East, Blackwater, and Pensacola Bays. The closest of these to NASWF is Blackwater Bay. Additionally, NOLF Spencer is near Escambia Bay, NOLF Santa Rosa is near Blackwater Bay, and NOLF Holley is near East Bay and Santa Rosa Sound. Of the Alabama NOLFs, Barin is located north of Wolf Bay and NOLF Wolf is located between Wolf Bay and Perdido Bay.

Pensacola Bay has a surface area of approximately 54 square miles and an average depth of 19.5 feet. It is a saline bay with a 0.5-mile-wide pass (Pensacola Pass) to the Gulf of Mexico. Pensacola Bay is the receiving water body for Escambia and East Bays, as well as Bayous Texar, Chico and Grande (FDEP 1998). Escambia Bay has a surface area of approximately 36 square miles. Its primary sources of freshwater are the Conecuh-Escambia River, Mulatto Bayou, and Pace Mill Creek.

Bayou Texar, Trout Bayou, and Indian Bayou influence the lower bay. Blackwater Bay is located at the mouth of the Blackwater River. It has a surface area of approximately 10 square miles and an average depth of 6.3 feet (FDEP, 1998). Blackwater Bay is lower in salinity than other bays in the system, and it contains brackish-water species of submerged aquatic vegetation. East Bay receives waters from Blackwater Bay and the East Bay River. The East Bay River headwaters are in the area of Fort Walton Beach, and its mouth is approximately 2 miles north of Navarre (FDEP, 1998). Santa Rosa Sound connects Choctawhatchee and Pensacola Bays. The sound is approximately 42 square miles in size, and compared to the other water bodies in the Pensacola Bay system, Santa Rosa Sound is one of the few with a fairly diverse assemblage of seagrasses (FDEP, 1998).

Perdido Bay is a semi-enclosed estuary located on the border of Alabama and Florida. It has a surface area of approximately 33 square miles and empties into a series of inland bayous that are connected to the Gulf of Mexico by the approximately 0.25-mile-wide Perdido Pass. The major tributary of Perdido Bay is the Perdido River, but many smaller creeks also flow into the bay. Wolf Bay is located west of Perdido Bay and empties into the south end of Perdido Bay. Major tributaries of Wolf Bay include Wolf Creek, Sandy Creek, Mifflin Creek, and Hammock Creek.

#### **2.2.5.4 Groundwater**

##### Escambia and Santa Rosa Counties

Four hydrostratigraphic units define the regional groundwater flow system in northwest Florida. Moving downward from the land surface, these units are the Sand-and-Gravel aquifer, the Intermediate System, the Floridan aquifer system, and the Sub-Floridan system (Ryan et al., 1998). The upper Floridan aquifer is an important source of potable water in the eastern and southeastern portions of Santa Rosa County; however, the primary source of groundwater in the Milton area, including NASWF, is the Sand-and-Gravel aquifer (Richards 1998).

The thickness of the Sand-and-Gravel aquifer varies regionally and increases from east to west. Thickness ranges from less than 50 feet in Walton County to greater than 400 feet in Santa Rosa County (Ryan et al., 1998). Near Milton, the Sand-and-Gravel aquifer occurs from ground surface to a depth of approximately 220 feet below ground surface (BGS; Richards, 1998). The aquifer consists of quartz sand, gravel, silt, and clay. It is especially susceptible to contamination from surface sources because it is contiguous with the ground surface and recharge occurs primarily through infiltration of rainfall. Contamination of groundwater and soil with fuel components and spent solvents occurred from past practices at NASWF. Contamination of groundwater with trichloroethylene, a spent solvent, has affected the installation's drinking water supply. This led EPA to place NASWF on the National Priority List to implement remedial actions (NAVFAC SE, 2000).

### Baldwin County

Baldwin County is part of the Southern Pine Hills District of the East Gulf Coastal Plain physiographic section (Robinson et al., 1996). The major aquifer system in Baldwin County is the Miocene-Pliocene aquifer, which is an unconfined aquifer consisting of the Citronelle formation and undifferentiated deposits of the Miocene series. Recharge occurs throughout the county. Highly permeable soils in the county allow rapid infiltration of surface water; consequently, the entire area is considered susceptible to surface contamination (Mooty, 1988).

The Miocene-Pliocene aquifer system is currently the sole source of public water supply in Baldwin County. Most wells are between approximately 100 and 300 feet deep (30.5 and 91.5 meters; Robinson et al., 1996).

### Conecuh County

Due to the relatively minor land holdings in the clear zone at NOLF Evergreen, groundwater resources in this area are not discussed.

#### **2.2.5.5 Floodplains**

Floodplains are low, relatively flat areas adjoining inland and coastal waters and include flood-prone areas of offshore islands. The Federal Emergency Management Agency (FEMA) defines these areas as being subject to a 1.0% or greater chance of flooding in any given year.

Neither NAS Whiting Field nor Whiting Pines Housing are located within a FEMA-designated flood hazard area (Environmental Systems Research Institute, Inc. (ESRI), 2000; <http://www.esri.com/hazards/makemap.html>). The Florida NOLFs (i.e., Spencer, Pace, Harold, Santa Rosa, Holley, and Site 8-A) are also outside the flood-hazard area. The northern boundary of NOLF Holley, however, does approach the 100-year floodplain. Additionally, Whiting Park, along the Blackwater River, is within the 100-year floodplain (ESRI, 2000).

Three of the five Alabama NOLFs do not lie within a FEMA-designated flood hazard area (ESRI, 2000); these three are NOLF Wolf, Summerdale, and Silverhill. The northeastern and eastern portions of NOLF Barin, near Sandy Creek, are within the 100-year floodplain. Also, the northwestern corner of NOLF Evergreen is near the 100-year floodplain of Hunter Creek.

#### **2.2.5.6 Wetlands**

Wetlands are transitional zones between the terrestrial and aquatic environment. These areas are characterized by physical, chemical, and biological features indicative of hydrological conditions. Currently, wetlands are regulated at the federal level by the United States Army Corps of Engineers (USACE) under Section 404 of the CWA of 1977. Wetlands are defined by the USACE as “those

areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.” Wetlands at the NASWF Complex were delineated in 2009 and 2010 (GSRC 2010a; 2010b; 2010c; 2010d; 2013a; 2013b; 2013c; 2013d; 2013e). Jurisdictional wetland boundaries were delineated for the NASWF Complex in 2009 and 2010 in accord with the USACE 1987 Wetland Delineation Manual. The NASWF Complex has 279.09 acres of wetlands distributed as presented in Table 7 and Figures 3 through 14.

<b>Table 7. Wetland Acreage at the NAS Whiting Field Complex</b>				
<b>Property</b>	<b>Wetlands (acres)</b>		<b>Property</b>	<b>Wetlands (acres)</b>
NAS Whiting Field	24.90		NOLF Site 8-A	23.30
NOLF Spencer	3.30		NOLF Wolf	30.20
NOLF Pace	0.05		NOLF Barin	8.51
NOLF Harold	3.40		NOLF Summerdale	10.90
NOLF Santa Rosa	0.93		NOLF Silverhill	4.00
NOLF Holley	169.60		<b>TOTAL</b>	<b>279.09</b>

## 2.2.6 Land Use

The NAS Whiting Field Strategic Plan, completed in 1999, includes a goal to develop a 10-year facilities master plan for facilities management, maintenance, repair, and construction. This goal includes assembling a team to plan the update of the existing station master plan, written in 1988. Efforts to update the master plan began in 2012.

The primary objective of the 1988 master plan is to provide for the orderly and efficient development of NAS Whiting Field, as well as enhancing the quality of life at the Installation while optimizing the use of Navy property. The master plan includes NAS Whiting Field and the associated NOLFs. The master plan establishes an overall scheme for land use in response to the mission requirements of the station. It also includes maps showing the proposed land uses, and a Capital Improvements Plan (CIP) that sets priorities and recommends construction phasing for projects included in the land use plan. In a discussion of buildable areas at NAS Whiting Field, the master plan directs that treeless areas (as opposed to tree-covered areas) should be given first priority when locating new facilities. Further, it is an objective to preserve as many trees as practical when sitting new facilities.

The NASWF Complex properties are delineated into Functional Areas, each of which accommodates different types of land uses. Functional Areas serve military purposes, and some have potential for natural resources management. Land uses at various functional areas are largely fixed and the

potential for natural resources management depends upon the availability and suitability of natural resources within the parameters of the military use on the property. Functional areas can be classified into one or more of the following classes:

- **Protected Areas** include land protected due to the unique natural, cultural or aesthetic value. Examples include rare geologic features, significant historical sites, natural heritage sites, threatened and endangered species' critical habitat, unique high-value recreation areas, and exemplary natural communities;
- **Operational Protected Areas** are vital to the continuance of the military mission, and intensively utilized for this purpose. Examples include AICUZ areas, intensively developed and built areas, dredge spoil sites, high security restricted areas, industrial support areas, and BASH areas;
- **Mixed-Use Management Areas** facilitate the military mission, but also exist in a natural condition, contain valued natural features, and could benefit from effective natural resources management practices. Consistent with the military mission, non-timber values such as wildlife habitat, water quality (wetland, storm water and floodplains protection), recreational potential, and urban forestry provide the framework for management decisions. Examples include streamside management zones, cypress domes and ponds, fresh water fisheries, shoreline, habitat for established conservation priorities, grounds maintenance, and urban forestry;
- **Forest Management Areas** include lands where forest management is the primary objective and includes areas that may be designated for commercial harvesting. The management intensity within each area will be considered against factors such as regulations, economic and wildlife considerations, slope stability concerns, soils, inaccessibility, aesthetics, and site productivity. Examples include bottomland hardwood stands, upland hardwood and softwood areas with natural regeneration, wildlife corridors, and stands with extended rotation ages.

The NASWF Complex is composed of the main Installation (NASWF), Whiting Pines Housing, Whiting Park, and 11 NOLFs. The NASWF Complex is divided into 20 functional areas based upon geography, land use, and natural resources. NASWF is divided into three functional areas. Whiting Pines Housing and Whiting Park are each a functional area but are not further subdivided. The NOLFs are composed of either one or two functional areas, depending on the requirements of the military mission and the presence of unique natural resources. Functional area maps are only provided for those properties that are divided into multiple functional areas.

### **2.2.6.1 NAS Whiting Field**

#### Operational Protected Area 1

Operational Protected Area 1 (OP-1) includes the majority of land area at NAS Whiting Field, with the exception of undeveloped areas adjacent to Clear Creek and the golf course (Figure 15). This is an Operational Protected Area due to the developed condition of the land, and its intensive use for fulfilling mission requirements. OP-1 includes North Field, South Field, clear zones, administrative and classroom areas, the historic district, an RV camp site, and forest stands along the periphery of the site. Rare species found in OP-1 include the gopher tortoise, Henslow's sparrow, and Eastern

diamondback rattlesnake. The management focus objectives of OP-1 are land management and forestry.

#### Protected Area 1

Protected Area 1 (P-1) includes areas along the southeast edge of NASWF, adjacent to Clear Creek (Figure 15). This is a Protected Area due the presence of a high quality floodplain swamp, other wetlands, several rare plants, and excellent opportunities for nature study. The Clear Creek Nature Trail, which winds through portions of P-1, is designated as a Watchable Wildlife area. The management focus of P-1 is fish and wildlife due to its unique and high quality natural communities and close proximity to Clear Creek.

#### Mixed Use Management Area 1

Mixed Use Management Area 1 (MU-1) is located north of North Field and includes the NASWF golf course and several small forest stands (Figure 15). This is a Mixed-Use Management Area because it has the potential to yield significant natural resources-based benefits through effective management practices. The golf course is managed by the MWR Department. The management focus objectives of MU-1 are land management and forestry due to the amount of improved and semi-improved grounds at the golf course and existing forest stands. The golf course will be managed to enhance habitat for wildlife that does not have the potential to obstruct flight operations.

### **2.2.6.2 Whiting Park**

#### Protected Area 2

The boundaries of Protected Area 2 (P-2) are consistent with the boundaries of Whiting Park. This is a Protected Area due to its habitat sensitivity and high recreational potential. The 15-acre site is located along the southeastern bank of the Blackwater River, within the 100-year floodplain. Rare species found within this area include the west Florida cow lily, primrose-flowered butterwort, and white-top pitcher plant. The site includes rental facilities for canoes, rowboats, motor boats, and fishing gear, and a small sandy beach for swimming. Use of this area is generally restricted to active duty, reserve, retiree, DoD civilian employees, and their dependents. The management objective of P-2 is outdoor recreation.

### **2.2.6.3 Whiting Pines Housing**

#### Operational Protected Area 2

The boundaries of Operational Protected Area 2 (OP-2) are consistent with Whiting Pines Housing, an approximately 98-acre housing development for officers and enlisted personnel. This is an Operational Protected Area due to its developed condition and intensive use by the Complex's resident population. Land Management at OP-2 will focus on developed land use. Natural resources



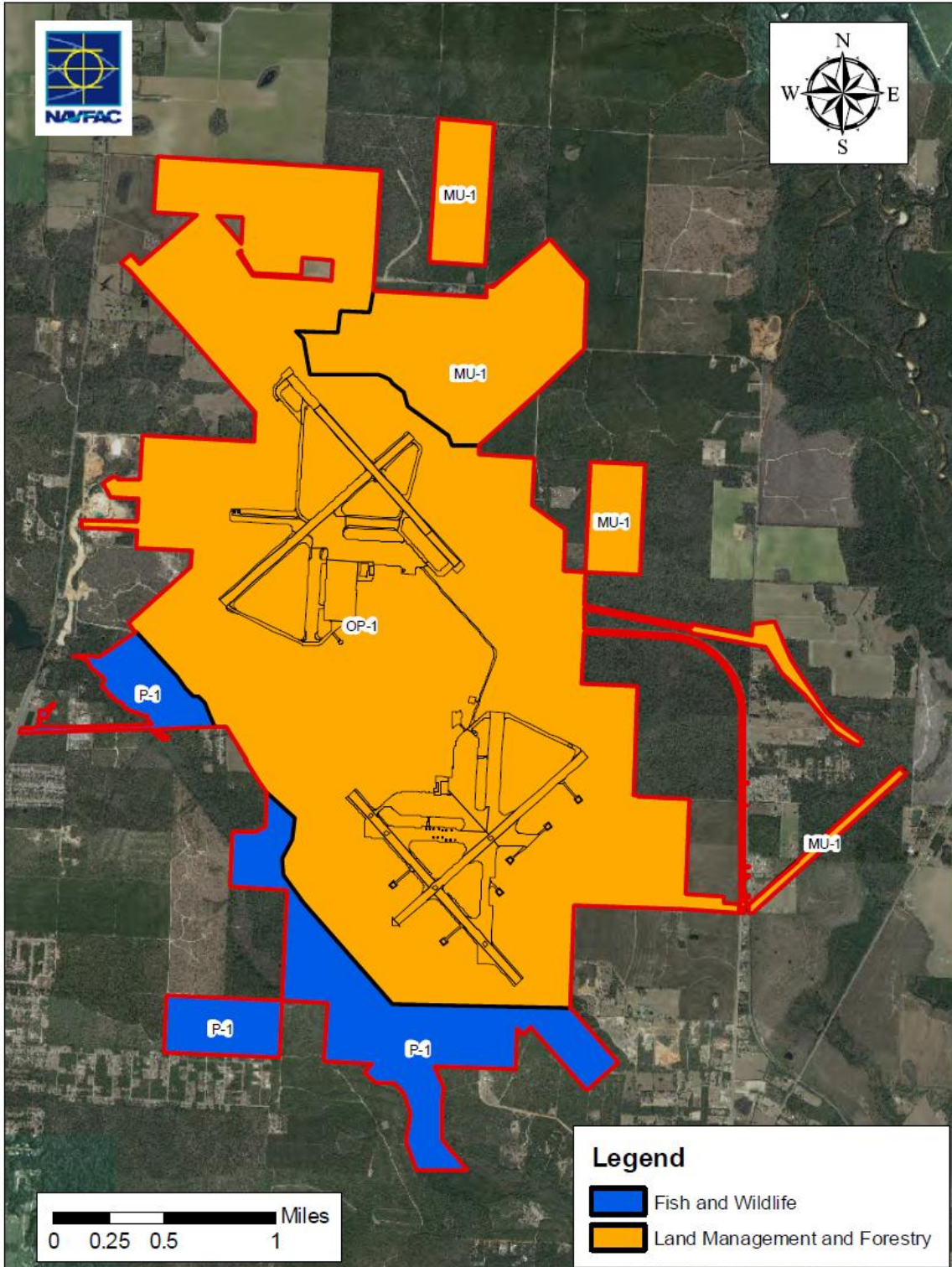


Figure 15. Land Use at Naval Air Station Whiting Field

management issues will be dominated by activities related to soil erosion, grounds maintenance, urban forestry, and stormwater management practices.

#### **2.2.6.4 NOLF Spencer**

##### Operational Protected Area 3

The boundaries of Operational Protected Area 3 (OP-3) are consistent with the boundaries of NOLF Spencer. This is an Operational Protected Area due to its intensive use and maintenance for helicopter training. The area is primarily grass. There is one building that houses the crash crew and equipment and eight parallel runways, 1,800 feet long and 200 feet wide, that are used as landing pads only. There is a two-acre wetland located along the western edge of the site. The management focus of OP-3 is land management due to the military mission requirements of the land. Natural resources management issues will be dominated by activities related to grounds maintenance activities and the BASH program.

#### **2.2.6.5 NOLF Pace**

##### Operational Protected Area 4

The boundaries of Operational Protected Area 4 (OP-4) are consistent with the boundaries of NOLF Pace. This is an Operational Protected Area due to its intensive use and maintenance. This area, which is used for helicopter training, is primarily cleared and grassed. One building exists at the site. The management focus of OP-4 is land management due to the military mission requirements of the land. Natural resources management issues will be dominated by activities related to grounds maintenance and nuisance wildlife control.

#### **2.2.6.6 NOLF Harold**

##### Operational Protected Area 5

Operational Protected Area 5 (OP-5) includes areas at NOLF Harold utilized for helicopter training (Figure 16). This is an Operational Protected Area due to its intensive use and maintenance. Land area within OP-5 is primarily cleared and grassy. One building is located on site. The management objective of OP-5 is land management due to the military mission requirements of the land.

##### Protected Area 3

Protected Area 3 (P-3) includes natural areas at NOLF Harold surrounding OP-5 (Figure 16). This is a Protected Area due to the presence of high quality natural communities (e.g. sandhill, baygall, and seepage stream) and several threatened and endangered species. The area is bordered to the north by the Blackwater River State Forest and on the east, south, and west by lands managed for natural resources. The sandhill community, which occurs throughout P-3, is characterized by a longleaf pine, turkey oak, and wiregrass community. Several rare species, such as the gopher tortoise, gopher

frog, Bachman's sparrow, and the hairy wild indigo, have been documented in this area. Also, the federally-threatened red-cockaded woodpecker forages in this sandhill community. The seepage stream and associated baygall communities occur in the northwest corner of P-3 and contain certain rare plants such as the Florida anise, spoon-flower, and white-top pitcher plant. The management objective of P-3 is fish and wildlife and forestry. Portions of P-3 may be considered for hunting in the future.

#### **2.2.6.7 NOLF Santa Rosa**

##### Operational Protected Area 6

The boundaries of Operational Protected Area 6 (OP-6) are consistent with the boundaries of NOLF Santa Rosa. This is an Operational Protected Area due to its intensive use and maintenance. There is one permanent crash facility structure and four runways used for landings, measuring 4,500 feet long by 150 feet wide. Drainage is handled by a combination of storm sewers and open ditches. The eastern portion of the site is primarily forested, and a relatively high quality 0.7-acre depression marsh occurs in the northwest portion of the site. Rare species occurring on the site include hairy wild indigo, gopher tortoise, gopher frog, and Florida pine snake. Gully erosion has occurred in the southeastern portion of OP-6, directly east of the longleaf pine-scrub oak forest. Corrective measures have included planting trees, constructing a check dam, decreasing the number of inlets, and creating a large retention pond at the south end of the airfield. The management focus of OP-6 is land management and forestry due to the military mission requirements of the land and existing forest resources. Natural resources management issues will be dominated by activities related to soil erosion control, grounds maintenance, stormwater management, wetlands protection, nuisance wildlife, and forest management. Forest stands within OP-6 will be managed in accordance with the Forest Management Plan and gopher tortoise populations will be monitored.

#### **2.2.6.8 NOLF Holley**

##### Operational Protected Area 7

Operational Protected Area 7 (OP-7) includes the airfield and planted forest stands north of the airfield at NOLF Holley (Figure 17). This is an Operational Protected Area due to its intensive use and maintenance. The management focus of OP-7 is land management and forestry. Natural resources management issues will be dominated by activities related to soil erosion control, grounds maintenance, urban forestry, stormwater management, and silvicultural activities. Forest stands in OP-7 will be managed to enhance wildlife habitat. Portions of OP-7 are within the conservation management area buffer zones for the reticulated flatwoods salamander and will be managed in accordance with federal register guidelines and in conjunction with the USFWS.

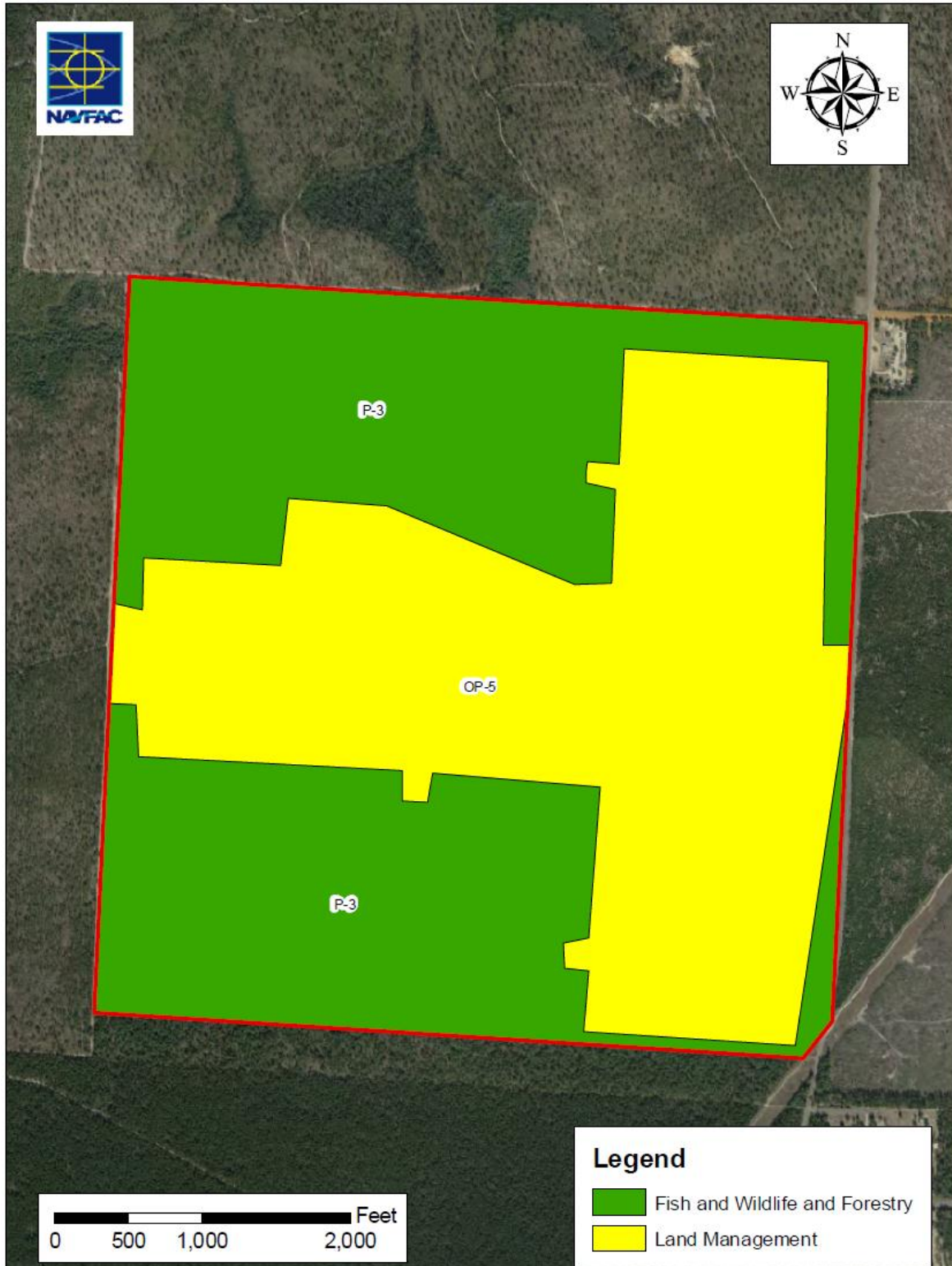


Figure 16. Land Use at NOLF Harold

#### Protected Area 4

Protected Area 4 (P-4) is located within the southern half of NOLF Holley and contains wet prairie, dome swamp, mesic flatwoods, and wet flatwoods natural communities (Figure 17). This is a Protected Area due to the presence of high quality natural communities and threatened and endangered species. Rare species known to occur within P-4 include the gopher tortoise, reticulated flatwoods salamander, coal skink, Florida black bear, and several protected plants adapted to wet prairie habitats. There are several reticulated flatwoods salamander breeding ponds within P-4. The management focus of P-4 is fish and wildlife. Management activities will maintain and enhance existing natural communities and wildlife habitat through practices such as prescribed burning and thinning. Forest stands will be managed in accordance with the Forest Management Plan. Planned-forestry activities include prescribed burning and forest thinning. No chemical treatments will occur within P-4 in conjunction with forest management. Forest management practices will adhere to management objectives pertaining to the reticulated flatwoods salamander.

#### **2.2.6.9 NOLF Site 8-A**

##### Operational Protected Area 8

Operational Protected Area 8 (OP-8) includes the existing helicopter landing field at NOLF Site 8-A (Figure 18). This is an Operational Protected due its intensive use and maintenance. Gopher tortoises have been documented in this area, which is maintained as a grassy field. The management focus of OP-8 is land management due to the military mission requirements of the land. The primary issue pertaining to this area is grounds maintenance. Gopher tortoise burrows in mowed areas will be marked to protect tortoises from mowing activities.

##### Protected Area 5

Protected Area 5 (P-5) includes four distinct areas at NOLF Site 8-A (Figure 18). This is a Protected Area due to unique natural resources, including a baygall natural community, a small gopher tortoise population, and many rare plants. The portion of P-5 located in the southwest corner of NOLF Site 8-A is composed of pine and mixed pine-hardwood forest stands and contains wetlands. The two portions of P-5 along the northern border of NOLF Site 8-A are both primarily forested wetlands; Stand No. 8 is a water/swamp tupelo stand and Stand No. 9 is slash pine stand. The portion of P-5 along the eastern edge of NOLF Site 8-A is composed of longleaf, slash, and loblolly pine stands and a high quality baygall. There is a large gully in the eastern portion of NOLF Site 8-A, which potentially provides roosting habitat for bats, which have been observed in this area. The management focus of P-5 is fish and wildlife and forestry.

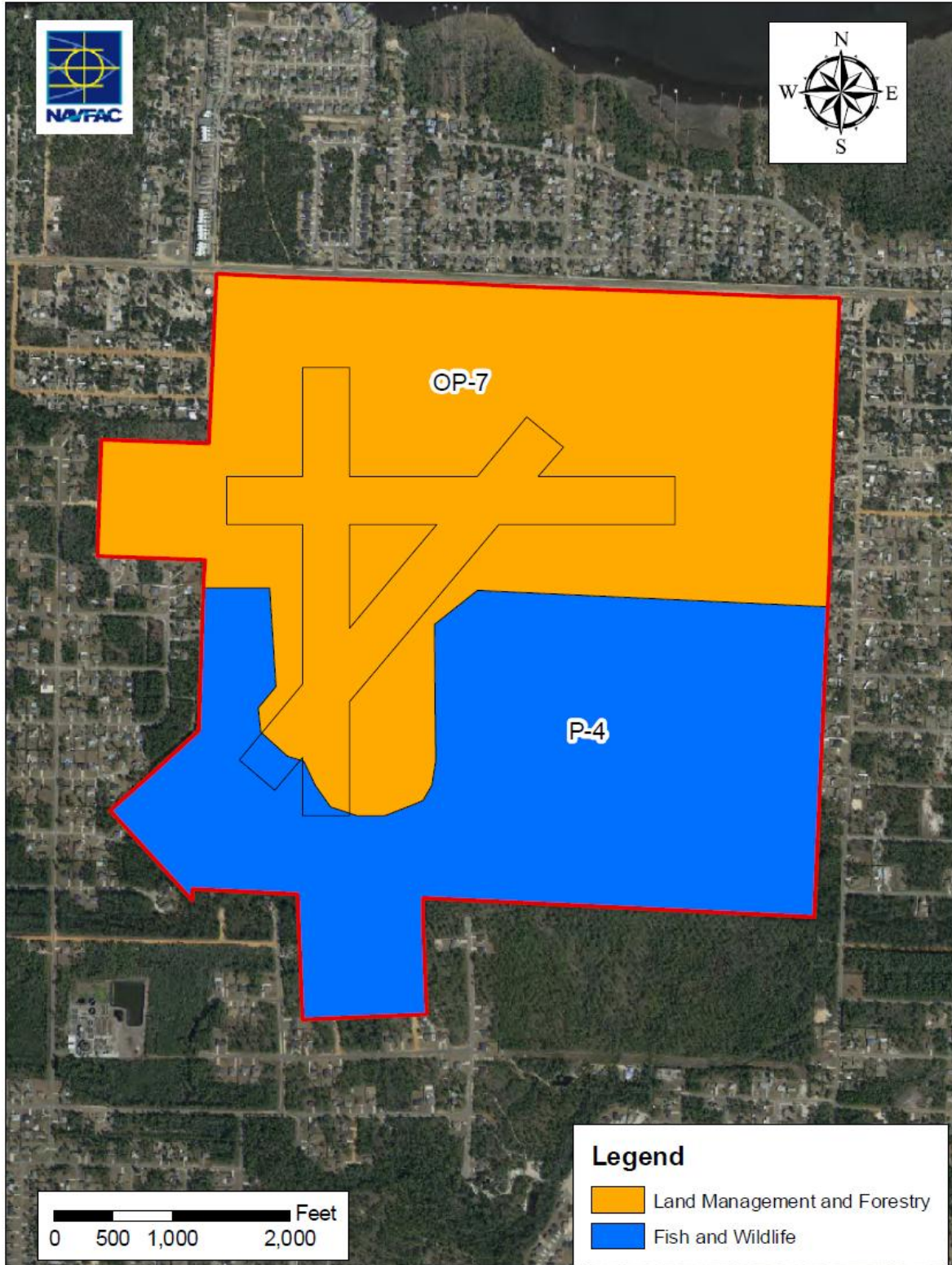


Figure 17. Land Use at NOLF Holley

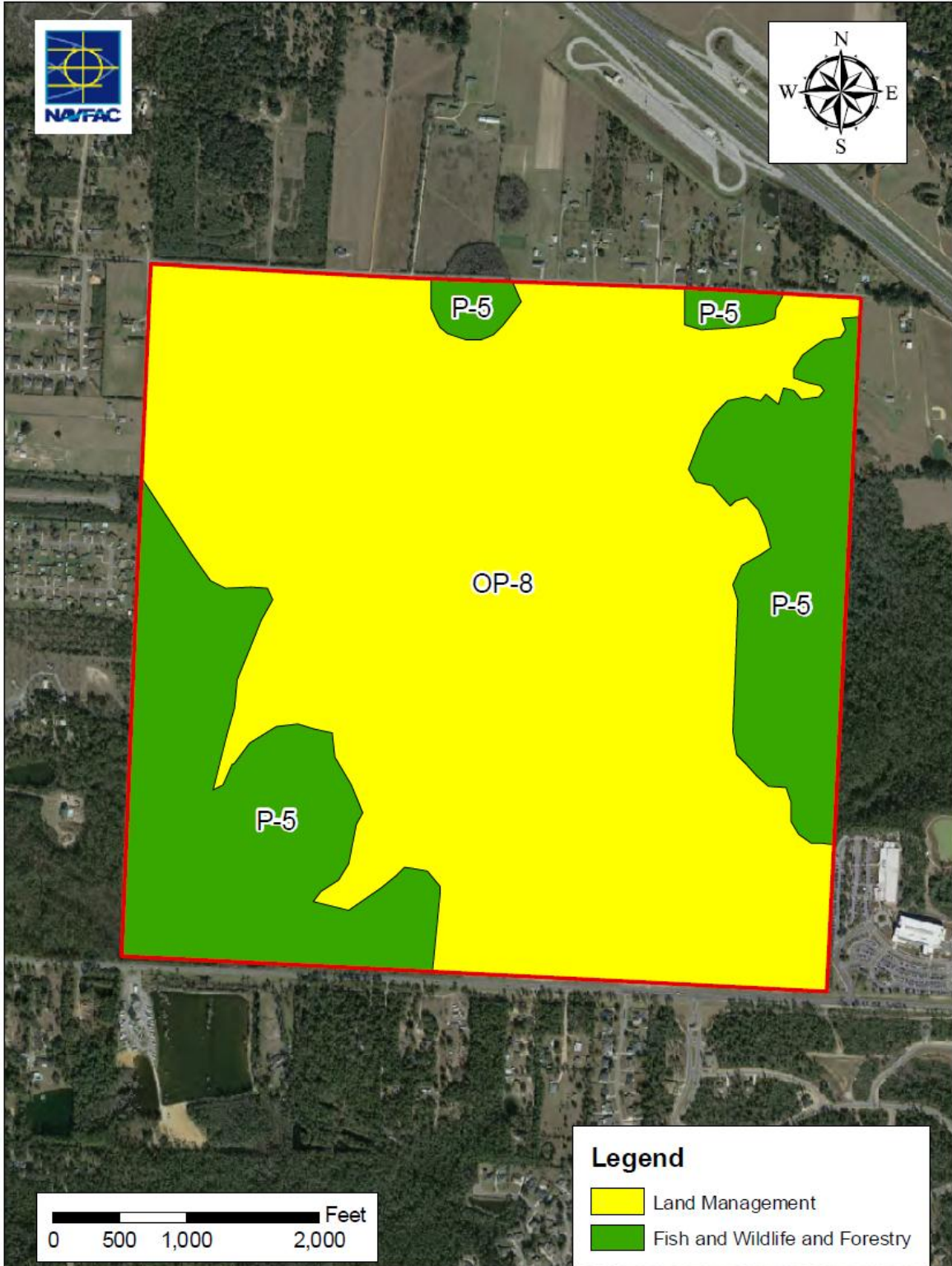


Figure 18. Land Use at NOLF Site 8-A

#### **2.2.6.10 NOLF Wolf**

##### Operational Protected Area 9

The boundaries of Operational Protected Area 9 (OP-9) are consistent with the boundaries of NOLF Wolf. This is an Operational Protected Area due to its past use and potential future use. The airfield currently is not utilized for training operations; however, it may be reactivated in the future. NOLF Wolf contains three runways surrounded primarily by open land, much of which (approximately 114 acres) is outleased for hay production. Gopher tortoises occur on the cleared airfield, primarily on a small manmade ridge that does not get mowed. Eastern diamondback rattlesnakes (in gopher tortoise burrows) and the common ground dove have also been documented at NOLF Wolf. Approximately 9 acres of OP-9 are in forest management at OP-9; Forest thinning and prescribed burning will occur within the forest stands.

#### **2.2.6.11 NOLF Barin**

##### Operational Protected Area 10

Operational Protected Area 10 (OP-10) includes most of NOLF Barin, except for the northeast portion, which is designated as P-6 (Figure 19). This is an Operational Protected Area due to its intensive use and maintenance. NOLF Barin contains two runways surrounded primarily by open land, with forest stands along its periphery. Wetland areas are located in the southern portions of OP-10. Gopher tortoises occur in the southwest corner of OP-10. The management objectives at OP-10 are land management and forestry. Forest stands within OP-10 will be managed to enhance wildlife habitat as well as providing sustained yield of forest products. In addition to land management, forestry, and fish and wildlife initiatives, the potential for a biking and hiking trail along the perimeter road to provide outdoor recreation will be assessed.

##### Protected Area 6

Protected Area 6 (P-6) includes the northeastern corner of NOLF Barin (Figure 19). This is a Protected Area due to the presence of high quality natural communities and several rare species. Sandy Creek, a high quality seepage stream, flows southeast through P-6. The bottomland forest associated with Sandy Creek is also a high quality natural community and is characterized by white cedar and black and white titi. Forest stands to the southwest of these natural communities may be characterized as primarily even-aged slash and longleaf pine stands. Much of P-6 lies within the 100-year floodplain of Sandy Creek. The primary management objectives of P-6 are fish and wildlife and outdoor recreation. Forestry activities may include harvesting and sale of timber and pine straw, the construction and maintenance of forest roads for management activities access, and prescribed burning and wildfire control.



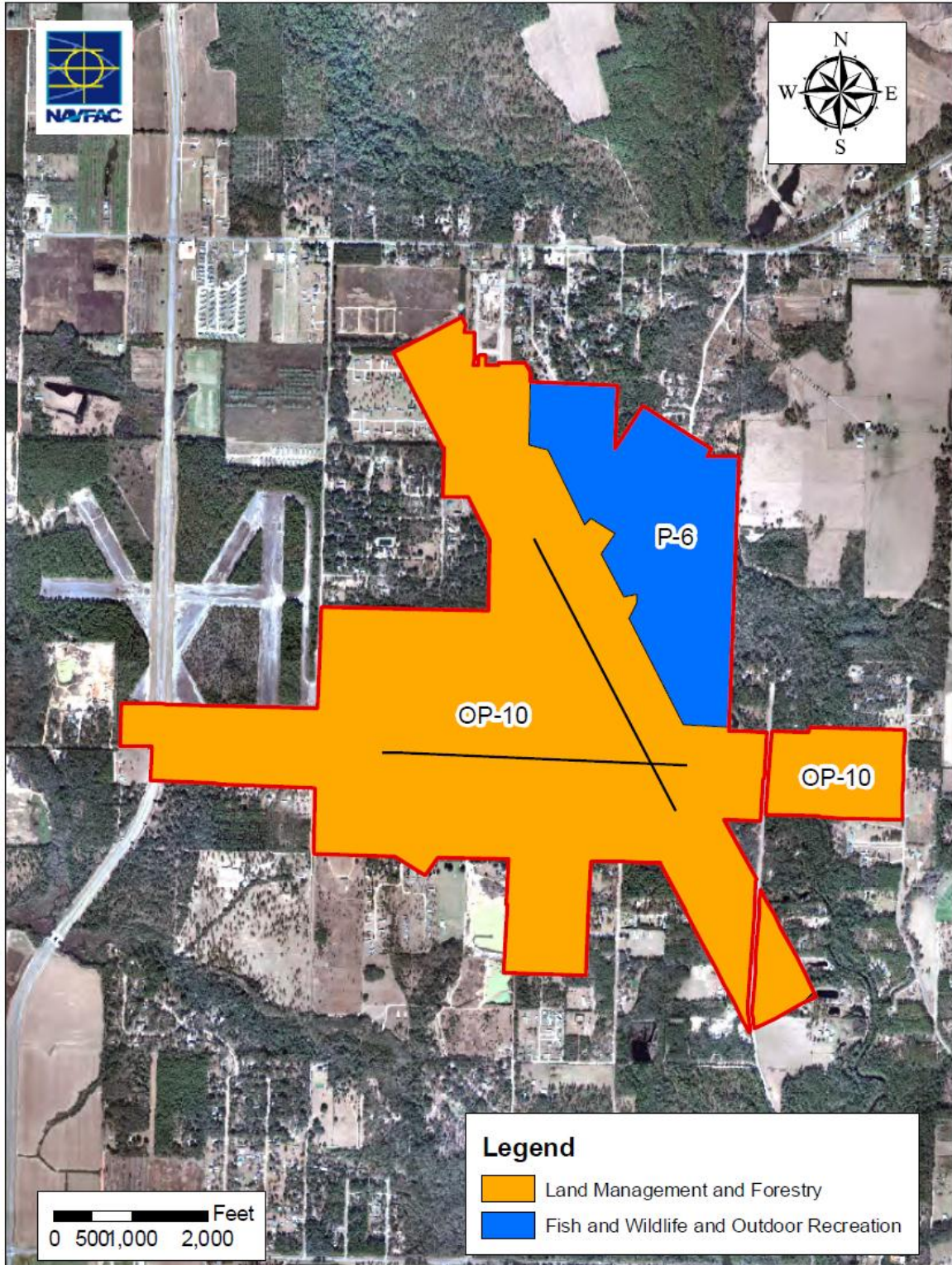


Figure 19. Land Use at NOLF Barin

#### **2.2.6.12 NOLF Summerdale**

##### Operational Protected Area 11

The boundaries of OP-11 are consistent with the boundaries of NOLF Summerdale. This is an Operational Protected Area due to its intensive use and maintenance. NOLF Summerdale contains three runways surrounded primarily by lands outleased for hay and row crop production. Land area directly adjacent to the airfield is maintained by the Navy. The area surrounding the airfield consists primarily of agricultural fields, with a few occasional low moist spots. There are forested areas along the southern and western portions of the site, including longleaf pine and forested wetlands. No natural communities occur within the boundaries of NOLF Summerdale, and no threatened or endangered species have been documented at the site (FNAI 1997). The management objectives at OP-11 are land management in the vicinity of the airfield and in agricultural outleased areas and forestry in forested areas. Silvicultural activities, such as forest thinning and prescribed burning, will enhance wildlife habitat.

#### **2.2.6.13 NOLF Silverhill**

##### Operational Protected Area 12

The boundaries of Operational Protected Area 12 (OP-12) are consistent with the boundaries of NOLF Silverhill. This is an Operational Protected Area due to its intensive use and maintenance. NOLF Silverhill contains three runways surrounded primarily by lands outleased for hay production. The southwest portion of NOLF Silverhill is forested (slash pine and mixed pine-hardwood stands). There is a small stand of longleaf pine-scrub oak along the eastern edge of the area. A small population of gopher tortoises has been documented at NOLF Silverhill where habitat includes the mowed airfield clear zone, hayfield, and upland forests (FNAI 1997). The management objectives of OP-12 are land management in the vicinity of the airfield and in agricultural outleased areas and forestry in forested areas. Silvicultural activities, such as forest thinning and prescribed burning, will enhance wildlife habitat.

#### **2.2.6.14 NOLF Evergreen**

##### Operational Protected Area 13

Operational Protected Area 13 (OP-13) is composed of approximately 22 acres, primarily within the clear zone at NOLF Evergreen. This is an Operational Protected Area due to its intensive use and maintenance. The management focus at OP-13 is land management. Presently, there is no active management on the property other than oversight. Management activities will be implemented as needed. Submerged portions of Hunter Creek, which flows through the western portion of OP-13, have been designated as critical habitat for the Alabama pearlshell mussel; however, the section of

the creek within the boundary of NOLF Evergreen is obviated from critical habitat designation (77 FR 61664).

## **2.3 BIOLOGICAL ENVIRONMENT**

The biological environment of the NASWF Complex was considerably different prior to colonization and development. Historically, the area was dominated by natural communities that are, today, only scattered throughout the Complex. Ecosystems at the NASWF Complex have been affected by development to varying degrees. Areas that have been highly developed by the Navy contain little or no natural vegetation and wildlife associated with previous ecosystems. Prescribed burning and thinning in managed forest stands help regenerate natural communities to maintain and improve ecosystem quality to the extent practicable within the constraints of military mission requirements.

### **2.3.1 Natural Communities**

A natural community is a distinct and reoccurring assemblage of populations of plants, animals, fungi, and microorganisms naturally associated with each other and their physical environment (FNAI 1997). Florida Natural Areas Inventory (FNAI) conducted natural community surveys at the NASWF Complex in 1996-97 and 2006. The 1996-97 survey included NAS Whiting Field and NOLFs Harold, Santa Rosa, Holley, Site 8-A, Pace, Spencer, Wolf, Barin, Summerdale, and Silverhill. The 2006 survey included these same properties as well as Whiting Pines Housing and NOLFs Brewton, Evergreen, and Choctaw. Thirteen high-quality natural communities representing ten community types were identified; not all properties had high-quality natural communities. The communities, general descriptions, current condition, and observed changes from 1996 to 2006 are presented in Table 8. Damage resulting from Hurricane Ivan in 2004 and Hurricane Dennis in 2005 was evident in several of the communities. Increased density of understory shrubs and proliferation of exotic species were also common observations in several communities during the 2006 survey.

**Table 8. Descriptions of Natural Communities Present Within the NASWF Complex**

Natural Community/ Location(s)	General Description	Current Condition	Changes Observed from 1996 to 2006
<b>NAS Whiting Field</b>			
Floodplain Swamp NAS Whiting Field	Floodplain swamps occur on flooded soils along stream channels and in low spots and oxbows within river floodplains. Dominant trees are usually buttressed hydrophytic species. They harbor a diverse array of animals including both temporary and permanent residents. Soils are highly variable mixtures of sand, organic, and alluvial materials and peat accumulation is typical in sloughs and smaller streams.	This community has altered hydrology from beaver activity and woody encroachment. The area is dominated by woody species including <i>Nyssa sylvatica</i> , <i>Acer rubrum</i> , and <i>Magnolia virginiana</i> . Herbaceous species can be found in the understory of the community, but are more frequently found in canopy openings and on streamside hummocks.	This community appeared to be relatively unchanged from its conditions in 1996. Beaver activity was still present.
<b>NOLF Harold</b>			
Baygall NOLF Harold	Baygalls depend upon seepage flow and a high water table. They are densely forested, peat-filled seepage depressions often found at the base of sandy slopes. The canopy consists of evergreen hardwood trees such as sweetbay and magnolia, and the understory tends to be open and contains shrubs and ferns.	At least the ecotone or a portion of this community was formerly seepage slope that has succeeded to baygall. Fire is needed to maintain an herb-dominated ecotone and associated rare plants. There are many wind-thrown trees due to hurricanes.	The white-top pitcher plant population decreased from 21 plants in 1996 to 11 plants in 2006. The population had low vigor due to woody encroachment and decreased light penetration to the herbaceous layer. There was major soil disturbance from hog rooting.
Seepage Stream NOLF Harold	Seepage streams are seasonal water courses originating from shallow ground waters that have percolated through deep, sandy, upland soils. Their waters are typically sheltered by a dense overstory of hardwoods and maintain a constant temperature of approximately 70°F.	The clear-water stream is small, about 3 feet wide and 1 foot deep, and bordered by 20-40 ft tall <i>Cliftonia monophylla</i> , <i>Magnolia virginiana</i> , and <i>Ilex coriacea</i> . There are many wind-thrown trees due to hurricanes.	This community appeared to be relatively unchanged from its conditions in 1996.

**Table 8. Descriptions of Natural Communities Present Within the NASWF Complex**

Natural Community/ Location(s)	General Description	Current Condition	Changes Observed from 1996 to 2006
Sandhill NOLF Harold	Sandhills are forests of widely-spaced pine trees with a sparse understory of deciduous oaks and a ground cover of grasses and herbs. Their soils are deep marine-deposited sands that are well-drained and relatively sterile. Fire is a dominant factor in the ecology of this community.	This community has minimal disturbance, except for a few roads and habitat fragmentation. This area was recently burned. It has a very diverse community supporting a healthy population of the rare <i>Baptisia calycosa</i> .	It appeared that this community maintained its health since the 1996 survey.
<b>NOLF Santa Rosa</b>			
Depression Marsh NOLF Santa Rosa	Depression marsh is a shallow, rounded, depression in sand substrate with herbaceous vegetation often in concentric bands. They usually support a different assemblage of species than are found in larger, permanent wetlands, and are vital habitats for reticulated flatwoods salamanders.	This community suffers from woody encroachment as a result of fire suppression. This site is currently dry. The surrounding mesic flatwoods community contains <i>Pinus elliottii</i> and various <i>Quercus</i> spp.	This community did not appear to have received prescribed fire since the 1996 survey. Woody elements increased in size and cover.
<b>NOLF Holley</b>			
Wet Prairie NOLF Holley	Wet prairies are treeless plains with a sparse to dense ground cover of grasses and herbs. They occur on low, flat, poorly drained terrain of coastal plain. Soils consist of sands often with a substantial clay or organic component. Few good quality wet prairies remain intact.	ATV trails cross this community. It is fire suppressed with woody encroachment and is succeeding to a woody-dominated community. The herb layer is diverse, but the woody encroachment will reduce species diversity.	The reticulated flatwoods salamander occurs in this community and continued fire suppression threatens its habitat. Cogongrass invaded this habitat and the area was receiving sedimentation from the adjacent north-south red clay road.
Wet Flatwoods NOLF Holley	Wet flatwoods are open-canopy forests of scattered pine trees or cabbage palms with thick understory and sparse ground cover or vice-versa. They occur on flat, poorly drained terrain. Water stands on the surface during the rainy season. Fire is an important physical factor for wet flatwoods.	This community suffers from woody encroachment as a result of fire suppression. The canopy is dominated by <i>Pinus elliottii</i> with <i>Ilex glabra</i> in the shrub stratum. The southeast section of this area has a more open structure than the rest.	The shrub coverage of this community increased from 20-25% in 1996 to 60-75 % in 2006. However, shrub coverage subsequently fell following a 2008 prescribed burn, although the current coverage is not quantified.

**Table 8. Descriptions of Natural Communities Present Within the NASWF Complex**

Natural Community/ Location(s)	General Description	Current Condition	Changes Observed from 1996 to 2006
Dome Swamp NOLF Holley	Dome swamps are shallow, forested, usually circular depressions that generally present a domed profile because smaller trees grow on the outer edge while bigger trees grow in the deeper water of the interior. They typically develop in sandy flatwoods where sand has slumped around or over a sinkhole.	Disturbances to this community include lack of fire and an old logging road that crosses to the north and west. Woody elements dominate, including <i>Pinus elliotii</i> , and <i>Ilex cassine</i> . Herbaceous species include <i>Eriocaulon compressum</i> and <i>Stylisma aquatica</i> .	This community appeared to be relatively unchanged from its conditions in 1996. Prescribed fire was conducted in 2008.
Mesic Flatwoods NOLF Holley	Mesic flatwoods are open canopy forests of widely-spaced pine trees with little or no understory but a dense ground cover of herbs and shrubs. They occur on flat, moderately to poorly drained terrain. Nearly all plants and animals inhabiting this community depend upon fire.	Fire suppression is resulting in woody encroachment. The canopy is dominated by <i>Pinus palustris</i> and <i>Pinus elliotii</i> . The increasingly dense shrub layer includes <i>Serenoa repens</i> and <i>Vaccinium corymbosum</i> .	The condition of this community was similar to that observed in 1996. There was little evidence of fire entering this community, but a prescribed burn was conducted in 2008.
<b>NOLF Site 8-A</b>			
Baygall NOLF Site 8-A	Baygalls depend upon seepage flow and a high water table. They are densely forested, peat-filled seepage depressions often found at the base of sandy slopes. The canopy consists of evergreen hardwood trees such as sweetbay and magnolia, and the understory tends to be open and contains shrubs and ferns.	The fenceline is cleared, and this has allowed desirable herbaceous species to persist. The community is undisturbed and dominated by shrubs and mature trees including <i>Woodwardia areolata</i> , <i>Peltandra sagittifolia</i> , <i>Magnolia virginiana</i> , and <i>Illicium floridanum</i> .	This community appeared to be in the same condition as it was in 1996. There was no evidence of fire entering this community. It can be assumed that the shrub component increased and the herbaceous percent cover was reduced.
Seepage Stream NOLF Site 8-A	Seepage streams are seasonal water courses originating from shallow ground waters that have percolated through soils. Their waters are sheltered by a dense overstory of hardwoods and maintain a constant temperature of about 70°F.	The fenceline is cleared, and this has allowed desirable herbaceous species to persist along the stream edge. The undisturbed community is surrounded and dominated by shrubs and younger mature trees.	This community appeared to be in the same condition as it was in 1996. There was no evidence of fire in this community. It can be assumed that the shrub component increased and the herbaceous

			percent cover was reduced.
<b>Table 8. Descriptions of Natural Communities Present Within the NASWF Complex</b>			
<b>Natural Community/ Location(s)</b>	<b>General Description</b>	<b>Current Condition</b>	<b>Changes Observed from 1996 to 2006</b>
<b>NOLF Barin</b>			
Floodplain Forest NOLF Barin	Floodplain forests are hardwood forests that occur on slight elevations within floodplains. The understory may be open or dense. Hydroperiod is the primary physical feature of floodplain forests, which are inundated by flood waters nearly every year for up to 50% of the growing season.	This community has an included seepage stream. Disturbances include ditching and invasive exotic plants. The highest-quality portion of this community is found offsite, north of installation fence.	This community seemed to have been altered since 1996 by hurricane damage, wind thrown trees and invasive exotic plant establishment. Barin has the most invasive and exotic species on the NASWF Complex.
Seepage Stream NOLF Barin	Seepage streams are seasonal water courses originating from shallow ground waters that have percolated through deep, sandy, upland soils. Their waters are typically sheltered by a dense overstory of hardwoods and maintain a constant temperature of approximately 70°F.	The seepage stream averages 3 feet wide and ten inches deep. Kudzu is also found in the surrounding floodplain forest. There is rip rap fill upstream consisting of concrete and brick with steel retaining walls and culvert. There is some erosion near the fenceline.	No exotics were reported in 1996; these species are assumed to have invaded the surrounding floodplain forest community since the 1996 survey.

Sources: FNAI 1997a, 1997b, 1997c, and 2007

### 2.3.2 Rare, Threatened and Endangered Species

The NASWF Complex is within, or approached by, the range of approximately 60 rare, threatened, endangered, and declining vertebrate taxa and approximately 100 rare, threatened, and endangered plant taxa. Rare vertebrate surveys were conducted across the NASWF Complex in 1996-97 and 2009-10. Two federally-listed threatened species, one federal candidate species, one species under review for federal listing, two state-listed threatened species, and seven state-listed species of special concern are known to occur on the NASWF Complex (see Table 9). The American alligator (*Alligator mississippiensis*) and reticulated flatwoods salamander (*Ambystoma bishopi*) are the only federally-threatened species confirmed present the NASWF Complex. The gopher tortoise (*Gopherus polyphemus*) is a candidate for federal listing and is present on eight NASWF Complex properties. The gopher tortoise and reticulated flatwoods salamander are also state-listed threatened species. The Cooper's hawk (*Accipiter cooperii*) and southeastern fox squirrel (*Sciurus niger niger*) are rare species identified on the Complex during the 2009-10 surveys, but not identified in 1996-97. Conversely, ten rare species, including the Florida pine snake (*Pituophis melanoleucas*), gopher frog (*Rana capito*), and Florida black bear (*Ursus americanus floridanus*), were identified during the 1996-97 surveys, but not in 2009-10.

Surveys of rare plants (e.g. state-listed rare, threatened, and endangered plants) were conducted across to NASWF Complex in 1990, 1996-97, 2006, and 2009-10. No federally-listed plant species were found on the properties, but 17 state-listed threatened and endangered plant species have been identified across the NASWF Complex between 1990 and 2010 (see Table 10). Locations where state-listed plants were identified during one survey were usually re-visited during subsequent surveys. Listed species that have not been observed since the 1990's are spoonflower (*Peltandra sagittifolia*), Chapman's butterwort (*Pinguicula planifolia*), crested fringed orchid (*Platanthera cristata*), narrow-leaf beakrush (*Rhynchospora stenophylla*), and purple pitcher plant (*Sarracenia purpurea*). The habitats required by these missing species are still present on the properties, so there remains potential for them to be identified in future surveys. Conversely, listed plant species that were not observed until the most recent 2009-10 survey are bumpy jointtail grass (*Coelorachis tuberculosa*) and yellow butterwort (*Pinguicula lutea*).



**Table 9. Rare, Threatened and Endangered Vertebrates Occurring Within the NASWF Complex, Florida 1996-97 and 2009-10**

1996	2009	Scientific Name Common Name	Community Where Found	Federal Status	State Status	Whiting Field	Whiting Park	Harold	Santa Rosa	Holley	Site 8-A	Wolf	Barin	Summerdate	Silverhill
<b>REPTILES</b>															
	X	<i>Alligator mississippiensis</i> American alligator	Blackwater River	T(S/A)	SSC		X								
X	X	<i>Crotalus adamanteus</i> eastern diamondback	clear zone, pine plantation	UR	N	X						X	X		
X		<i>Eumeces anthracinus</i> coal skink	wet prairie	N	N					X					
X	X	<i>Gopherus polyphemus</i> gopher tortoise	clear zone, pine plantation, ruderal, sandhill, xeric upland	C	T	X		X	X	X	X	X	X		X
X		<i>Macrochelys temminckii</i> alligator snapping turtle	Blackwater River	N	SSC		X								
X		<i>Pituophis melanoleucas</i> Florida pine snake	pine plantation	N	SSC				X						
<b>AMPHIBIANS</b>															
X	X	<i>Ambystoma bishopi</i> reticulated flatwoods salamander	wet prairie	T	T					X					
X		<i>Rana capito</i> gopher frog	depression marsh, pine plantation, clear zone	N	SSC			X	X						
<b>BIRDS</b>															
	X	<i>Accipiter cooperii</i> Cooper's hawk	coastal, ruderal, sandhill	N	N					X					X
X	X	<i>Aimophila aestivalis</i> Bachman's sparrow	sandhill	N	N			X							
X	X	<i>Ammodrammus henslowii</i> Henslow's sparrow	clear zone	N	N	X				X					
X		<i>Ammodrammus leconteii</i> Le Conte's sparrow	clear zone, hay field	N	N										X
X		<i>Casmerodius albus</i> great egret	storm water retention pond	N	N	X									
X		<i>Columbina passerina</i> common ground dove	clear zone	N	SSC							X	X		
X		<i>Egretta caerulea</i> little blue heron	storm water retention pond	N	SSC	X									
X		<i>Egretta thula</i> snowy egret	storm water retention pond	N	SSC	X									
<b>MAMMALS</b>															
	X	<i>Sciurus niger niger</i> southeastern fox squirrel	sandhill	N	N			X							
X		<i>Ursus americanus floridanus</i> Florida black bear	all areas	N	T					X					

Sources: FNAI 1997 and 2010.

KEY: E=Endangered; T=Threatened; T(S/A)=Threatened due to Similarity of Appearance; C=Candidate; UR= Under Review for Listing; SSC=Species of Special Concern; N=Not listed, but of interest to NASWF Complex natural resource managers.

**Table 10. State-Listed and Rare Plants Occurring Within the NASWF Complex, Florida, 1990, 1996-97, 2006, and 2009-10**

1990	1996	2006	2009	Scientific Name Common Name	Community Where Found	State Status	Whiting Field	Whiting Park	Harold	Santa Rosa	Holley	Site 8-A	Wolf	Barin	Summerdale	Silverhill
X	X	X	X	<i>Baptisia calycosa</i> hairy wild indigo	sandhill	R			X	X						
X	X	X	X	<i>Calamovilfa curtissii</i> Curtiss' sandgrass	dome swamp, mesic flatwoods, wet flatwoods, wet prairie	T					X					
	X	X	X	<i>Calycanthus floridus</i> sweet shrub	upland pine forest	E						X				
X	X			<i>Chamaecyparis thyoides</i> Atlantic white cedar	bottomland forest	R								X <sup>1</sup>		
			X	<i>Coelorachis tuberculosa</i> bumpy jointtail grass	dome swamp	T					X					
X	X	X	X	<i>Drosera intermedia</i> spoon-leaved sundew	baygall, beaver pond, floodplain marsh	T	X					X				
	X	X		<i>Helenium vernale</i> savannah sneezeweed	seepage slope, wet flatwoods	R							X	X		
X	X			<i>Illicium floridanum</i> Florida anise	baygall, floodplain marsh	R	X <sup>1</sup>		X <sup>1</sup>			X <sup>1</sup>				
	X	X	X	<i>Juncus gymnocarpus</i> Coville's rush	floodplain marsh	E	X									
X		X		<i>Lachnocaulon digynum</i> bog button	seepage slope	T								X		
	X		X	<i>Lilium catesbaei</i> southern red lily	wet prairie	T					X					
	X		X	<i>Nuphar advena</i> west Florida cow lily	blackwater stream	R		X								
X	X			<i>Peltandra sagittifolia</i> spoonflower	baygall	R			X <sup>1</sup>			X <sup>1</sup>				
		X	X	<i>Penstemon multiflorus</i> many flowered beardtongue	mesic flatwoods	R								X		
			X	<i>Pinguicula lutea</i> yellow butterwort	dome swamp	T					X					
X	X			<i>Pinguicula planifolia</i> Chapman's butterwort	wet prairie	T					X <sup>1</sup>					
X	X	X	X	<i>Pinguicula primuliflora</i> primrose flowered butterwort	Blackwater River marsh, seepage stream	E	X <sup>1</sup>	X				X				
	X		X	<i>Platanthera ciliaris</i> yellow-fringed orchid	baygall, seepage stream	T						X				
	X			<i>Platanthera cristata</i> crested fringed orchid	baygall	T						X <sup>1</sup>				
X	X		X	<i>Pleea tenuifolia</i> rush featherling	wet flatwoods	R								X		
	X		X	<i>Pogonia ophioglossoides</i> rose pogonia	wet prairie	T	X <sup>1</sup>				X					

**Table 10. State-listed and Rare Plants Occurring Within the NASWF Complex, Florida, 1990, 1996-97, 2006, and 2009-2010**

1990	1996	2006	2009	Scientific Name Common Name	Community Where Found	State Status	Whiting Field	Whiting Park	Harold	Santa Rosa	Holley	Site 8-A	Wolf	Barin	Summerdale	Silverhill
X	X	X	X	<i>Quercus minima</i> dwarf live oak	clear zone, mesic flatwoods	R								X		
	X			<i>Rhynchospora stenophylla</i> narrow-leaf beakrush	baygall	T						X <sup>1</sup>				
X	X	X	X	<i>Sarracenia leucophylla</i> white-top pitcher plant	dome swamp, mesic flatwoods, wet prairie	E	X	X	X		X	X <sup>1</sup>		X		
	X		X	<i>Sarracenia psittacina</i> parrot pitcher plant	wet flatwoods, wet prairie	T					X					
	X			<i>Sarracenia purpurea</i> purple pitcher plant	baygall	T						X <sup>1</sup>				

Sources: Environmental Protection Systems 1991, FNAI 1997, FNAI 2007, and FNAI 2010.

No federally-listed plant species occur at the NASWF Complex.

KEY: R=Rare; E=Endangered; T=Threatened.

X<sup>1</sup>=The species has not been identified at the indicated property since the 1990's.

### 2.3.2.1 Critical Habitat

The ESA requires the conservation of critical habitat, which is defined as the areas of land, water, and air space a threatened or endangered species need for survival. Critical habitat also includes such things as food and water, breeding sites, cover or shelter, and sufficient habitat area to provide for normal population growth and behavior. Section 7 of the ESA restricts destructive or adverse modification of critical habitat by any activity funded, authorized, or carried out by any Federal agency. One of the primary threats to many species is the destruction and modification of essential habitat by uncontrolled land and water development.

Critical habitat has been designated adjacent to NOLF Evergreen, in submerged portions of Hunter Creek, for the Alabama pearlshell. Hunter Creek flows through the western portion of NOLF Evergreen, but the segment of the creek within NOLF Evergreen boundaries is obviated from critical habitat designation (77 FR 61664). This INRMP describes natural resources management actions that impart benefits to listed species and their habitats on the NASWF Complex and provides assurances that those actions will be implemented and will be effective. The NASWF Complex NRM and Navy Region Southeast biologists are designated the responsibility to ensure this INRMP continues to perform that function for all ESA-listed species on the Complex and those that utilize waters adjacent to the Complex. Effective communication and partnership with the Federal regulatory agencies are essential to successfully perform this responsibility.

### 2.3.2.2 Gopher Tortoise

Gopher tortoises are present throughout much of the uplands at NASWF and on NOLFs Harold, Santa Rosa, Holley, Site 8-A, Wolf, Barin, and Silverhill. Gopher tortoise surveys were conducted at the NASWF Complex in 1996, 2006, 2007-08, and 2011 (FNAI 1997, FNAI 2007, Greene et al. 2008, Tuberville and Grosse 2011). The total numbers of burrows (active and abandoned) observed at each NASWF Complex property during each survey year are presented in Table 11. These numbers should be interpreted with caution since survey effort and area covered could have varied between surveys; however, the trend is towards more burrows at NAS Whiting Field, NOLF Holley, and NOLF Wolf. No burrows have been detected at NOLFs Summerdale and Evergreen. The numbers of burrows at the other NOLFs have remained somewhat constant, with no more than 19 burrows observed at any of them during the 2011 survey.

Gopher tortoises prefer sparsely-canopied xeric sites; however, many of the xeric uplands within the NASWF Complex maintain dense canopies and minimal herbaceous layers. Therefore, tortoises are often concentrated in small canopy openings and cleared areas (i.e., firebreak and road edges, ditch openings, and airfield clear zones). Several species, including the gopher frog, eastern indigo snake, pine snake, and eastern diamondback rattlesnake, depend on gopher tortoise burrows for cover and shelter. Proper management of the xeric uplands in which the gopher tortoise lives is critical to the species' long-term viability at any site. Xeric uplands will be burned approximately every 2 to 5 years and potential predators such as coyotes, dogs, feral cats, and raccoons will be controlled. Additionally, forest thinnings are scheduled (see Appendix B) to assist in opening the forest canopy and increasing sunlight to the forest floor. The gopher tortoise is considered a keystone species, and the proper management of its habitat will benefit species dependent on gopher tortoise burrows for cover and protection.

<b>Table 11. Gopher Tortoise Burrow Counts at the NASWF Complex</b>				
Property	Number of Burrows			
	1996	2006	2007	2011
NAS Whiting Field	58	13	105	234
NOLF Harold	3	3	0	7
NOLF Santa Rosa	1	2	0	4
NOLF Holley	32	50	79	109
NOLF Site 8-A	5	0	6	13
NOLF Wolf	12	4	20	22
NOLF Barin	1	4	10	5
NOLF Summerdale	n/a	n/a	0	0
NOLF Silverhill	10	14	15	19
NOLF Evergreen	n/a	n/a	0	0

### **2.3.2.3 Reticulated Flatwoods Salamander**

Reticulated flatwoods salamanders were observed at NOLF Holley during surveys conducted in 1996-97 (FNAI 1997), 2001 (NatureTech 2002), and 2009-10 (Buhlmann et al. 2010). Reticulated flatwoods salamanders breed in shallow, isolated, ephemeral ponds surrounded by an ecotone of open-canopy, fire-maintained pine lands. Optimal ground cover is wiregrass with a diversity of other herbaceous vegetation and some downed woody material. The best reticulated flatwoods salamander habitat at NOLF Holley is associated with an ephemeral pond in the northeast portion of the property.

### **2.3.2.4 Red-cockaded Woodpecker**

The red-cockaded woodpecker historically occurred from East Texas and Oklahoma to Florida and North to New Jersey. The present distribution is similar; however, present populations are fragmented into isolated populations. Preferred habitat of the red-cockaded woodpecker is characterized by open stands of pine between 80 to 120 years old, which provide suitable nesting habitat. Longleaf pines are most commonly used, but other southern pine species are also acceptable for nesting. Nest cavities are excavated in living pines, usually in those infected with a fungus producing what is known as red-heart disease. Foraging habitat is provided in pine and pine/hardwood stands 30 years old or older with foraging preference for pine trees 10 inches or larger in diameter (USFWS 1993).

Sandhill communities at NOLF Harold are dominated by longleaf pine, turkey oak, and wiregrass and potentially provide appropriate foraging habitat for red-cockaded woodpeckers. One forest stand on NAS Whiting Field is considered potential habitat for red-cockaded woodpeckers and may be managed to promote colonization. Although no colonies presently exist on the NASWF Complex, red-cockaded woodpecker nesting sites have been identified in the Blackwater River State Forest, approximately 0.25 miles north of NOLF Harold. To encourage use by red-cockaded woodpeckers, the NASWF Complex will promote longleaf pine and maintain sandhill communities at NOLF Harold through the use of prescribed fire and herbicide applications. In addition, the NASWF Complex has joined the Longleaf Alliance and GCPEP (see Project No. 3, Appendix A) to aid in the region-wide recovery of longleaf pine forests.

### **2.3.3 Forest Resources**

The NASWF Complex manages approximately 2,354 acres of forestland. This includes forest stands at NAS Whiting Field (Figure 3), NOLF Harold (Figure 6), NOLF Santa Rosa (Figure 7), NOLF Holley (Figure 8), NOLF Site 8-A (Figure 9), NOLF Wolf (Figure 10), NOLF Barin (Figure 11), NOLF Summerdale (Figure 12), and NOLF Silverhill (Figure 13). The predominant forest

cover at the NASWF Complex includes slash and longleaf pine. The NASWF Forestry Plan is located in Appendix B.

A viable commercial market exists for forest products in the region. There are pulp mills in Escambia County, Florida, and Mobile and Escambia Counties, Alabama, sawmills in Escambia and Baldwin Counties, Alabama, and pole mills in Escambia County, Alabama. There also is a new sawmill in Escambia County, Florida.

#### **2.3.4 Agricultural Outleases**

Agricultural outleasing is the use of non-excess DOD lands, under a lease, by an agency, organization, or person for growing crops or grazing domestic animals. Agricultural outleasing occurs on approximately 575 acres across NOLF Wolf, NOLF Summerdale, and NOLF Silverhill. The agricultural outlease program at these properties is administered by the NRM at nearby NAS Pensacola. A survey of agricultural outleasing potential at other NOLFs and NAS Whiting Field determined that there was no market for additional agricultural outleases at this time. Surveys will be made periodically to determine if the market situation has changed and additional land can be put under lease. Additional information on the program and on what agricultural activities take place at each NOLF is provided in Section 5.1.8.

### **2.4 RECREATIONAL OPPORTUNITIES**

Outdoor recreation activities are dependent upon the natural environment. Opportunities for outdoor recreation at the NASWF Complex occur primarily at NAS Whiting Field, Whiting Park and NOLF Barin. Facilities at the Complex are maintained by the Morale, Welfare, and Recreation (MWR) Division, the Natural Resources Program, and grounds maintenance contractors (see Tables 12 and 13). MWR promotes and maintains the morale and welfare of military personnel and their dependents, both active and retired, in addition to DOD civilians when possible, through the programming and operation of recreation and club facilities. Some facilities managed by MWR (e.g., the Whiting Field Golf Course) are not considered as outdoor recreation here because they are highly developed.

The focus of the present outdoor recreation program at the Complex is a Watchable Wildlife Program (areas are designated at the Clear Creek Nature Trail and two stormwater retention ponds), the Clear Creek Nature Trail, the Sandhill Pine Bike and Hike Trail, the Whiting Military Heritage Trail, the Historic District Trail, the Indian Heritage Trail, picnic areas, a target shooting range, a skeet shooting range, and an archery range (see Tables 12 and 13; note that the Whiting Military Heritage Trail is referred to as the Blackwater Heritage Trail). Additionally, Whiting Park, operated by MWR, provides fishing, swimming, boating, and canoeing opportunities. The general public is allowed access to the Clear Creek Nature Trail, the Whiting

Military Heritage Trail, and the Sandhill Pine Bike and Hike Trail. Hunting is not authorized at the NASWF Complex, primarily due to safety considerations and incompatibility with the military mission (i.e., student aviation flight training). There is also limited acreage potentially available for hunting and a lack of management staff to oversee a hunting program.

In addition to the recreational opportunities at the NASWF Complex, Complex personnel, and in some cases the public, have available to them the recreational resources at the NASWF Complex, such as the Sunec-ke Nature Trail, Bayou Grande Nature Trail, and Trout Point Nature Trail at NAS Pensacola; the Saufley Field primitive camping areas at Saufley Field; and various facilities and activities at the Blue Angel Recreation Park. Additionally, the nearby Blackwater River State Park and Forest provide numerous opportunities for boating, canoeing, swimming, fishing, picnicking, and hiking. Public hunting is available at Eglin AFB and Blackwater Forest, as well as state wildlife management areas in Escambia and Santa Rosa Counties, although public hunting acreage in the vicinity has declined in recent years (Sermons, 2001). Also, chartered hunting clubs are available in both counties.

Implementation of the INRMP will increase opportunities for natural resources-based outdoor recreation at the NASWF Complex for both the public and military personnel.

**Table 12. Concentrated Recreation Opportunities at the NASWF Complex (NPS 1999a)**

Activity	Description	Management	Units	Regulations and Fees	Public Access	Carrying Capacity	Education Program	Needs and Recommendations
Camping	None	NA	NA	NA	NA	NA	NA	Develop plans to implement camping at Whiting Park, and NOLF Barin.
Picnicking	NAS Whiting Field has a main picnic facility with a gazebo and individual tables. A gazebo and individual tables are available at the Clear Creek Nature Trail. Whiting Park has pavilions and tables. NOLF Barin has a pavilion and tables.	Grounds maintenance	6 gazebos, plus several individual tables.	None	No, except at the Clear Creek Nature Trail.	Recommended use guidelines: 8 users per picnic table per day.	None	Conduct a survey to determine if the existing picnic areas are adequately serving the demand on NAS Whiting Field.
Fitness/Jogging Trails	The Sandhill Pine Trail, the Blackwater Heritage Trail, and the perimeter road are used on NAS Whiting Field.	Active trail maintenance program	Sandhill Pine (15 miles). Blackwater Trail (2.5)	None	Yes, first two trails.	Recommended use guidelines: 138 users per mile of trail	None	Continue current maintenance and up-keep of these areas.
Swimming/Surfing	Whiting Park, freshwater beach.	MWR	800 ft. of beach area	None	No	General use guidelines for FL, 2.5 linear feet of beach per user per day	None	Additional parking is needed at Whiting Park.
Target Shooting	Very nice facility sheltered and fully equipped.	MWR	10 spaces.	Safety rules are posted	No	NA	None	Target shooting is controlled by security and is not open to individual usage. Maintain current program.
Archery	Area adjacent to the skeet and trap shooting area.	MWR	One target.	Unknown	No	Unknown	None	Consider organizing an archery club for NAS Whiting Field; the club could help maintain the range.
Boating (Motor)	Whiting Park, boat ramp and boat rental.	MWR	14 rental boats, one boat ramp.	Rental fees and launching fees.	No	Florida's use guidelines, 108 users/ramp/day	NA	More boat docks are need. In addition, the boat dock area is in need of dredging.
Recreational Gardening	None currently.	NA	NA	NA	NA	NA	NA	Establish garden rental plots at NAS Whiting Field, Whiting Pines Housing area and NOLF Barin.
Outdoor Education & Interpretation	No formal program exists.	NA	NA	NA	NA	NA	NA	Develop a formal outdoor education & interpretation program for NAS Whiting Field.
Orienteering	A ten-point compass trail traverses the undeveloped area of NAS Whiting Field.	NRM	Head of the Clear Creek Nature Trail	None	Yes	Unlimited	None	Consider providing an orienteering course at NAS Whiting Field.



**Table 13. Dispersed Recreation Opportunities at the NASWF Complex (NPS 1999a)**

Activity	Description	Management	Units	Regulations Fees	Public Access	Carrying Capacity	Education Program	Needs and Recommendations
Hunting	Bow hunting is permitted during open season.	NRM & CMDCM	NAS Whiting Field only.	YES, state regulations and license. NO base fees.	Open to all with base access.	Unlimited.	None	A huntmaster is required on each hunt.
Fishing	Freshwater fishing opportunities are available at Whiting Park.	MWR	Blackwater River.	YES, state regulations and license. NO base fees.	No	Unlimited.	None	Develop a formal set of fishing regulations/instructions for NAS Whiting Field.
Hiking	Sandhill Pine Bike & Hike Trail, Blackwater Heritage Trail, Clear Creek Nature Trail, Perimeter roads at NAS Whiting Field and the NOLFs.	NRM	15 miles. 2.5 miles on WF. 1.7 miles.	None	YES Clear Creek Nature Trail and Blackwater Heritage Trail.	20 users per mile of trail per day. SNT = 30 users/day	None	Develop a regular maintenance program for the Sandhill Pine trail and improve marking of the trail. Consider some of the NOLFs, particularly NOLF Barin for development of hiking trails.
Nature Study	Clear Creek Nature Trail provides wonderful nature study with identification signs and interpretive areas.	NRM	1.7 miles	None	YES	Same as hiking.	None	Publicize trail more, as it is currently underutilized. Consider developing nature trail on some of the NOLFs in high quality natural communities.
Bicycling	Blackwater Heritage Trail, Sandhill Pine Bike & Hike Trail.	NRM	2.5 miles on WF. 15 miles.	None	Yes,	Unlimited	None	Develop a functioning management plan for bicycling at NAS Whiting Field.
Non-Motorized Boating/ Canoeing	Whiting Park provides boat ramp access to Blackwater River and provides canoes and kayaks for rental.	MWR	Blackwater River.	Rental fees	No	General use guidelines for Florida, 108 users/boat ramp lane/day.	NA	An additional van is needed for canoe transportation. Additional kayaks should be considered. NAS Whiting Field should work with the State of Florida to improve boating safety.
Watchable Wildlife	Designated areas include the Clear Creek Nature Trail and two runoff retention ponds.	MWR	Three	None	Yes	NA	NA	Efforts should be made to designate several of the NOLFs as Watchable Wildlife Areas.

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# 3

## Environmental Management Strategy and Mission Sustainability

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### 3.1 SUPPORTING SUSTAINABILITY OF THE MILITARY MISSION AND THE NATURAL ENVIRONMENT

Sustainability is the ability to provide for the needs of the current mission without damaging the ability of future missions to maintain their needs in coordination with natural resources adaptive management. A sustainable process can be carried out over and over without substantial negative environmental impacts, increased operational costs or a decrease in mission readiness and training.

Training and management activities detrimental to the functional values of the natural communities on the NASWF Complex can affect the Navy's military mission. For example, improper timber management around the airfields could result in encroachment of trees and shrubs into the runway clear zones, dead and dying trees that create perches for large bird species, and heavy wildland fire fuel loads. These consequences would pose visibility, BASH, and smoke issues that would negatively impact aviation training. Conversely, properly managed timber provides open canopy and herbaceous forage to the benefit of imperiled species such as the gopher tortoise, improves visibility, and reduces wildland fire potential. Reforestation of harvested timber also prevents erosion and increased sediment loading in stormwater runoff, which may increase turbidity and reduce water quality in the surrounding watersheds, threatening vital aquatic habitat. Environmental conditions detrimental to the habitat of federally or state-protected species could result in enforcement action by the responsible regulatory agency, possibly threatening the mission of the NASWF Complex.

Nuisance wildlife and outbreak of disease on the Complex could pose a threat to implementation of the military mission through the infection of military personnel and the consequent limitation of access to areas of the installation to control a problem.

Outdoor recreational use by the public can affect the security and safety of the military mission. Outdoor recreational opportunities must be planned, developed, and used consistently with the constraints of the military mission, so as not to affect security or safety on the NASWF Complex.

Unplanned and uncontrollable use of natural recreational areas by the general public may also affect the military mission.

Monitoring and measurement is fundamental to adaptive natural resources management and mission sustainability. The NASWF Complex will follow legal mandates and requirements to ensure the effectiveness of management, plans, controls, and training is monitored. Furthermore, the use of Best Management Practices (BMPs) and established monitoring protocols will enable the NASWF Complex natural resources program to identify its progress toward achieving goals and objectives. Without effective monitoring and measurement it would be difficult for natural resources management to continually improve, which is the basis of sustainability.

### **3.1.1 Military Mission and Sustainable Land Use**

The primary military mission on the NASWF Complex is to fully support the operational and training missions of assigned tenants, enhancing the readiness of the U.S. Navy, its sister armed services and other customers, especially with regard to aviation training. Merging the military mission with sustainable land use can be achieved through the maintenance of forestland to prevent encroachment onto the airfields and sustaining native environments such as low-lying scrubs and wet prairies. Maintenance of natural environments also better simulates “real world” conditions for trainees. Sustaining protected species habitat and air and water quality keeps the NASWF Complex in compliance with environmental laws, preventing regulatory consequences that can lead to financial penalties and mission delays. Effective partnering with adjacent landholders such as the Blackwater River State Forest and Park and the Yellow Water Marsh Aquatic Preserve will help limit urban encroachment, thereby limiting effects of aircraft noise on the surrounding populace. This INRMP creates a framework for sustainable land use that is compatible with the military training requirements while encouraging native and natural species abundance. Through the Commander Navy Region Southeast (CNRSE) and its constituent elements, the NASWF Complex integrates its land use to meet the current and future military mission and ensuring the conservation of the natural resources upon which effective training rely.

### **3.1.2 Defining Impact on the Military Mission**

The military mission at the NASWF Complex requires safe, natural-state land and environments for the training of naval aviators and other tenants. The NASWF Complex will comply with environmental regulations and strive to conserve the natural resources while also conducting effective training. Through the coordination of the various environmental programs (i.e., Forest Management, Fish and Wildlife Management), the NASWF Complex ensures the availability of quality training opportunities and the protection of the natural resources on its properties. The

NASWF Complex NRM and installation mission leadership and operators should coordinate during the planning phase of natural resources projects and training missions to ensure compatibility between the military mission and natural resources management. Resolutions should be established to ensure environmental regulations (e.g., ESA, Clean Water Act [CWA], etc.) are being satisfied while improving land and water resources and meeting the military mission.

### **3.1.3 Relationship to the Gulf of Mexico Range Complex and Pensacola Operational Area Management Plans**

The Gulf of Mexico (GOMEX) Range Complex represents an essential combination of air, land, and sea space that provides realistic training areas for Navy personnel. The GOMEX Range Complex includes air, land, and offshore areas Florida, Alabama, Mississippi, Louisiana, and Texas. An Operating Area (OPAREA) is a designated area of the ocean organized and managed to provide a safe and controlled surface and underwater military training and testing environment. The Pensacola OPAREA is one of four OPAREAs in the GOMEX Range. An Environmental Impact Statement / Overseas Environmental Impact Statement (EIS/OEIS) was prepared for Navy operations within the GOMEX Range and its associated OPAREAs in 2010 and was completed in cooperation with the National Marine Fisheries Service (NMFS) Office of Protected Resources. Potential impacts to the physical, environmental, and manmade environments from aircraft that take off and land at the NASWF Complex as part of training on the Range are evaluated in the GOMEX Range Complex Final EIS/OEIS, Volumes 1 and 2. No natural resources management actions described in this INRMP are compromised to accommodate training on the GOMEX Range or within the Pensacola OPAREA.

## **3.2 NATURAL RESOURCE CONSULTATION REQUIREMENTS**

All Federal agencies are required to implement protection programs for designated species and to use their authorities to further the purposes of the ESA. Furthermore, if a Federal action of any kind is found to potentially impact any species protected by the ESA, the responsible Federal agency must enter into Section 7 consultation with the USFWS or NMFS. The USFWS is the primary agency responsible for implementing the ESA, except for actions involving marine animals or anadromous fish, such as the Gulf sturgeon (*Acipenser oxyrinchus desotoi*), for which the NMFS is the acting agency. The federally-threatened reticulated flatwoods salamander (*Ambystoma bishop*) and the federal candidate, gopher tortoise (*Gopherus polyphemus*), are known to occur on the NASWF Complex, and the federally-threatened Gulf sturgeon potentially occurs in the Blackwater River. Section 7 consultation could be required for future military projects that have a potential to impact federally-listed species or designated critical habitat.

The CO of the NASWF Complex or his agent coordinates with the appropriate regulatory agency on any actions that have the potential to impact rare, threatened, or endangered (RTE) species. Early informal consultation with the acting ESA agency is key to resolving potential problems and addresses issues in a proactive and positive manner, and is the preferred method of consultation. Informal consultation includes all discussions and correspondence with the regulatory agency, and occurs prior to formal consultation to determine whether a proposed Federal action may affect listed species or critical habitat. A flow chart of the informal consultation process is provided in Figure 20.

The NASWF Complex may determine, through the informal consultation process or simply by the nature of the proposed action, that formal consultation is required for an action. If the NASWF Complex determines an activity may have an adverse effect upon a federally-listed species and/or critical habitat, the NASWF Complex will enter into formal consultation with USFWS or NMFS to determine whether a proposed action is likely to jeopardize the continued existence of listed species, destroy or adversely modify designated critical habitats, or potentially result in the incidental take of a species. The formal consultation process begins with a NASWF Complex written request and submittal of a complete initiation package and concludes with USFWS's or NMFS's issuance of a biological opinion and "incidental take" statement, if applicable. A flow chart detailing the steps of the formal consultation process is presented as Figure 21.

Essential marine and anadromous fish habitats (EFHs) are required to be identified and protected by the NMFS, regional fishery management councils (FMC), and other federal agencies under the auspices of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), as amended in 1996. Areas designated as EFH are defined as "...those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity" according to the Magnuson-Stevens Act. An Essential Fish Habitat Assessment will be prepared by the NASWF Complex if EFH will be affected by any project on the Complex. This assessment will serve as a supplemental technical report to be incorporated into consultation, as appropriate.

Migratory birds are specifically protected under the Migratory Bird Treaty Act (MBTA) of 1918, as amended, and EO 13186 of 10 January 2001, Responsibilities of Federal Agencies to Protect Migratory Birds. The MBTA makes it illegal to pursue, hunt, kill, capture, possess, buy, sell, purchase, or barter any migratory bird, including the feathers or other parts, nests, eggs, or migratory bird products, except as allowed by the implementing regulations. EO 13186 requires that Federal agencies avoid or minimize the impacts of their activities on migratory birds and make efforts to protect birds and their habitat. Military preparedness and readiness activities such as small craft operations training are exempt from the MBTA. Although exempt per 50 Code of

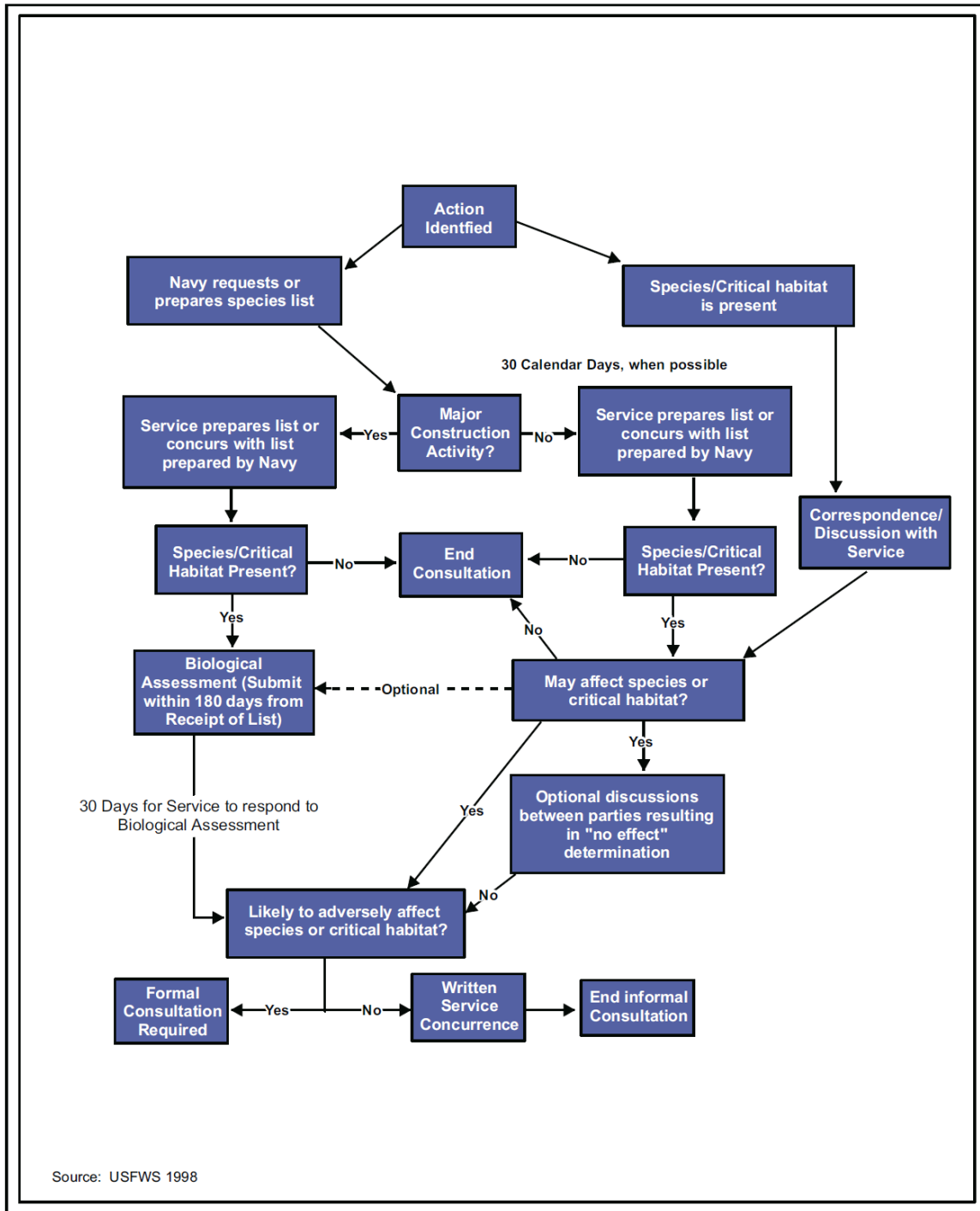


Figure 20. Flow Chart for the Informal Consultation Process

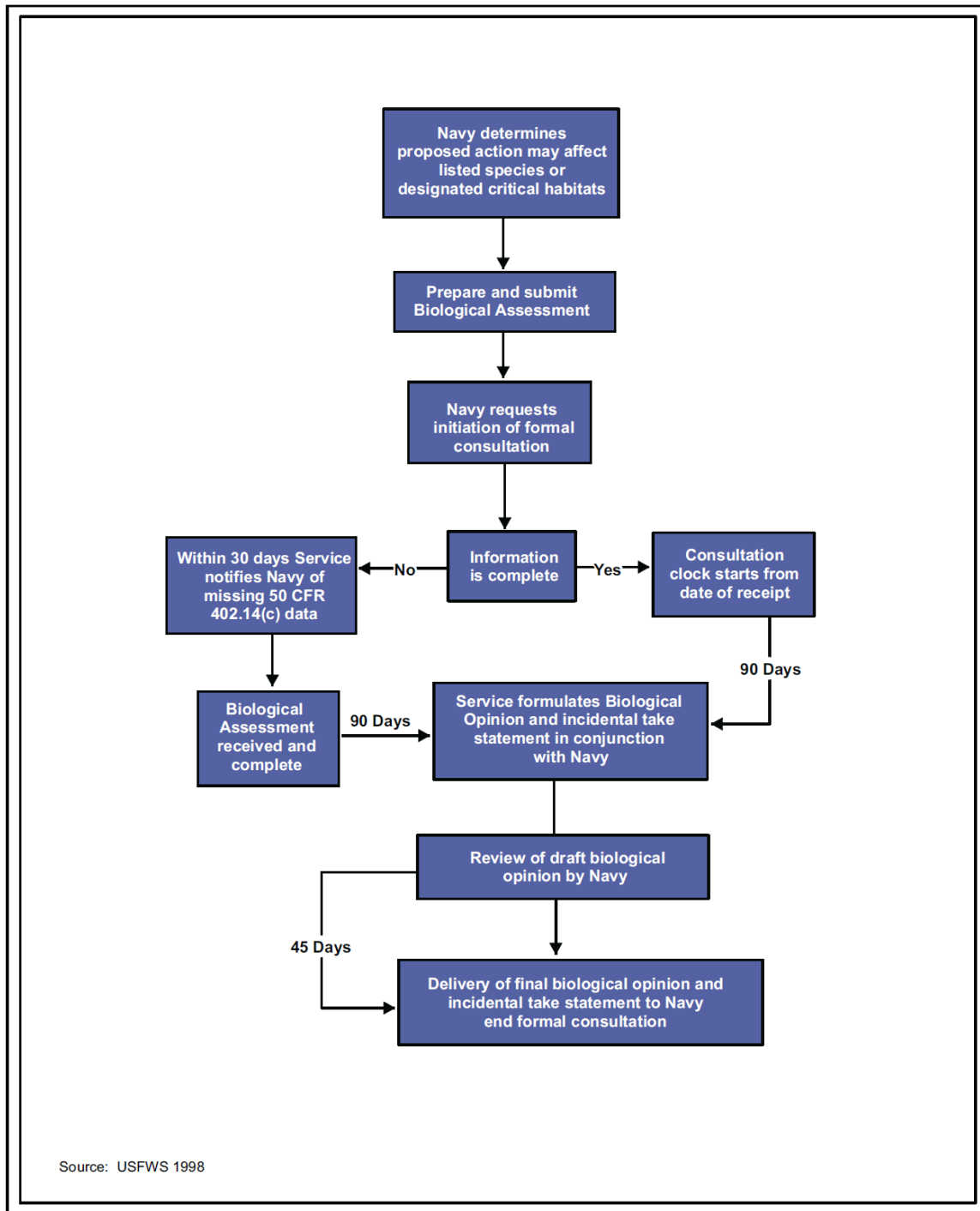


Figure 21. Flow Chart for the Formal Consultation Process



Federal Regulations (CFR) 21, the Navy is responsible for monitoring the potential impacts on migratory birds from military readiness activities. This monitoring will be carried out in conjunction with monitoring and management conducted under EO 13186 as specified in the Memorandum of Understanding (MOU) between DoD and USFWS to Promote the Conservation of Migratory Birds dated 31 July 2006, and in DoD Guidance to implement said memorandum dated 3 April 2007.

### **3.3 PLANNING FOR NATIONAL ENVIRONMENTAL POLICY ACT COMPLIANCE**

NEPA requires an environmental analysis of major Federal actions, including actions that occur with Federal funding or on Federal lands. NEPA requires the evaluation of the environmental effects of proposed land use, development, and military training activities. Some Navy actions fall under existing categorical exclusion (CATEX) and require no further analysis. For those actions not covered by an existing CATEX, the initial environmental document, the Environmental Assessment (EA) determines the potential for significant project impacts and the feasibility of proposed actions. The NEPA process requires coordination with appropriate Federal and state agencies and the general public. The public review process scopes or identifies significant issues to develop and evaluate alternatives. The preparation of an Environmental Impact Statement (EIS) occurs only if significant impacts are identified. If the EA finds “no significant impacts”, the Navy would complete the preparation of a formal Finding of No Significant Impact and make it available for public review.

An EA and FONSI were prepared and finalized in 2001 for implementation of this INRMP. The EA evaluated potential environmental impacts that could result from the implementation of various levels of management intensity, with all levels being in compliance with the Sikes Act. The Navy found, based upon the information gathered during preparation of the EA, that the implementation of the INRMP at the NASWF Complex would not significantly impact the environment.

### **3.4 BENEFICIAL PARTNERSHIPS AND COLLABORATIVE RESOURCE PLANNING**

The current staffing level of natural resource personnel at the NASWF Complex and the need for outside expertise increases the importance of developing cooperative projects with other agencies, universities, contractors, other installations, local residents, conservation organizations, and the Navy command. Cooperating Federal and state agencies, universities, and non-governmental organizations (NGOs) can provide a beneficial exchange of technical information, natural resources services, and field assistance. The NASWF Complex has a diversity of natural resources and, due to the need for a variety of expertise and assistance in developing and

implementing sound management practices, has developed partnerships and cooperative agreements for technical assistance in managing its natural resources.

Stakeholders are those organizations or individuals who have a vested interest in land management on the NASWF Complex. Stakeholders include the FWC, FDEP (including the Blackwater River State Park), FFS, Blackwater River State Forest, Alabama Department of Conservation and Natural Resources, West Florida Regional Planning Council, Santa Rosa and Escambia Counties, the City of Milton, Baldwin and Conecuh counties, Francis M. Weston Audubon Society, The Nature Conservancy, and Gulf Coast Environmental Defense. Additional guidance may be sought from other agencies such as the Natural Resources Conservation Service (NRCS), the United States Forest Service (USFS), Florida Department of Agriculture and Consumer Services (FDACS), Division of Forestry, and the USFWS. Partnerships, cooperative agreements, and community programs that affect natural resources management within NASWF Complex are discussed below.

- **Gopher Tortoise Candidate Conservation Agreement (GTCCA).** The GTCCA involves 15 federal, state, and private partners who work together to manage the gopher tortoise across the landscape in an effort to recover its population and reestablish its historic distribution.
- **Cooperative Agreement between the Navy, USFWS, FWC, and ADCNR.** In accordance with this agreement, biologists are able to make visits to review fish and wildlife management practices, which also allow them the opportunity to provide written recommendations for future management.
- **Tri-partite agreement between the Navy, NPS, and the Florida Division of Recreation and Parks.** The purpose of this agreement is to provide the Installation with professional and technical information and assistance necessary to coordinate actions pertaining to the operation, development, management, and protection of outdoor recreation resources. Based on this agreement, the National Park Service and the State of Florida will act in an advisory capacity on matters pertaining to the management of outdoor recreation resources on lands administered by the Installation.
- **Cooperative Agreement between the Navy and the Florida Division of Forestry.** This agreement provides for mutual aid in cases of uncontrolled fire occurring on or off the Installation. The NAS Whiting Field NRM, Pensacola Regional NRM, or Fire Department is responsible for requesting assistance from the state when forest fires occur.
- **SCA Program.** SCA is a non-profit organization that offers two types of expenses-paid volunteer and internship opportunities which are available year round to government agencies for support in natural resources. Resources Assistants (RAs), which generally are 12 to 16 weeks in length, and CAs, which are 6 months to one year long (26 to 52 weeks), also can receive Segal AmeriCorps Education Awards. All conservation interns receive bi-weekly allowances for living expenses. All interns also receive free housing, a travel grant, and accident insurance. CAs get full medical coverage. SCA programs are tuition free and may serve as an academic requirement.
- **Tree City USA Program.** This program is administered by the National Arbor Day Foundation in cooperation with the USFS and the National Association of State Foresters. The purpose of this program is to promote effective management of public

urban forest resources. NASWF has been recognized as a Tree City USA Program since 1995 for its effective management.

- **Scouts.** Scouting programs have used areas at the NASWF Complex in the past; however, there is no present use agreement.
- **Longleaf Alliance.** The NASWF Complex is a member of the Longleaf Alliance. The Longleaf Alliance is a partnership of private landowners, forest industries, state and federal agencies, conservation groups, university researchers, outreach personnel, and others interested in promoting a region-wide recovery of longleaf pine forests for their ecological and economic benefits. The Longleaf Alliance helps facilitate communication among research institutions and between researchers and managers. It also builds networks between landowners, managers, consultants, industries, researchers, and longleaf proponents.
- **Gulf Coastal Plain Ecosystem Partnership (GCPEP).** The NASWF Complex is a member of GCPEP. GCPEP is a voluntary landowner collaborative effort of TNC, Eglin Air Force Base, International Paper, Blackwater River State Forest, the Northwest Florida Water Management District (NFWFMD), and National Forests in Florida and Alabama. The partners, managing more than 845,000 acres, share resources and expertise in carrying out management activities, such as endangered species management and recovery, prescribed burning, and conducting watershed restoration projects.
- **NAS Whiting Field and US Forest Service Prescribed Fire Training Center.** The NASWF Complex executes this partnership through the NAS Pensacola Complex. This multi-year agreement allows for cooperative work and training for prescribed fire management between the Navy and Us Forest Service.
- **NAS Whiting Field and GCPEP.** This multi-year agreement allows for cooperative ecosystem management and natural resources work in the GCPEP partnership area.
- **NAS Whiting Field and the Six Rivers Cooperative Invasive Species Management Area (CISMA).** This multi-year agreement allows for cooperative work and training for invasive species management.

### 3.5 PUBLIC ACCESS AND OUTREACH

The Morale, Welfare, and Recreation Division (MWR) promotes and maintains the morale and welfare of military personnel and their dependents, both active and retired, in addition to DOD civilians when possible. This is accomplished through the programming and operation of recreation and club facilities. Opportunities for outdoor recreation at the NASWF Complex primarily occur at NAS Whiting Field, Whiting Park, and NOLF Barin. The MWR maintains outdoor recreational programs and facilities such as the marinas, picnic pavilions, campgrounds, hiking trails, and beaches. The NRM reviews and provides natural resources recommendations and guidance for all new projects proposed by MWR.

Access to natural resources management areas generally is limited to active duty and reserve military personnel assigned to the Installation, their dependents and accompanied guests, federal and civilian employees, their dependents and accompanied guests, and military retirees. The general public is allowed access to the Clear Creek Nature Trail and the Military Heritage Trail on

a reservation basis. There is limited access to Whiting Park and the NOLFs. Public access to additional areas at NAS Whiting Field and the NOLFs may be granted for outdoor events on a reservation basis. For example, special interest groups (i.e., model airplane clubs, scout troops) sometimes use areas at NAS Whiting Field or the NOLFs through special license/use agreements with NAS Whiting Field.

Access should also be considered in terms of accessibility of facilities and programs for the physically challenged. The Architectural Barriers Act of 1968 (Public Law 90-480) requires facilities to be accessible to the physically challenged. Section 504 of the Rehabilitation Act of 1973, as amended (Public Law 93-112), prohibits discrimination on the basis of handicap in program participation and in all facets of employment. The Americans with Disabilities Act of 1990 (Public Law 101-336) provides standards for addressing discrimination against individuals with disabilities in employment, transportation, telecommunications, public accommodations, and services operated by private entities. Military installations, including the dependents and civilians employed, are not exempt from these laws.

Outdoor recreational opportunities available at the NASWF Complex have been further discussed in Section 2.4.

### **3.6 ENCROACHMENT PARTNERING**

Encroachment is any issue external to military operations that inhibits, curtails, or has the potential to impede the performance of the military mission. Continued growth in the western Florida panhandle and coastal counties of Alabama has added to the encroachment concerns at the NASWF Complex and can limit operational capability. Complaints about noise, dust, and smoke from aircraft and vehicles can force the curtailment of certain types of training and available hours. As development destroys or displaces native species of plants and animals, military posts become their refuge. This, too, can restrict the military mission and so it is in the DoD's interest to help protect habitat, wildlife corridors, biodiversity, ecosystems, and water quality off base, and help educate local governments and communities about the need for ecosystem protection and management.

Santa Rosa and Escambia Counties have passed Airport/Airfield Environs Overlay ordinances that require all development within the NASWF Complex's Accident Potential Zones (APZs) and Noise Zones to be submitted to the NASWF Complex for review. The GIS department in each county maintains searchable, interactive online mapping programs that include these areas. The NASWF Complex hosts an Air Installations Compatible Use Zones (AICUZ) website that includes

basic information about military noise and operations at the Complex. The website also posts a Noise Hotline phone number to contact the Complex directly with questions or complaints.

Both counties have also completed joint land use studies (JLUSs) and developed comprehensive plans to set community goals and objectives, create frameworks for actions to implement JLUS recommendations, and lay the legal groundwork for any newly-adopted tools. The JLUS recommends objectives to ensure Naval aviation facilities development is compatible with policies of the comprehensive plans. The following elements are emphasized:

- Protection of the public health, safety, and welfare as the primary objective of land use planning around the airfields
- Mandatory referral to the local Naval installation commander of all development applications filed within the Airfield Influence Planning Districts for the Navy's review and comment
- Use of Airfield Influence Planning Districts around the airfields to promote an orderly transition and rational organization of land uses, protect the health, safety and welfare of the public, and maintain military missions
- General revisions of existing policy text to include reference to Airfield influence Planning Districts (current policies refer more narrowly to the existing AICUZ)
- Implementation of the JLUS as a guide for land use decisions and promotion of land use compatibility
- Coordination with Escambia County Utilities Authority, Florida Department of Transportation, and other utilities to review the possible growth-inducing impacts of service extension into the Airfield Influence Planning Districts
- General goals for the future acquisition of land, including the ability to achieve the complementary goals of encroachment reduction, environmental protection and open space (or agricultural) preservation
- Reference to any other new tools used to promote compatibility, such as transfer of development rights As a related measure, the county may also revise the future land use map to identify compatible land use categories (very low density residential, open space and recreation, and some commercial and industrial uses) for parcels within the Airfield Influence Planning Districts.

The NASWF Complex is a member of the Gulf Coastal Plain Ecosystem Partnership (GCPEP), which was formed in 1996 and now covers more than one million acres in northwest Florida and south Alabama. The GCPEP is working to increase buffers around military installations, improve biodiversity management, and assure green space and recreation opportunities for the region. Partners include Eglin Air Force Base, NAS Pensacola, Nokuse Plantation, Gulf Power, The Nature Conservancy, Florida Division of Forestry, FDEP, FWC, Northwest Florida Water Management District, USDA Forest Service, Conecuh National Forest, and the Gulf Islands National Seashore.

NAS Whiting Field, NOLF Santa Rosa, and NOLF Harold are in the vicinity of the Blackwater River State Forest. This state forest is the largest in Florida and encompasses approximately 189,594 acres of various natural communities in the northern portions of Santa Rosa and Okaloosa Counties. The forest borders Conecuh National Forest to the north and extends southward toward Eglin Air Force Base. The largest remaining fragment of longleaf pine/wiregrass ecosystem in the world is partially located in this state forest. Stream systems flowing through the forest include the Blackwater River, Juniper Creek, Coldwater Creek, and Sweetwater Creek. The forest is managed by the Florida Division of Forestry. Within the southwestern portion of the forest is the Blackwater River State Park. The 590-acre park, located off of US 90 and just north of NOLF Harold, is managed by FDEP.

The Yellow River Marsh Aquatic Preserve is located in Santa Rosa County south of NOLF Santa Rosa. The preserve includes a large portion of the Yellow River. Over 8,000 acres of salt and freshwater marshes and forested wetlands are included in the preserve. The primary purpose of the Yellow River Marsh Aquatic Preserve is to protect the area's biological resources and maintain them in a natural condition. The preserve is an important component of the Pensacola Bay System, and it has been the least impacted by pollution and development. FDEP manages the preserve.

### **3.7 FLORIDA AND ALABAMA'S STATE WILDLIFE ACTION PLANS**

The U.S. Congress mandated each state to develop a comprehensive wildlife conservation plan. Each plan was required to include the species and habitats to be conserved, the conservation actions proposed, procedures to review the plan, and coordination with the public and other agencies. Florida and Alabama completed their respective State Wildlife Action Plans in 2005 in response to this mandate. The Action Plans provide list of 974 Species of Greatest Conservation Need (SGCN) in Florida and 314 SGCN in Alabama, and report the status and trends of each species. The Action Plans also contains detailed conservation information about specific habitats in each state; there are 45 habitat categories in Florida and 15 habitats categories and 15 river basins in Alabama. Texts of the entire Action Plans can be downloaded at <http://myfwc.com/conservation/special-initiatives/fwli/action-plan/download/> for Florida and [http://www.wildlifeactionplan.org/pdfs/action\\_plans/al\\_action\\_plan.pdf](http://www.wildlifeactionplan.org/pdfs/action_plans/al_action_plan.pdf) for Alabama.

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## Natural Resources Goals, Objectives, and Strategies

This section presents the goals, objectives, and strategies for natural resources management at the NASWF Complex over the next 10-year period (2012-2021) and reviewed annually.

Five goals have been identified for the NASWF Complex:

- Goal 1 Protect and maintain natural resources within the NASWF Complex by continuing and enhancing ecologically appropriate and beneficial land uses and management practices, while ensuring the continuation of the military mission.
- Goal 2 Protect and enhance forest resources by practicing ecologically sound forest management leading to sustained yield of quality forest products, watershed protection, and wildlife habitat.
- Goal 3 Protect, maintain, and restore native vegetative communities and plant and wildlife populations, while improving the quality of life and ensuring continuation of the military mission.
- Goal 4 Provide facilities and develop policies that allow for recreational and educational uses of natural resources, and result in positive effects to these natural resources while improving the quality of life.
- Goal 5 Protect and conserve the ecological value and diversity of natural resources by fostering knowledge of, and participation in, adaptive ecosystem management.

Goal 1 primarily pertains to Land Management issues (see Section 5.1), Goal 2 to Forestry issues (see Section 5.2), Goal 3 to Fish and Wildlife issues (see Section 5.3), Goal 4 to Outdoor Recreation issues (see Section 5.4), and Goal 5 to the general implementation of adaptive ecosystem management. Through these goals, the NASWF Complex will create and maintain a balance between the Complex's natural resources and military operations. To ensure success in achieving these goals at the NASWF Complex, a framework or "road map" of objectives, strategies, projects, and management initiatives is provided in this section. The goals, objectives, strategies, projects, and initiatives are referenced throughout the INRMP where appropriate and relevant.

### **Definitions**

**Goals:** Goals are general expressions of desired future conditions that represent the long-range aim of management. For this INRMP, goals are compatible with the military mission of

the NASWF Complex and provide conservation and ecosystem management targets and direction.

**Issues:** Issues may include the presence, abundance, distribution, function, condition, and sensitivity of a particular natural resources feature, resources-based human function or other attribute on the Installation, or a broader ecological or community setting. Issues may also include the effectiveness or ineffectiveness of existing or past practices regarding management and use of resources on the Installation, and the requirements for regulatory compliance regarding the management and use of these natural resources. Section 5 addresses issues that have been identified to establish objectives for achieving the stated INRMP goals at the NASWF Complex.

**Objectives:** Objectives are defensible targets or specific components of a goal, the achievement of which represent measurable progress toward that goal. Objectives help focus management activities and provide a yardstick against which to evaluate and communicate results. One or more objectives may be identified for successfully achieving a particular goal.

**Strategies:** Strategies establish the approach and expected end result for the actions that are necessary to accomplish stated objectives. One or more strategies may be identified for accomplishing a particular objective. Strategies define certain actions to be taken by the DoN, such as the completion of specific projects and the implementation of other management initiatives at the NASWF Complex. Strategies usually specify timeframes for completion of various actions.

**Projects:** Projects are discrete actions for fulfilling a particular strategy. Projects may be required to fulfill obligations by the NASWF Complex in meeting regulatory requirements regarding natural resources management, or may enhance existing measures for ensuring compliance. Other projects are not compliance-driven, but may allow for more effective and efficient management of natural resources and provide for sound natural resources stewardship. Projects require labor resources and funding in addition to the day-to-day requirements of the Installation.

**Initiatives:** Initiatives are fundamental, non-measurable actions necessary for successful implementation of a strategy. Some strategies identify the need for incorporating sound natural resources management principles into the day-to-day decision-making process, and other actions of the various departments at the NASWF Complex. These types of initiatives typically strive to elevate awareness throughout the organization, avoid potentially reactive approaches to natural resources issues, and facilitate a proactive approach to addressing natural resources within the mission of the Installations. Initiatives attempt to solve problems that preclude meeting specific strategies.



**Goal 1: Protect and maintain natural resources within the NASWF Complex by continuing and enhancing ecologically appropriate and beneficial land uses and management practices, while ensuring the continuation of the military mission.**

**Issue:** As development and training activities have a significant potential to affect land area at the NASWF Complex, land management decisions and practices will become increasingly important aspects of ecosystem management. The use and management of lands for military mission needs, and the decision-making process regarding such land use, directly affects the sustainability of the ecosystem. Specific components of land management include wetlands (Section 5.1.1); noxious, invasive, and exotic species (Section 5.1.2); soil conservation and erosion control (Section 5.1.3); stormwater and water quality control (Section 5.1.4); landscaping and grounds maintenance (Section 5.1.5); floodplain management (Section 5.1.6); urban forestry (Section 5.1.7); and agricultural outleasing (Section 5.1.8). To protect and maintain natural resources while ensuring the continuation of the military mission, the NASWF Complex will implement practices to meet the following objectives:

**Objective 1.1: Continue existing, and establish new programs and procedures to monitor, maintain, and enhance wetlands and water quality;**

**Objective 1.2: Reduce and control noxious, invasive, and exotic species;**

**Objective 1.3: Maintain the attenuation capacity of the remaining undisturbed acreage within the 100-year floodplain;**

**Objective 1.4: Ensure that land management and land use decisions comply with all applicable laws, executive orders, regulations, directives, and instructions, and that adverse impacts to the natural environment are minimized;**

**Objective 1.5: Implement environmentally beneficial landscaping, grounds maintenance, and urban forestry practices.**

**Objective 1.1: Continue existing, and establish new programs and procedures to monitor, maintain, and enhance wetlands and water quality.**

Wetland and water quality may be improved through the proper management of stormwater runoff, soil erosion, and pesticide and fertilizer use at the NASWF Complex. The following strategies were developed to accomplish Objective 1.1. Projects and initiatives pertaining to each strategy are also listed.

**Strategy 1.1.1:** The NASWF Complex will continue to evaluate its stormwater management program and activities contributing to stormwater runoff and/or pollutant loading in stormwater runoff, and to implement Best Management Practices (BMPs) to minimize stormwater pollution (FDEP 2008; NASWF 2013).

**Projects:** Project No. 1 – Wetlands Protection; see Appendix A.  
Project No. 8 – Timber Stand Improvement; see Appendix A.

**Initiatives:** (1) Continue to fully implement the SWPPP (NASWF 2013), which covers NAS Whiting Field. The Stormwater P2 Team is responsible for implementation of the plan.

- (2) Continue to assess the adequacy of the SWPPP and conduct annual updates and re-certifications of the SWPPP.
- (3) Consider the application of the SWPPP or selected components of the plan to the NOLFs in the Complex.
- (4) Consistent with the SWPPP, the Complex will implement structural design and construction BMPs, such as lining swales with rip-rap, constructing material storage area covers or material storage sheds, installing filters in catch basins, constructing wetlands for water filtration, and installing oil/water separators. Although the SWPPP does not currently cover the NOLFs, the use of structural BMPs will be employed Complex-wide as needed.
- (5) Create a GIS layer showing watershed boundaries, water bodies and watercourses, stormwater piping schematics, IR Program sites, and other sources of pollution.
- (6) The Environmental Division will review stormwater discharges into wetlands and water bodies to address the protection of water quality and ensure that:
  - stormwater runoff is subjected to BMPs prior to discharging into wetlands and water bodies (FDEP 2008; NASWF 2013). BMPs shall prevent or reduce the amount of pollution in water to a level compatible with Florida Surface Water Quality Standards;
  - stormwater discharge onto the Complex from external sources does not adversely impact water quality on the Complex (consult FDEP and appropriate counties in the event that incoming water does not meet Florida Surface Water Quality Standards);
  - no activities on the Complex result in violation of state water quality standards associated with the siltation of wetlands, or reduction in the natural retention or filtering capability of wetlands;
  - adequate soil erosion measures are implemented. Cross Reference: Strategy 1.1.2; and
  - no site activities allow water to become a health hazard or contribute to the breeding of mosquitoes.
- (7) Manage stormwater runoff from new development to achieve no net increase in stormwater discharge volume from the Complex, unless there are no means to do so that will meet the military mission.
- (8) Provide stormwater retention by developing and enhancing stormwater ponds. Stormwater ponds often function as wetlands and can provide ideal growing conditions for emergent wetland vegetation that may be useful in pollutant removal.
- (9) Consider, where feasible, retrofitting stormwater infrastructure to provide natural infiltration of stormwater (e.g., grass swales), or to increase detention time prior to discharge.
- (10) Use natural or created buffers around new stormwater ponds to provide wildlife habitat, filter sediments and sediment-bound pollutants, and facilitate infiltration prior to discharge into water bodies.

- (11) Where feasible, the Complex will use permeable alternatives to impervious surfaces; for example, using wood decks instead of concrete patios, grass swales instead of concrete.

**Strategy 1.1.2:** The NASWF Complex will continue to develop a soil erosion control plan (or a working list), and will reduce the rate of soil erosion through the implementation of long-term measures and projects.

**Project:** Project No. 6 – Reforestation; see Appendix A.  
Project No. 8 – Timber Stand Improvement; see Appendix A.  
Project No. 9 – Construction and Maintenance of Forest Roads; see Appendix A.

- Initiatives:**
- (1) Determine areas where soil type presents a threat of erosion. Cross Reference: Strategy 5.2.3 (GIS maps).
  - (2) Continue the use of BMPs to prevent soil erosion (FDACS 2003; FDOT and FDEP 2007; FDEP 2008; NASWF 2013), and implement the six soil conservation principles described in Section 5.1.3.
    - It will be the responsibility of a Natural Resources Program representative to work with facility and environmental personnel to ensure implementation of soil erosion control measures.
  - (3) Resolve existing erosion problems at NAS Whiting Field (approach to Runway 05/23 at South Field, and North Field retention pond dam) and NOLF Silverhill (drainage ditch). Undertake joint effort with adjacent landowner to prevent erosion into Clear Creek.
  - (4) Train and educate all contract and department personnel on actions that may directly or indirectly contribute to soil erosion problems and measures that can be employed to avoid or lessen soil erosion. Cross Reference: Strategy 5.3.1.
    - Consult with soil conservation experts from NAVFAC SE, as well as with the USDA NRCS on training program development. Cross Reference: Section 5.1.3 - Additional Sources of Information.

**Strategy 1.1.3:** The NASWF Complex will continue to inventory its use of pesticides and fertilizers to assess alternatives to their use and a reduction in pesticide and fertilizer use. The intent is to protect water quality by reducing the quantity of chemical pesticides and fertilizers used. Continue to use Integrated Pest Management (IPM) techniques in pest management programs and emphasize the use of pesticides with low toxicity and low application rates; and

**Projects:** Project No. 8 – Timber Stand Improvement; see Appendix A.

- Initiatives:**
- (1) Inventory current pesticide and fertilizer use and consult NAVFAC SE's Applied Biology Department (ABD) and the FDACS Pesticide Division for means of reduction.
  - (2) Continue to use Integrated Pest Management (IPM) techniques. Consider non-pesticide removal methods, or removal using pesticides with low toxicity and low application rates. Cross

References: Strategy 2.1.1, Objective 1.2, and Sections 5.1.2 and 5.1.5 - Additional Sources of Information.

- (3) Ensure that contractors, grounds maintenance, natural resources, and other appropriate personnel receive education on the use of pesticides and fertilizers, and verify that they understand the procedures they are permitted to perform (and/or require certification).
- (4) Consult with foresters, fish and wildlife biologists, and soil conservationists from NAVFAC SE, as well as with federal, state, and county wildlife biologists, foresters, and land managers.

**Strategy 1.1.4:** The NASWF Complex will inventory wetlands and assess their function and quality on a routine basis (approximately every 5 to 10 years), establish protective buffers for wetlands where feasible, and promote land use and land management practices that will not adversely affect wetland resources.

**Projects:** Project No. 1 – Wetlands Management; see Appendix A.  
Project No. 4 – Endangered Species Habitat Management at NOLF Holley; see Appendix A.

- Initiatives:**
- (1) Monitor the quality and function of wetlands using the Wetlands Rapid Assessment Program (WRAP) developed by the South Florida Water Management District, and establish a baseline from which to evaluate no net loss of wetlands. Cross Reference: Section 5.1.1 – Additional Sources of Information.
  - (2) Continue to implement management practices (e.g., prescribed burning) to enhance wetland habitat, where appropriate (see Section 5.3.2).
  - (3) Where feasible, establish and maintain 50-foot vegetative buffers around all wetlands.
    - Inventory wetlands to identify areas with insufficient or inadequate buffering. List areas having insufficient or inadequate buffering, as identified by the survey, as projects in subsequent INRMP updates.
    - Encourage the use of volunteers (e.g., Scout troops, SCA) to improve buffers of native vegetation.
    - Use native species and xeriscaping principles when creating buffers. Cross Reference: Section 5.1.5 - Additional Sources of Information (for xeriscaping).
  - (4) Create a GIS layer for wetland quality. (Location of wetlands will be digitized under Project No. 1, Wetlands Protection.)
  - (5) Avoid impacts to wetlands, unless essential to the military mission.
  - (6) Plan for mitigation if wetlands need to be adversely impacted.

**Strategy 1.1.5:** Continue using BMPs for forest management activities, and ensure that they are used in agricultural outleasing activities, to ensure watershed protection.

- Projects:**
- Project No. 5 – Agricultural Outleasing; see Appendix A.
  - Project No. 7 – Forest Product Sales; see Appendix A.
  - Project No. 8 – Timber Stand Improvement; see Appendix A.
  - Project No. 9 – Construction and Maintenance of Forest Roads; see Appendix A.
  - Project No. 10 – Fire Management; see Appendix A.

- Initiatives:**
- (1) Consult with foresters and soil conservationists from NAVFAC SE, as well as with federal, state and county foresters, soil scientists, and land managers.
  - (2) Cross References: Strategies 1.1.2 (1), (2), and (4).

**Objective 1.2: Reduce and control noxious, invasive, and exotic species.**

This objective will ensure that noxious, invasive, and exotic species do not interfere with military and recreational activities or the quality and functions of wildlife habitats, forests, wetlands, or other resources. The following strategies have been developed to address noxious, invasive, and exotic species. Projects and initiatives pertaining to each strategy are also listed.

**Strategy 1.2.1:** The NASWF Complex continues its active implementation strategy for the removal of noxious, invasive, and exotic plant species. The station began control work for invasive and exotic species in 2006.

**Project:** Project No. 2 – Invasive Plant Control; see Appendix A.

- Initiatives:**
- (1) Develop a noxious, invasive, and exotic species management strategy that involves a survey of the NASWF Complex to determine: extent of exotic and invasive species; species priority for control efforts; removal methods, including time of year for removal; and pesticide application rates.
    - Consult NAVFAC SE's ABD and the FDACS Pesticide Division to determine recommended removal methods. Consider non-pesticide removal methods and removal using pesticides with lower toxicity and applied at reduced rates. Cross Reference: Strategy 1.1.3 and Section 5.1.2 - Additional Sources of Information for noxious, invasive, and exotic species control.
    - Consult with foresters and fish and wildlife biologists from NAVFAC SE, as well as with federal, state, and county wildlife biologists, foresters, and land managers, for identification of noxious, invasive, and exotic species, and for appropriate measures to protect fish and wildlife. Cross Reference: Section 5.1.2 - Additional Sources of Information for noxious, invasive, and exotic species control.
  - (2) Identify individuals or groups that could contribute to the removal effort.
    - NASWF Complex natural resources staff members.
    - Contractor and installation personnel. Cross Reference: Strategy 5.3.1.

- Volunteer groups (e.g., Scout troops, SCA) during non-chemical control portions of the work. Cross Reference: Strategy 5.3.2.
  - Special Interest Groups (i.e., TNC and Six Rivers CISMA).
- (3) Ensure adequate training of removal teams. Cross Reference: Strategy 5.1.2.
  - (4) Maintain a program for the eradication and control of noxious, invasive, and exotic plant species and prohibit the planting of such species as part of the Complex's Grounds and Surfaced Area Maintenance Plan. Develop a monitoring and removal program for problem areas. The NRM will review and monitor landscape materials used for new as well as renovation landscaping projects. Cross Reference: Section 5.1.2 – Laws, Executive Orders, Regulations, Directives, and Memoranda Relevant to Invasive Species.

**Objective 1.3: Maintain the attenuation capacity of the remaining undisturbed acreage within the 100-year floodplain.**

Floodplains provide many important functions, such as the temporary storage of floodwaters, moderation of peak flows, maintenance of water quality, and provision of habitat for wildlife. On the NASWF Complex, only three areas or portions thereof (i.e., Whiting Park, NOLF Evergreen, and NOLF Barin) are within the 100-year floodplain. The following strategies have been developed to address development of, and impacts to, the 100-year floodplain.

**Strategy 1.3.1:** The NASWF Complex will continue to review and monitor proposed activities to avoid impacts to the attenuation capacity of the 100-year floodplain. If it is determined that development is necessary within the 100-year floodplain to support the military mission, development shall first be located in the previously disturbed areas of the floodplain.

**Projects:** Project No. 1 – Wetlands Management; see Appendix A.

- Initiatives:**
- (1) It will be the responsibility of a Natural Resources Program representative to work with Public Works and environmental personnel to ensure implementation of the floodplain management strategy. Cross Reference: Strategy 5.2.3.
  - (2) Map undisturbed and disturbed areas of the 100-year floodplain for use in the decision-making process. Cross Reference: Strategy 5.2.3.
  - (3) Where there is no practical alternative to development within the 100-year floodplain, construction methods should be such that damage will be minimized in the event of flooding. The Complex will use the county's floodplain ordinances and building codes as guidance for development in the floodplain.
  - (4) Retain the natural attenuation and filtering capacity of wetlands within the 100-year floodplain.
    - Ensure no net loss of wetlands. Cross Reference: Strategies 1.1.4 (1) and (4).
    - Ensure adequate buffers around wetland areas to maintain wetland attenuation capacity. Cross Reference: Strategy 1.1.4.

**Objective 1.4: Ensure that land management and land use decisions comply with all applicable laws, executive orders, regulations, directives, and instructions, and that adverse impacts to the natural environment are minimized.**

This objective may be accomplished through appropriate and careful site selection and development to avoid or minimize impacts associated with the placement of human-made linear and nonlinear features and structures. The arbitrary location of such features may undermine ecological processes by separating and isolating plant and wildlife populations, which can render the fragmented parcels unsuitable for wildlife. An arbitrary method of locating features also increases costs associated with daily land management practices and infrastructure improvements. The following strategy has been developed to accomplish Objective 1.4.

**Strategy 1.4.1:** The NASWF Complex will ensure implementation of policies that minimize adverse impacts to ecosystem resources from land disturbance activities (e.g., construction, clearing, and training).

**Projects:** Project No. 1 – Wetlands Protection; see Appendix A.  
Project No. 2 – Noxious, Invasive, and Exotic Plant Species Control; see Appendix A.  
Project No. 8 – Timber Stand Improvement; see Appendix A.  
Project No. 9 – Construction and Maintenance of Forest Roads; see Appendix A.  
Project No. 11 – Update Biological Inventory; see Appendix A.

**Initiatives:** (1) The Site Plan Activity Guidelines in Section 5.5 will be followed to minimize and avoid adverse impacts to resources.  
(2) It will be the primary responsibility of the NRM to work with Public Works and Environmental personnel to ensure the use of site selection and site plan development criteria to minimize impacts to environmental and ecological resources.  
(3) Natural resources maps will be used as a tool for minimizing impacts.  
Cross References: Strategy 5.2.3 and Project No. 16 – Habitat Mapping and Endangered Species Surveys.

**Objective 1.5: Implement environmentally beneficial landscaping, grounds maintenance, and urban forestry practices.**

By using native species and xeriscaping concepts, the Navy will reduce the need for irrigation, pesticides, and fertilizers. In addition, urban forests provide numerous quality of life benefits to both humans and wildlife (see Section 5.1.7). The following strategies were developed to accomplish Objective 1.5.

**Strategy 1.5.1:** The NASWF Complex will continue to implement general landscape management practices consistent with the concepts presented in this INRMP.

**Projects:** Project No. 2 – Invasive Plant Control; see Appendix A.

**Initiatives:** (1) Educate grounds maintenance planning personnel on the principles of landscaping discussed in this INRMP (see Section 5.1.5). The NRM will review grounds maintenance plans, as needed. Cross Reference: Strategy 5.3.1.

(2) Evaluate the use of combined organic and mineral fertilizers. Slow release fertilizers will be preferred over other mineral fertilizers.

**Strategy 1.5.2:** The NASWF Complex will continue to apply xeriscaping principles using native species for new landscaping, and will phase in these principles for existing landscapes.

**Projects:** Project No. 2 – Invasive Plant Control; see Appendix A.

**Initiatives:** (1) Educate grounds maintenance personnel on the principles of xeriscaping. Cross References: Strategy 5.3.1 and Section 5.1.5.

(2) Use volunteer groups and/or interested Complex personnel to assist in plantings.

(3) Integrate the concept of xeriscaping into grounds maintenance plans (contracted maintenance and golf course maintenance). Cross Reference: Section 5.1.5.

(4) Develop a xeriscaping program; enlist the services of foresters, fish and wildlife biologists, and soil conservationists at NAVFAC SE, as well as federal, state, and county wildlife biologists, foresters, and land managers. Cross Reference: Section 5.1.5 - Additional Sources of Information (for xeriscaping).

(5) Remove noxious, invasive, and exotic plant species from existing landscape plantings as the opportunity avails itself. Cross Reference: Strategy 1.2.1.

**Strategy 1.5.3:** The NASWF Complex will continue to follow its working Urban Forestry Plan and implement projects to enhance wildlife habitat and aesthetics in developed areas.

**Projects:** None.

**Initiatives:** (1) Consider producing a multi-year Urban Forestry Plan for use and distribution.

(2) Use volunteers (e.g., Scout troops, SCA) for planting. Cross Reference: Strategy 5.3.2 (1).

(3) Train and educate grounds maintenance personnel on the principles of urban forestry management.

(4) Ensure that public works personnel coordinate installation planning, construction, and maintenance with the natural resources program to ensure a positive effect on urban forests. Construction and facility managers shall coordinate with the natural resources program concerning replacement of trees removed for any reason, except due to natural causes.



- (5) Ensure that the Urban Forestry Management Program conforms to technical and professional recommendations, as provided by NAVFAC SE or cooperating agencies.
- (6) Observe the first week of December as "Tree Awareness Week," and conduct educational programs and tree planting projects.

**Goal 2: Protect and enhance forest resources by practicing ecologically sound forest management leading to Sustained yield of quality forest products, watershed protection, and wildlife habitat.**

**Issue:** The NASWF Complex manages approximately 2,351 acres of commercial forestland. Ecologically sound stewardship involves managing forestland for various components, including forest products (i.e., timber), wildlife habitat, aesthetics, and recreation. Components of the annual work plan generally include firebreak management, prescribed burning, timber sales, timber inventory, site preparation, reforestation, forest roadwork, and equipment operation and maintenance. To protect and enhance forest resources, the Complex will implement programs to address the following objectives:

**Objective 2.1: Practice the ecosystem management concept for sustained yield of forest products and forest health;**

**Objective 2.2: Manage forests in an ecologically sound way to provide habitat for wildlife; and**

**Objective 2.3: Manage forest stands for watershed protection.**

**Objective 2.1: Practice the ecosystem management concept for sustained yield of forest products and forest health.**

Sustained yield is the management of forest resources for continuous production, with the aim of achieving an approximate balance between net growth and harvest. Healthy forests may be maintained through silvicultural activities (see Section 5.2.1). Silvicultural activities that will be undertaken at the NASWF Complex include harvesting, herbicide applications, and prescribed burns. The following strategies were developed to accomplish Objective 2.1.

**Strategy 2.1.1:** Continue managing forest stands through harvesting, herbicide applications, and prescribed burns as outlined in the Forest Management Plan (see Appendix B).

**Projects:**

- Project No. 6 – Reforestation; see Appendix A.
- Project No. 7 – Forest Product Sales; see Appendix A.
- Project No. 8 – Timber Stand Improvement; see Appendix A.
- Project No. 10 – Fire Management; see Appendix A.
- Project No. 12 – Gopher Tortoise Biological Monitoring; see Appendix A.

**Initiatives:**

- (1) Sell timber and other forest products, to be removed, to private logging contractors using competitive timber sales contracts.
- (2) Complete Society of American Foresters certification for all staff foresters.

- (3) Identify certified prescribed burn training programs. Ensure that the program and its duration are compatible with the timeframe of the implementation strategy.
  - Training will be conducted through Florida's Interagency Prescribed Fire Course administered through Hillsborough Community College. This course is offered at various locations throughout the state, but requires the participant to complete three supervised prescribed burns to become a Certified Burn Manager.
- (4) Identify training programs for Federal Wildland Firefighting and complete S-130 and S-190 federal wildland fire training courses, at a minimum.
- (5) Consult with foresters from NAVFAC SE, as well as state and federal foresters.

**Strategy 2.1.2:** The NASWF Complex will continue to support the training and certification of one individual in prescribed burn management, in addition to the Regional Forester.

**Projects:** None.

**Initiatives:** Cross References: Strategies 2.1.1 (2) and (3).

**Strategy 2.1.3:** Perpetuate the prevailing pine forest while giving equal emphasis to hardwoods in those areas best suited to such species.

**Projects:** Project No. 3 - Longleaf Alliance and Gulf Coastal Plain Ecosystem Partnership; see Appendix A.  
Project No. 6 – Reforestation; see Appendix A.  
Project No. 7 – Forest Product Sales; see Appendix A.  
Project No. 8 – Timber Stand Improvement; see Appendix A.  
Project No. 10 – Fire Management; see Appendix A.

**Initiatives:** (1) Update FMIS regularly.  
(2) Monitor for insect/disease outbreaks.  
(3) Monitor noxious, invasive, and exotic weed encroachment, such as kudzu.

**Objective 2.2:** **Manage forests in an ecologically sound manner to provide habitat for wildlife.**

**Strategy 2.2.1:** Continually evaluate forest management practices and their effects on ecosystems and wildlife habitat, and continue programs to protect rare, threatened, and endangered plant and animal species.

**Projects:** Project No. 7 – Forest Product Sales; see Appendix A.  
Project No. 10 – Fire Management; see Appendix A.  
Project No. 11 – Update Biological Inventory; see Appendix A.  
Project No. 12 – Gopher Tortoise Biological Monitoring; see Appendix A.

Project No. 14 – Endangered Species Habitat Conservation; see Appendix A.

- Initiatives:**
- (1) Review management recommendations outlined in the rare plant, rare vertebrate, and natural community surveys conducted in 1997 by FNAI (see Section 5.3.2).
  - (2) Seek additional management guidance and management recommendations from foresters, fish and wildlife biologists, and soil conservationists from Southern Division's LMD, as well as federal, state, and county wildlife biologists, foresters, and land managers.

**Objective 2.3: Manage forest stands for watershed protection.**

**Strategy 2.3.1:** Cross Reference: Strategy 1.1.5.

- Projects:**
- Project No. 7 – Forest Product Sales; see Appendix A.
  - Project No. 8 – Timber Stand Improvement; see Appendix A.
  - Project No. 10 – Fire Management; see Appendix A.

**Initiatives:** Cross Reference: Strategy 1.1.4.

**Goal 3: Protect, maintain, and restore native communities for plant and animal life, while improving the quality of life and ensuring the continuation of the military mission.**

**Issue:** The biological environment of the NASWF Complex and surrounding area was considerably different prior to colonization and development. Historically, the area was dominated by natural communities that today are found scattered throughout the Complex. Areas representing the following communities remain in relatively small patches within the Complex: floodplain swamp, sandhill, baygall, seepage stream, depression marsh, dome swamp, wet prairie, mesic flatwood, wet flatwood, and bottomland forest (see Section 3.7.1). These remaining natural communities provide good quality habitat for both plant and animal life and will be protected and enhanced.

Occasionally, nuisance wildlife species (e.g., rodents and some birds) become overpopulated or congregate in areas creating a threat to human health and/or the military mission. In such cases, these wildlife species must be controlled to prevent problems. To protect, maintain, and restore native communities for plant and animal life, while preventing nuisance wildlife from negatively impacting quality of life and the military mission, the NASWF Complex will implement programs to address the following objectives:

**Objective 3.1: Maintain the ecological integrity of wetland and upland communities for the protection of native plant and animal species, including federally-listed and state-listed species.**

**Objective 3.2: Preserve and protect threatened and endangered species and species of special concern to ensure no reduction in population sizes.**

**Objective 3.3: Control nuisance wildlife and wildlife diseases that may adversely affect human health and welfare, the health of the ecosystem, and the military mission.**

**Objective 3.1:** **Maintain the ecological integrity of wetland and upland communities for the protection of native plant and animal species, including numerous federally and state listed species.**

**Strategy 3.1.1:** The NASWF Complex will continue existing efforts, and further, establish a program/plan using prescribed burns and/or thinning to improve habitat quality, reduce the potential for wildfires, control diseases and insect pests, and ensure the continuation of fire-dependent plant communities.

**Projects:** Project No. 10 – Fire Management; see Appendix A.  
Project No. 14 – Endangered Species Habitat Conservation; see Appendix A.  
Project No. 3 – Retain membership with the Longleaf Alliance and Gulf Coastal Plain Ecosystem Partnership; See Appendix A.  
Project No. 4 – Endangered Species Habitat Management at NOLF Holley; See Appendix A.

**Initiatives:**

- (1) In consultation with foresters and wildlife biologists from NAVFAC SE, as well as federal, state, and county wildlife biologists and foresters, prepare harvesting and prescribed burn prescriptions using existing data from the FMIS.
  - Develop and implement a prescribed burn regime that will adequately address safety and smoke concerns. Burns will be conducted by trained personnel. The prescribed burn schedule may be adjusted to accommodate fuel-reduction burns and site safety constraints.
- (2) Certify additional personnel in prescribed burning and wildfire fighting. Cross Reference: Strategy 2.1.1 (2).
- (3) Review management recommendations outlined in the rare plant, rare vertebrate, and natural community surveys conducted in 1997 by FNAI (see Section 5.3.2).
- (4) Seek additional management suggestions from foresters, fish and wildlife biologists, and soil conservationists from NAVFAC SE, as well as federal, state, and county wildlife biologists, foresters, and land managers to generate maximum benefits.

**Strategy 3.1.2:** Continue monitoring program for natural communities (as well as rare, threatened and endangered species), and implement programs to enhance natural communities/wildlife habitat.

**Projects:** Project No. 1 – Wetlands Protection; see Appendix A.  
Project No. 2 – Invasive Plant Control; see Appendix A.  
Project No. 6 – Reforestation; see Appendix A.  
Project No. 11 – Update Biological Inventory; see Appendix A.  
Project No. 14 – Endangered Species Habitat Conservation; see Appendix A.

**Initiatives:** Cross References:

- Objective 1.1 – wetland buffers, stormwater runoff, soil erosion, and pesticide and fertilizer use.
- Objective 1.3 – 100-year floodplain.
- Objective 1.4 – land management and land use decisions.
- Objective 1.5 – shoreline protection.
- Objective 1.6 – environmentally beneficial landscaping practices.

**Objective 3.2: Preserve and protect threatened and endangered species and species of special concern to ensure no reduction in population sizes.**

**Strategy 3.2.1:** Continue program to conduct (i.e., update) surveys of rare, threatened, and endangered species every 5 years (next survey scheduled for 2009), and to monitor other rare species as needed. Review FWC Management Recommendations for the Flatwoods Salamander on Holley Naval Outlying Landing Field.

**Projects:** Project No. 11 – Update Biological Inventory; see Appendix A.  
Project No. 12 – Gopher Tortoise Biological Monitoring; see Appendix A.  
Project No. 13 – Neotropical Migratory Bird Survey; see Appendix A.

**Initiatives:** (1) Contract a private firm to conduct the surveys; or  
(2) Develop a team of experts from within the DON with sufficient technical knowledge to conduct the surveys.  
(3) Pursue services provided via cooperative agreements between the NASWF Complex and the USFWS, the FWC, Alabama Department of Conservation and Natural Resources, and TNC.

**Strategy 3.2.2:** The NASWF Complex will continue to implement programs and activities for the protection and enhancement of threatened and endangered plant and animal species and their habitats.

**Projects:** Project No. 1 – Wetlands Protection; see Appendix A.  
Project No. 2 – Invasive Plant Control; see Appendix A.  
Project No. 4 – Endangered Species Habitat Management at NOLF Holley; See Appendix A.  
Project No. 8 – Timber Stand Improvement; see Appendix A.  
Project No. 10 – Fire Management; see Appendix A.

**Initiatives:** (1) Cross References:

- Strategy 1.5.3 – Urban forestry.
- Strategy 2.2.1 – Forest management practices.
- Strategy 3.2.1 – Rare, threatened, and endangered species surveys.
- Strategy 3.3.1 – Wildlife damage and disease control.

(2) The NASWF Complex will use FWC guidelines for the protection of listed species from proposed development or land clearing impacts.

The NASWF Complex will consult with FWC, USFWS, and NAVFAC SE wildlife biologists to implement this initiative.

- (3) Use volunteer assistance (e.g., Scout troops, SCA) for implementation and construction of habitat enhancement projects.
- (4) The NASWF Complex will institute wildlife education and stewardship programs. Cross References:
  - Strategy 5.3.1 – NASWF Complex personnel education and participation.
  - Strategy 5.3.1 – Training for contract and Complex-employed maintenance personnel.
  - Strategy 5.3.2 – Citizen education and participation.

**Objective 3.3: Control nuisance wildlife and wildlife diseases that may adversely affect human health or welfare, the health of the ecosystem, and the military mission.**

**Strategy 3.3.1:** The NASWF Complex will continue to monitor the health and size of animal populations, and control populations as needed.

**Projects:** None.

- Initiatives:**
- (1) Establish an awareness program to educate the public on indicators of wildlife population problems and diseases. Use pamphlets, flyers, and command units to disseminate information. Cross Reference: Strategy 5.3.2.
  - (2) Continue to use IPM techniques in the PMP and emphasize the use of pesticides with low toxicity and low application rates.
  - (3) Repair or re-fence perimeter fences at NOLFs, and develop management strategies for clear zones to keep deer and other animals from interfering with flight operations.

**Strategy 3.3.2:** The NASWF Complex will implement grounds maintenance practices consistent with the BASH Plan. The BASH Plan will be continuously updated and monitored to meet the needs of the Complex.

**Projects:** None.

- Initiatives:**
- (1) Educate grounds maintenance personnel on practices that will minimize BASH-related incidents.
  - (2) Ensure that the grounds maintenance personnel receive a copy of the BASH Plan and are aware of the locations in which to manage in accordance with the plan.
  - (3) Cross References: Strategy 3.3.1 (3) and Strategy 5.2.3.

**Goal 4: Provide facilities and develop policies that allow for recreational and educational uses of natural resources, and result in positive effects to these natural resources while improving the quality of life.**

**Issue:** The SAIA requires that military installations evaluate the potential for providing outdoor recreational resources to the general public. In general, access to the

NASWF Complex for outdoor recreation is limited to active duty and reserve military personnel assigned to work at the installation, their dependents and accompanied guests; federal civilian employees, their dependents and accompanied guests; and military retirees. However, at the NASWF Complex, the general public is allowed access to the Clear Creek Nature Trail, the Military Heritage Trail, and the Sandhill Pine Bike and Hike Trail, located at the main Installation. The CO authorizes access for educational and outdoor natural resource recreational activities consistent with the military mission and security levels. The following objectives were developed to address Goal 4.

**Objective 4.1: Maintain existing and develop additional outdoor recreational trails, interpretive centers, and/or facilities to support present and future natural resources-based outdoor recreation at the NASWF Complex.**

**Objective 4.2: Implement existing and further develop (where needed) natural resources-based outdoor recreation programs to support present and future outdoor recreation at the NASWF Complex.**

**Objective 4.1: Maintain existing and develop additional outdoor recreational trails, interpretive centers, and/or facilities to support present and future natural resources-based outdoor recreation at the NASWF Complex.**

**Strategy 4.1.1:** The NRM will continue updating the baseline information pertaining to present usage of natural resources-based outdoor recreation activities.

**Projects:** Project No. 15 – Recreational Fishing; see Appendix A.

**Initiatives:**

- (1) Monitor existing use of outdoor recreational facilities and trails by placing sign-in sheets at convenient locations.
- (2) Survey base personnel to determine types and locations of desired natural resources-based outdoor recreational activities.

**Strategy 4.1.2:** Continue to develop recreational trails and/or interpretive centers in areas exhibiting unique cultural, natural, historical, or archeological resources.

**Projects:** None.

**Initiatives:**

- (1) Use GIS data coverage's for preliminary site assessments. Cross Reference: Strategy 5.2.3.
- (2) Use volunteers and interested Complex personnel for construction of facilities. Cross Reference: Strategy 5.3.2.
- (3) Identify potential natural resources conflicts that could arise from increased outdoor recreational facilities.
- (4) Investigate facility use agreements with other providers of educational, cultural, and recreational opportunities in the area.
- (5) Review issues that currently affect public access to outdoor recreational resources, and modify access to provide for greater recreational opportunities to the extent possible based on security and mission requirements.
- (6) Identify the types of outdoor recreational and educational opportunities compatible with the NASWF Complex's mission.

**Strategy 4.1.3:** Expand, improve, and provide additional facilities (in addition to trails and interpretive centers, addressed in Strategy 4.1.2) for outdoor recreational opportunities.

**Projects:** Project No. 15 – Recreational Fishing; see Appendix A.

**Initiatives:** (1) Cross References: Section 5.4 – Long-term Management, and Strategy 4.1.2 Initiatives.  
(2) Develop rules and regulations for outdoor recreational activities, and incorporate them into NASWF Complex instructions.

**Objective 4.2:** **Implement existing and further develop (where needed) natural resources-based outdoor recreation programs to support present and future outdoor recreation at the NASWF Complex.**

**Strategy 4.2.1:** The NASWF Complex will continue to ensure distribution and review of the Outdoor Recreation Management Section report, prepared by the National Park Service (in November 1999) for NAS Whiting Field, by all appropriate programs and departments (e.g., MWR). As appropriate, develop report recommendations into projects and activities.

**Projects:** Project No. 15 – Recreational Fishing; see Appendix A.

**Initiatives:** (1) Cross References:  
• Strategy 5.2.2 – Integrate INRMP management concepts.  
• Strategy 5.3.1 – Ecosystem management awareness and training.

**Strategy 4.2.2:** The NASWF Complex will further develop recreational fishing opportunities at the Complex.

**Projects:** Project No. 15– Recreational Fishing; see Appendix A.

**Initiatives:** (1) The NRM will develop a catch and release fishing program at NASWF Complex.  
(2) The NRM will develop a fishing program for children at NASWF Complex.

**Goal 5: Protect and conserve the ecological value and diversity of natural resources by fostering knowledge of, and participation in, adaptive ecosystem management.**

**Issue:** Existing programs and plans for maintaining and managing natural resources within the NASWF Complex consider the inter-relationships among resources on the Complex and in the region, but typically focus on the management of individual resources in accordance with federal and state laws.

Ecosystem management cannot be accomplished solely through the implementation of programs and plans focused on individual resources. A coordinated effort among all programs and personnel, from tenant commands to decision-making authorities, is necessary to protect the interdependent components of communities that define an ecosystem. The coordinated effort will address the consequences of actions on



related resources, and will resolve conflicts between competing programs and plans for use of the Complex's natural resources.

Ecosystem management is a holistic, adaptive management concept that transcends human-made boundaries, both internal and external to the NASWF Complex. Management for a sustainable ecosystem requires awareness, education and training, and responsible participation of all individuals potentially affecting the ecosystem, as well as adjustments in management principles and practices to respond to new knowledge and dynamic conditions. To participate in adaptive ecosystem management, the NASWF Complex will implement programs to meet the following objectives:

**Objective 5.1: Provide adequate staffing, equipment, technology, and training for the Natural Resources Program to ensure proper implementation of this INRMP.**

**Objective 5.2: Incorporate the concept of ecosystem management into all planning and management processes.**

**Objective 5.3: Implement training, education, and stewardship initiatives for ecosystem management.**

**Objective 5.4: Establish a planning team to review and update the INRMP in accordance with OPNAVINST 5090.1D, 12-3.4 (c)(4) and 12-3.4(c)(12).**

**Objective 5.1: Provide adequate staffing, equipment, technology, and training to the Natural Resources Program to ensure proper implementation of this INRMP.**

The NRM is unable to conduct the level of management required at the NASWF Complex due to inadequate staffing and resources. Non-compliance with laws and instructions, such as the Sikes Act, could lead to violation of federal laws such as the CWA or the Endangered Species Act (ESA).

**Strategy 5.1.1:** Staffing needs shall be continuously reviewed for adequacy and filled to meet those needs.

**Projects:** None.

**Initiatives:** Annually review staffing to determine adequacy. Submit staffing recommendations up the chain of command.

**Strategy 5.1.2:** Continually verify that natural resources personnel obtain proper training/certifications for the following:

- Fire Management;
- Threatened and Endangered Species Management;
- Wetlands Management;
- Ecosystem Management (including noxious, invasive, and exotic species control);
- Technology (GIS/GPS);

- Natural Resources Legal Requirements;
- Professional Forest Management Training;
- HW Training;
- Safety Training;
- Pest Management (including BASH Training); and
- Real Estate Management.

**Projects:** None.

**Initiatives:** (1) Identify training programs.  
(2) Cross Reference: Strategy 2.1.1 (2).

**Strategy 5.1.3:** The NRM will continue to purchase equipment (i.e., an all-terrain vehicle (ATV)/utility vehicle) needed for access areas too difficult to reach on the Complex, as well as other needed supplies.

**Projects:** None.

**Initiatives:** Annually assess equipment to determine adequacy. Submit recommendations up the chain of command.

**Strategy 5.1.4:** The NRM will continue to obtain tools and capabilities (e.g., GPS/GIS mapping and digital photography) that will assist in managing natural resources and meeting the goals of the INRMP.

**Projects:** Project No. 16 – Habitat Mapping and Endangered Species Surveys; see Appendix A.

**Initiatives:** Annually review tools and capabilities to determine adequacy. Submit recommendations up the chain of command.

**Objective 5.2:** **Incorporate the concept of ecosystem management into all planning and management processes.**

**Strategy 5.2.1:** The NASWF Complex will continue to utilize the review board within the Public Works Department to review all projects that potentially affect natural resources, including soil and water quality. The NRM of the Natural Resources Program will continue to be a part of the review board. In the interim, the NRM will be provided an opportunity to review all ground disturbing projects for natural resources concerns at an early stage of development.

**Projects:** Project No. 17 – NAS Whiting Field INRMP; see Appendix A.

**Initiatives:** Brief the CO on the importance of the formation of a review board to ensure that natural resources are considered when making planning decisions. Cross Reference: Military mission discussions throughout Section 5.

**Strategy 5.2.2:** Continue to integrate the management concepts of the INRMP into all appropriate working programs and department plans (e.g., PMP, Urban Forestry Plan, Grounds and Surfaced Area Maintenance Plan, and SWPPP).

**Projects:** None.

**Initiatives:** Develop a working team whose responsibility it is to integrate the concepts of the INRMP into all appropriate plans (e.g., PMP, Urban Forestry Plan, Grounds and Surfaced Area Maintenance Plan, and SWPPP). The team will consist of a representative from each department or division who is tasked with the responsibility of implementing programs, plans, or policies related to ecosystem management. The NRM will be on the team, and the team should meet monthly until all programs are integrated.

**Strategy 5.2.3:** The NASWF Complex will continue the use of Computer-Aided Drafting and a GIS for construction, environmental, engineering, and natural resources mapping. The NASWF Complex will continue to build and/or acquire appropriate Complex and region-wide data coverages. The GIS allows environmental and natural resources professionals to produce custom maps for preliminary environmental site assessments and to facilitate analysis of natural resources and environmental issues.

**Projects:** Project No. 16 – Habitat Mapping and Endangered Species Surveys; see Appendix A.

**Initiatives:**

- (1) Cross Reference: Strategy 5.1.4.
- (2) Compile GIS data coverages and maintain and update data coverages, as needed. GIS data coverages should include:
  - Wetlands, water bodies, water courses, and appropriate buffers;
  - Forest stands;
  - Natural communities;
  - Undisturbed and undeveloped 100-year floodplain;
  - Military constraint areas;
  - Maps of soil units and areas where soil type presents a threat of erosion;
  - Maps showing current soil erosion areas;
  - Ground maintenance plan of operation for improved and semi-improved grounds;
  - Populations and habitats of endangered and threatened species and species of special concern;
  - HW sites;
  - Land use;
  - Infrastructure and utilities;
  - NASWF Complex boundaries and buildings;
  - Trails and roads;

- Cultural, natural, historical, or archeological resources where allowed;
- Pest management areas (e.g., specific areas where coyote and deer concentrate);
- Stormwater outfalls and monitoring stations; and
- Outdoor recreation facilities.

**Strategy 5.2.4:** The NASWF Complex will continue to ensure that all cooperative agreements, memoranda, or other agreements between the Complex and federal and state agencies that oversee and regulate natural resources protection, are current, and those agreements have been established with all necessary agencies.

**Projects:** None.

**Initiatives:** It will be the responsibility of the NRM to ensure that the NASWF Complex has up-to-date agreements. The NRM will consult with foresters and fish and wildlife biologists from NAVFAC SE, as well as with federal, state, and county wildlife biologists, foresters, and land managers for assistance. The NRM will also consult with Complex commands and departments, such as MWR.

**Objective 5.3: Implement training, education, and stewardship initiatives for ecosystem management.**

**Strategy 5.3.1:** The NASWF Complex will continue an ecosystem management awareness and training/education program available to all interested NASWF Complex personnel. In addition, the Complex will continue the technical education and training program for all contract and installation personnel involved in activities that may directly or indirectly affect ecosystem management success. Individuals required to attend will be those involved in activities associated with (but not limited to): stormwater management, landscaping, forest management, HW response, operations, MWR, Public Works, volunteers, and trainers.

**Projects:** Project No. 16 – Habitat Mapping and Endangered Species Surveys; see Appendix A.

**Initiatives:**

- (1) For program development, enlist the services of foresters, fish and wildlife biologists, and soil conservationists from NAVFAC SE, as well as federal, state, and county wildlife biologists, foresters, and land managers.
- (2) Encourage participation by providing information about NASWF Complex natural resources and communicating each individual's important contributions to ensuring a viable ecosystem. Use pamphlets, flyers, command units, and the Internet to disseminate information. Initiate an annual environmental awareness achievement award for project suggestions and participation.
- (3) Offer hands-on training and individual participation in activities to better demonstrate the concept, application, and importance of ecosystem management. Cross References: Activities such as wetland enhancement (Section 5.1.1), prescribed burning (5.2.1), landscaping

(Section 5.1.5), urban forestry (Section 5.1.7), and threatened and endangered species management (Section 5.3.2).

- (4) Annually brief the CO on the importance of training and education to ensure cooperation among participating departments. Communicate to the CO the importance of all contract and Complex personnel receiving education in relevant environmental laws, regulations, directives, and mandates that have the potential to affect the military mission. Require, at a minimum, that one representative from each of the tenant commands participate in the training.
- (5) Encourage participants in the technical education and training program to conduct training and education classes for the tenant commands and departments they represent.
- (6) Provide information about natural resources at the NASWF Complex to visiting commands (e.g., training groups) prior to the command initiating actions.
- (7) The NRM will receive training needed to stay current on changes to natural resources and environmental legislation and Navy policy.

**Strategy 5.3.2:** The NASWF Complex will continue to implement programs and initiatives that foster citizen participation in ecosystem education and stewardship.

**Projects:** None.

- Initiatives:**
- (1) Encourage the use of volunteer groups (e.g., Scout troops, SCA) on the Complex. Offer hands-on training or activity participation to better demonstrate the concept, application, and importance of ecosystem management. Cross References: Strategy 5.3.1 and activities such as wetland enhancement (Section 5.1.1), landscaping (Section 5.1.5), prescribed burning (Section 5.2.1), urban forestry (Section 5.1.7), and threatened and endangered species management (Section 5.3.2).
  - (2) Actively pursue suggestions from Complex personnel for environmental enhancement projects.
  - (3) Continue participation in Earth Day activities, field trips, and other environmental stewardship opportunities.
  - (4) Maintain "Tree City USA" designation.
  - (5) Continue participation in regional ecosystem management initiatives.
  - (6) Continue to develop a Watchable Wildlife Program.
  - (7) Cross Reference: Project 3 - Continue membership with the Longleaf Alliance and GCPEP.

**Objective 5.4:** **Establish a planning team to review and update the INRMP in accordance with OPNAVINST 5090.1D, 12-3.4 (c)(4) and 12-3.4(c)(12).**

The INRMP is intended as a dynamic, evolving planning document; updates are required to ensure compliance with regulations and to initiate requests for project funding. The following strategy has been developed to accomplish this objective.

**Strategy 5.4.1:** The NASWF Complex will develop a team of experts with sufficient technical knowledge, to evaluate the effectiveness of INRMP implementation and to recommend improvements.

**Projects:** Project No. 17 – NAS Whiting Field INRMP; see Appendix A.

**Initiatives:** With assistance from NAVFAC SE and federal, state, and county agencies, review Complex staffing to determine whether there is adequate staffing and expertise to update the INRMP. If needed staffing does not exist, list private contracting as a compliance project for implementation of Project No. 17.

Cross Reference: Section 1.5.3 for updating compliance.

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# Program Elements

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This section discusses ecosystem management at the NASWF Complex by dividing ecosystem management into four components: land management, forest management, fish and wildlife, and outdoor recreation. These components are further divided into sub-components; for example, land management addresses wetlands, noxious, invasive, and exotic species and pests, soil conservation and erosion control, stormwater and water quality control, landscaping and grounds maintenance, floodplain management, urban forestry, and agricultural outleasing.

Sub-components are defined in this section. For each sub-component, this section discusses the issue(s), long-term management of the issue(s), the relationship of issues to ecosystem management within the NASWF Complex, the relationships among ecosystem management sub-components, legal requirements, and sources for additional management information. This section also correlates the goals, objectives, and strategies (see Section 4) pertaining to ecosystem management issues.

The sub-components constitute natural resource management actions, and benefit the plants, animals, and ecosystems occurring on this installation. Special attention is given to rare, threatened, and endangered (RTE) species, and their habitats, through management actions referenced in Table 14. These actions are long-term conservation measures that provide benefits for terrestrial and aquatic habitats on the installation. Management actions such as soil conservation and storm water management, for example, control sediment and pollutant runoff to protect water quality for species such as alligators and salamanders. Forestry actions such as prescribed burning, thinning, and reforestation help to establish longleaf pine stands and herbaceous low-lying vegetation that provide habitat and resources for gopher tortoises, as another example.

The “Wildlife Habitat Management and Threatened and Endangered Species, and Natural Communities” section of this INRMP (Section 5.3.2) includes additional goals, objectives, strategies, and projects for the benefit and long-term conservation of RTE species found, or potentially found, on the Complex. Animal and plant species explicitly accounted for in this INRMP are:

- Alabama Pearlshell (mussel)
- Alabama Shad (fish)
- Alligator Snapping Turtle
- American Alligator
- American Eel
- Chapman's Butterwort (plant)
- Crested Fringed Orchid (plant)
- Curtiss' Sandgrass
- Eastern Diamondback Rattlesnake
- Florida Black Bear
- Florida Pine Snake
- Gopher Frog
- Gopher Tortoise
- Gulf Sturgeon (fish)
- Hairy Wild Indigo (plant)
- Le Conte's Sparrow (bird)
- Parrot Pitcher Plant
- Primrose-flowered Butterwort (plant)
- Purple Pitcher Plant
- Red-cockaded Woodpecker (bird)
- Rose Pogonia (plant)
- Southern Red Lily (plant)
- Spoon-leaf Sundew (plant)
- Sweetshrub (plant)
- White-top Pitcher Plant
- Yellow-fringed Orchid (plant)

<b>Table 14. Habitat Management Actions at the NAS Whiting Field Complex</b>	
<b>Habitat Management Actions</b>	<b>Section</b>
Wetland Management	5.1.1
Noxious, Invasive, and Exotic Species and Pests	5.1.2
Soil Conservation and Erosion Control	5.1.3
Stormwater and Water Quality Control	5.1.4
Landscaping and Grounds Maintenance	5.1.5
Floodplain Management	5.1.6
Urban Forestry	5.1.7
Agricultural Outleasing	5.1.8
Silvicultural Activities (i.e. Thinning, Prescribed Burns)	5.2.1
Forest Protection	5.2.2
Fisheries Management	5.3.1
Threatened and Endangered Species	5.3.2
Wildlife Damage and Diseases and Nuisance Wildlife	5.3.3

## 5.1 LAND MANAGEMENT

Land management is the development of programs and techniques for managing lands. The land management issues of this INRMP are wetlands, noxious, invasive, and exotic species and pests, soil conservation and erosion control, stormwater and water quality control, landscaping and grounds maintenance, floodplains protection, urban forestry, and agricultural outleasing. The land management issues contained within this plan are not intended for directing land use activity



(i.e., what buildings or activities should go where), but rather to provide managers with directions and general techniques (e.g. regarding soil conservation, stormwater management) to protect and enhance the natural environment, while continuing to provide for the needs associated with the military mission of the NASWF Complex.

The land management issues in this plan are not intended for directing land use activity (i.e., what buildings or activities should go where), but rather to provide managers with directions and general techniques (e.g., regarding soil conservation, stormwater management) to protect and enhance the natural environment, while continuing to provide for the needs associated with the military mission of the NASWF Complex.

**5.1.1 Wetlands**

Wetlands are lands on which water covers the soil or is present either at or near the surface of the soil or within the root zone all year or for varying periods of time during the year, including during the growing season. The USACE (33 CFR 328.3(b), 1991) and the EPA (40 CFR 230.3(t), 1991) jointly define wetlands as "...those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas" (USACE 1982). The USACE and FDEP define wetlands based upon the presence of hydrophytic vegetation, hydric soil characteristics, and hydrologic indicators, which must all occur and meet the defined characteristics in order for a location to be classified as a wetland. The NASWF Complex has 279.09 acres of wetland areas (Table 15).

<b>Table 15. Wetland Acreage at the NAS Whiting Field Complex</b>				
<b>Property</b>	<b>Wetlands (acres)</b>		<b>Property</b>	<b>Wetlands (acres)</b>
NAS Whiting Field	24.90		NOLF Site 8-A	23.30
NOLF Harold	3.40		NOLF Silverhill	4.00
NOLF Santa Rosa	0.93		NOLF Summerdale	10.90
NOLF Holley	169.60		NOLF Barin	8.51
NOLF Spencer	3.30		NOLF Wolf	30.20
NOLF Pace	0.05		<b>TOTAL</b>	<b>279.09</b>

**Issues**

Wetlands at the NASWF Complex provide habitat for birds, fish, wildlife, and plants, store and purify water, and provide open space and aesthetic value. Development constraints within the

NASWF Complex and the need for future development of lands require the NASWF Complex to balance the wetland protection with support of the military mission.

### **Goals and Objectives**

- Protect and maintain natural resources within the NASWF Complex by continuing and enhancing ecologically appropriate and beneficial land uses and management practices, while ensuring the continuation of the military mission;
- Protect, maintain, and restore native vegetative communities and plant and wildlife populations, while improving the quality of life and ensuring continuation of the military mission;
- Protect and conserve the ecological value and diversity of natural resources by fostering knowledge of, and participation in, adaptive ecosystem management;
- Continue existing, and establish new programs and procedures to monitor, maintain, and enhance wetlands and water quality;
- Maintain the ecological integrity of wetland and upland communities for the protection of native plant and animal species, including numerous federally and state listed species;
- Maintain the attenuation capacity of the remaining undisturbed acreage within the 100-year floodplain;
- Ensure that land management and land use decisions comply with all applicable laws, executive orders, regulations, directives, and instructions, and that adverse impacts to the natural environment are minimized;
- Manage forests in an ecologically sound manner to provide habitat for wildlife;;
- Manage forest stands for watershed protection;
- Provide adequate staffing, equipment, technology, and training to the Natural Resources Program to ensure proper implementation of this INRMP; and
- Incorporate the concept of ecosystem management into all planning and management processes.

### **Projects**

- Wetlands Delineation and Protection (Project 1 in Appendix A);
- Invasive Plant Control (Project 2 in Appendix A);
- Endangered Species Habitat Management at NOLF Holley (Project 4 in Appendix A);
- Timber Stand Improvement (Project 8 in Appendix A);
- Fire Management (Project 10 in Appendix A);
- Construction and Maintenance of Forest Roads (Project 9 in Appendix A);
- Endangered Species Habitat Conservation (Project 14 in Appendix A); and
- Habitat Mapping and Endangered Species Surveys (Project 16 in Appendix A).

### **Management Strategies**

- Inventory wetlands and assess their function and quality on a routine basis;

- Promote 50-foot buffers for all wetlands, and ensure land use and land management practices that will not adversely affect wetland resources;
- Continue to develop a soil erosion control plan and reduce the rate of soil erosion through the implementation of long-term measures and projects;
- Continue to inventory the use of pesticides and fertilizers to assess alternatives to their use and a reduction in pesticide and fertilizer use;
- Continue to implement BMPs to minimize stormwater pollution and erosion (FDOT and FDEP 2007; FDEP 2008; NASWF 2013);
- Continue using BMPs for forest management activities and ensure that they are used in agricultural outleasing activities to ensure watershed protection (FDACS 2003);
- Implement environmentally beneficial landscaping, grounds maintenance, and urban forestry practices;
- Continually verify that natural resources personnel obtain proper training and certifications; and
- Continue the use of Computer-Aided Drafting and a GIS for construction, environmental, engineering, and natural resources mapping.

### ***Long-Term Management***

The NASWF Complex will adhere to best management practices to protect wetlands and water quality from sedimentation and erosion during activities on installation properties. These include the *Stormwater Pollution Prevention Plan, Facility ID: FLR05A954, Updated February 2013* (NASWF 2013), *Florida Erosion and Sediment Control Designer and Reviewer Manual* (FDOT and FDEP 2007), *Florida Stormwater Erosion and Sedimentation Inspector's Manual* (FDEP 2008), and *Silviculture Best Management Practices, Revised 2003* (FDACS 2003).

The NASWF Complex will increase the width of existing vegetative buffers that are less than 50 feet wide to a minimum of 50 feet, providing that buffer acreage is available and that buffers would not interfere with the military mission. Buffers will not be removed if any portion of the buffer is less than 50 feet wide. A minimum buffer width of 50 feet is required to provide the basic physical and chemical buffering needed to reduce siltation into the wetland, retain the natural attenuation and filtering capacity of the wetland, and maintain the wetland's biological communities.

In areas where the acreage available for buffering is not sufficient, or greater protection is needed, other appropriate measures will be employed. These protective measures could include: (1) redirecting, discouraging, or prohibiting pedestrian and pet access to the wetland or buffer area by the placement of hedges, fences, or signs; and (2) planting vegetated filter strips, swaths of land planted with grasses and trees, to intercept uniform sheet flows of runoff before the runoff reaches a wetland. The NASWF Complex will use these methods individually or in combination along the perimeters of wetlands.

In addition to creating and maintaining buffers to protect wetlands and subsequently water quality, the NASWF Complex will manage stormwater (see Section 5.1.4) and the use of pesticides and herbicides (see Sections 5.1.5 and 5.2.1) to further protect water quality.

***Integration with Other Natural Resources Management Activities***

- Soil Conservation and Erosion, Section 5.1.2 – sedimentation into wetlands;
- Stormwater and Water Quality, Section 5.1.3 – stormwater runoff into wetlands;
- Floodplains, Section 5.1.4 – maintain wetlands to reduce flood impacts;
- Landscaping and Grounds Maintenance, Section 5.1.5 – maintain wetland buffer;
- Invasive, Exotic, and Noxious Species, Section 5.1.6 – potential pesticide contamination of wetlands;
- Urban Forestry, Section 5.1.7 – consider wetland buffers and water quality during urban forestry;
- Agricultural Outleasing, Section 5.1.8 – potential pesticide and fertilizer contamination of wetlands;
- Silviculture, Section 5.2.1 – consider effects of burns and soil erosion on wetlands;
- Forest Protection, Section 5.2.2 – maintain regular burn cycles to ensure natural wetland conditions;
- Fisheries Management, Section 5.3.1 – wetland nursery habitat for juvenile fishes;
- Migratory Birds, Section 5.3.2 – wetlands are vital forage habitat for birds, particularly wading birds;
- Threatened and Endangered Species, Section 5.3.3 – wetlands provide vital habitat for many protected species;
- Nuisance Wildlife and BASH, Section 5.3.4 – consider propensity for wetlands to attract BASH animals;
- Outdoor Recreation, Section 5.4 – restricted uses within wetlands;
- Natural Resources Training, Section 5.5.1 – ensure personnel are current on wetland laws, regulations, and management practices; and
- GIS, Section 5.5.2 – utilize GIS tools to improve wetland management.

***Ecosystem Management***

Wetlands management is an essential component of ecosystem management because proper management will preserve, enhance, and create habitat for a variety of wildlife species, while providing aesthetic and educational values. Changes to hydrology, geochemistry, substrate, or species composition may impair the ability of a wetland to function properly. Vegetative buffers between wetland and upland communities help maintain water quality by filtering sediments and other pollutants from runoff prior to discharge into the wetland. Vegetative buffers also provide habitat for a diversity of wetland and upland species.

### **Military Mission**

NASWF Complex activities detrimental to wetland functions can affect the military mission by placing Complex at odds with Florida DEP. Proper wetland management improves water quality for MWR and outdoor recreational activities, which helps maintain the morale of personnel assigned to the Complex. Proper wetland management also helps mitigate the effects of flooding, which could pose a threat to the continuation and location of training activities.

### **Laws, Executive Orders, Regulations, Directives, and Memoranda Relevant to Wetlands**

- Federal Water Pollution Control Act, as amended by the Clean Water Act of 1977, 33 U.S.C. 1251, prohibits the discharge of dredged or filled materials into waters of the United States, including wetlands, without first obtaining a permit from USACE (Section 404 of the CWA).
- Executive Order 11990, 24 May 1977, as amended, requires government agencies, in carrying out agency actions and programs affecting land use, to provide leadership and take action to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands.
- Clean Water Act: Section 401 Water Quality Certification, 1986, 33 U.S.C. 1341, requires that states certify compliance of federal permits or licenses with state water quality requirements and other applicable state laws. Under Section 401, states have authority to review any federal permit or license that may result in a discharge to wetlands or other waters under state jurisdiction to ensure that the actions would be consistent with the state's water quality requirements.
- Executive Order 13112, 3 February 1999, requires executive agencies to restrict the introduction of exotic organisms into natural ecosystems.
- OPNAVINST 5090.1D, 12-3.8(b), discusses natural resources management relating to wetland management.
- Coastal Zone Management Act, 16 U.S.C. 1451, Establishes goals and a mechanism for states to control use and development of their coastal zone. Authorizes states to administer approved coastal non-point source pollution programs.

### **Additional Sources of Information**

USACE, Jacksonville Division, Pensacola Section

[http://www.saj.usace.army.mil/Divisions/Regulatory/Pensacola\\_Permitting.htm](http://www.saj.usace.army.mil/Divisions/Regulatory/Pensacola_Permitting.htm)

USFWS, National Wetlands Inventory, Regional Wetlands Coordinator, Region 4

<http://www.fws.gov/wetlands/Organization/rwc4.html>

EPA, Water: Wetlands

<http://water.epa.gov/type/wetlands/index.cfm>

FDEP, Wetland Evaluation and Delineation Program

<http://www.dep.state.fl.us/water/wetlands/delineation/>

FDEP, Water Programs

<http://www.dep.state.fl.us/water/>

Northwest Florida Water Management District (NWFWM D)

<http://www.nwfwmd.state.fl.us/>

University of Florida, Howard T. Odum Center for Wetlands  
<http://www.cfw.ufl.edu/>

Environmental Law Institute  
<http://www.eli.org/>

### 5.1.2 Soil Conservation and Erosion Control

Soil conservation involves the identification (e.g., type, location, and amount) and appropriate use of soils in accordance within the limits of its physical characteristics while protecting it from uncontrolled stormwater runoff to prevent and control soil erosion. This information will be used to plan the use and management of soils for construction, forestry practices, recreation facilities, and wildlife habitat. More fragile soil types require modifications to the timing, intensity and frequency of forestry and wildlife management practices. Knowing where soil types are located on a particular tract, and understanding the capabilities and limitations of the soils are prerequisites to selecting the most appropriate wildlife habitat or forestry improvement practices.

Erosion is the detachment and movement of soil, usually by water, which results in sedimentation and physical damage. Water quality is diminished by increased sedimentation, which is a form of water pollution. Sedimentation is particularly detrimental to benthic organisms and many fish species; it can eliminate habitat by covering food sources and spawning sites, smother bottom-dwelling organisms, and increase turbidity to the point that photosynthesis is hindered or prevented. Reductions in photosynthesis decrease dissolved oxygen levels to the detriment of fish and benthic invertebrates. Soil erosion also undermines roadways, shoreline facilities, and other military structures, and increases maintenance costs associated with stormwater facilities.

#### **Issues**

Soil erosion can undermine roadways, shoreline facilities, and other military structures, and often results in water quality problems (e.g., increased turbidity). It also increases maintenance costs associated with stormwater facilities. NASWF and several of the NOLFs have above average potential for severe erosion because of their soil types. Actions contributing to the susceptibility of the soil to erosion include:

- Pedestrian traffic on grassy areas of low sustainability due to poor soil conditions, resulting in a turf of thin grass interspersed with bare sandy areas;
- Excessive and improper mowing activities and practices;
- Human-made alterations to the natural vegetative cover and topography, including the channeling of water flow (e.g., ditches) which decreases infiltration and increases the quantity and rate of flow, the exposure of soils and increased soil slopes, and the creation of impervious surfaces;
- Forestry practices (e.g., prescribed burns, thinning, and reforestation) that expose soils to rainfall and stormwater runoff;

- Combination of sandy soils, drought, and rainfall events that occur at the NASWF Complex; and
- Failure to maintain a healthy ground cover in areas of low fertility and heavy use.

Areas at the NASWF Complex that are either susceptible to erosion or have an erosion problem include road shoulders, stream banks, and areas adjacent to runways that receive airfield surface runoff. Proper grounds maintenance, which emphasizes vigorous growth of vegetation, is the best and most economical means of erosion control.

### **Goals and Objectives**

- Protect and maintain natural resources within the NASWF Complex by continuing and enhancing ecologically appropriate and beneficial land uses and management practices, while ensuring the continuation of the military mission;
- Protect, maintain, and restore native vegetative communities and plant and wildlife populations, while improving the quality of life and ensuring continuation of the military mission;
- Protect and conserve the ecological value and diversity of natural resources by fostering knowledge of, and participation in, adaptive ecosystem management;
- Continue existing, and establish new programs and procedures to monitor, maintain, and enhance wetlands and water quality;
- Maintain the ecological integrity of wetland and upland communities for the protection of native plant and animal species, including numerous federally and state listed species;
- Maintain the attenuation capacity of the remaining undisturbed acreage within the 100-year floodplain;
- Ensure that land management and land use decisions comply with all applicable laws, executive orders, regulations, directives, and instructions, and that adverse impacts to the natural environment are minimized;
- Manage forests in an ecologically sound manner to provide habitat for wildlife;
- Manage forest stands for watershed protection;
- Provide adequate staffing, equipment, technology, and training to the Natural Resources Program to ensure proper implementation of this INRMP; and
- Incorporate the concept of ecosystem management into all planning and management processes.

### **Projects**

- Wetlands Protection (Project 1 in Appendix A);
- Invasive Plant Control (Project 2 in Appendix A);
- Reforestation (Project 6 in Appendix A);
- Timber Stand Improvement (Project 8 in Appendix A); and
- Construction and Maintenance of Forest Roads (Project 9 in Appendix A).

### **Management Strategies**

- Continue to develop a soil erosion control plan and reduce the rate of soil erosion through the implementation of long-term measures and projects;
- Inventory wetlands and assess their function and quality on a routine basis;
- Promote 50-foot buffers for all wetlands, and ensure land use and land management practices that will not adversely affect wetland resources;
- Maintain the attenuation capacity of the remaining undisturbed acreage within the 100-year floodplain;
- Implement environmentally beneficial landscaping, grounds maintenance, and urban forestry practices;
- Ensure implementation of policies that minimize adverse impacts to ecosystem resources from land disturbance activities (e.g., construction, clearing, and training);
- Apply xeriscaping principles using native species for new landscaping, and will phase in these principles for existing landscapes;
- Ensure that land management and land use decisions comply with all applicable laws, executive orders, regulations, directives, and instructions, and that adverse impacts to the natural environment are minimized;
- Continue to implement BMPs to minimize stormwater pollution and erosion (FDOT and FDEP 2007; FDEP 2008; NASWF 2013);
- Continue using BMPs for forest management activities and ensure that they are used in agricultural outleasement activities to ensure watershed protection (FDACS 2003);
- Manage forests in an ecologically sound manner to provide habitat for wildlife;
- Manage forest stands for watershed protection; and
- Continually verify that natural resources personnel obtain proper training and certifications.

### **Long-Term Management**

Long-term management for soil conservation and erosion control will include identifying and understanding the suitability and sustainability of a soil unit for a proposed action. The USDA NRCS soil surveys may be used to identify the potential applicability and limitations of each soil unit for land use activities. Land uses may include forestry, building construction, recreation, wildlife habitat, and agriculture. As discussed in Section 2, the NASWF Complex maintains properties in Baldwin and Conecuh counties, Alabama, and Escambia and Santa Rosa counties, Florida. The USDA soil surveys for these counties provide information on potential erosion hazards; groundwater contamination; productivity of cultivated crops, trees, and grass; and the protection of water quality, wetlands, and wildlife habitat.

The NASWF Complex will adhere to best management practices to protect wetlands and water quality from sedimentation and erosion during activities on installation properties. These include the *Stormwater Pollution Prevention Plan, Facility ID: FLR05A954, Updated February 2013*



(NASWF 2013), *Florida Erosion and Sediment Control Designer and Reviewer Manual* (FDOT and FDEP 2007), *Florida Stormwater Erosion and Sedimentation Inspector's Manual* (FDEP 2008), and *Silviculture Best Management Practices, Revised 2003* (FDACS 2003).

Additional guidelines to minimize soil erosion on the NASWF Complex include:

- Implement the following six principles for soil conservation and erosion management:
  1. Minimize areas of disturbance,
  2. Stabilize and protect disturbed areas from raindrop and runoff energies as soon as practical,
  3. Minimize runoff velocities,
  4. Protect disturbed areas from adjacent area runoff,
  5. Retain sediment within construction sites, and
  6. Reduce exposure time (Smoot and Smith, 1999);
- Implement BMPs during forest management activities such as road building, harvesting, reforestation, and timber stand improvement (FDACS 2003);
- Evaluate areas on the Installation for erosion control problems;
- Reduce mowing and increase grass height and coverage, where practicable;
- Control potential erosion control problems by:
  1. Using vegetative and structural protective covers (e.g. permanent seeding, groundcover),
  2. Using sediment barriers (e.g. straw bales, silt fence, brush),
  3. Creating sediment detention ponds and basins (e.g. sediment traps and basins),
  4. Implementing stream and pond bank protection (e.g. natural vegetation),
  5. Constructing pervious surface walkways in areas of high pedestrian traffic,
  6. Constructing water conveyances (e.g. slope drains, check dam inlet and outlet protection),
  7. Implementing temporary construction and road stabilization (e.g. placement of stone and geotextile fabrics [Smoot and Smith 1999]),
  8. Repairing bare and slightly eroded areas quickly, and
  9. Maintain healthy ground cover in improved and semi-improved areas with low fertility by applying natural or chemical fertilizers and/or soil additives.

In addition to the implementation of the above-mentioned BMPs, the NASWF Complex will repair existing erosion problems at the NASWF South Field, the North Field retention pond, and NOLF Silverhill.

#### ***Integration with Other Natural Resources Management Activities***

- Wetlands, Section 5.1.1 – control sedimentation into wetlands;

- Stormwater and Water Quality, Section 5.1.3 – control stormwater to reduce erosion;
- Floodplains, Section 5.1.4 – identify soil types to reduce flood damage;
- Landscaping and Grounds Maintenance, Section 5.1.5 – ensure mowing plans and landscaping do not compromise soil conservation;
- Invasive, Exotic, and Noxious Species, Section 5.1.6 – ensure removal of undesired plants does not enhance erosion;
- Urban Forestry, Section 5.1.7 – consider soil conservation during urban forestry planning;
- Agricultural Outleasing, Section 5.1.8 – control agricultural activities that could promote erosion;
- Silviculture, Section 5.2.1 – consider effects of soil erosion during silviculture activities;
- Forest Protection, Section 5.2.2 – burns promote the health of herbaceous ground cover to prevent erosion;
- Fisheries Management, Section 5.3.1 – control erosion into fishing areas;
- Migratory Birds, Section 5.3.2 – control erosion into wading areas;
- Threatened and Endangered Species, Section 5.3.3 – control erosion to maintain habitat and water quality for protected species;
- Nuisance Wildlife and BASH, Section 5.3.4 – controlling nuisance species that root (e.g., feral pigs) enhances erosion control;
- Outdoor Recreation, Section 5.4 – educate resource users to minimize erosion;
- Natural Resources Training, Section 5.5.1 – ensure personnel are current on BMPs; and
- GIS, Section 5.5.2 – utilize GIS tools to improve soil mapping and management.

### ***Ecosystem Management***

Soil conservation is an essential component of the ecosystem management concept. Soils are particularly susceptible to erosion from uncontrolled stormwater runoff and may discharge into water bodies from point and nonpoint sources. Sediments in stormwater runoff have the capacity to obstruct drainage infrastructure and to reduce the volume capacity of wetlands, potentially resulting in damaging flood conditions. Turbidity pollution, derived from soil erosion, may also affect surface water quality in adjacent freshwater, estuarine, and marine environments.

### ***Military Mission***

Erosion can undermine roads and runways, potentially affecting the military mission. It can also increase sediment loading in stormwater runoff, which increases turbidity and reduces water quality in surrounding waters, violating environmental laws and placing the Complex at odds with Florida FDEP.

### **Laws, Executive Orders, Regulations, Directives, and Memoranda Relevant to Soil Conservation**

- Soil Conservation Act, 16 U.S.C. 590(a) et seq., provides for soil conservation practices on federal lands.
- Federal Water Pollution Control Act, as amended by the Clean Water Act of 1977, 33 U.S.C. 1251, regulates the dredging and filling of wetlands and establishes procedures for identifying and regulating nonpoint sources of polluted discharge, including turbidity, into waterways.
- Clean Water Act (CWA), Section 402: National Pollutant Discharge Elimination System (NPDES) Program, 2002, 33 USC 1251, controls direct discharges into navigable waters. NPDES permits, issued by either the EPA or an authorized state or tribe, contain industry-specific technology-based limits and establish pollutant monitoring and reporting requirements.
- CWA Section, Section 401, requires an applicant for a federal license or permit to provide a certification that any discharges from the facility will comply with the CWA, including water quality standard requirements.
- CWA Section, Section 404, establishes a program to regulate the discharge of dredged or fill material into waters of the United States, including wetlands.
- Rivers and Harbors Act, requires authorization from the USACE for the construction of any structure in or over any navigable water of the United States and the excavation, dredging, and deposition of material in these waters or any obstruction or alteration in navigable waters.
- Executive Orders 11989 and 12608, close areas to off-road vehicles where soil, wildlife, or other natural resources may be adversely affected.
- Executive Order 13112, 3 February 1999, requires executive agencies to restrict the introduction of exotic organisms into natural ecosystems. Vegetative buffers and landscaping to control soil erosion must comply with this executive order.
- OPNAVINST 5090.1D, 12-3.8(c), discusses natural resources management relating to soil conservation management.
- Florida Statutes, Chapter 582.05, provides for control and prevention of soil erosion and damage from floodwater and sediments, and for the conservation of soil and water resources.

### **Additional Sources of Information**

USDA Natural Resources Conservation Service in Florida  
<http://www.fl.nrcs.usda.gov/>

NPDES Stormwater Pollution Prevention Plans  
<http://cfpub.epa.gov/npdes/stormwater/swppp.cfm>

FDEP Stormwater, Erosion, and Sediment Control  
<http://www.dep.state.fl.us/water/nonpoint/erosion.htm>

USDA Soil Survey Geographic (SSURGO) Database  
<http://soils.usda.gov/survey/geography/ssurgo/>

The National Soil Erosion Research Laboratory  
[http://www.ars.usda.gov/main/site\\_main.htm?modecode=36-02-15-00](http://www.ars.usda.gov/main/site_main.htm?modecode=36-02-15-00)

### **5.1.3 Stormwater and Water Quality Control**

Stormwater runoff is precipitation that falls onto surfaces such as roofs, streets, the ground, etc., and is not absorbed or retained by that surface, but collects volume and velocity as it flows off. Stormwater runoff management addresses measures to reduce stormwater runoff and pollutants in stormwater runoff, and to control discharge from point and nonpoint sources. Nonpoint source pollution is the polluting of surface water and groundwater resources by diffuse sources, rather than by discrete, identifiable point sources. Point and nonpoint source pollutants are commonly associated with land use. These pollutants routinely include sediments from land disturbance, pesticides and nutrients from urban lawns and landscaping, and oil, grease, heavy metals, and other toxic materials from streets, rooftops, and parking lots. Stormwater runoff is the most common transport mechanism for nonpoint source pollution. The majority of pollutant loading occurs during and immediately after storm events.

#### ***Issues***

Stormwater discharges have been increasingly identified as a significant source of water pollution in numerous nationwide studies on water quality. As development increases at the NASWF Complex, the control of stormwater drainage is an increasingly important aspect of water quality control. More impermeable surface area (less land available for absorption and filtration) translates to faster runoff rates and increased pollution loads. More development means more land clearing and landscaping activities that require appropriate stormwater management practices. It is especially important to have proper stormwater management when developed areas are in close proximity to surface waterbodies.

#### ***Goals and Objectives***

- Protect and maintain natural resources within the NASWF Complex by continuing and enhancing ecologically appropriate and beneficial land uses and management practices, while ensuring the continuation of the military mission;
- Protect, maintain, and restore native vegetative communities and plant and wildlife populations, while improving the quality of life and ensuring continuation of the military mission;
- Protect and conserve the ecological value and diversity of natural resources by fostering knowledge of, and participation in, adaptive ecosystem management;
- Continue existing, and establish new programs and procedures to monitor, maintain, and enhance wetlands and water quality;
- Maintain the ecological integrity of wetland and upland communities for the protection of native plant and animal species, including numerous federally and state listed species;
- Maintain the attenuation capacity of the remaining undisturbed acreage within the 100-year floodplain;
- Reduce and control noxious, invasive, and exotic species;

- Ensure that land management and land use decisions comply with all applicable laws, executive orders, regulations, directives, and instructions, and that adverse impacts to the natural environment are minimized;
- Implement environmentally beneficial landscaping, grounds maintenance, and urban forestry practices;
- Manage forests in an ecologically sound manner to provide habitat for wildlife;
- Manage forest stands for watershed protection;
- Provide adequate staffing, equipment, technology, and training to the Natural Resources Program to ensure proper implementation of this INRMP; and
- Incorporate the concept of ecosystem management into all planning and management processes.

### **Projects**

- Wetlands Protection (Project 1 in Appendix A);
- Invasive Plant Control (Project 2 in Appendix A);
- Agricultural Outleasing (Project 5 in Appendix A);
- Reforestation (Project 6 in Appendix A);
- Timber Stand Improvement (Project 8 in Appendix A);
- Construction and Maintenance of Forest Roads (Project 9 in Appendix A); and
- Fire Management (Project 10 in Appendix A).

### **Management Strategies**

- Continue to develop a soil erosion control plan and reduce the rate of soil erosion through the implementation of long-term measures and projects;
- Inventory wetlands and assess their function and quality on a routine basis;
- Promote 50-foot buffers for all wetlands, and ensure land use and land management practices that will not adversely affect wetland resources;
- Maintain the attenuation capacity of the remaining undisturbed acreage within the 100-year floodplain;
- Implement environmentally beneficial landscaping, grounds maintenance, and urban forestry practices;
- Ensure implementation of policies that minimize adverse impacts to ecosystem resources from land disturbance activities (e.g., construction, clearing, and training);
- Apply xeriscaping principles using native species for new landscaping, and will phase in these principles for existing landscapes;
- Ensure that land management and land use decisions comply with all applicable laws, executive orders, regulations, directives, and instructions, and that adverse impacts to the natural environment are minimized;
- Continue to implement BMPs to minimize stormwater pollution and erosion (FDOT and FDEP 2007; FDEP 2008; NASWF 2013);

- Continue using BMPs for forest management activities and ensure that they are used in agricultural outleasing activities to ensure watershed protection (FDACS 2003);
- Manage forests in an ecologically sound manner to provide habitat for wildlife;
- Manage forest stands for watershed protection; and
- Continually verify that natural resources personnel obtain proper training and certifications.

### **Long-Term Management**

The NASWF Complex adheres to its Stormwater Pollution Prevention Plan (SWPPP) and updates it regularly (NASWF 2013). According to the SWPPP, NAS Whiting Field has been subdivided into 12 different areas in which industrial activity has been identified. These industrial drainage basins discharge through a network of swales, drainage pipes, concrete and asphalt-lined channels and open field ditches primarily to Clear Creek to the west, and Big Coldwater Creek to the east. The SWPPP addresses pollutants in these industrial drainage basins and identifies BMPs to help prevent stormwater pollution. The SWPPP focuses on three objectives:

1. Identify sources of pollution potentially affecting the quality of stormwater discharges associated with industrial activity from the facility;
2. Describe and ensure implementation of practices to minimize and control pollutants in stormwater discharges associated with industrial activity from the facility; and
3. Ensure compliance with the terms and conditions of the NPDES permit.

The CO is responsible for the implementation of the SWPPP; however, a Stormwater Environmental Awareness Team (SWEAT) was formed to determine the adequacy of the SWPPP, ensure implementation of BMPs, perform required record keeping, and carry out the annual update and certification of the SWPPP. The SWPPP will be revised and updated at least annually. The SWEAT is also responsible for obtaining a permit for discharging stormwater from construction sites greater than one acre on the facility.

The SWPPP consists of a series of steps and activities to identify potential sources of stormwater pollution or contamination and implement BMPs. Analytical and visual monitoring for pollutants will occur in areas specified in the SWPPP. Visual examinations include observations of color, odor, turbidity, floating solids, foam, oil sheet, settled solids, suspended solids, and other obvious indicators of stormwater pollution.

In addition to operating under its SWPPP, the NASWF Complex will adhere to established State of Florida best management practices, including the *Florida Erosion and Sediment Control Designer and Reviewer Manual* (FDOT and FDEP 2007), *Florida Stormwater Erosion and Sedimentation Inspector's Manual* (FDEP 2008), and *Silviculture Best Management Practices, Revised 2003* (FDACS 2003). The NASWF Complex will implement additional programs to

reduce pollutant loading and stormwater runoff into wetlands and waterbodies. Wetland quality and wildlife habitat will benefit from the reduction of stormwater and pollutant loading. The NASWF Complex will operate under the following management guidelines for stormwater runoff and water quality control:

1. The NASWF Complex will prevent pollutant loading in stormwater by operating under the following pollution management plans: Preparedness, Prevention and Contingency Plan (40 CFR 264 and 265); SPCC Plan (40 CFR 112); NPDES Toxic Organic Management Plan (40 CFR 413,433, and 469); and Occupational Safety and Health Administration (OSHA) Emergency Action Plan (29 CFR 1910);
2. The NASWF Complex will implement forestry BMPs during silvicultural activities (e.g. thinning, reforestation, and prescribed burning) to prevent soil erosion and other adverse impacts to the soil (FDACS 2003);
3. The NASWF Complex will manage stormwater runoff from new development to achieve no net increase in stormwater discharge volume from the Installation, unless there are no means to do so that will meet the military mission;
4. The NASWF Complex will provide stormwater retention by developing and enhancing stormwater ponds. Stormwater ponds often function as wetlands and can provide ideal growing conditions for emergent wetland vegetation, which may be useful in pollutant removal;
5. The NASWF Complex will consider, where feasible, retrofitting stormwater infrastructure to provide natural infiltration of stormwater (e.g. grass swales, shallow retention ponds adjacent to intakes), or to increase detention time prior to discharge;
6. The NASWF Complex will use natural or created buffers around new stormwater ponds to provide wildlife habitat; reduce impacts associated with runoff; filter sediments and sediment-bound pollutants; and facilitate infiltration prior to discharge into waterbodies. Reducing sediment loading will increase the longevity of the retention ponds and further reduce maintenance costs;
7. The NASWF Complex will use permeable alternatives to impervious surfaces; for example, wood decks instead of concrete patios, grass swales instead of concrete; and
8. With the intent of helping to protect water quality, the NASWF Complex will inventory its use of pesticides and fertilizers and will assess alternatives to reduce the use of mineral fertilizers and/or pesticides. The NASWF Complex intends to use pesticides with lower toxicity levels and to apply them at reduced rates.
  - The use of organic matter to provide nutrient material will be considered. Organic matter consists of the wastes and remains of plants and animals. Organic matter is the nutrient of choice because it improves soil composition and structure by making soil more resistant to erosion by stormwater runoff. Other benefits from increasing the organic matter content of soil include better soil aeration and temperature control, increased water holding and nutrient retaining capacities, and a steady supply of nutrients to plants.
  - Mineral fertilizers are materials, either natural or manufactured, containing nutrients essential for the normal growth and development of the plants. Mineral fertilizers include both fast and slow-release fertilizers, and will be used as a supplement to organic matter for the growth and development of landscaping.
  - Where feasible, slow-release fertilizers will be the mineral fertilizer of choice, and will be used, after consultation with the NRM, in combination with organic matter when it

is impractical to only use organic matter. Slow-release mineral fertilizers are released at a slow rate throughout the season, thereby reducing the amount of waste by leaching and reducing the potential for surface water contamination. Other benefits of using slow-release fertilizers are the reduced application frequency and the minimization of fertilizer burn.

- Fertilizers or pesticides will not be applied before or during rain events due to the strong likelihood of runoff. Fertilizers and pesticides will be applied during maximum plant uptake periods to minimize leaching.
- The NASWF Complex will contact the ABD at NAVFAC SE and the FDACS Pesticide Division for information regarding fertilizer and pesticide applications.

### ***Integration with Other Natural Resources Management Activities***

- Wetlands, Section 5.1.1 – control runoff and sedimentation into wetlands;
- Soil Conservation and Erosion, Section 5.1.2 – stormwater control will reduce erosion;
- Floodplains, Section 5.1.4 – proper stormwater drainage helps reduce flood damage;
- Landscaping and Grounds Maintenance, Section 5.1.5 – landscape to reduce runoff velocity and maximize absorption;
- Invasive, Exotic, and Noxious Species, Section 5.1.6 – ensure removal of undesired plants does not accentuate the effects of runoff;
- Urban Forestry, Section 5.1.7 – consider runoff during urban forestry planning;
- Agricultural Outleasing, Section 5.1.8 – consider runoff during agricultural activities;
- Silviculture, Section 5.2.1 – consider effects of stormwater runoff and water quality during silviculture activities;
- Forest Protection, Section 5.2.2 – burns promote the health of herbaceous ground cover to prevent erosion from stormwater;
- Fisheries Management, Section 5.3.1 – control water quality in fishing areas;
- Migratory Birds, Section 5.3.2 – control water quality in wading areas;
- Threatened and Endangered Species, Section 5.3.3 – maintain water quality for protected species;
- Nuisance Wildlife and BASH, Section 5.3.4 – control pesticide to reduce runoff in stormwater;
- Outdoor Recreation, Section 5.4 – educate resource not to accentuate the effects of runoff;
- Natural Resources Training, Section 5.5.1 – ensure personnel are current on stormwater and water quality BMPs; and
- GIS, Section 5.5.2 – utilize GIS tools to improve management of stormwater runoff.

### ***Ecosystem Management***

Like soil conservation, the effective management of stormwater, and associated pollutant loading, is essential to realize the ecosystem management concept. Implementation of BMPs in developed, semi-developed, and unimproved areas will help protect water quality and habitat for



aquatic life. BMPs address the reduction of sedimentation, nutrient overloading, bacterial and parasitic pests, and harmful chemicals in stormwater. Construction of any new stormwater ponds in accordance with the stormwater and water quality management concept will increase wildlife habitat and reduce the potential for additional discharge from new development into nearby creeks.

### ***Military Mission***

Improper stormwater management could lead to increased flooding on the NASWF Complex properties, altering the timing and location of training. It can also lead to increased erosion, pollution, and sedimentation into water bodies, which increase turbidity and reduce water quality, violating environmental laws and placing the Complex at odds with Florida FDEP and potentially violating federal permits.

### ***Laws, Executive Orders, Regulations, Directives, and Memoranda Relevant to Stormwater and Water Quality***

- Federal Water Pollution Control Act, as amended by the Clean Water Act of 1977, 33 U.S.C. 1251, regulates the dredging and filling of wetlands and establishes procedures for identifying and regulating nonpoint sources of polluted discharge, including turbidity, into waterways.
- Coastal Zone Management Act of 1972, 16 U.S.C. 1451 et seq., establishes authority (Section 6217) for states to administer coastal nonpoint pollution programs when approved by NOAA and EPA. The NASWF Complex will coordinate with the State of Florida for nonpoint source compliance with the Florida Coastal Nonpoint Source Pollution Control Program.
- Executive Order 11990, 24 May 1977, as amended, directs the preservation and enhancement of wetlands.
- Oil Pollution Act of 1990 (OPA 90), 33 U.S.C. 2701, requires planning for, rescue of, minimization of injury to, and assessment of damages or injury to fish and wildfire resources from the discharge of oil.
- Comprehensive, Environmental Response, Compensation and Liability Act, 42 U.S.C. 9601 et seq., authorizes Natural Resources Trustees to recover damages for injury to, destruction of or loss of natural resources resulting from the release of a hazardous substance.
- CWA, Section 402 NPDES Program, 2002, 33 USC 1251, controls direct discharges into navigable waters. NPDES permits, issued by either the EPA or an authorized state or tribe, contain industry-specific, technology-based and water-quality-based limits and establish pollutant monitoring and reporting requirements.
- CWA, Section 401, requires an applicant for a federal license or permit to provide a certification that any discharges from the facility will comply with the CWA, including water quality standard requirements.
- CWA, Section 404, establishes a program to regulate the discharge of dredge and fill material into waters of the United States, including wetlands.

- OPNAVINST 5090.1D, 12-3.8(f), discusses natural resources management relating to nonpoint source pollution.
- OPNAVINST 5090.1D, Chapter 27, establishes requirements, guidelines and standards for the assessment of damages arising from the release of oil or hazardous substances.
- Florida Statutes, Chapter 373, Management and Storage of Surface Waters, regulates the management and storage of surface water and is implemented by NFWFMD under Environmental Resources Permitting.
- Florida Statutes, Chapter 376, Pollutant Discharge Prevention and Removal, prohibits the discharge of pollutants into coastal waters, estuaries, tidal flats, or beaches.
- Florida Statutes, Chapter 380, The Florida Environmental Land and Water Management Act of 1972, is intended: (1) to ensure a water management system that reverses the deterioration of water quality and that provides optimum utilization of limited water resources; (2) to facilitate orderly, well planned development; and (3) to protect public health, welfare, safety, and quality of life for Florida residents.
- Florida Statutes, Chapter 403, Florida Air and Water Pollution Control Act, conserves, protects, maintains, and improves the quality of the public water supply. Waste must not be discharged into any waters without prior approval from the state.
- Florida Statutes, Chapter 582, Soil and Water Conservation, provides control and prevention of soil erosion, prevention of damage from floodwater and sediments, and conservation of soil and water resources.
- Florida Coastal Management Program, requires federal action in the coastal zone to be consistent with 23 Florida Statutes, which are administered by 11 state agencies and four of the five state water management districts. The coastal zone includes the area encompassed by the state's 67 counties and its territorial waters. Therefore, federal actions which occur throughout the state are reviewed by the state for consistency with the FCMP. Consistency with the statutes constitutes consistency with the FCMP (DCA 1999).

#### **Additional Sources of Information**

Northwest Florida Water Management District  
<http://www.nfwfmd.state.fl.us/>

NPDES Stormwater Pollution Prevention Plans  
<http://cfpub.epa.gov/npdes/stormwater/swppp.cfm>

EPA Office of Wetlands, Oceans, and Watersheds  
<http://water.epa.gov/aboutow/owow/>

FDEP Water Programs  
<http://www.dep.state.fl.us/water/>

FDEP Stormwater, Erosion, and Sediment Control  
<http://www.dep.state.fl.us/water/nonpoint/erosion.htm>

FDEP Nonpoint Source Management Program  
<http://www.dep.state.fl.us/water/nonpoint/index.htm>

USGS Water Resources Programs  
<http://water.usgs.gov/programs.html>

USGS Florida Water Science Center  
<http://fl.water.usgs.gov/>

Environmental Law Institute  
www.eli.org

Nonpoint Source Pollution of Surface Waters  
<http://water.epa.gov/aboutow/owow/>

#### **5.1.4 Floodplain Management**

Floodplain management is the operation of an overall program of corrective and preventive measures for reducing flood damage. In addition to storing water during flood events, floodplains provide many ecological functions, such as the transport and cycling of nutrients and provision of productive and essential habitats.

##### ***Issues***

Whiting Park is within the Blackwater River 100-year floodplain. Portions of NOLFs Barin and Evergreen also occur within (NOLF Barin) or in close proximity to (NOLF Evergreen) a 100-year floodplain (see Section 2.2.5.5). To prevent adverse impacts to the floodplain, the NASWF Complex must minimize development and activities that occur in the floodplain.

##### ***Goals and Objectives***

- Protect and maintain natural resources within the NASWF Complex by continuing and enhancing ecologically appropriate and beneficial land uses and management practices, while ensuring the continuation of the military mission;
- Protect, maintain, and restore native vegetative communities and plant and wildlife populations, while improving the quality of life and ensuring continuation of the military mission;
- Protect and conserve the ecological value and diversity of natural resources by fostering knowledge of, and participation in, adaptive ecosystem management;
- Continue existing, and establish new programs and procedures to monitor, maintain, and enhance wetlands and water quality;
- Maintain the ecological integrity of wetland and upland communities for the protection of native plant and animal species, including numerous federally and state listed species;
- Maintain the attenuation capacity of the remaining undisturbed acreage within the 100-year floodplain;
- Ensure that land management and land use decisions comply with all applicable laws, executive orders, regulations, directives, and instructions, and that adverse impacts to the natural environment are minimized;
- Manage forests in an ecologically sound manner to provide habitat for wildlife;
- Manage forest stands for watershed protection;
- Provide adequate staffing, equipment, technology, and training to the Natural Resources Program to ensure proper implementation of this INRMP; and
- Incorporate the concept of ecosystem management into all planning and management processes.

### **Projects**

- Wetlands Protection (Project 1 in Appendix A);
- Timber Stand Improvement (Project 8 in Appendix A);
- Construction and Maintenance of Forest Roads (Project 9 in Appendix A);
- Endangered Species Habitat Conservation (Project 14 in Appendix A); and
- Habitat Mapping and Endangered Species Surveys (Project 16 in Appendix A).

### **Management Strategies**

- Inventory wetlands and assess their function and quality on a routine basis;
- Promote 50-foot buffers for all wetlands, and ensure land use and land management practices that will not adversely affect wetland resources;
- Continue to develop a soil erosion control plan and reduce the rate of soil erosion through the implementation of long-term measures and projects;
- Continue to inventory the use of pesticides and fertilizers to assess alternatives to their use and a reduction in pesticide and fertilizer use;
- Continue to implement BMPs to minimize stormwater pollution and erosion (FDOT and FDEP 2007; FDEP 2008; NASWF 2013);
- Continue using BMPs for forest management activities and ensure that they are used in agricultural outleasement activities to ensure watershed protection (FDOT 2003);
- Implement environmentally beneficial landscaping, grounds maintenance, and urban forestry practices;
- Continually verify that natural resources personnel obtain proper training and certifications; and
- Continue the use of Computer-Aided Drafting and a GIS for construction, environmental, engineering, and natural resources mapping.

### **Long-Term Management**

The NASWF Complex will avoid construction or management practices that will adversely affect the attenuation capacity of the 100-year floodplain unless it finds that: (1) there is no practicable alternative; or (2) the proposed action has been designed to minimize harm to or within the floodplain. To enforce this, preferred sites for development will be outside the 100-year floodplain. If there is no suitable location outside the 100-year floodplain that will satisfy the need of the military mission (for example, proximity to dependent function), preferred sites for development will be within previously disturbed areas of the 100-year floodplain. For all development within the 100-year floodplain, the NASWF Complex will evaluate alternatives and techniques for controlling and reducing the potential for flood damages. The NASWF Complex will use the county's floodplain regulation and building codes as guidance for development in the floodplain. Consistent with DoN's policy of no net loss of wetlands, NASWF will avoid any

construction in wetlands within the 100-year floodplain. Wetlands play an important role in flood control by providing storage, slowing flood waters, reducing flood peaks, and increasing the duration of the flow.

### ***Integration with Other Natural Resources Management Activities***

- Wetlands, Section 5.1.1 – manage to maintain viability of floodplains;
- Soil Conservation and Erosion, Section 5.1.2 – identify soil types in floodplain;
- Stormwater and Water Quality, Section 5.1.4 – proper stormwater drainage helps reduce flood damage;
- Landscaping and Grounds Maintenance, Section 5.1.5 – use appropriate landscape practices in floodplains;
- Invasive, Exotic, and Noxious Species, Section 5.1.6 – ensure removal of undesired plants is consistent with maintaining floodplain function;
- Urban Forestry, Section 5.1.7 – ensure urban forestry is consistent with maintaining floodplain function;
- Agricultural Outleasing, Section 5.1.8 – consider agricultural effects on the floodplain;
- Silviculture, Section 5.2.1 – ensure silviculture is consistent with maintaining floodplain function;
- Forest Protection, Section 5.2.2 – burns promote the health of herbaceous ground cover to prevent erosion during flooding;
- Fisheries Management, Section 5.3.1 – proper management of floodplains improves water quality in fishing areas;
- Migratory Birds, Section 5.3.2 – undeveloped floodplains provides bird habitat away from infrastructure;
- Threatened and Endangered Species, Section 5.3.3 – controlling development in floodplains enhances habitat and water quality for protected species;
- Nuisance Wildlife and BASH, Section 5.3.4 – consider floodplain function when modifying habitat on the airfield;
- Outdoor Recreation, Section 5.4 – controlling development in floodplains enhances outdoor recreational opportunities;
- Natural Resources Training, Section 5.5.1 – ensure personnel are current on floodplain laws; and
- GIS, Section 5.5.2 – utilize GIS tools to improve management of floodplains.

### ***Ecosystem Management***

Proper management of the 100-year floodplain is an essential ecosystem management concept. Floodplains perform important natural functions, including temporary storage of floodwaters, moderation of peak flows, maintenance of water quality, groundwater recharge, and erosion prevention. Floodplains also provide habitat for wildlife, recreational opportunities, aesthetic benefits, and areas of archaeological significance.

### **Military Mission**

Inappropriate floodplain management practices have the potential to decrease the flood attenuation capacity of the floodplain and increase the amount and rate at which flooding occurs. Flooding has the potential to adversely affect necessary infrastructure components of the military mission.

### **Laws, Executive Orders, Regulations, Directives, and Memoranda Relevant to Floodplains**

- Executive Order 11988, Floodplain Management, 24 May 1977, requires federal service agencies to avoid construction or management practices that will adversely affect floodplains, unless it is found that there is no practical alternative and the proposed action has been designed to minimize harm to or within the floodplain.
- OPNAVINST 5090.1D, 12-3.8(c), discusses natural resources management relating to floodplain management.
- Florida Coastal Management Program, requires federal action in the coastal zone to be consistent with 23 Florida Statutes, which are administered by 11 state agencies and four of the five state water management districts. The coastal zone includes the area encompassed by the state's 67 counties and its territorial waters. Therefore, federal actions which occur throughout the state are reviewed by the state for consistency with the FCMP. Consistency with the statutes constitutes consistency with the FCMP (DCA 1999).

### **Additional Sources of Information**

Northwest Florida Water Management District  
<http://www.nwfwmd.state.fl.us/>

FEMA Floodplain Management Publications  
<http://www.fema.gov/plan/prevent/floodplain/publications.shtm>

USFWS Floodplain Management  
<http://www.fws.gov/policy/613fw1.html>

Florida Floodplain Management Program  
<http://www.floridadisaster.org/Mitigation/SFMP/Index.htm>

Florida Floodplain Managers Association  
<https://ffma.pbsjteamaccess.com/default.aspx>

Pensacola Beach Flood Facts  
<http://sria-fla.com/pdf/floodfacts.pdf>

### **5.1.5 Landscaping and Grounds Maintenance**

Landscaping and grounds maintenance is defined here as landscaping design and construction practices intended to benefit the environment and to generate long-term cost savings. Such practices include using native species, which will reduce the need for irrigation and fertilization, stabilize soil, and improve wildlife habitat. Grounds maintenance is provided by the Base Operations Support (BOS) contractor under direction of the PWD.

## **Issues**

Grounds maintenance efforts are needed for aesthetic reasons, as well as to prevent erosion and protect soil by maintaining good, stable ground cover. □ The NASWF Complex has accomplished this in past years by maintaining vegetation cover, by installing stormwater diversion measures, and maintaining and planting forestry areas. The NASWF Complex needs to continue to minimize landscaping costs while ensuring the quality of aesthetic and environmental resources.

## **Goals and Objectives**

- Protect and maintain natural resources within the NASWF Complex by continuing and enhancing ecologically appropriate and beneficial land uses and management practices, while ensuring the continuation of the military mission;
- Protect, maintain, and restore native vegetative communities and plant and wildlife populations, while improving the quality of life and ensuring continuation of the military mission;
- Provide facilities and develop policies that allow for recreational and educational uses of natural resources, and result in positive effects to these natural resources while improving the quality of life.
- Protect and conserve the ecological value and diversity of natural resources by fostering knowledge of, and participation in, adaptive ecosystem management;
- Continue existing, and establish new programs and procedures to monitor, maintain, and enhance wetlands and water quality;
- Maintain the ecological integrity of wetland and upland communities for the protection of native plant and animal species, including numerous federally and state listed species;
- Maintain the attenuation capacity of the remaining undisturbed acreage within the 100-year floodplain;
- Ensure that land management and land use decisions comply with all applicable laws, executive orders, regulations, directives, and instructions, and that adverse impacts to the natural environment are minimized;
- Implement environmentally beneficial landscaping, grounds maintenance, and urban forestry practices;
- Control nuisance wildlife and wildlife diseases that may adversely affect human health or welfare, the health of the ecosystem, and the military mission;
- Provide adequate staffing, equipment, technology, and training to the Natural Resources Program to ensure proper implementation of this INRMP; and
- Incorporate the concept of ecosystem management into all planning and management processes.

## **Projects**

- Wetlands Protection (Project 1 in Appendix A);
- Invasive Plant Control (Project 2 in Appendix A);
- Gopher Tortoise Biological Monitoring (Project 12 in Appendix A); and

- Endangered Species Habitat Conservation (Project 14 in Appendix A).

### **Management Strategies**

- Continue to implement general landscape management practices consistent with the concepts presented in this INRMP;
- Continue to apply xeriscaping principles using native species for new landscaping, and will phase in these principles for existing landscapes;
- Continue to follow its working Urban Forestry Plan and implement projects to enhance wildlife habitat and aesthetics in developed areas;
- Implement environmentally beneficial landscaping, grounds maintenance, and urban forestry practices;
- Continue to implement BMPs to minimize stormwater pollution and erosion (FDOT and FDEP 2007; FDEP 2008; NASWF 2013);
- Promote 50-foot buffers for all wetlands, and ensure land use and land management practices that will not adversely affect wetland resources;
- Continue to develop a soil erosion control plan and reduce the rate of soil erosion through the implementation of long-term measures and projects;
- Continue to inventory the use of pesticides and fertilizers to assess alternatives to their use and a reduction in pesticide and fertilizer use;
- Implement grounds maintenance practices consistent with the BASH Plan;
- Continue to implement programs and activities for the protection and enhancement of threatened and endangered plant and animal species and their habitats; and
- Continually verify that natural resources personnel obtain proper training and certifications.

### **Long-Term Management**

Executive Order 13148 of 21 April 2000, Section 207 calls for landscaping practices that benefit the environment and generate long-term cost savings at federal facilities. The EO provides the following guidelines to be followed when cost-effective and to the extent practicable:

- Use regionally native plants for landscaping;
- Design, use, or promote construction practices that minimize adverse effects on the natural habitat;
- Take measures to prevent pollution (i.e. reduce fertilizer and pesticide use);
- Implement water-efficient practices; and
- Promote awareness of environmental and economic benefits of native landscaping.

The NASWF Complex will landscape by xeriscaping around all newly-constructed buildings and other facilities to create relatively low maintenance and low cost landscapes and reduce the need for intensive labor (i.e., hand trimming and bed maintenance). Xeriscaping will also be phased into existing landscaped areas. Xeriscaping offers a viable alternative to the typically high-



volume water requirements of other landscaping approaches by conserving water through creative landscaping. Xeriscaping uses native plants, which are adapted to local climatic conditions and variations, generally resistant to drought, disease, and pests, and require less water than non-native species. The potential benefits of xeriscaping include reduced water use (typically from 30 to 80 percent), reduced heating and cooling costs from placement of appropriate tree species, decreased stormwater and irrigation runoff, fewer pesticide and fertilizer applications, less yard waste, increased habitat for plants and animals, and lower labor and maintenance effort and thus costs. Xeriscaping incorporates seven principles (Xeriscape Colorado, Inc., 1999):

1. Planning and design for water conservation and beauty;
2. Creating practical turf areas using manageable sizes, shapes, and appropriate grass species;
3. Selecting plants with low water requirements and grouping plants with similar water needs, then experimenting to determine how much and how often to water the plants;
4. Using soil amenities, such as compost or manure, appropriate to site and plant needs;
5. Using mulches, such as wood chips, to reduce evaporation and reduce soil temperatures;
6. Irrigating efficiently with properly designed systems (including hose-end equipment) and by applying the right amount of water at the right time; and
7. Maintaining the landscape by mowing, weeding, pruning, and fertilizing properly. Grass mowing should not be excessive and should be based on height rather than by arbitrarily specified time intervals.

The NASWF Complex will evaluate current landscaping practices to determine how effective the principles of xeriscaping would be in improving existing conditions. The NASWF Complex will determine: (1) if implementation of xeriscaping principles will provide sufficient benefits to justify any additional cost, (2) if the implementation of certain principles may achieve the desired results, or (3) if continuation of existing conditions will achieve desired results. The NASWF Complex will monitor the success of integrating the principles of xeriscaping with existing landscaped areas and adjust management practices as warranted.

Grounds maintenance at the NASWF Complex will be accomplished using the following guidelines:

- Avoid excessive mowing. Grass mowing should be scheduled on the basis of height, rather than by arbitrarily specified time intervals, if practicable;
- Maintain good ground cover through proper fertilization to prevent erosion. If erosion occurs, it will be addressed and corrected as soon as possible;
- Maintain healthy lawns to prevent insect infestations and disease;

- Minimize hand trimming; and
- Implement grounds maintenance activities in the vicinity of airfields to reduce BASH-related incidents. Grounds maintenance in the vicinity of airfield operations require significantly different management than in other developed areas; guidelines are provided in the NASWFINST 3571.1A (BASH Plan).

Grounds maintenance personnel will contact the NRM for technical advice prior to tree and shrub pruning, fertilization, grass replacement, species selection, new landscape projects, and new irrigation projects. Pesticide and fertilizer applications during landscaping and grounds maintenance will be consistent with the long-term management concepts pertaining to pesticides and fertilizers in Sections 5.1.7 and 5.3.3.

### ***Integration with Other Natural Resources Management Activities***

- Wetlands, Section 5.1.1 – maintain a 50-foot buffer around wetlands;
- Soil Conservation and Erosion, Section 5.1.2 – landscape to reduce erosion;
- Stormwater and Water Quality, Section 5.1.3 – use proper amounts of herbicide and fertilizers to avoid excessive runoff in stormwater;
- Floodplains, Section 5.1.4 – ensure landscaping in floodplains does not alter floodplain function;
- Invasive, Exotic, and Noxious Species, Section 5.1.6 – replace removed exotic species with native vegetation;
- Urban Forestry, Section 5.1.7 – utilize urban forestry principles during landscaping and grounds maintenance, and vice-versa;
- Agricultural Outleasing, Section 5.1.8 – consider aesthetics of outleasing areas;
- Forest Protection, Section 5.2.2 – maintain grounds to reduce fuel loads;
- Fisheries Management, Section 5.3.1 – use proper amounts of herbicide and fertilizers to avoid runoff into fishing areas;
- Migratory Birds, Section 5.3.2 - use proper amounts of herbicide and fertilizers to avoid runoff into wading areas;
- Threatened and Endangered Species, Section 5.3.3 – landscape and maintain grounds to maintain and enhance habitat for protected wildlife;
- Nuisance Wildlife and BASH, Section 5.3.4 – control nuisance animals to prevent landscape damage;
- Outdoor Recreation, Section 5.4 – maintain aesthetically-pleasing grounds for recreation;
- Natural Resources Training, Section 5.5.1 – ensure personnel are aware of landscaping and grounds issues and practices; and
- GIS, Section 5.5.2 – utilize GIS tools to improve landscaping plans.

### ***Ecosystem Management***

Beneficial landscaping through construction and design practices is consistent with an ecosystem management approach because it reduces the need for irrigation, pesticides, and fertilizers and relies on the functions and characteristics of native plant species. The use of native species also is recommended for the reduction and control of invasive species. Reducing irrigation, fertilizer, and pesticide demand reduces costs associated with grounds maintenance and reduces pollutant loading to stormwater runoff and surrounding surface waters and aquatic communities.

### ***Military Mission***

Inappropriate landscaping and grounds maintenance practices (e.g., excessive use or application of inappropriate pesticides) may potentially affect water quality and federally and state-designated endangered or threatened species, resulting in regulatory actions by agencies such as the USFWS, FDEP, or USACE, which could threaten the military mission of the NASWF Complex. In addition, appropriate landscaping and maintenance practices improve quality of life.

### ***Laws, Executive Orders, Regulations, Directives, and Memoranda Relevant to Landscaping and Grounds Maintenance***

- Executive Order 13148, 21 April 2000, Section 207, requires implementing landscaping practices that are intended to benefit the environment and generate long-term cost savings.
- Executive Order 13112, 3 February 1999, requires executive agencies to restrict the introduction of exotic organisms into natural ecosystems.
- The President's April 16, 1994, Memorandum on Environmentally Beneficial Landscaping, requires implementing landscaping practices that are intended to benefit the environment and generate long-term cost savings.
- Federal Insecticide, Fungicide and Rodenticide Act, 7 U.S.C. 136, governs the use and application of pesticides in natural resources management programs.
- Federal Water Pollution Control Act as amended by the CWA of 1977, 33 U.S.C. 1251, prohibits the discharge of dredged or filled materials into waters of the United States, including wetlands, without first obtaining a permit from USACE (Section 404 of the CWA).
- OPNAVINST 5090.1D, 12-3.8(e), discusses natural resources management relating to environmentally and economically beneficial landscaping.
- DODINST 7310.5, administers the reimbursement of costs related to managing forest resources for timber production. Under this regulation, only expenses related to the maintenance of timber for commercial sales are reimbursed.

### ***Additional Sources of Information***

NFWFMD Xeriscape Pamphlet  
<http://www.nfwfmd.state.fl.us/pubs/pubinfo/xeriscape.pdf>

FDEP List of Native Plant Nurseries in NW Florida  
<http://www.dep.state.fl.us/northwest/ecosys/section/nurserylist.pdf>

Escambia County IFAS Extension Office, Horticulture  
<http://escambia.ifas.ufl.edu/lng/>

Florida Association of Native Nurseries  
<http://www.afnn.org/>

Florida Natural Areas Inventory  
<http://www.fnai.org>

Florida Native Plant Society  
<http://www.fnps.org>

American Water Works Association, WaterWiser  
<http://www.awwa.org/waterwiser/>

### **5.1.6 Invasive, Exotic, and Noxious Species**

Species can be categorized as native, exotic, exotic and invasive, or native and invasive. A native species is a species already occurring at the time of European contact in 1500 (Florida Exotic Pest Council 1999). An exotic species is a non-indigenous (non-native) species that was either purposefully or accidentally introduced into an area outside its natural range. Invasive species are alien species whose introduction does, or is likely to, cause harm to the economy, environment, or human health. Invasive species in natural areas include aggressive plants that produce a significant change in terms of species composition, ecosystem structure, or ecosystem function (Cronk and Fuller 1995).

Executive Order 13112, Invasive Species, of 3 February 1999 requires executive agents to restrict the introduction of exotic organisms into natural ecosystems. The Federal Noxious Weed Act of 1974 (7 U.S.C. 2801-2814) provides for the control and eradication of noxious weeds and their regulation in interstate and foreign commerce. It defines noxious weeds as “any living stage (including but not limited to, seeds and reproductive parts) of any parasitic or other plant of a kind, or subdivision of a kind, which is of foreign origin, is new to or not widely prevalent in the United States, and can directly or indirectly injure crops, other useful plants, livestock, poultry, and agricultural irrigation navigation, the fish and wildlife resources of the United States, and the public health (7 U.S.C. 2802 (c)).

The higher temperatures and changes in precipitation patterns associated with climate change are anticipated to cause shifts in species composition and geographic range. Among the species shifts anticipated are movement of wildlife to more favorable habitat, shifts in vector-borne diseases, and expansion of invasive grasses and shrubs. Invasive plants contribute fuel load for

wildfires, which in turn increases the likelihood, range, and intensity of wildfire. Ongoing management of exotic and invasive species is therefore vital to offset the potential vulnerability of properties and native communities on the NASWF Complex.

The following species occur on the NASWF Complex and are considered exotic and invasive:

- Cogon grass (*Imperata cylindrica*) was introduced into the United States in 1911 near Mobile, Alabama, and is a fast-growing perennial grass that thrives in areas of minimal tillage such as lawns and roadsides. Roots and rhizomes are remarkably resistant to fire;
- Japanese climbing fern (*Lygodium japonicum*) is generally found in damp, usually disturbed areas. The plant tolerates both shade and sun and can be found along the edges of swamps, marshes, creeks, and lakes, as well as in upland woodlands. It forms a tangled mass over groundcover and shrubs, eliminating understory vegetation;
- Chinese tallow or popcorn tree (*Sapium sebiferum*) was purposely introduced into the southeastern United States in the early 1700's. It tends to take over large areas, mainly areas with wet soils, but can thrive in upland areas as well. It can survive in both poorly drained freshwater and saline soils. It has the capacity to dominate wetland areas;
- Camphor tree (*Cinnamomum camphora*) generally occurs in drier disturbed areas, including scrub habitat, which is the habitat of many threatened and endangered species;
- Chinese privet (*Ligustrum sinense*) generally occurs on open disturbed sites and is difficult to control in wetland areas;
- Kudzu (*Pueraria lobata*) is a trailing or climbing, semi-woody vine introduced into this country from Japan in 1876 at the Centennial Exposition in Philadelphia. Kudzu has been used as an ornamental, for erosion control, and as a livestock forage. Within the NASWF Complex, it has escaped from areas where it was originally planted for erosion control and has invaded several pine stands;
- Mimosa (*Albizia julibrissin*), or silk tree, was introduced into the United States in 1745;
- Fire ants (*Solenopsis* spp.) include many opportunistic ant species, both exotic and native. Fire ants are present throughout the NASWF Complex and have the ability to interfere with landing operations. They were introduced near Mobile, Alabama some time between 1918 and 1930; and
- Coyotes (*Canis latrans*) and armadillos (*Dasypus novemcinctus*) occur at the NASWF Complex and are considered nuisance wildlife species (see Section 5.3.3).

Pests occurring at the NASWF Complex include the following:

- Household and nuisance pests - cockroaches, ants, fleas, spiders, silverfish, etc.;
- Structural pests - termites, powder post beetles, wood borers, and wood destroying fungi, etc.;
- Stored products pests - grain, meal, and flour moths; rice and granary weevils; and saw-toothed grain and confused flour beetles, etc.;
- Health-related pests – mosquitoes and filth flies;
- Pests of ornamental plants and turf – soil and root infesting insects, leaf-chewing insects, plant-sucking insects, wood-boring insects, etc.; and

- Vertebrate pests – vertebrates such as rodents, pocket gophers, feral cats, opossums, armadillos, coyotes, starlings, and pigeons may be considered pests under certain circumstances (e.g., when they occur in high numbers or in certain locations in urban or developed areas). Vertebrate pests are also discussed as nuisance wildlife in Section 5.3.3.

### **Issues**

Invasive species have the potential to interfere with military and recreational activities, wildlife habitats, forests, wetlands, and other natural areas. Invasive species often interfere with ecosystem functions. Some of them can form expansive monocultures when left uncontrolled and, in extreme case, will lead to complete loss of native plant communities and reduction in regional biodiversity. The NASWF Complex currently does not have a formal program to address the control of noxious, invasive, and exotic species.

### **Goals and Objectives**

- Protect and maintain natural resources within the NASWF Complex by continuing and enhancing ecologically appropriate and beneficial land uses and management practices, while ensuring the continuation of the military mission;
- Protect, maintain, and restore native vegetative communities and plant and wildlife populations, while improving the quality of life and ensuring continuation of the military mission;
- Protect and conserve the ecological value and diversity of natural resources by fostering knowledge of, and participation in, adaptive ecosystem management;
- Control nuisance wildlife and wildlife diseases that may adversely affect human health or welfare, the health of the ecosystem, and the military mission;
- Maintain the ecological integrity of wetland and upland communities for the protection of native plant and animal species, including numerous federally and state listed species;
- Continue existing, and establish new programs and procedures to monitor, maintain, and enhance wetlands and water quality;
- Ensure that land management and land use decisions comply with all applicable laws, executive orders, regulations, directives, and instructions, and that adverse impacts to the natural environment are minimized;
- Implement environmentally beneficial landscaping, grounds maintenance, and urban forestry practices;
- Provide adequate staffing, equipment, technology, and training to the Natural Resources Program to ensure proper implementation of this INRMP; and
- Incorporate the concept of ecosystem management into all planning and management processes.

### **Projects**

- Wetlands Protection (Project 1 in Appendix A);
- Invasive Plant Control (Project 2 in Appendix A);
- Endangered Species Habitat Conservation (Project 14 in Appendix A); and

- Habitat Mapping and Endangered Species Surveys (Project 16 in Appendix A).

### **Management Strategies**

- Continue existing efforts, and further, establish a program/plan using prescribed burns and/or thinning to improve habitat quality, reduce the potential for wildfires, control diseases and insect pests, and ensure the continuation of fire-dependent plant communities;
- Continue monitoring program for natural communities (as well as rare, threatened and endangered species), and implement programs to enhance natural communities/wildlife habitat;
- Continue to implement programs and activities for the protection and enhancement of threatened and endangered plant and animal species and their habitats;
- Continue to implement general landscape management practices consistent with the concepts presented in this INRMP;
- Continue to apply xeriscaping principles using native species for new landscaping, and will phase in these principles for existing landscapes;
- Implement environmentally beneficial landscaping, grounds maintenance, and urban forestry practices;
- Continue to inventory the use of pesticides and fertilizers to assess alternatives to their use and a reduction in pesticide and fertilizer use; and
- Continually verify that natural resources personnel obtain proper training and certifications.

### **Long-Term Management**

Invasive and exotic species will be managed through the removal of the species and restrictions on the introduction of the species to the NASWF Complex in accordance with Executive Order 13112. The Complex will survey the extent of invasive and exotic species on all properties and schedule removal. This plan will be implemented to control invasive and exotic species to acceptable levels. The NRM will screen all lists of landscaping plants proposed for the NASWF Complex to ensure invasive and exotic species are not used.

Prior to the use of pesticides at the NASWF Complex, the Installation's NRM will contact the ABD of NAVFAC SE and the FDACS Pesticide Division for information regarding approved pesticides, including the location of use, amount, and concentrations, as well as treatment methods. The FDEP Bureau of Invasive Plant Management issues licenses that may be required for special use pesticides. The NASWF Complex will also consider the applicability of burning and hand clearing in combination with pesticides, as well as non-pesticide removal methods alone.

The use of pesticides for removal of invasive and exotic species and pests will be conducted in accordance with federal and state laws regulating the use of pesticides. According to the EPA, a "pesticide is any substance or mixture of substances intended for preventing, destroying,

repelling, or mitigating any pest. Pests can be insects, mice and other animals, unwanted plants (weeds), fungi, or microorganisms like bacteria and viruses; the term pesticide also applies to herbicides, fungicides, and various other substances used to control pests” (<http://www.epa.gov/pesticides/about/>). Under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA; 7 U.S.C. 136), pesticides are registered at the federal level and by individual states. Therefore, a particular pesticide product that is federally registered by the EPA is not legal for use until it is also registered by the individual state. FIFRA allows individual state registrations to be more restrictive than federal registrations, but not less so.

Pesticides will be applied by skilled, DOD-certified workers and according to label instructions to ensure their application does not contaminate surface waters or affect flora and fauna. Careful prescription of the type and amount of chemical to be applied and the use of buffer areas around surface waters will also help prevent misdirected application or deposition. The NASWF Complex will use pesticides with lower toxicity and apply them at rates below those specified on the label, when it is believed that such modifications can adequately address the problem. The NASWF Complex will also consider the applicability of non-pesticide removal methods, which could be implemented through the use of volunteer groups.

#### ***Integration with Other Natural Resources Management Activities***

- Wetlands, Section 5.1.1 – prevent contamination of wetlands by pesticides;
- Soil Conservation and Erosion, Section 5.1.2 – control nuisance animals that contribute to erosion;
- Stormwater and Water Quality, Section 5.1.3 – prevent contamination of water quality by pesticides;
- Floodplains, Section 5.1.4 – ensure exotic species do not compromise attenuation properties of floodplains;
- Landscaping and Grounds Maintenance, Section 5.1.5 – landscape with native plants to reduce the opportunity for exotics to become established;
- Urban Forestry, Section 5.1.7 – ensure only native trees are planted;
- Agricultural Outleasing, Section 5.1.8 – prevent the introduction of invasive and exotic plant species and pests;
- Silviculture, Section 5.2.1 – ensure activities promote native vegetation in the forest understory;
- Forest Protection, Section 5.2.2 – burn to accentuate the environmental conditions of native plants and wildlife;
- Fisheries Management, Section 5.3.1 – manage exotic aquatic plants and prevent stocking of non-native fishes;
- Migratory Birds, Section 5.3.2 – conserve native vegetation used by migratory birds;



- Threatened and Endangered Species, Section 5.3.3 – control exotic plants and wildlife that would otherwise compete with protect species for resources;
- Nuisance Wildlife and BASH, Section 5.3.4 – reduce nuisance species concurrent with control of invasives and exotics;
- Outdoor Recreation, Section 5.4 – eliminate exotic vegetation to enhance outdoor recreation;
- Natural Resources Training, Section 5.5.1 – ensure personnel are current on exotic and invasive control procedures and laws; and
- GIS, Section 5.5.2 – utilize GIS tools to improve management of exotic and invasive species.

### ***Ecosystem Management***

The management of exotic and invasive species is a fundamental component of the ecosystem management concept. Invasive species typically out-reproduce native species and have a propensity to spread into unstable or disturbed areas (e.g., highway and utility right-of-ways, site disturbance areas, ponds, and wetland areas). Therefore, the control of invasives and replacement with native species at the NASWF Complex is essential to protect and enhance biodiversity, and for the proper functioning of wetlands as water storage and purifying systems.

### ***Military Mission***

Invasive species have a propensity to spread rapidly, potentially creating hazardous situations when they interfere with infrastructure systems (e.g., along and around roadway intersections and electric distribution lines and substations).

### ***Laws, Executive Orders, Regulations, Directives, and Memoranda Relevant to Invasive, Exotic, and Noxious Species***

- Federal Noxious Weed Act of 1974, 7 U.S.C. 2801 et. seq., provides for the control and eradication of noxious weeds and their regulation in interstate and foreign commerce.
- Executive Order 13112, 3 February 1999, requires executive agencies to restrict the introduction of exotic organisms into natural ecosystems.
- Federal Insecticide, Fungicide, and Rodenticide Act, 7 U.S.C. 136, requires that all pesticides, whether for commercial or private use, be applied in accordance with product labeling and that containers are properly disposed of. EPA is responsible under FIFRA for the registration of all pesticide active ingredients used in the United States.
- OPNAVINST 6250.4B, 27 August 1998, DOD Pest Management Programs, provides the DON with policies for implementing pest management programs directed against pests that conflict with or adversely affect the mission of the DOD; affect the health and well-being of the DON personnel and their dependants; attach or damage real property, supplies, or equipment; adversely affect the environment; or are otherwise undesirable.
- Federal Plant Pest Act, 7 U.S.C. 150a et seq., regulates the importation and interstate movement of plant pests and authorizes the Secretary of Agriculture to take emergency measures to destroy infected plants or materials.

- OPNAVINST 5090.1D, 12-3.10, discusses natural resources management relating to the control of invasive species.
- Florida Statutes, Chapter 487, the Florida Pesticide Law, regulates the distribution and use of pesticides.
- Florida Statutes, Chapter 482, Structural Pest Control Act, requires using pesticides for their intended purpose in accordance with the registered labels or as directed by the EPA.
- Florida Statutes, Chapter 369.20, Florida Aquatic Weed Control Act, regulates noxious aquatic weeds on public lands.
- Florida Statutes, Chapter 369.252, Invasive Exotic Plant Control, requires a program be established to eradicate or maintain control of the species detrimental to the state's natural environment.

### **Additional Sources of Information**

USDA Invasive and Noxious Weeds  
<http://plants.usda.gov/java/noxiousDriver>

Federal Noxious Weed Act  
<http://www.fws.gov/laws/lawsdigest/fednox.html>

FIFRA Act  
<http://www.epa.gov/agriculture/lfra.html>

USDA State-Specific Threats  
<http://www.invasivespeciesinfo.gov/unitedstates/fl.shtml#thr>

Center for Plant Conservation  
<http://www.centerforplantconservation.org/>

The Nature Conservancy, Protecting Native Plants and Animals  
<http://www.nature.org/ourinitiatives/habitats/forests/howwework/protecting-native-plants-and-animals-taking-on-the-invaders.xml>

Florida Exotic Pest Plant Council  
[www.fleppc.org](http://www.fleppc.org)

FDEP Bureau of Invasive Plant Management  
[http://www.dep.state.fl.us/mainpage/programs/invasive\\_plants.htm](http://www.dep.state.fl.us/mainpage/programs/invasive_plants.htm)

University of Florida, Center for Aquatic and Invasive Plants  
<http://aquat1.ifas.ufl.edu/welcome.html>

USFWS Invasive Species  
<http://www.fws.gov/invasives/>

### **5.1.7 Urban Forestry**

Urban forestry is the management of forests and related natural resources within human communities. Urban forests include trees, groups of trees, and stands of trees on improved or semi-improved lands, exclusive of forests managed under the NASWF Complex Forestry Management Plan. Successful urban forestry programs manage these resources to enhance both natural and human-built features.

## **Issues**

Trees and vegetation in urban areas, when properly managed, contribute to ecological health and quality of life at the NASWF Complex. Certain areas at the NASWF Complex, such as industrial and residential areas, would benefit from urban forestry practices that contribute to:

- Reduced noise levels, stormwater runoff, and soil erosion;
- Increased habitat for wildlife;
- Air quality improvements, dust control, purer air and dust control, reduced pollution, and controlled wind speeds;
- Moderated temperatures in paved areas and around buildings;
- Aesthetic improvements, including color, views, and seasonal changes; and
- Defined space, buffers, and barriers.

Urban landscaping has been shown to contribute to individuals' physical and mental health and quality of life. Urban landscaping also improves the public image of the Installation and directly relates to positive public opinion in the community.

## **Goals and Objectives**

- Protect and maintain natural resources within the NASWF Complex by continuing and enhancing ecologically appropriate and beneficial land uses and management practices, while ensuring the continuation of the military mission;
- Protect, maintain, and restore native vegetative communities and plant and wildlife populations, while improving the quality of life and ensuring continuation of the military mission;
- Provide facilities and develop policies that allow for recreational and educational uses of natural resources, and result in positive effects to these natural resources while improving the quality of life.
- Protect and conserve the ecological value and diversity of natural resources by fostering knowledge of, and participation in, adaptive ecosystem management;
- Implement environmentally beneficial landscaping, grounds maintenance, and urban forestry practices;
- Continue existing, and establish new programs and procedures to monitor, maintain, and enhance wetlands and water quality;
- Maintain the ecological integrity of wetland and upland communities for the protection of native plant and animal species, including numerous federally and state listed species;
- Maintain the attenuation capacity of the remaining undisturbed acreage within the 100-year floodplain;
- Ensure that land management and land use decisions comply with all applicable laws, executive orders, regulations, directives, and instructions, and that adverse impacts to the natural environment are minimized;

- Control nuisance wildlife and wildlife diseases that may adversely affect human health or welfare, the health of the ecosystem, and the military mission;
- Provide adequate staffing, equipment, technology, and training to the Natural Resources Program to ensure proper implementation of this INRMP; and
- Incorporate the concept of ecosystem management into all planning and management processes.

### **Projects**

- Wetlands Protection (Project 1 in Appendix A);
- Invasive Plant Control (Project 2 in Appendix A); and
- Endangered Species Habitat Conservation (Project 14 in Appendix A).

### **Management Strategies**

- Continue to follow its working Urban Forestry Plan and implement projects to enhance wildlife habitat and aesthetics in developed areas;
- Implement environmentally beneficial landscaping, grounds maintenance, and urban forestry practices;
- Continue to implement general landscape management practices consistent with the concepts presented in this INRMP;
- Continue to apply xeriscaping principles using native species for new landscaping, and will phase in these principles for existing landscapes;
- Continue to implement BMPs to minimize stormwater pollution and erosion (FDOT and FDEP 2007; FDEP 2008; NASWF 2013);
- Continue using BMPs for forest management activities to ensure watershed protection (FDACS 2003);
- Promote 50-foot buffers for all wetlands, and ensure land use and land management practices that will not adversely affect wetland resources;
- Continue to develop a soil erosion control plan and reduce the rate of soil erosion through the implementation of long-term measures and projects;
- Continue to inventory the use of pesticides and fertilizers to assess alternatives to their use and a reduction in pesticide and fertilizer use;
- Implement grounds maintenance practices consistent with the BASH Plan;
- Continue to implement programs and activities for the protection and enhancement of threatened and endangered plant and animal species and their habitats; and
- Continually verify that natural resources personnel obtain proper training and certifications.

### **Long-Term Management**

Long-term management for urban forestry will involve the central management of urban forest maintenance, tree planting, and tree protection to enhance the quality of life on the Complex. The NASWF Complex will identify areas where the benefits of urban forestry can be applied,

develop a plan for planting trees and shrubs, recruit and train volunteers, and develop partnerships to support the Complex's urban forestry program.

The program primarily includes planting, removal, maintenance, and protection of urban trees and forests. The NASWF Complex is working under a "working urban forestry plan" that includes an inventory and maintenance schedule for urban forestry projects. The primary components of the working urban forestry plan for the NASWF Complex are listed below.

- Selection of the appropriate tree species;
- Use of appropriate maintenance measures (pruning, fertilizing, watering) for new plantings and established trees;
- Mulching and tree protection from mowers and weed eaters;
- Completion of inventories and annual work plans to implement the overall urban forestry plan; and
- Use of volunteer organizations for assistance with planting and maintenance activities.

The NASWF Complex will strive to continue its achievement as a Tree City USA participant. Tree City USA is sponsored by The National Arbor Day Foundation in cooperation with the National Association of State Foresters, USDA Forest Service, US Conference of Mayors, and National League of Cities. The NASWF Complex has achieved the "Tree City USA" award every year since 1993. To achieve the annual recertification (as well as the initial award), four standards must be met: the establishment of a tree board or department which develops and implements a tree management program, development of a community tree ordinance, the expenditure of at least \$2 per capita, annually, for the urban forestry program, and the observance of a Navy Tree Awareness Week.

#### ***Integration with Other Natural resources Management Activities***

- Wetlands, Section 5.1.1 – maintain a 50-foot buffer around wetlands;
- Soil Conservation and Erosion, Section 5.1.2 – urban forestry can help reduce erosion;
- Stormwater and Water Quality, Section 5.1.3 – use proper amounts of herbicide and fertilizers to avoid excessive runoff in stormwater;
- Floodplains, Section 5.1.4 – ensure urban forestry does not compromise the function of floodplains;
- Landscaping and Grounds Maintenance, Section 5.1.5 – ensure urban forestry projects are consistent with landscaping and grounds maintenance tasks;
- Invasive, Exotic, and Noxious Species, Section 5.1.6 – replace removed exotic trees with native trees;
- Agricultural Outleasing, Section 5.1.8 – ensure urban forestry projects are consistent with agricultural outleasing objectives;
- Forest Protection, Section 5.2.2 – maintain urban forests to reduce fuel loads;

- Fisheries Management, Section 5.3.1 – use proper amounts of herbicide and fertilizers to avoid runoff into fishing areas;
- Migratory Birds, Section 5.3.2 - use proper amounts of herbicide and fertilizers to avoid runoff into wading areas;
- Threatened and Endangered Species, Section 5.3.3 – maintain and enhance habitat for protected wildlife;
- Nuisance Wildlife and BASH, Section 5.3.4 – be aware of creating potential habitat for BASH birds and wildlife;
- Outdoor Recreation, Section 5.4 – maintain aesthetically-pleasing grounds for recreation;
- Natural Resources Training, Section 5.5.1 – ensure personnel are aware of urban forestry issues and practices; and
- GIS, Section 5.5.2 – utilize GIS tools to improve urban forestry plans.

### ***Ecosystem Management***

Urban forestry supports the ecosystem management concept by providing wildlife habitat through the development of new greenways and managing urban areas for the enhancement of wildlife. Urban forests help reduce stormwater runoff and soil erosion, and will be used as a component of xeriscaping. Urban trees can also play an important role in temperature modification in developed areas.

### ***Military Mission***

Urban forestry practices can be implemented to help protect and enhance water quality and wildlife; thereby reducing the potential for adverse impacts to these resources that could threaten the military mission. It can also play an important part in improving quality of life for those supporting the military mission.

### ***Laws, Executive Orders, Regulations, Directives, and Memoranda Relevant to Urban Forest Management***

- Federal Noxious Weed Act of 1974, 7 U.S.C. 2801, establishes control and eradication of noxious weeds and regulates them in interstate and foreign commerce.
- Executive Order 13112, Invasive Species, as previously described.
- OPNAVINST 5090.1D, 12-3.8(j), discusses laws that govern natural resources management relating to the protection and management of forest resources.
- NASWFINST11015.2A, identifies requirements, delineates responsibilities, establishes procedures, and issues policies for the management of urban forests at NASWF.

### ***Additional Sources of Information***

FDACS Forest Service  
[http://www.floridaforestservice.com/field\\_operations/county\\_foresters/](http://www.floridaforestservice.com/field_operations/county_foresters/)

IFAS, Southern Escambia County, Florida's Urban Forests  
<http://edis.ifas.ufl.edu/fr293>

Alliance for Community Trees  
<http://actrees.org/site/index.php>

Arbor Day Foundation  
<http://www.arborday.org/programs/treeCityUSA/index.cfm>

Native Florida, Your Florida Backyard  
<http://www.nsis.org/>

International Society of Arboriculture  
<http://www.isa-arbor.com/home.aspx>

National Association of State Foresters  
<http://www.stateforesters.org/>

Society of American Foresters  
<http://www.safnet.org/>

Society of Municipal Arborists  
<http://www.urban-forestry.com/mc/page.do?sitePagelId=1374>

USDA Forest Service  
<http://www.fs.fed.us/>

Treelink  
<http://www.treelink.org/>

### 5.1.8 Agricultural Outleasing

Agricultural outleasing is the use of non-excess DoD lands, as allowed by 10 U.S.C. 2667, under a lease to an agency, organization, or person for growing crops or grazing domestic animals. The term "agriculture" includes activities related to producing, harvesting, processing, or marketing an agricultural, maricultural, or horticultural commodity. The NASWF Complex outleases land area at NOLF Summerdale, NOLF Silverhill, and NOLF Wolf. Agricultural leases are for 1 year, but may be renewed for four additional 1-year periods unless special needs dictate a longer lease period. Normally, agricultural leases are re-bid at least every 5 years. Lessees are required to comply with the conservation provisions of the Food Security Act of 1985, which is administered by the USDA NRCS and the conservation plan development for the lease area by NAVFAC SE Natural Resources Branch. Agricultural outleasing is strongly advocated by the DoD as a means of showing good stewardship of government lands. Agricultural outleases must be competitively bid and the government must get fair value. A major benefit of such leases is the savings realized by the Installation in grounds maintenance costs. The conservation plan can also include additional conservation and maintenance work that the lessee can do in lieu of cash rent. Table 16 summarizes outleased lands.

Table 16. NASWF Complex Agricultural Outleases			
Location	Acreage	Crops	Beginning of Term

NOLF Summerdale	231	Row crops (i.e., beans, silage, hay, grain, cotton and legumes) and hay	December 15, 2011
NOLF Silverhill	223	Bermuda grass	March 30, 2011
NOLF Wolf	114	Bermuda and bahia grass	February 1, 2009

### **Issues**

Agricultural outleasing occurs at NOLF Summerdale, NOLF Silverhill, and NOLF Wolf. The continuation of agricultural outleasing is important for good stewardship of government lands and reducing maintenance costs.

### **Goals and Objectives**

- Protect and maintain natural resources within the NASWF Complex by continuing and enhancing ecologically appropriate and beneficial land uses and management practices, while ensuring the continuation of the military mission;
- Protect, maintain, and restore native vegetative communities and plant and wildlife populations, while improving the quality of life and ensuring continuation of the military mission;
- Provide facilities and develop policies that allow for recreational and educational uses of natural resources, and result in positive effects to these natural resources while improving the quality of life.
- Protect and conserve the ecological value and diversity of natural resources by fostering knowledge of, and participation in, adaptive ecosystem management;
- Implement environmentally beneficial landscaping, grounds maintenance, and urban forestry practices;
- Continue existing, and establish new programs and procedures to monitor, maintain, and enhance wetlands and water quality;
- Maintain the attenuation capacity of the remaining undisturbed acreage within the 100-year floodplain;
- Ensure that land management and land use decisions comply with all applicable laws, executive orders, regulations, directives, and instructions, and that adverse impacts to the natural environment are minimized;
- Control nuisance wildlife and wildlife diseases that may adversely affect human health or welfare, the health of the ecosystem, and the military mission;
- Provide adequate staffing, equipment, technology, and training to the Natural Resources Program to ensure proper implementation of this INRMP; and
- Incorporate the concept of ecosystem management into all planning and management processes.



### **Projects**

- Wetlands Protection (Project 1 in Appendix A);
- Invasive Plant Control (Project 2 in Appendix A); and
- Agricultural Outleasing (Project 5 in Appendix A).

### **Management Strategies**

- Continue using BMPs for forest management activities and ensure that they are used in agricultural outleasing activities to ensure watershed protection (FDACS 2003);
- Implement environmentally beneficial landscaping, grounds maintenance, and urban forestry practices;
- Continue to implement general landscape management practices consistent with the concepts presented in this INRMP;
- Promote 50-foot buffers for all wetlands, and ensure land use and land management practices that will not adversely affect wetland resources;
- Continue to develop a soil erosion control plan and reduce the rate of soil erosion through the implementation of long-term measures and projects;
- Continue to inventory the use of pesticides and fertilizers to assess alternatives to their use and a reduction in pesticide and fertilizer use;
- Implement grounds maintenance practices consistent with the BASH Plan;
- Continue to implement programs and activities for the protection and enhancement of threatened and endangered plant and animal species and their habitats; and
- Continually verify that natural resources personnel obtain proper training and certifications.

### **Long-Term Management**

Land area currently being utilized for agricultural outleases will continue to be utilized for this purpose during this 10-year period. No additional lands are scheduled to be utilized for agricultural outlease unless market conditions make leasing additional areas desirable. Any newly acquired land will be considered for agricultural outlease. The long-term management of outleased land will be consistent with conservation principles. Leases or other actions that may result in significant changes in land use (e.g. hay production to sod farming) will require additional environmental documentation to comply with NEPA requirements. Lessees are required to comply with the conservation provisions of the Food Security Act of 1985, which is administered by the USDA NRCS. The Food Security Act applies primarily to the fields which have been determined as having high erosion potential by NRCS. In general, compliance with the Food Security Act will involve but is not limited to the following:

- Conservation Cropping Sequence – Rotation of designated crops in a specified sequence;

- Conservation Tillage – Farming techniques must be utilized to leave a specified percentage of crop residue on the soil surface after planting; and
- Terrace & Grassed Waterway Systems – Movement of soil to form terraces and waterways and establishment of grass in waterways where designated by NRCS.
- In addition, the following conservation management practices will be implemented:
- Erosion Control – Erosion control measures will be implemented to reduce the loss of soil due to the actions of wind and water;
- Proper Farm Equipment – Hydraulic connections on all power-driven equipment will be made in a manner to prevent oil leaks. The storage of fuel for equipment will be in accordance with Government regulations. The use of crawler tractors or spike-wheeled vehicles that could injure, impair, or cut into the surface on any pavement within the Installation will be prohibited;
- Fire Prevention – All farming practices shall be performed in a manner to prevent and/or reduce fire hazards; and
- Pesticides – All applications of pesticides shall be accomplished in compliance of DoD requirements for safety, effectiveness and environmental protection.

#### ***Integration with Other Natural resources Management Activities***

- Wetlands, Section 5.1.1 – maintain a 50-foot buffer around wetlands;
- Soil Conservation and Erosion, Section 5.1.2 – minimize erosion during agricultural activities;
- Stormwater and Water Quality, Section 5.1.3 – prevent sedimentation as a result of agricultural activities;
- Floodplains, Section 5.1.4 – ensure agricultural activities does not compromise the function of floodplains;
- Landscaping and Grounds Maintenance, Section 5.1.5 – ensure agricultural activities are consistent with landscaping and grounds maintenance tasks;
- Invasive, Exotic, and Noxious Species, Section 5.1.6 – do not introduce exotic or invasive plants to the Complex as a result of agriculture;
- Urban Forestry, Section 5.1.7 – ensure agricultural activities are consistent with urban forestry tasks;
- Forest Protection, Section 5.2.2 – prevent plant diseases that may be introduced via agriculture;
- Fisheries Management, Section 5.3.1 – use proper amounts of herbicide and fertilizers to avoid runoff into fishing areas;
- Migratory Birds, Section 5.3.2 - use proper amounts of herbicide and fertilizers to avoid runoff into wading areas;
- Threatened and Endangered Species, Section 5.3.3 – maintain and enhance habitat for protected wildlife;
- Nuisance Wildlife and BASH, Section 5.3.4 – be aware of creating potential habitat or forage for BASH birds and wildlife;
- Outdoor Recreation, Section 5.4 – maintain aesthetically-pleasing grounds for recreation;

- Natural Resources Training, Section 5.5.1 – ensure personnel are aware of agricultural outleasement issues and practices; and
- GIS, Section 5.5.2 – utilize GIS tools to improve utilization of agricultural outleasements.

### ***Ecosystem Management***

Agricultural production within the clear zones of NOLFs Wolf, Summerdale, and Silverhill, agricultural outleasement will be consistent with ecosystem management concepts. Agricultural practices on outleased lands will be consistent with soil conservation and erosion control measures so that adjacent ecosystems will not be adversely impacted.

### ***Military Mission***

Potential impacts to the military mission could arise from erosion problems near runways. In addition, agricultural lands could potentially attract nuisance wildlife that could interfere with the military mission.

### ***Laws, Executive Orders, Regulations, Directives, and Memoranda Relevant to Urban Forest Management***

- Military Construction and Authorization Act – Leases, Non-excess property, 10 U.S.C. 2667, provides for the out-leasing of public lands.
- Farm Land Protection Policy, 7 CFR 658, defines criteria that ensure farmland protection.
- Federal Insecticide, Fungicide, and Rodenticide Act, 7 U.S.C. 136, governs the use and application of pesticides in natural resources management programs.
- Federal Noxious Weed Act of 1974, 7 U.S.C. 2801, establishes control and eradication of noxious weeds and regulates them in interstate and foreign commerce.
- Soil Conservation Act, 16 U.S.C. 3B, provides for application of soil conservation practices on Federal lands.
- OPNAVINST 5090.1D, 12-3.(i), discusses natural resources management relating to agriculture.

### ***Additional Sources of Information***

World Wide Web Virtual Library, Agriculture  
<http://vlib.org/Agriculture.html>

USDA Natural Resources Conservation Service  
<http://www.nrcs.usda.gov/>

## **5.2 FOREST MANAGEMENT**

The NASWF Complex will protect and enhance forest resources by practicing ecologically-sound forest management leading to sustained yield of quality forest products, watershed protection, and wildlife habitat protection and management. Ecologically-sound stewardship involves

managing forestland for various components, including forest products, wildlife habitat, aesthetics, and recreation. Components of the NASWF Complex annual work plan generally include prescribed burning, timber sales, timber inventory, site preparation, and reforestation. To protect and enhance forest resources, the Complex will implement the strategies, projects, and initiatives described in Section 4 of the INRMP.

Forest Management may be divided into two major components: silviculture and forest protection. Silvicultural practices include timber harvesting, pine straw harvesting, prescribed burning, establishment of firebreaks, herbicide application, forest fertilization, site preparation, and regeneration. Forest protection includes protection from wildfire, diseases, and insects. The NASWF Complex recognizes that the frequent and intense heat extremes and altered precipitation patterns projected to occur with climate change may increase the frequency and intensity of wildfires. Ongoing and continued forest management and protection measures are therefore vital to offset the potential vulnerability of properties on the Complex.

Approximately 2,335 acres of forestland are being managed under the NASWF Forest Management Plan (see Appendix B). This includes forest stands at NAS Whiting Field (945 acres, see Figure 3), NOLF Harold (277 acres, see Figure 6), NOLF Santa Rosa (314 acres, see Figure 7), NOLF Holley (320 acres, see Figure 8), NOLF 8-A (156 acres, see Figure 9), NOLF Wolf (9 acres, see Figure 10), NOLF Barin (247 acres, see Figure 11), NOLF Summerdale (39 acres, see Figure 12), and NOLF Silverhill (25 acres, see Figure 13).

Slash and longleaf pine are the favored species, and will be perpetuated on those sites suited for these particular species. Hardwoods are limited in total area, but they nevertheless contribute much to the food and habitat needs of wildlife in the area. Some of the most prevalent hardwood species include hickory, oak, dogwood, sweetgum, holly, maple, and blackgum. Hardwoods will be given equal importance with pine in areas where hardwood species can be managed. The leaving of mast trees, den trees, and cavity trees for wildlife purposes, will be given a high priority. During this 10-year period, forest stands will continue to be thinned to improve the quality of merchantable trees to be carried through the rotation age (80 years unless modified for the military mission). In addition, prescribed burning and herbicide and fertilizer applications will be utilized to improve stand quality and habitat.

### **5.2.1 Silvicultural Activities**

Silvicultural activities include timber harvesting, pine straw harvesting, prescribed burning (including the establishment of firebreaks), herbicide application, forest fertilization, site preparation and regeneration. Timber harvesting methods include the following: thinning;

improvement cutting; salvage cutting; clear cutting; seed tree cutting; and shelterwood cutting. Silvicultural practices are described below.

- **Thinnings** are cuttings in planted immature stands to increase the rate of growth of timber products and maintain stand composition. A thinning can be a removal of every other row of trees, or the removal of selected trees that are ready for the market and low-value trees that are competing with future crop trees. In either case, a thinning will redistribute the growth potential of the site to the best trees so that they continue to grow at an acceptable growth rate. This action also increases sunlight penetration to the forest floor, which stimulates understory growth and creates food and cover for wildlife.
- **Improvement cuttings** are made in stands older than the sapling stage, usually to improve the composition. This type cut is most often applied to wild stands being placed under management and involves removal of undesirable trees that are of sufficient size to provide merchantable products, as well as trees that are diseased, mechanically injured, unthrifty (likely to die before the next cut), insect infested, and of poor form (forked or crooked). Improvement cuttings and thinnings in a stand are usually concurrent operations.
- **Salvage cuttings** remove dead and injured trees in order to utilize them before they become unable to be harvested. Trees are salvaged promptly following storm events, severe fires, or attacks of insects and diseases. Salvage cuts are sometimes required to clear construction sites.
- **Clear cuttings** will be used at the discretion of the NRM in consultation with NAVFAC SE foresters and fish and wildlife biologists, as well as other federal and state agencies. Clear cutting will be used when there is an identified need to change species (e.g., slash pine to longleaf pine), remove an over mature or diseased stand, or for another reason deemed essential (i.e., following natural disasters). No clear cutting is planned for this 10-year period. Occasionally, clear cutting is required to meet mission safety criteria, such as height restrictions around runways.
- **Shelterwood cuttings** will be used at the discretion of the NRM in consultation with NAVFAC SE foresters and fish and wildlife biologists, as well as other federal and state agencies. Shelterwood cutting will be used to regenerate forest stands through a series of perhaps two to three cuts. This system is frequently used to regenerate heavy seeded species. Cuttings may be separated by as much as 20 years.
- **Seed tree cuttings** will be used at the discretion of the NRM in consultation with NAVFAC SE foresters and fish and wildlife biologists, as well as other federal and state agencies. Seed tree cutting involves the removal of all trees except trees of the desired species in sufficient numbers to reseed the cut-over area.
- **Prescribed burning** is the purposeful application of fire in a controlled, knowledgeable manner to remove and reduce forest fuels on a specific land area under selected weather conditions. A prescribed burn generally involves backing a low-intensity, surface fire through forest stands. Prescribed burning improves habitat by removing dense, scrubby understory vegetation, and allowing early successional flora to grow. Burning removes forest floor litter, promotes wildlife forage, promotes germination of plant seeds scarified by the heat, releases minerals and nutrients tied up in vegetation to the soil, and creates an edge effect along the boundaries between burned and unburned areas. In addition, prescribed burning reduces fuel levels and the chance of wildfires, which could destroy or seriously damage forest stands and potentially cause a threat to the military mission. Prescribed burning cannot be used in hardwood stands under management. Sand pines are also very sensitive to fire.

- **Firebreaks** are a necessary part of a fire management program. Existing features such as roads and streams may be used as firebreaks, but oftentimes such features are not present. Where existing features do not occur, man-made firebreaks must be established. Plowed firebreaks will be disked and leveled to prevent soil erosion and interruption of boundaries and hydrology. Permanent firebreaks may later be used for forest access.
- **Pine straw harvesting** involves the removal of annual pine litterfall from the forest floor. Quantity removed varies by age of stand and site quality. Younger (5 to 10 years) stands are generally more productive than older (>15 years) stands.
- **Herbicide application** is used as a timber stand improvement (TSI) practice to control understory vegetation in areas where prescribed burning cannot be accomplished.
- **Forest fertilization** is used as a TSI practice to improve timber growth rates on relatively poor quality sites. Combined with herbicide applications, prescribed burning, and thinning, fertilization will promote the more rapid development of the forest stand so that other ecosystem values can be realized.
- **Site preparation** includes activities designed to improve conditions for seeding or planting that result in increased germination or seedling survival and tree growth. Examples include land-clearing activities, such as drum chopping, shearing, raking, piling into windrows, burning, and pesticide applications. Additional methods of site preparation include complete vegetation removal through chipping and other debris removal methods, followed by disking or scarification.
- **Regeneration** is the renewal of a forest by either natural or artificial means. Regeneration is generally preceded by a clear cut, a seed tree cut, or a shelterwood cut. Regeneration methods include natural seeding, planting, and direct seeding. The need for regeneration is not anticipated during this 10-year period.

### **Issues**

Forest stands at the NASWF Complex require periodic maintenance (i.e., use of silvicultural activities). Maintenance neglect represents a threat to the military mission and to the sustainability of forestry and wildlife resources. Timber stands require maintenance to increase the growth rate of the preferred trees, to reduce the potential for wildfires, to control diseases and insect pests, and to ensure the continuation of fire-dependent plant and wildlife communities.

### **Goals and Objectives**

- Protect and enhance forest resources by practicing ecologically sound forest management leading to sustained yield of quality forest products, watershed protection, and wildlife habitat;
- Protect and maintain natural resources within the NASWF Complex by continuing and enhancing ecologically appropriate and beneficial land uses and management practices, while ensuring the continuation of the military mission;
- Protect, maintain, and restore native vegetative communities and plant and wildlife populations, while improving the quality of life and ensuring continuation of the military mission;
- Protect and conserve the ecological value and diversity of natural resources by fostering knowledge of, and participation in, adaptive ecosystem management;

- Practice the ecosystem management concept for sustained yield of forest products and forest health;
- Manage forests in an ecologically sound manner to provide habitat for wildlife;
- Manage forest stands for watershed protection.
- Maintain the attenuation capacity of the remaining undisturbed acreage within the 100-year floodplain;
- Maintain the ecological integrity of wetland and upland communities for the protection of native plant and animal species, including numerous federally and state listed species;
- Preserve and protect threatened and endangered species and species of special concern to ensure no reduction in population sizes;
- Control nuisance wildlife and wildlife diseases that may adversely affect human health and welfare, the health of the ecosystem, and the military mission; and
- Ensure that land management and land use decisions comply with all applicable laws, executive orders, regulations, directives, and instructions, and that adverse impacts to the natural environment are minimized.

### **Projects**

- Wetlands Protection (Project 1 in Appendix A);
- Invasive Plant Control (Project 2 in Appendix A);
- Longleaf Alliance and Gulf Coastal Plain Ecosystem Partnership (Project 3 in Appendix A);
- Reforestation (Project 6 in Appendix A);
- Forest Product Sales (Project 7 in Appendix A);
- Timber Stand Improvement (Project 8 in Appendix A);
- Construction and Maintenance of Forest Roads (Project 9 in Appendix A);
- Fire Management (Project 10 in Appendix A);
- Gopher Tortoise Biological Monitoring (Project 12 in Appendix A); and
- Endangered Species Habitat Conservation (Project 14 in Appendix A).

### **Management Strategies**

- Continue managing forest stands through harvesting, herbicide applications, and prescribed burns as outlined in the Forest Management Plan (see Appendix B);
- Support the training and certification of one individual in prescribed burn management, in addition to the Regional Forester;
- Perpetuate the prevailing pine forest while giving equal emphasis to hardwoods in those areas best suited to such species;
- Continually evaluate forest management practices and their effects on ecosystems and wildlife habitat, and continue programs to protect rare, threatened, and endangered plant and animal species;
- Continue using BMPs for forest management activities and ensure that they are used in agricultural outleasing activities to ensure watershed protection (FDACS 2003);

- Promote 50-foot buffers for all wetlands, and ensure land use and land management practices that will not adversely affect wetland resources;
- Continue to develop a soil erosion control plan and reduce the rate of soil erosion through the implementation of long-term measures and projects;
- Continue to inventory the use of pesticides and fertilizers to assess alternatives to their use and a reduction in pesticide and fertilizer use;
- Implement grounds maintenance practices consistent with the BASH Plan;
- Continue to implement programs and activities for the protection and enhancement of threatened and endangered plant and animal species and their habitats; and
- Continually verify that natural resources personnel obtain proper training and certifications.

### ***Long-Term Management***

The forest management program for the NASWF Complex is administered and carried out by the Pensacola Regional NRM and Forester with assistance from the NASWF Natural Resources staff. The program provides for sustained-yield of quality timber products, and protection and development of other natural resources in a multiple-use, integrated concept.

The program is set up using a 10-year management plan with continual review and updating as required. The 10-year Forestry Management Plan for the NASWF Complex is included in Appendix B. Table B-1 characterizes forest stands at each Installation within the NASWF Complex. Table B-2 presents a Summary of the 10-year Forest Management Plan for the NASWF Complex. Table B-3 presents the 10-year forest management prescriptions for forest stands within the NASWF Complex.

The yearly work plan, which is based on the 10-year Plan, is prepared and submitted as an annual increment to NAVFAC HQ via NAVFAC SE for funding of proposed work items. The annual increment identifies specific work items to be accomplished, such as timber stand improvement, reforestation, fire management, timber sales, and administrative management. The approved increment is the basic forestry work for the year. The actual forestry operations are implemented by the NRM and Forester, NASWF forces, NAVFAC SE, and contractual services. Basic operation, such as marking and cruising timber, prescribed burning, inspection of timber contracts, and general forest management, are the responsibility of the Installation NRM and Forester. NAVFAC SE provides technical support and assists in contract specification preparation. The Resident Officer in Charge of Construction and Contracts (ROICC) advertises, awards, and maintains records on forestry contracts.

Forest stands at the NASWF Complex are managed with an ecosystem approach for sustained yield and health. Planned silvicultural activities for this 10-year period include thinning,



prescribed burning, pinestraw harvesting, herbicide application, and forest fertilization. Cutting and prescribed burn cycles will be conducted consistent with the long-term management concepts for wildlife (Section 5.3). To accomplish this, foresters and fish and wildlife biologists from NAVFAC SE, as well as other appropriate federal, state, and county agencies will review the forest annual increment of work. This review will help ensure that ongoing management techniques include those that enhance wildlife populations that are dependent on forest ecosystems. Silvicultural activities in relation to the 10-year Forestry Management Plan are discussed below.

#### Thinning

Scheduled thinnings reduce the stand density as measured by “basal area” in square feet per acre. The desired reduction in density will be determined by the NRM, and will reflect the needs of the forest stand and the associated ecosystem represented by the stand and surrounding area. Thinnings will be designed to promote future natural regeneration of the forest stand by leaving quality seed trees spaced appropriately. A target basal area for pine regeneration at rotation age will be from 20 to 60 square feet of basal area per acre. In pine communities, the cutting cycle will begin when the stand reaches merchantable size (approximately 13 to 15 years) and will continue every 7 to 10 years until the rotation age of 80 years. The cutting cycle will be scheduled at the discretion of the NRM. Stands older than 80 years will be evaluated by the NRM, as well as by NAVFAC SE wildlife biologists, for their value as wildlife habitat. Cutting will decrease stand density between 60 and 80%. Harvesting activities in forested wetlands will occur as determined by the NRM. The NASWF Complex will practice snag retention, the practice of leaving dead trees standing in managed forests to enhance wildlife habitat. Dead trees are often colonized and used by various wildlife species. The NASWF Complex will not to remove a snag unless it jeopardizes property or is a safety risk.

#### Prescribed Burning

Prescribed burning is the primary forestry management tool at the NASF Complex. Burns will be conducted by trained personnel. Forest stands (pine) will be burned on a 3-year rotation, or at the discretion of the NRM. Burns will be hot enough on pine stands to kill invasive hardwoods, and will be scheduled in winter to reduce fuel loads to allow growing season burns in subsequent years, if desired. Prescribed burns will be scheduled in wetlands for habitat management. The timing of prescribed burning will account for ecosystem needs within the forest stand and surrounding area and will be conducted during both the growing season and the dormant season as determined by the NRM.

Firebreaks must be established as part of the prescribed burning program to prevent fire from escaping from the burn area. Existing barriers such as roads and wetlands will be used as firebreaks where feasible, but firebreaks must be established and maintained where existing barriers are not present. Prescribed burning is dependent upon weather conditions and mission-related activities. Equipment necessary to conduct fire management includes crawler tractor, transport truck, ATVs, Gyrotrac, and other fire ignition and suppression equipment.

The following conditions must be understood and described in each prescription for prescribed burns to be an effective management technique: (1) biological requirements of target species (i.e., gopher tortoise, large-leaved jointweed), (2) vegetative condition of the stand to be burned, and (3) expected results for understory and species composition.

#### Pinestraw Harvesting

Pinestraw harvesting should occur annually for 3 to 5 years followed by no harvesting for 3 to 5 years in relatively young pine stands (5 to 20 years old) to prevent reduction of site quality. Two to 10 tons per acre per year of pine straw can be harvested in relatively young stands.

#### Herbicide Application

Herbicide application is scheduled in forest areas where prescribed burning is not effective or is not authorized due to proximity to residential areas and other smoke-sensitive sites. Prescribed fire can be introduced after initial treatment by herbicide in most cases. The removal of undesirable exotic species using herbicides is also discussed in the land management section of the INRMP. The control of exotic species will be coordinated with the Forest Management Plan (Appendix B) so forestry operations can enhance the control effort (i.e., prescribed burning following an exotic species control project).

#### Forest Fertilization

Fertilization is scheduled in forest areas where site quality is relatively poor. These forest stands are usually fertilized every 10 years.

#### Unplanned Activities

Unplanned activities that will require a change to the work plan in forest areas may result due to natural causes or mission-related requirements. Natural causes include the effects of wildfire, insect and disease outbreaks, nuisance animal damage, and weather-related events

such as tornadoes, tropical storms, and hurricanes. Mission related requirements may include reduction of forest areas to construct new facilities and training requirements that require an interruption in the thinning or prescribed burn schedule. Should scheduled prescribed burning not occur due to mission-related requirements, the application of approved pesticides in forest areas, combined with the cutting and removal of understory vegetation, may be scheduled as an unplanned activity.

Silvicultural actions for unplanned activities include the full range of available and acceptable practices as described above, as well as forest harvesting methods, such as clear cutting. One hundred sixty (160) total acres (plus an increase of 300% in the event of natural events such as tornadoes and hurricanes) of forest area per year shall be designated as the approximate acreage requiring work described as an “unplanned activity”, in accord with the environmental assessment associated with this INRMP. Unplanned activities such as clearcutting, debris removal, chipping, drum chopping, shearing, raking, piling into windrows, burning, pesticide applications, and conversion to a different forest age class may be necessary if the unplanned activity is dictated by natural events. The specific project, if mission related, shall include complete environmental documentation separate from the actions designated by this INRMP as unplanned activities. The environmental authorization established by this INRMP will cease for an existing forest stand if it is converted to another use for mission purposes.

#### ***Integration with Other Natural Resources Management Activities***

- Wetlands, Section 5.1.1 – maintain a 50-foot buffer around wetlands;
- Soil Conservation and Erosion, Section 5.1.2 – consider and control erosion during silvicultural activities such as thinning;
- Stormwater and Water Quality, Section 5.1.3 – use proper amounts of herbicide and fertilizers to avoid excessive runoff in stormwater;
- Floodplains, Section 5.1.4 – ensure silvicultural activities do not compromise the function of floodplains;
- Landscaping and Grounds Maintenance, Section 5.1.5 – ensure silvicultural projects are consistent with landscaping and grounds maintenance tasks;
- Invasive, Exotic, and Noxious Species, Section 5.1.6 – reduce and control exotic vegetation in forest stands;
- Urban Forestry, Section 5.1.7 – apply principles to urban forestry when possible;
- Agricultural Outleasing, Section 5.1.8 – prevent plant diseases that may be introduced via agriculture;
- Forest Protection, Section 5.2.2 – maintain forest stands to reduce fuel loads;

- Fisheries Management, Section 5.3.1 – use proper amounts of herbicide and fertilizers to avoid runoff into fishing areas;
- Migratory Birds, Section 5.3.2 - use proper amounts of herbicide and fertilizers to avoid runoff into wading areas;
- Threatened and Endangered Species, Section 5.3.3 – maintain and enhance forest habitat for protected wildlife;
- Nuisance Wildlife and BASH, Section 5.3.4 – be aware of creating potential habitat for BASH birds and wildlife;
- Outdoor Recreation, Section 5.4 – maintain aesthetically-pleasing forests for recreation;
- Natural Resources Training, Section 5.5.1 – ensure personnel are aware of forestry issues and practices; and
- GIS, Section 5.5.2 – utilize GIS tools to improve forest management and silvicultural plans.

### ***Ecosystem Management***

Silvicultural activities are essential to maintain healthy forests (especially fire-dependent ecosystems) that provide quality wildlife habitat and sustainable yields of forest products. Harvesting activities are means by which to redistribute the site's growth potential to the best trees so that they maintain an acceptable rate of growth. Harvesting also stimulates understory growth, which creates food and cover for some wildlife. Prescribed burning is a natural part of many ecosystems at the NASWF Complex, and, when used in combination with harvesting, can maintain healthy and vigorous forest stands on the Installation, as well as provide habitat for rare, threatened, or endangered species.

### ***Military Mission***

Silvicultural practices such as harvesting, herbicide applications, and prescribed burning on the NASWF Complex decrease forest fuel loads, thus decreasing fuel available to wildfires, which could threaten the NASWF Complex military mission activities, facilities, and housing, and affect scheduling for training.

### ***Laws, Executive Orders, Regulations, Directives, and Memoranda Relevant to Silvicultural Activities***

- Resources Planning Act (RPA), passed by Congress in 1974, requires a complete national assessment or inventory of all forest, rangeland resources, and public needs every ten years, along with a plan to meet those needs.
- Soil Conservation Act, 16 USC 590a et. seq., provides for soil conservation practices on federal lands.
- Federal Noxious Weed Act of 1974, 7 U.S.C. 2801, establishes control and eradication of noxious weeds and regulates them in interstate and foreign commerce.

- Executive Order 13112, 3 February 1999, requires executive agencies to restrict the introduction of exotic organisms into natural ecosystems. Vegetative buffers and landscaping to control soil erosion must comply with this executive order.
- Executive Orders 11989 and 12608, close areas to off-road vehicles where soil, wildlife, and other natural resources may be adversely affected.
- Federal Water Pollution Control Act, as amended by the CWA of 1977, 33 USC 1251, regulates the dredging and filling of wetlands and establishes procedures to identify and regulate nonpoint sources of pollutant discharge, including turbidity, into wetlands.
- CWA, Section 402 NPDES Program, 2002, 33 USC 1251, controls direct discharges into navigable waters. NPDES permits, issued by either the EPA or an authorized state or tribe, contain industry-specific, technology-based and water-quality-based limits and establish pollutant monitoring and reporting requirements.
- CWA Section 401, requires an applicant for a federal license or permit to provide a certification that any discharges from the facility will comply with the CWA, including water quality standard requirements.
- CWA Section 404, establishes a program to regulate the discharge of dredged or fill material into waters of the United States, including wetlands.
- Endangered Species Act, protects threatened and endangered species and their habitats until they are out of danger of extinction.
- DOD 7000.14-R, Volume 11A, Chapter 16 administers the reimbursement of costs of managing forest resources for timber production. Under this regulation, only expenses related to the maintenance of timber for commercial sale are reimbursed.
- OPNAVINST 5090.1D, 12-3.8(j), discusses laws that govern natural resources management relating to the protection and management of forest resources.
- Sikes Act, 16 U.S.C. 670a-o, authorizes conservation programs on military reservations.
- DOD Directive 4715.1E, establishes the Defense Environmental Security Council; the Environment, Safety, and Occupational Health Policy Board and the Defense Environmental Security Council Committee structure; and the Armed Forces Pest Management Board.

#### **Additional Sources of Information**

Eglin Air Force Base Forest Restoration  
[http://www.eglin.af.mil/library/factsheets/factsheet\\_print.asp?fsID=6449&page=1](http://www.eglin.af.mil/library/factsheets/factsheet_print.asp?fsID=6449&page=1)

Blackwater Forestry Center  
<http://www.floridafl.org/c-517331.htm>

FDACS Florida Forest Service  
<http://www.floridaforestservice.com/index.html>

FDACS Prescribed Fire Training  
[http://www.floridaforestservice.com/wildfire/rx\\_training.html](http://www.floridaforestservice.com/wildfire/rx_training.html)

FDACS County Forester Directory  
[http://www.floridaforestservice.com/field\\_operations/county\\_foresters/](http://www.floridaforestservice.com/field_operations/county_foresters/)

Tall Timbers Research Station  
<http://www.talltimbers.org/>

TNC Fire Management Manual

<http://www.tncfiremanual.org/>

A Guide for Prescribed Fire in Southern Forests

[http://www.sref.info/resources/publications/file\\_03\\_22b\\_06](http://www.sref.info/resources/publications/file_03_22b_06)

American Forests

<http://www.americanforests.org/>

National Association of State Foresters

<http://www.stateforesters.org/>

Society of American Foresters

<http://www.safnet.org/>

USDA Forest Service

<http://www.fs.fed.us/>

Treelink

<http://www.treelink.org/>

### 5.2.2 Forest Protection

The NASWF Complex protects its forest stands against wildfires, insects, and diseases, and endeavors to maintain desirable environmental and aesthetic forest qualities. A desirable aesthetic quality may be a dense stand of healthy trees near a roadside.

- **Wildfires** are uncontained fires in forested or open areas. Wildfires may result from human activities or weather events. The potential for severe wildfires may be decreased by implementing prescribed burning programs, which decrease fuel loads in forest stands (see Section 5.2.1).
- **Diseases**, such as fusiform rust (*Cronartium fusiforme*), are present on the NASWF Complex. Galls are the first signs of the disease, and grow on branches and tree trunks, eventually encircling the trunk or branch and killing it. Thinnings will emphasize salvage and removal of diseased trees. It is likely that highly infected plantations may have to be cleared and replanted because, after salvage cutting, too few trees per acre will remain for future growth and development.
- **Insects**, such as the southern pine, ips, and black turpentine beetles, attack and kill pine trees. The attack intensity depends on the field conditions, tree vigor, and weather. Needles on trees will turn brown within several days after a fatal attack. The threat of insect infestations may be lowered by the use of pesticides and maintaining thinned healthy forests (see Section 5.2.1). Damage to trees by machinery, especially in pine stands, should be minimized because the wounds will attract insects.

#### **Issues**

Wildfires, insects, and diseases have the potential to cause severe damage in forest stands on the NASWF Complex. Silvicultural activities and proper training to control wildfires, insects, and diseases at the NASWF Complex are essential to carrying out the goals and objectives of this INRMP. Proper forest protection activities will increase the growth rate of the preferred trees, reduce the potential for wildfires, control diseases and insect pests, and ensure the continuation of healthy forest communities.

### **Goals and Objectives**

- Protect and enhance forest resources by practicing ecologically sound forest management leading to sustained yield of quality forest products, watershed protection, and wildlife habitat;
- Protect and maintain natural resources within the NASWF Complex by continuing and enhancing ecologically appropriate and beneficial land uses and management practices, while ensuring the continuation of the military mission;
- Protect, maintain, and restore native vegetative communities and plant and wildlife populations, while improving the quality of life and ensuring continuation of the military mission;
- Protect and conserve the ecological value and diversity of natural resources by fostering knowledge of, and participation in, adaptive ecosystem management;
- Practice the ecosystem management concept for sustained yield of forest products and forest health;
- Manage forests in an ecologically sound manner to provide habitat for wildlife;
- Manage forest stands for watershed protection.
- Maintain the attenuation capacity of the remaining undisturbed acreage within the 100-year floodplain;
- Maintain the ecological integrity of wetland and upland communities for the protection of native plant and animal species, including numerous federally and state listed species;
- Preserve and protect threatened and endangered species and species of special concern to ensure no reduction in population sizes;
- Control nuisance wildlife and wildlife diseases that may adversely affect human health and welfare, the health of the ecosystem, and the military mission; and
- Ensure that land management and land use decisions comply with all applicable laws, executive orders, regulations, directives, and instructions, and that adverse impacts to the natural environment are minimized.

### **Projects**

- Wetlands Protection (Project 1 in Appendix A);
- Invasive Plant Control (Project 2 in Appendix A);
- Longleaf Alliance and Gulf Coastal Plain Ecosystem Partnership (Project 3 in Appendix A);
- Reforestation (Project 6 in Appendix A);
- Forest Product Sales (Project 7 in Appendix A);
- Timber Stand Improvement (Project 8 in Appendix A);
- Construction and Maintenance of Forest Roads (Project 9 in Appendix A);
- Fire Management (Project 10 in Appendix A);
- Gopher Tortoise Biological Monitoring (Project 12 in Appendix A); and
- Endangered Species Habitat Conservation (Project 14 in Appendix A).

### **Management Strategies**

- Continue managing forest stands through harvesting, herbicide applications, and prescribed burns as outlined in the Forest Management Plan (see Appendix B);
- Support the training and certification of one individual in prescribed burn management, in addition to the Regional Forester;
- Perpetuate the prevailing pine forest while giving equal emphasis to hardwoods in those areas best suited to such species;
- Continually evaluate forest management practices and their effects on ecosystems and wildlife habitat, and continue programs to protect rare, threatened, and endangered plant and animal species;
- Continue using BMPs for forest management activities and ensure that they are used in agricultural outleashing activities to ensure watershed protection (FDACS 2003);
- Promote 50-foot buffers for all wetlands, and ensure land use and land management practices that will not adversely affect wetland resources;
- Continue to develop a soil erosion control plan and reduce the rate of soil erosion through the implementation of long-term measures and projects;
- Continue to inventory the use of pesticides and fertilizers to assess alternatives to their use and a reduction in pesticide and fertilizer use;
- Implement grounds maintenance practices consistent with the BASH Plan;
- Continue to implement programs and activities for the protection and enhancement of threatened and endangered plant and animal species and their habitats; and
- Continually verify that natural resources personnel obtain proper training and certifications.

### **Long-Term Management**

Forest stands at the NASWF Complex are managed with an ecosystem approach to sustain yield and health. Planned silvicultural activities in the Forest Management Plan (Appendix B) that are directly related to forest protection include prescribed burning, thinning, and pesticide application (see Section 5.2.1). The NRM will have timber prescriptions reviewed by foresters and fish and wildlife biologists from NAVFAC SE, as well as other appropriate federal, state, and county agencies to ensure proper forest protection management. The NASWF Complex adheres to BMPs prescribed in *Silviculture Best Management Practices, Revised 2003* to control sedimentation and erosion that might affect waterways and water quality as the result of forestry activities (FDACS 2003)

### **Gyrotrac**

Navy Region Southeast has a Model GT-18XP Gyrotrac as an aid for vegetation control. The Gyrotrac Heavy Duty Brushcutter has a flail mower type cutting head mounted on the front of the track propelled machine powered by a 190 horsepower Cummings diesel engine. The cutter head has the capability of cutting to ground level heavy brush and trees 8 to 12 inches in



diameter, leaving nothing but a layer of chips on the ground. The Gyrotrac's low ground pressure tracks exert a pressure of only 2.5 pounds per square inch (PSI). This allows the machine to be used over a wide range of ground conditions. Navy Region Southeast has used this unit with great success to maintain roads, trails, right of ways, flight clearance zones, and security areas. The unit has been shared between the Facilities and the Natural Resources Departments since the time of purchase.

The NASWF Complex has successfully used the Gyrotrac to supplement its prescribed burning program and enables foresters to limit the forest fuel load year-round. This is important for proper forest management at the NASWF Complex since smoke and limited burn days make it difficult to integrate burning schedules with aircraft training requirements. The Gyrotrac, when used to maintain firebreaks on unstable soils, reduces erosion that would otherwise be accentuated by more impactful machinery. The low ground pressure exerted by the Gyrotrac is suitable for use in wetland areas; the unit's approved use in wetlands generally does not require an EA.



The Gyrotrac has other applications that benefit natural resources management. It can be used to improve habitat for wildlife, reduce competition to release desirable forest species, maintain trails and enhance other outdoor recreation facilities, remove invasive plant species and enhance urban forestry areas.

#### ***Integration with Other Natural Resources Management Activities***

- Wetlands, Section 5.1.1 – use proper amounts of pesticides to avoid wetland contamination;
- Soil Conservation and Erosion, Section 5.1.2 – consider and control erosion during forest protection activities such as thinning;
- Stormwater and Water Quality, Section 5.1.3 – use proper amounts of pesticides to avoid excessive runoff in stormwater;
- Floodplains, Section 5.1.4 – ensure forest protection activities do not compromise the function of floodplains;
- Landscaping and Grounds Maintenance, Section 5.1.5 – ensure forest protection activities are consistent with landscaping and grounds maintenance tasks;
- Invasive, Exotic, and Noxious Species, Section 5.1.6 – reduce and control destructive pests in forest stands;

- Urban Forestry, Section 5.1.7 – protection measures will likely benefit urban forestry;
- Agricultural Outleasing, Section 5.1.8 – prevent plant diseases that may be introduced via agriculture;
- Silvicultural Activities, Section 5.2.1 – maintain forest stands to reduce fuel loads;
- Fisheries Management, Section 5.3.1 – use proper amounts of pesticides to avoid runoff into fishing areas;
- Migratory Birds, Section 5.3.2 – use proper amounts of pesticides to avoid runoff into wading areas;
- Threatened and Endangered Species, Section 5.3.3 – protect forest health and habitat for protected wildlife;
- Nuisance Wildlife and BASH, Section 5.3.4 – be aware of creating potential habitat for BASH birds and wildlife;
- Outdoor Recreation, Section 5.4 – maintain aesthetically-pleasing forests for recreation;
- Natural Resources Training, Section 5.5.1 – ensure personnel are aware of forestry issues and practices; and
- GIS, Section 5.5.2 – utilize GIS tools to improve forest protection.

### ***Ecosystem Management***

Forest protection activities are essential to maintain healthy forests that provide quality wildlife habitat and sustainable yields and prevent the accumulation of fuel loads, which could cause detrimental effects to forest stands. In addition, forest protection activities enhance the functional capacities of wetland areas within the NASWF Complex by allowing prescribed burns to remove invasive species within wetland areas, and minimize the potential for catastrophic wildfires that could decimate forest stands and expose large areas of soil to erosion.

### ***Military Mission***

Forest protection helps prevent wildfires which could threaten the NASWF Complex military mission activities and facilities.

### ***Laws, Executive Orders, Regulations, Directives, and Memoranda Relevant to Forest Protection***

- Federal Noxious Weed Act of 1974, 7 U.S.C. 2801, establishes control and eradication of noxious weeds and regulates them in interstate and foreign commerce.
- Executive Order 13112, Invasive Species, as previously described.
- Federal Insecticide, Fungicide, and Rodenticide Act, 7 U.S.C. 136, requires that all pesticides, whether for commercial or private use, be applied in accordance with product labeling and that containers are properly disposed of. EPA is responsible under FIFRA for the registration of all pesticide active ingredients used in the United States.

- Federal Plant Pest Act, 7 U.S.C. 150a et seq., regulates the importation and interstate movement of plant pests and authorizes the Secretary of Agriculture to take emergency measures to destroy infected plants or materials.
- Florida Statutes, Chapter 487, the Florida Pesticide Law, regulates the distribution and use of pesticides.
- OPNAVINST 6250.4B, 27 August 1998, DOD Pest Management Program, provides the DON with policies for implementing pest management programs directed against pests that conflict with or adversely affect the mission of the DOD; affect the health and well-being of the DON personnel and their dependants; attack or damage real property, supplies, or equipment; adversely affect the environment; or are otherwise undesirable.
- DOD 7000.14R, Volume 11A, Chapter 16 administers the reimbursement of costs of managing forest resources for timber production. Under this regulation, only expenses related to the maintenance of timber for commercial sale are reimbursed.
- OPNAVINST 5090.1D, 12-3.8(j), discusses laws that govern natural resources management relating to the protection and management of forest resources.

### **Additional Sources of Information**

Blackwater Forestry Center  
<http://www.floridafl.org/c-517331.htm>

FDACS Florida Forest Service  
<http://www.floridaforestservice.com/index.html>

FDACS Prescribed Fire Training  
[http://www.floridaforestservice.com/wildfire/rx\\_training.html](http://www.floridaforestservice.com/wildfire/rx_training.html)

FDACS County Forester Directory  
[http://www.floridaforestservice.com/field\\_operations/county\\_foresters/](http://www.floridaforestservice.com/field_operations/county_foresters/)

Tall Timbers Research Station  
<http://www.talltimbers.org/>

TNC Fire Management Manual  
<http://www.tncfiremanual.org/>

A Guide for Prescribed Fire in Southern Forests  
[http://www.sref.info/resources/publications/file\\_03\\_22b\\_06](http://www.sref.info/resources/publications/file_03_22b_06)

American Forests  
<http://www.americanforests.org/>

National Association of State Foresters  
<http://www.stateforesters.org/>

Society of American Foresters  
<http://www.safnet.org/>

USDA Forest Service  
<http://www.fs.fed.us/>

### **5.3 FISH AND WILDLIFE**

Fish and wildlife management actions are designed to preserve, enhance, and manage indigenous wildlife and their habitats. These actions include the conservation of protected

species and nongame species, management and harvest of game species, BASH reduction, and animal damage and disease control. Primary management issues for fish and wildlife at the NASWF Complex are: (1) fisheries management; (2) migratory bird management; (3) threatened and endangered species and natural communities management; and (4) nuisance wildlife and BASH.

Habitat management is the basis on which fish and wildlife programs are conducted at the NASWF Complex. However, artificial stocking (for fish only) and animal damage control are also included in the management scheme. An objective of the fish and wildlife management program at the NASWF Complex is to protect, conserve, and manage fish and wildlife, and threatened and endangered species, as vital elements of the ecosystem. Generally, species dependent on wetlands, fire, and sandhill communities have been the focus of fish and wildlife management at the NASWF Complex. Fish and wildlife have benefited from forest management practices (i.e., prescribed burning), native landscaping, preservation of natural communities, and wetlands protection. A second objective of the fish and wildlife management program is to prevent nuisance wildlife populations from interfering with the military mission or other natural resources programs.

- Current demands on wildlife resources and long-term needs for wildlife programs include:
- Species protection and habitat development program;
- Surveys and protection program for threatened and endangered species and natural communities;
- Survey and protection program for neotropical migratory birds;
- Program to address wildlife damage and diseases;
- Nuisance wildlife monitoring and control program;
- BASH Plan revision and implementation; and
- Recreational Fishing Program for NASWF ponds and Whiting Park, located on the Blackwater River.

The hunting program is authorized by the NRM at NASWF only but is operationally run by certain Installation staff. Bow-hunting is presently authorized for weekends, holidays, and specifically authorized days during the regular hunting season.

### **5.3.1 Fisheries Management**

Fisheries management includes activities to monitor and manipulate habitat and/or populations of fish species. Such activities include: stocking, feeding, and fertilizing ponds; controlling aquatic vegetation; and/or implementing water quality control programs.

## **Issues**

Freshwater fishing is currently available at Whiting Park, which is located on the Blackwater River. In addition, stormwater retention ponds at NASWF could be stocked and utilized for recreational fishing catch and release programs.

## **Goals and Objectives**

- Protect and maintain natural resources within the NASWF Complex by continuing and enhancing ecologically appropriate and beneficial land uses and management practices, while ensuring the continuation of the military mission;
- Protect, maintain, and restore native vegetative communities and plant and wildlife populations, while improving the quality of life and ensuring continuation of the military mission;
- Protect and conserve the ecological value and diversity of natural resources by fostering knowledge of, and participation in, adaptive ecosystem management;
- Continue existing, and establish new programs and procedures to monitor, maintain, and enhance wetlands and water quality;
- Maintain the ecological integrity of wetland and upland communities for the protection of native plant and animal species, including numerous federally and state listed species;
- Maintain the attenuation capacity of the remaining undisturbed acreage within the 100-year floodplain;
- Control nuisance wildlife and wildlife diseases that may adversely affect human health or welfare, the health of the ecosystem, and the military mission;
- Ensure that land management and land use decisions comply with all applicable laws, executive orders, regulations, directives, and instructions, and that adverse impacts to the natural environment are minimized;
- Manage forest stands for watershed protection;
- Maintain existing and develop additional outdoor recreational trails, interpretive centers, and/or facilities to support present and future natural resources-based outdoor recreation at the NASWF Complex;
- Implement existing and further develop (where needed) natural resources-based outdoor recreation programs to support present and future outdoor recreation at the NASWF Complex;
- Provide adequate staffing, equipment, technology, and training to the Natural Resources Program to ensure proper implementation of this INRMP; and
- Incorporate the concept of ecosystem management into all planning and management processes.

## **Projects**

- Wetlands Protection (Project 1 in Appendix A);
- Invasive Plant Control (Project 2 in Appendix A);
- Endangered Species Habitat Conservation (Project 14 in Appendix A); and

- Recreational Fishing (Project 15 in Appendix A).

### **Management Strategies**

- Further develop recreational fishing opportunities at the Complex;
- Inventory wetlands and assess their function and quality on a routine basis;
- Continue to implement BMPs to minimize stormwater pollution and erosion (FDOT and FDEP 2007; FDEP 2008; NASWF 2013);
- Continue using BMPs for forest management activities and ensure that they are used in agricultural outleasement activities to ensure watershed protection (FDOT 2003);
- Promote 50-foot buffers for all wetlands, and ensure land use and land management practices that will not adversely affect wetland resources;
- Continue to implement programs and activities for the protection and enhancement of threatened and endangered plant and animal species and their habitats;
- Continue to develop a soil erosion control plan and reduce the rate of soil erosion through the implementation of long-term measures and projects;
- Continue to inventory the use of pesticides and fertilizers to assess alternatives to their use and a reduction in pesticide and fertilizer use;
- Continue using BMPs for forest management activities and ensure that they are used in agricultural outleasement activities to ensure watershed protection;
- Continue to monitor the health and size of animal populations, and control populations as needed;
- Continue updating the baseline information pertaining to present usage of natural resources-based outdoor recreation activities;
- Expand, improve, and provide additional facilities for outdoor recreational opportunities; and
- Continually verify that natural resources personnel obtain proper training and certifications.

### **Long-Term Management**

Whiting Park will remain available for freshwater fishing opportunities; however, no active management of fishery resources is needed. Participating personnel must comply with all applicable state and federal fishing rules and regulations. Stormwater retention ponds at NASWF will be managed for recreational fishing opportunities and a recreational fishing program will be established (see Project No. 15). Elements of the program will include:

- Developing a catch and release fishing program;
- Developing fishing instructions and coordinating fishing regulations with security personnel;
- Implementing a fishing program for children;
- Constructing a fishing pier and platform at one of the stormwater retention ponds; and

- Stocking the ponds with freshwater fish (e.g. bass, bluegill, sunfish, and catfish) and maintaining stocking, feeding, and fertilization programs.

The long-term management of erosion control (Section 5.1.3) and stormwater (Section 5.1.4) will help maintain water quality in these freshwater ponds. In addition, NASWF will closely monitor the provision of outdoor recreational opportunities and the carrying capacity of the resources being utilized.

### ***Integration with Other Natural Resources Management Activities***

- Wetlands, Section 5.1.1 – wetland health relates to fishery health;
- Soil Conservation and Erosion, Section 5.1.2 – control sedimentation into fishing areas;
- Stormwater and Water Quality, Section 5.1.3 – water quality relates to fishery health;
- Floodplains, Section 5.1.4 – floodplain maintenance relates to fishery health;
- Landscaping and Grounds Maintenance, Section 5.1.5 – maintain wetland buffers and properly apply herbicides and fertilizers;
- Invasive, Exotic, and Noxious Species, Section 5.1.6 – control invasive aquatic weeds in fishing areas;
- Urban Forestry, Section 5.1.7 – properly apply herbicides and fertilizers during urban forestry;
- Agricultural Outleasing, Section 5.1.8 – control flow of fertilizer and pesticide into fishing areas;
- Silviculture, Section 5.2.1 – consider effects of thinning and soil erosion on water quality;
- Forest Protection, Section 5.2.2 – maintain regular burn cycles to ensure natural wetland conditions;
- Migratory Birds, Section 5.3.2 – wading birds and osprey prey upon fish.
- Threatened and Endangered Species, Section 5.3.3 – ensure protection of sturgeon and other listed aquatic animals at fishing areas;
- Nuisance Wildlife and BASH, Section 5.3.4 – ensure fishing areas do not increase the BASH risk, and advise fishers of biting insects and venomous animals;
- Outdoor Recreation, Section 5.4 – properly educate recreational participants in stewardship of the resource and aquatic environment;
- Natural Resources Training, Section 5.5.1 – ensure personnel are current on Florida fishing rules and regulations; and
- GIS, Section 5.5.2 – utilize GIS tools to improve fisheries management.

### ***Ecosystem Management***

Fisheries management is consistent with ecosystem management; freshwater ponds will be managed as catch and release for recreational fishing without adversely impacting native species or the environment.

### **Military Mission**

Increased productivity could potentially cause an increase in bird populations using the stormwater retention ponds. Birds have a potential to negatively impact the military mission through BASH-related incidents. However, fishing also helps sustain the morale and wellness of base tenants.

### **Laws, Executive Orders, Regulations, Directives, and Memoranda Relevant to Fisheries Management**

- Executive Order 12962 directs federal agencies to cooperate in conservation of aquatic resources and enhancement of opportunities for recreational fishing.
- Endangered Species Act, 16 U.S.C. 35, 32 CFR 190, provides for the identification and protection of threatened and endangered species of fish, wildlife, and plants and their critical habitats. Requires federal agencies to ensure that no agency action is likely to jeopardize the continued existence of a threatened or endangered species.
- Sikes Act, as amended 16 U.S.C. 670a-o, requires each military department to manage fish and wildlife resources in accordance with a tripartite cooperative plan agreed to by the USFWS and state wildlife agency.
- Magnuson-Stevens Fishery Conservation and Management Act (1996 Reauthorization), 16 U.S.C. 1855(b), federal agencies must consult with the Secretary of Commerce on all activities, or proposed activities, authorized, funded, or undertaken by the agency, that may adversely affect EFH.
- Fish and Wildlife Conservation Act, 16 U.S.C. 2901, encourages all federal departments and agencies to utilize their statutory and administrative authority, to the maximum extent practicable and consistent with each agency's statutory responsibilities, to conserve and promote conservation of nongame fish and wildlife and their habitats.
- Executive Order 13112, 3 February 1999, requires executive agencies to restrict the introduction of exotic organisms into natural ecosystems.
- OPNAVINST 5090.1D, 12-3.5, discusses laws that govern natural resources management relating to the protection and management of fish and wildlife resources.
- Florida Statutes, Chapter 370.12, Florida Endangered and Threatened Species Act, is to conserve, protect, and manage the threatened and endangered species and their habitats.

### **Additional Sources of Information**

FWC, Division of Freshwater Fisheries Management  
<http://myfwc.com/about/overview/programs/ffm/>

FWC, Division of Saltwater Fisheries Management  
<http://myfwc.com/about/overview/programs/mfm/>

FWC, Division of Habitat and Species Conservation  
<http://myfwc.com/about/overview/programs/hsc/>

UF, IFAS, Center for Aquatic and Invasive Plants  
<http://plants.ifas.ufl.edu/>

USFWS, Panama City Ecological Services



<http://www.fws.gov/PanamaCity/>

NOAA Fisheries Service, Southeast Regional Office

<http://sero.nmfs.noaa.gov/>

### **5.3.2 Migratory Birds**

The Migratory Bird Treaty Act (MBTA) of 1918 (16 USC 703-711) protects migratory birds and their parts (e.g., eggs, nests and feathers). Migratory birds face serious challenges, including habitat loss, collisions with artificial structures, and environmental contaminants, resulting in species decline. Protecting migratory birds requires a coordinated effort involving multiple jurisdictions and interests because they cross national boundaries, watersheds, and ecosystems. Pursuant to the 2003 National Defense Authorization Act (NDAA), the Armed Forces are exempted from the incidental taking of migratory birds during military readiness activities. Military readiness activities include all training and operations of the Armed Forces that relate to combat and the adequate testing of military equipment, vehicles, weapons and sensors for proper operation and suitability for combat use. However, the NDAA also requires that the Secretaries of Defense and Interior to identify ways to minimize, mitigate and monitor the take of migratory birds during military readiness activities.

#### ***Issues***

Migratory birds at the NASWF Complex are protected under the MBTA against take for normal and routine operations such as installation support functions. Take includes pesticide application, nest or egg removal, and occasionally, tree removal. The temporal and spatial presence of migratory bird species must therefore be considered when carrying out all management activities described in this INRMP. Habitat modification as a result of timber sales would not constitute a take; neither would nest removal outside nesting season.

#### ***Goals and Objectives***

- Protect and maintain natural resources within the NASWF Complex by continuing and enhancing ecologically appropriate and beneficial land uses and management practices, while ensuring the continuation of the military mission;
- Protect, maintain, and restore native vegetative communities and plant and wildlife populations, while improving the quality of life and ensuring continuation of the military mission;
- Protect and conserve the ecological value and diversity of natural resources by fostering knowledge of, and participation in, adaptive ecosystem management;
- Continue existing, and establish new programs and procedures to monitor, maintain, and enhance wetlands and water quality;
- Maintain the ecological integrity of wetland and upland communities for the protection of native plant and animal species, including numerous federally and state listed species;

- Preserve and protect threatened and endangered species and species of special concern to ensure no reduction in population sizes;
- Maintain the attenuation capacity of the remaining undisturbed acreage within the 100-year floodplain;
- Control nuisance wildlife and wildlife diseases that may adversely affect human health or welfare, the health of the ecosystem, and the military mission;
- Ensure that land management and land use decisions comply with all applicable laws, executive orders, regulations, directives, and instructions, and that adverse impacts to the natural environment are minimized;
- Provide adequate staffing, equipment, technology, and training to the Natural Resources Program to ensure proper implementation of this INRMP; and
- Incorporate the concept of ecosystem management into all planning and management processes.

### **Projects**

- Wetlands Protection (Project 1 in Appendix A);
- Longleaf Alliance and Gulf Coastal Plain Ecosystem Partnership (Project 3 in Appendix A);
- Timber Stand Improvement (Project 8 in Appendix A);
- Fire Management (Project 10 in Appendix A);
- Update Biological Inventory (Project 11 in Appendix A);
- Neotropical Migratory Bird Survey (Project 13 in Appendix A); and
- Endangered Species Habitat Conservation (Project 14 in Appendix A).

### **Management Strategies**

- Continue monitoring program for natural communities (as well as rare, threatened and endangered species), and implement programs to enhance natural communities/wildlife habitat;
- Further establish a program/plan using prescribed burns and thinning to improve habitat quality, reduce the potential for wildfires, control diseases and insect pests, and ensure the continuation of fire-dependent plant communities;
- Continue program to conduct (i.e., update) surveys of rare, threatened, and endangered species every 5 years (next survey scheduled for 2009), and to monitor other rare species as needed;
- Continue to implement programs and activities for the protection and enhancement of threatened and endangered plant and animal species and their habitats;
- Continue to monitor the health and size of animal populations, and control populations as needed;
- Implement grounds maintenance practices consistent with the BASH Plan. The BASH Plan will be continuously updated and monitored to meet the needs of the Complex;
- Continue to implement BMPs to minimize stormwater pollution and erosion (FDOT and FDEP 2007; FDEP 2008; NASWF 2013);

- Continue using BMPs for forest management activities and ensure that they are used in agricultural outleashing activities to ensure watershed protection (FDOT 2003);
- Inventory wetlands and assess their function and quality on a routine basis;
- Promote 50-foot buffers for all wetlands, and ensure land use and land management practices that will not adversely affect wetland resources;
- Continue using BMPs for forest management activities and ensure that they are used in agricultural outleashing activities to ensure watershed protection; and
- Continually verify that natural resources personnel obtain proper training and certifications.

### ***Long-Term Management***

The NRM will be informed before routine support action is taken that may affect any migratory bird species. The natural resources manager would determine if the possible impacts associated with the routine action would impact migratory bird species and, if necessary, would initiate discussions or negotiate a permit with the USFWS. Bird surveys are vital to knowing when and where migratory birds occur on the Complex and will be conducted to monitor the bird populations at the NASWF Complex. Where possible, military readiness activities should be sited in ways to avoid or minimize impacts to migratory birds. If clear evidence of bird takes is noted, such as the sight of numerous dead or injured birds, the NASWF Complex will consider modifying its activities, as practicable, to reduce take of migratory birds. Effective communication and partnership between the NRM and BASH control agent is imperative to achieve successful management of migratory birds on the NASWF Complex.

### ***Integration with Other Natural Resources Management Activities***

- Wetlands, Section 5.1.1 – wetlands provide forage habitat for various bird species;
- Soil Conservation and Erosion, Section 5.1.2 – control sedimentation into bird foraging areas;
- Stormwater and Water Quality, Section 5.1.3 – control water quality in bird foraging areas;
- Floodplains, Section 5.1.4 – limited development in floodplains provides habitat for migratory birds away from Complex infrastructure;
- Landscaping and Grounds Maintenance, Section 5.1.5 – ensure nests are not removed in season during grounds maintenance activities;
- Invasive, Exotic, and Noxious Species, Section 5.1.6 – exotic species can provide unwanted nesting areas and materials for birds near infrastructure;
- Urban Forestry, Section 5.1.7 – consider potential for bird nesting near infrastructure and training areas when planning urban forests;
- Agricultural Outleashing, Section 5.1.8 – control runoff of pesticides and fertilizer into bird foraging areas;

- Silviculture, Section 5.2.1 – consider nesting season when planning thinning and prescribed burn activities;
- Forest Protection, Section 5.2.2 – maintain forests to prevent disease and monitor dead trees that provide nesting habitat for BASH species;
- Fisheries Management, Section 5.3.1 – wading birds and osprey prey upon fish;
- Threatened and Endangered Species, Section 5.3.3 – migratory bird management aids the status and survival of rare bird species;
- Nuisance Wildlife and BASH, Section 5.3.4 – the NRM, Bash control agent, and USFWS should communicate before nests are removed for BASH purposes;
- Outdoor Recreation, Section 5.4 – enlist avid bird watchers in bird inventories ;
- Natural Resources Training, Section 5.5.1 – ensure personnel are current on MBTA and related laws; and
- GIS, Section 5.5.2 – utilize GIS tools to improve migratory bird management.

### ***Ecosystem Management***

Migratory bird management is one component of ecosystem management on the NASWF Complex. Benefits of other management activities described in this INRMP, such as marine coastal management, wetland management, and nuisance animal control all benefit migratory bird management, and vice-versa. Many birds that migrate through the Complex spread seeds, eat rodents, and perform other functions that benefit the health of the entire ecosystem.

### ***Military Mission***

Appropriate landscaping and management of migratory birds will help alleviate potential hindrances to the military mission of the MBTA. The integration of the various management actions described in this INRMP and an understanding of how they all relate to migratory bird management will enable the NASWF Complex to accomplish all its training objectives within the framework of the MBTA.

### ***Laws, Executive Orders, Regulations, Directives, and Memoranda Relevant to Migratory Birds***

- Migratory Bird Treaty Act, as amended 16 U.S.C. 703-712, prohibits the taking or harming of a migratory bird, its eggs, nests, or young without the appropriate permit.
- Bald and Golden Eagle Protection Act, 16 U.S.C. 668-668c, prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald eagles, including their parts, nests, or eggs.
- Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds, describes specific actions to advance migratory bird conservation, avoid or minimize the take of migratory birds, and ensure DoD operations, other than military readiness activities, are consistent with the MBTA.

- 2003 National Defense Authorization Act, exempts the Armed Forces from the incidental taking of migratory birds during military readiness activities.
- Endangered Species Act, 16 U.S.C. 35, 32 CFR 190, provides for the identification and protection of threatened and endangered species of fish, wildlife, and plants and their critical habitats. It requires federal agencies to ensure that no agency action is likely to jeopardize the continued existence of a threatened or endangered species.
- Sikes Act, as amended 16 U.S.C. 670a-o, requires each military department to manage fish and wildlife resources in accordance with a tripartite cooperative plan agreed to by the USFWS and state wildlife agency.
- Fish and Wildlife Conservation Act, 16 U.S.C. 2901, encourages all federal departments and agencies to utilize their statutory and administrative authority, to the maximum extent practicable and consistent with each agency's statutory responsibilities, to conserve and promote conservation of nongame fish and wildlife and their habitats.
- Fish and Wildlife Conservation Act, 16 U.S.C. 2901, encourages all federal departments and agencies to utilize their statutory and administrative authority, to the maximum extent practicable and consistent with each agency's statutory responsibilities, to conserve and promote conservation of nongame fish and wildlife and their habitats.
- OPNAVINST 5090.1D, 12-3.5(b)(1), discusses natural resources management relating to migratory birds.
- OPNAVINST 5090.1D, 12-3.5(b)(2), discusses natural resources management relating to bald and golden eagles.

#### **Additional Sources of Information**

Smithsonian National Zoological Park, Migratory Bird Center  
<http://nationalzoo.si.edu/ConservationAndScience/MigratoryBirds/>

USFWS Division of Migratory Bird Management  
<http://www.fws.gov/migratorybirds/>

Birds of Conservation Concern  
[www.fws.gov/migratorybirds/reports/BCC2002.pdf](http://www.fws.gov/migratorybirds/reports/BCC2002.pdf)

East Gulf Coastal Plain Priority Bird Populations and Habitats  
[http://www.blm.gov/wildlife/pl\\_04sum.htm](http://www.blm.gov/wildlife/pl_04sum.htm)

Migratory Bird Treaty Act  
<http://www.fws.gov/permits/mbpermits/regulations/mbta.html>

The Nature Conservancy, Migratory Bird Program  
<http://www.nature.org/initiatives/programs/birds/>

#### **5.3.3 Threatened and Endangered Species**

The ecological integrity of wetland and upland communities will be maintained for the protection of native plant and animal species, including numerous federally and state-listed species. Threatened and endangered species, and species of special concern, will be preserved and protected to ensure there is no reduction in species numbers or population sizes. Wildlife habitat management is the approach used by the NASWF Complex; management activities at the NASWF Complex have been described in this INRMP for wetlands, floodplains, coastal areas,

urban areas, and forests, and these activities are intended to enhance habitat for fish, birds, and wildlife on and adjacent to the Complex, including threatened and endangered species.

Species are listed as endangered or threatened if, based upon scientific and commercial data, there is a current or threatened habitat loss, disease, over-exploitation, or other factors affecting its existence. The Endangered Species Act (ESA) of 1973 prohibits federal agencies from authorizing, funding, or carrying out any actions that destroy or adversely modify "critical habitat." Critical habitat for a threatened or endangered species is defined as: (1) the specific areas within the geographical area occupied by the species at the time it is listed as threatened or endangered on which are found physical or biological features essential to the conservation of the species, and which may require special management considerations or protection; and (2) specific areas outside the geographical areas occupied by the species at the time it is listed, upon a determination by the Secretary of Interior that such areas are essential for the conservation of the species.

The NASWF Complex is within, or approached by, the range of approximately 60 rare, threatened, endangered, and declining vertebrate taxa and approximately 100 rare, threatened, and endangered plant taxa. Rare vertebrate surveys were conducted across the NASWF Complex in 1996-97 and 2009-10. Two federally-listed threatened species, one federal candidate species, one species under review for federal listing, two state-listed threatened species, and seven state-listed species of special concern are known to occur on the NASWF Complex (see Section 2.3.2, Table 8). The American alligator (*Alligator mississippiensis*) and reticulated flatwoods salamander (*Ambystoma bishopi*) are the only federally-threatened species confirmed present the NASWF Complex. The gopher tortoise (*Gopherus polyphemus*) is a candidate for federal listing and is present on eight NASWF Complex properties. The eastern diamondback rattlesnake (*Crotalus adamanteus*) has been petitioned for federal listing. The gopher tortoise and reticulated flatwoods salamander are also state-listed threatened species. The Cooper's hawk (*Accipiter cooperii*) and southeastern fox squirrel (*Sciurus niger niger*) are rare species identified on the Complex during the 2009-10 surveys, but not identified in 1996-97. Conversely, ten rare species, including the Florida pine snake (*Pituophis melanoleucas*), gopher frog (*Rana capito*), and Florida black bear (*Ursus americanus floridanus*), were identified during the 1996-97 surveys, but not in 2009-10.

Surveys of rare plants (e.g. state-listed rare, threatened, and endangered plants) were conducted across to NASWF Complex in 1990, 1996-97, 2006, and 2009-10. No federally-listed plant species were found on the properties, but 17 state-listed threatened and endangered plant species have been identified across the NASWF Complex between 1990 and 2010 (see Table 9).

Locations where state-listed plants were identified during one survey were usually re-visited during subsequent surveys. Listed species that have not been observed since the 1990's are spoonflower (*Peltandra sagittifolia*), Chapman's butterwort (*Pinguicula planifolia*), crested fringed orchid (*Platanthera cristata*), narrow-leaf beakrush (*Rhynchospora stenophylla*), and purple pitcher plant (*Sarracenia purpurea*). The habitats required by these missing species are still present on the properties, so there remains potential for them to be identified in future surveys. Conversely, listed plant species that were not observed until the most recent 2009-10 survey are bumpy jointtail grass (*Coelorachis tuberculosa*) and yellow butterwort (*Pinguicula lutea*).

### **Issues**

Federally and state-listed species inhabit the NASWF Complex. These species are protected under various laws, including the Endangered Species Act (ESA). Section 7(a)(1) of the ESA provides that all federal agencies, in consultation with USFWS and NMFS, shall use their authorities to further the purpose of ESA by carrying out programs for the conservation of endangered and threatened species. Section 7(a)(2) requires federal agencies to ensure, in consultation with USFWS and/or NMFS, that any action authorized, funded, or carried out is not likely to jeopardize the continued existence of any endangered or threatened species or result in destruction or adverse modification of critical habitat.

Natural communities at the NASWF Complex provide habitat for many protected species and require special protection and management. There are no areas designated as critical habitat for threatened and endangered species at the NASWF Complex.

Climate change is anticipated to result in ecosystem changes and, consequently, many species are expected to become increasingly vulnerable to extinction. This scenario is of particular concern for threatened, endangered, rare, and species at-risk species. The response of species to climate change is uncertain and is subject to complex interactions and processes. Reptiles, amphibians, and fish, which are cold-blooded, will be more vulnerable than mammals and birds. More frequent and intense heat extremes and changes in precipitation patterns could alter wet prairies and wetlands, threatening vulnerable vegetation, such as pitcher plants, and facilitating their replacement by invasive grasses.

### **Goals and Objectives**

- Protect and maintain natural resources within the NASWF Complex by continuing and enhancing ecologically appropriate and beneficial land uses and management practices, while ensuring the continuation of the military mission;

- Protect, maintain, and restore native vegetative communities and plant and wildlife populations, while improving the quality of life and ensuring continuation of the military mission;
- Protect and conserve the ecological value and diversity of natural resources by fostering knowledge of, and participation in, adaptive ecosystem management;
- Continue existing, and establish new programs and procedures to monitor, maintain, and enhance wetlands and water quality;
- Maintain the ecological integrity of wetland and upland communities for the protection of native plant and animal species, including numerous federally and state listed species;
- Preserve and protect threatened and endangered species and species of special concern to ensure no reduction in population sizes;
- Maintain the attenuation capacity of the remaining undisturbed acreage within the 100-year floodplain;
- Control nuisance wildlife and wildlife diseases that may adversely affect human health or welfare, the health of the ecosystem, and the military mission;
- Ensure that land management and land use decisions comply with all applicable laws, executive orders, regulations, directives, and instructions, and that adverse impacts to the natural environment are minimized;
- Provide adequate staffing, equipment, technology, and training to the Natural Resources Program to ensure proper implementation of this INRMP; and
- Incorporate the concept of ecosystem management into all planning and management processes.

### **Projects**

- Wetlands Protection (Project 1 in Appendix A);
- Longleaf Alliance and Gulf Coastal Plain Ecosystem Partnership (Project 3 in Appendix A);
- Timber Stand Improvement (Project 8 in Appendix A);
- Fire Management (Project 10 in Appendix A);
- Update Biological Inventory (Project 11 in Appendix A);
- Gopher Tortoise Biological Monitoring (Project 12 in Appendix A); and
- Endangered Species Habitat Conservation (Project 14 in Appendix A).

### **Management Strategies**

- Continue monitoring program for natural communities (as well as rare, threatened and endangered species), and implement programs to enhance natural communities/wildlife habitat;
- Further establish a program/plan using prescribed burns and thinning to improve habitat quality, reduce the potential for wildfires, control diseases and insect pests, and ensure the continuation of fire-dependent plant communities;
- Continue program to conduct (i.e., update) surveys of rare, threatened, and endangered species every 5 years (next survey scheduled for 2009), and to monitor other rare species as needed;



- Continue to implement programs and activities for the protection and enhancement of threatened and endangered plant and animal species and their habitats;
- Continue to monitor the health and size of animal populations, and control populations as needed;
- Implement grounds maintenance practices consistent with the BASH Plan. The BASH Plan will be continuously updated and monitored to meet the needs of the Complex;
- Continue to implement BMPs to minimize stormwater pollution and erosion (FDOT and FDEP 2007; FDEP 2008; NASWF 2013);
- Continue using BMPs for forest management activities and ensure that they are used in agricultural outleasing activities to ensure watershed protection (FDOT 2003);
- Inventory wetlands and assess their function and quality on a routine basis;
- Promote 50-foot buffers for all wetlands, and ensure land use and land management practices that will not adversely affect wetland resources;
- Continue using BMPs for forest management activities and ensure that they are used in agricultural outleasing activities to ensure watershed protection; and
- Continually verify that natural resources personnel obtain proper training and certifications.

### ***Long-Term Management***

The NASWF Complex will actively manage areas and natural communities to provide habitat for rare, threatened, and endangered species that are known to occur on the properties. Other federally or state-listed threatened and endangered species will also be managed as conditions warrant. The NASWF Complex will continue to monitor populations of the reticulated flatwoods salamander, gopher tortoises, bird species, and protected plants. The NRM will undertake measures, as appropriate, to ensure activities and actions conducted within the NASWF Complex are not detrimental to rare, threatened, and endangered species or habitats upon which they depend.

Species dependent upon wetlands and fire-dependent communities are the focus of most management activities at the NASWF Complex. Natural communities and other wildlife habitats will be managed to sustain and enhance fish and wildlife resources on the Complex consistent with the military mission.

Well-informed, resources-based ecosystem management will enable the NASWF Complex to serve the military mission while playing an important role in the protection of Florida's native biodiversity. Most habitat development will occur in conjunction with forest management. The NASWF Complex will sustain existing natural communities and forests for wildlife and enhance other ecosystems for urban and non-urban species using a combination of the following

management concepts. These management concepts will be implemented under the discretion of the NRM.

- Preserve portions of stands to provide suitable large snags and trees for den and cavity activities.
- Provide nest boxes/platforms for birds and bats.
- Leave brush material along woodland edges following necessary clearing (e.g. military mission).
- Plant trees and shrubs, or seed open areas for soil stabilization and to provide wildlife habitat.
- Maintain pine stands with basal areas low enough to prevent crown closure in order to stimulate understory growth, which in turn, creates food and cover.
- Prescribe burn on rotation through fire-dependent communities to increase food production and maintain desired habitat structure.
- Avoid habitat fragmentation. Although fragmentation increases edge, arbitrarily locating human-made linear and nonlinear features within wildlife areas undermines ecological processes through the separation of wildlife populations and may render the fragmented parcel unsustainable for wildlife.
- Create or enhance connections between habitats to facilitate wildlife movement between areas. The necessary characteristics of connections will vary depending on the species; for instance, amphibians need water or moist areas to move between ponds and wet areas, and most vertebrates require protective cover such as trees, shrubs, dense ground cover, downed trees, and existing burrows.
- Maintain vegetative buffers around ponds and wetland areas and along stream edges.
- Leave snags and downed logs for nesting, roosting, foraging, cover, perching, and/or territorial displays.
- Maintain hardwood areas for foraging activities.
- Seed cleared areas (associated with silvicultural activities, i.e., logging decks) with wildlife food plants to prevent erosion and provide forage.
- Avoid impacts to wetlands.

The following species sub-sections describe management recommendations and benefits of this INRMP for threatened and endangered species known to occur at the NASWF Complex (Table 17). Changes in management practices may result from: (1) the listing or removal of a species under the ESA or (2) a change in species presence at the NASWF Complex. The NASWF Complex will continue to conduct species survey updates to identify changes in populations and habitat on the properties. Species information provided in the surveys will be used to modify management practices. Modification to management practices will be administered by the NRM in consultation with NAVFAC SE foresters and fish and wildlife biologists, as well as other federal, state, and county agencies.

**Table 17. INRMP Management Activities and Projects That Benefit Rare, Threatened, and Endangered Species Potentially Occurring on the NAS Whiting Field Complex.**

Species (in alphabetical order by common name)	Status	Category	Cross-reference to text	Management Activities that Benefit the Species and its Habitat														INRMP Projects that Benefit the Species and its Habitat																		
				Wetlands Management	Soil Conservation and Erosion Control	Stormwater and Water Quality Control	Floodplain Management	Landscaping and Grounds Maintenance	Invasive, Exotic, and Noxious Species	Urban Forestry	Agricultural Outleasings	Silvicultural Activities	Forest Protection	Fisheries Management	Migratory Birds	Threatened and Endangered Species	Nuisance Wildlife and BASH	Wetlands Protection	Invasive Plant Control	Longleaf Alliance and Ecosystem Partnership	Endangered Species Habitat at OLF Holley	Agricultural Outleasings	Reforestation	Forest Product Sales	Timber Stand Improvement	Construction and Maintenance of Forest Roads	Fire Management	Update Biological Inventory	Gopher Tortoise Biological Monitoring	Neotropical Migratory Bird Survey	Endangered Species Habitat Conservation	Recreational Fishing	Habitat Mapping and Species Surveys	NAS Whiting Field INRMP Updates		
Alabama Pearlshell ( <i>Margaritifera marrianae</i> )	FE	Freshwater mussel	pp. 1-8, 2-46, 2-55, 5-79	M	M	M	M	M	M					M		M			P	P									P				P	P	P	P
Alabama Shad ( <i>Alosa alabamae</i> )	FP	Anadromous fish	pp. 1-8, 5-79	M	M	M	M	M	M					M		M			P	P									P				P	P	P	P
American Alligator ( <i>Alligator mississippiensis</i> )	FT	Aquatic reptile	p. 5-79 Table 9	M	M	M	M	M	M							M			P	P									P				P		P	P
Alligator Snapping Turtle ( <i>Macrolemys temminckii</i> )	SSC	Freshwater turtle	p. 5-83 Table 12	M	M	M	M	M	M							M	M		P	P									P				P		P	P
American Eel ( <i>Anguilla rostrata</i> )	FP	Anadromous fish	p. 5-80 Table 9	M	M	M	M	M	M					M		M			P	P									P				P	P	P	P
Chapman's Butterwort ( <i>Pinguicula planifolia</i> )	ST	Plant in sunny wetlands	pp. 2-52, 5-73, 5-84 Table 10	M	M	M	M	M	M							M	M		P	P	P	P						P	P	P	P	P	P	P	P	
Crested Fringed Orchid ( <i>Platanthera cristata</i> )	ST	Plant in sandy wetlands	pp. 2-52, 5-73, 5-84 Table 10	M	M	M	M	M	M							M			P	P	P	P						P	P	P	P	P	P	P	P	
Curtiss' Sandgrass ( <i>Calamovilfa curtissii</i> )	ST	Plant in sandy wet forests	p. 5-85 Table 10	M	M	M	M	M	M							M			P	P	P	P						P	P	P	P	P	P	P	P	
Eastern Diamondback (Crotalus adamanteus)	FP	Uplands snake	pp. 2-35, 2-44, 2-55, 5-72, 5-80, Table 9	M	M	M	M	M	M	M	M	M	M			M	M		P	P	P	P						P	P	P	P	P	P	P	P	P
Florida Black Bear ( <i>Ursus americanus floridanus</i> )	ST	Uplands and wetlands mammal	pp. 2-41, 2-52, 5-72, 5-85, Table 9	M	M	M	M	M	M					M		M			P	P	P	P						P	P	P	P	P	P	P	P	
Florida Pine Snake ( <i>Pituophis melanoleucas mugitus</i> )	SSC	Uplands snake	pp. 2-39, 2-52, 5-72, 5-86, Table 9	M	M	M	M	M	M	M	M	M	M			M			P	P	P	P						P	P	P	P	P	P	P	P	P
Gopher Frog ( <i>Rana capito</i> )	SSC	Uplands frog	pp. 2-38, 2-39, 2-52, 2-56, 5-72, 5-86, 5-92, Table 9	M	M	M	M	M	M					M		M			P	P	P	P						P	P	P	P	P	P	P	P	P
Gopher Tortoise ( <i>Gopherus polyphemus</i> )	FC/ST	Uplands Tortoise	pp. 1-8, 2-35, 2-39, 2-41, 2-44, 2-46, 2-52, 2-56, 5-72, 5-81, 5-92, Project 12, Tables 9 & 11	M	M	M	M	M	M					M		M			P	P	P	P						P	P	P	P	P	P	P	P	P
Gulf Sturgeon ( <i>Acipenser oxyrinchus desotoi</i> )	FT	Anadromous fish	pp. 1-8, 3-3, 5-81, 5-93	M	M	M	M	M	M					M		M			P	P									P				P	P	P	P

**Table 17, continued. INRMP Management Activities and Projects That Benefit Rare, Threatened, and Endangered Species Potentially Occurring on the NAS Whiting Field Complex.**

Species (in alphabetical order by common name)	Status	Category	Cross-reference to text	Management Activities that Benefit the Species and its Habitat													INRMP Projects that Benefit the Species and its Habitat																
				Wetlands Management	Soil Conservation and Erosion Control	Stormwater and Water Quality Control	Floodplain Management	Landscaping and Grounds Maintenance	Invasive, Exotic, and Noxious Species	Urban Forestry	Agricultural Outleasings	Silvicultural Activities	Forest Protection	Fisheries Management	Migratory Birds	Threatened and Endangered Species	Nuisance Wildlife and BASH	Wetlands Protection	Invasive Plant Control	Longleaf Alliance and Ecosystem Partnership	Endangered Species Habitat at OLF Holley	Agricultural Outleasings	Reforestation	Forest Product Sales	Timber Stand Improvement	Construction and Maint- enance of Forest Roads	Fire Management	Update Biological Inventory	Gopher Tortoise Biological Monitoring	Neotropical Migratory Bird Survey	Endangered Species Habitat Conservation	Recreational Fishing	Habitat Mapping and Species Surveys
Hairy Wild Indigo ( <i>Baptisia calycosa</i> )	ST	Uplands plant	pp. 2-39, 5-87 Table 10	M	M	M	M	M	M		M	M	M			M		P	P	P	P		P	P	P	P	P			P		P	P
Le Conte's Sparrow ( <i>Ammodramus leconteii</i> )	N	Bird in open fields	pp. 5-91 Table 9	M	M	M	M	M	M	M	M	M	M		M	M	M	P	P	P	P	P	P	P	P	P			P	P		P	P
Red-cockaded Woodpecker ( <i>Picoides borealis</i> )	FE	Uplands bird	pp. 2-39, 2-57, 5-82	M	M	M	M	M	M	M	M	M	M		M	M	M	P	P	P	P		P	P	P	P			P	P		P	P
Reticulated Flatwoods Salamander ( <i>Ambystoma bishopi</i> )	FE	Amphibian in pine forests and wetlands	pp. 2-39, 2-41, 2-52, 2-57, 5-72, 5-75, 5-82, Table 9	M	M	M	M	M	M		M	M	M			M		P	P	P	P		P	P	P	P			P		P	P	
Parrot Pitcher Plant ( <i>Sarracenia psittacina</i> )	ST	Plant in sunny wetlands	p. 5-87 Table 10	M	M	M	M	M	M		M	M	M			M		P	P	P	P		P	P	P	P			P		P	P	
Purple Pitcher Plant ( <i>Sarracenia purpurea</i> )	ST	Plant in sunny wetlands	pp. 2-52, 5-72, 5-87 Table 10	M	M	M	M	M	M		M	M	M			M		P	P	P	P		P	P	P	P			P		P	P	
Primrose-flowered Butterwort ( <i>Pinguicula primuliflora</i> )	SE	Plant in sunny wetlands	pp. 2-36, 5-88 Table 10	M	M	M	M	M	M		M	M	M			M		P	P	P	P		P	P	P	P			P		P	P	
Rose Pogonia ( <i>Pogonia ophioglossoides</i> )	ST	Wetlands plant	p. 5-88 Table 10	M	M	M	M	M	M		M	M	M			M		P	P	P	P		P	P	P	P			P		P	P	
Southern Red Lily ( <i>Lilium catesbaei</i> )	ST	Uplands plant	p. 5-89 Table 10	M	M	M	M	M	M	M	M	M	M			M		P	P	P	P		P	P	P	P			P		P	P	
Spoon-leaf Sundew ( <i>Drosera intermedia</i> )	ST	Plant in sunny wetlands	p. 5-89 Table 10	M	M	M	M	M	M		M	M	M			M		P	P	P	P		P	P	P	P			P		P	P	
Sweetshrub ( <i>Calycanthus floridus</i> )	SE	Wetlands plant	p. 5-90	M	M	M	M	M	M		M	M	M			M		P	P	P	P		P	P	P	P			P		P	P	
White-top Pitcher Plant ( <i>Sarracenia leucophylla</i> )	SE	Plant in sunny wetlands	pp. 2-36, 2-39, 5-90 Table 10	M	M	M	M	M	M		M	M	M			M		P	P	P	P		P	P	P	P			P		P	P	
Yellow-fringed Orchid ( <i>Platanthera ciliaris</i> )	ST	Plant in sunny wetlands	p. 5-91 Table 10	M	M	M	M	M	M		M	M	M			M		P	P	P	P		P	P	P	P			P		P	P	

M = The denoted management activity benefits the denoted species and its habitat.

P = The denoted project benefits the denoted species and its habitat.

Status Key:  
FC = Federal Candidate; FE = Federally Endangered; FP = Federally Petitioned; FT = Federally Threatened;  
SMP = Managed under a State Management Plan; SSC = State Species of Special Concern; SE = State Endangered; ST = State Threatened  
N= Not Listed, but Rare

## **Federally-Listed Species**

### **Alabama Pearlshell (*Margaritifera marrianae*).**

*Status: Endangered (Federal).*

The Alabama pearlshell is a mussel known to occur in a few tributaries of the Escambia River drainage in south central Alabama. The Alabama pearlshell typically inhabits small headwater streams with mixed sand and gravel substrates, occasionally in sandy mud, with slow to moderate current. The boundary of NOLF Evergreen encompasses a segment of Hunter Creek, which has been designated as critical habitat for the Alabama pearlshell; however, the segment of the creek within NOLF Evergreen boundaries is exempt from critical habitat designation based upon the water quality benefits inferred to the species by this INRMP (77 FR 61664). This INRMP protects habitat and water quality for the Alabama pearlshell through active management of factors such as wetlands (Section 5.1.1), erosion control (Section 5.1.2), stormwater control (Section 5.1.3), and floodplain management (Section 5.1.4). Projects described in this INRMP that benefit and conserve Alabama pearlshell habitat include Wetlands Protection, Update Biological Inventory, and Habitat Mapping and Endangered Species Surveys (see Appendix A for descriptions).

### **Alabama Shad (*Alosa alabamae*)**

*Status: Petitioned (Federal).*

The Alabama shad is an anadromous fish species; adults live in saltwater and migrate into coastal rivers to spawn. Its historic range was from the Mississippi River east to the Suwannee River, Florida, in medium-to-large-sized rivers. Existing populations are known to exist in the Choctawhatchee River and Alabama River, which are east and west of Pensacola Bay, respectively, and in the Escambia River, which flows into western Pensacola Bay. The Blackwater River, which flows adjacent to Whiting Park, empties into eastern Pensacola Bay, so Alabama shad may be assumed to also venture into that waterway. This INRMP protects habitat for Alabama shad through active management of factors such as wetlands (Section 5.1.1), erosion control (Section 5.1.2), stormwater control (Section 5.1.3), and floodplain management (Section 5.1.4). Projects described in this INRMP that benefit and conserve Alabama shad habitat include Wetlands Protection, Update Biological Inventory, and Habitat Mapping and Endangered Species Surveys (see Appendix A for project descriptions).

### **American Alligator (*Alligator mississippiensis*).**

*Status: Threatened (Federal) due to similarity of appearance to protected crocodilians.*

The American alligator is known to occur in Blackwater River. Alligators inhabit low-lying areas near water, preferring freshwater but also venturing into brackish or saltwater. Females build

nests near water and lay clutches of 20-60 eggs between May and July. They are protective of their nesting areas during this season and such areas should be avoided. Alligators should not be fed, as this causes them to associate humans with food, thereby increasing the likelihood of potentially deadly encounters. Staff and visitors will be educated about the dangers of interacting with alligators. This INRMP protects habitat and water quality for alligators through active management of factors such as wetlands (Section 5.1.1), erosion control (Section 5.1.2), stormwater control (Section 5.1.3), and floodplain management (Section 5.1.4). Projects described in this INRMP that benefit and conserve alligator habitat include Wetlands Protection, Update Biological Inventory, and Habitat Mapping and Endangered Species Surveys (see Appendix A for descriptions).

### **American Eel (*Anguilla rostrata*)**

*Status: Petitioned (Federal).*

The American eel is ubiquitous in most Florida rivers. It spends most of its life in freshwater but migrates into the Atlantic Ocean to spawn. Larvae drift back to coastal waters and juveniles migrate into freshwater systems. The American eel occurs up the Blackwater River and therefore passes properties of the NASWF Complex, particularly at the Boat Docks. This INRMP protects habitat for American eels through active management of factors such as wetlands (Section 5.1.1), erosion control (Section 5.1.2), stormwater control (Section 5.1.3), and floodplain management (Section 5.1.4). Projects described in this INRMP that benefit and conserve American eel habitat include Wetlands Protection, Update Biological Inventory, and Habitat Mapping and Endangered Species Surveys (see Appendix A for project descriptions).

### **Eastern Diamondback Rattlesnake (*Crotalus adamanteus*)**

*Status: Petitioned Species (Federal).*

Eastern diamondback rattlesnakes have been confirmed present on NAS Whiting Field and NOLFs Wolf and Barin, and are likely present on other NOLFs. They generally live in dry, pine flatwoods, sandy woodlands, and coastal scrub habitats, and often inhabit gopher tortoise burrows. Natural resources managers at NASWF Complex actively manage habitat for the benefit of gopher tortoises and these actions concurrently protect habitat for eastern diamondbacks. Although the eastern diamondback is not endangered, indiscriminate killing and widespread loss of habitat have decreased its numbers throughout its range, which stretches from North Carolina to eastern Louisiana. This INRMP protects habitat for eastern diamondbacks through active management of factors such as landscaping and grounds maintenance (Section 5.1.5), invasive species control (Section 5.1.6), silvicultural activities (particularly thinning and prescribed burns [Section 5.2.1]), and forest protection (Section 5.2.2). Projects described in this INRMP that benefit and conserve eastern diamondback habitat include Invasive Plant Control,

Longleaf Alliance and Gulf Coastal Plain Ecosystem Partnership, Endangered Species Habitat Management at NOLF Holley, Reforestation, Forest Product Sales, Timber Stand Improvement, Construction and Maintenance of Forest Roads, Fire Management, Update Biological Inventory, Gopher Tortoise Biological Monitoring, Endangered Species Habitat Conservation, and Habitat Mapping and Endangered Species Surveys (see Appendix A for descriptions).

**Gopher Tortoise (*Gopherus polyphemus*).**

*Status: Candidate (Federal) and Threatened (State).*

Gopher tortoises are present throughout much of the uplands at NAS Whiting Field and on NOLFs Harold, Santa Rosa, Holley, Site 8-A, Wolf, Barin, and Silverhill. Gopher tortoises prefer xeric uplands with open canopy and ample low-lying herbaceous vegetation for foraging. Several species, including the gopher frog, eastern indigo snake, pine snake, and eastern diamondback rattlesnake, depend upon gopher tortoise burrows for shelter. Forest management strategies such as thinning and prescribed burning help open canopy and promote the growth of forage material. Gopher tortoises are vulnerable to predation by nuisance animals such as coyotes, feral cats, and raccoons, so control of such species is beneficial. This INRMP protects habitat for gopher tortoises through active management of factors such as landscaping and grounds maintenance (Section 5.1.5), invasive species control (Section 5.1.6), silvicultural activities (particularly thinning and prescribed burns [Section 5.2.1]), and forest protection (Section 5.2.2). Projects described in this INRMP that benefit and conserve gopher tortoise habitat include Gopher Tortoise Biological Monitoring, Invasive Plant Control, Longleaf Alliance and Gulf Coastal Plain Ecosystem Partnership, Endangered Species Habitat Management at NOLF Holley, Reforestation, Forest Product Sales, Timber Stand Improvement, Construction and Maintenance of Forest Roads, Fire Management, Update Biological Inventory, Endangered Species Habitat Conservation, and Habitat Mapping and Endangered Species Surveys (see Appendix A for descriptions).

**Gulf Sturgeon (*Acipenser oxyrinchus desotoi*).**

*Status: Threatened (Federal).*

The Gulf sturgeon is anadromous; adults and sub-adults spend the coldest three to four months in the Gulf of Mexico and the remainder of the year in rivers where spawning occurs. Spawning typically takes place from February to April. The Gulf sturgeon occurs in the water bodies adjacent to NAS Pensacola, Bronson Field, and Whiting Park, and is commonly found during midwinter in the deep cut located north of the barrier island at Fort Pickens and south of NAS Pensacola. This INRMP protects habitat and water quality for Gulf sturgeon through active management of factors such as wetlands (Section 5.1.1), erosion control (Section 5.1.2), stormwater control (Section 5.1.3), and marine coastal management (Section 5.1.5).

Management actions have successfully maintained and improved water quality around the NASWF Complex, as exemplified by the Clean Marina status earned by Bayou Grande and Sherman Cove Marinas. Projects described in this INRMP that benefit and conserve Gulf sturgeon habitat include Wetlands Management, Invasive and Exotic Species Control, Establish Shoreline Vegetation, International Coastal Cleanup, Golf Course Habitat Conservation Plan, and Biological Monitoring (see Appendix A for project descriptions).

**Red-cockaded Woodpecker (*Picoides borealis*)**

*Status: Endangered (Federal)*

Preferred habitat of the red-cockaded woodpecker is characterized by open stands of pine generally between 80 to 120 years of age, which provide suitable nesting habitat. Longleaf pines are most commonly used, but other southern pine species are also acceptable for nesting. Nest cavities are excavated in living pines and the birds forage in pine and stands at least 30 years old with pine trees at least 10 inches in diameter. No colonies presently exist on the NASWF Complex, but red-cockaded woodpecker nesting sites have been identified in the Blackwater River State Forest, approximately 0.25 miles north of NOLF Harold. Sandhill communities at NOLF Harold are dominated by longleaf pine, turkey oak, and wiregrass and potentially provide appropriate foraging habitat for red-cockaded woodpeckers. One forest stand on NAS Whiting Field is considered potential habitat for red-cockaded woodpeckers. The NASWF Complex will promote longleaf pine and maintain sandhill communities at NOLF Harold through the use of prescribed fire and herbicide applications. This INRMP protects habitat for red-cockaded woodpeckers through active management of factors such as landscaping and grounds maintenance (Section 5.1.5), invasive species control (Section 5.1.6), silvicultural activities (particularly prescribed burns [Section 5.2.1]), and forest protection (Section 5.2.2). Projects described in this INRMP that benefit and conserve red-cockaded woodpecker habitat include Invasive Plant Control, Longleaf Alliance and Gulf Coastal Plain Ecosystem Partnership, Endangered Species Habitat Management at NOLF Holley, Reforestation, Forest Product Sales, Timber Stand Improvement, Construction and Maintenance of Forest Roads, Fire Management, Update Biological Inventory, Endangered Species Habitat Conservation, and Habitat Mapping and Endangered Species Surveys (see Appendix A for descriptions).

**Reticulated Flatwoods Salamander (*Ambystoma bishopi*)**

*Status: Endangered (Federal)*

The reticulated flatwoods salamander has been documented in a wet prairie natural community at NOLF Holley. It requires pine flatwoods habitats that have a well-developed groundcover of grasses and isolated seasonally-wet ponds that the salamander uses for



breeding. Habitat for reticulated flatwoods salamanders can be protected by not using machines to thin pine forests, as this could negatively impact surface hydrology. Growing-season prescribed burns every 2-5 years would enhance habitat for the species. Consistent with Federal Register recommendations (CFR, April 1, 1999), on-the-ground buffers will be established around areas known to be occupied by the reticulated flatwoods salamander. The outer zone of the buffer will be established with 1,476-foot radius, and the inner zone with a 538-foot radius. These measures are predicted to protect 95% of the resident population. This INRMP protects habitat for reticulated flatwoods salamanders through active management of factors such as wetland management (Section 5.1.1), erosion control (Section 5.1.2), silvicultural activities (particularly prescribed burns [Section 5.2.1]), and forest protection (Section 5.2.2). Projects described in this INRMP that benefit and conserve reticulated flatwoods salamander habitat include Invasive Plant Control, Wetlands Protection, Longleaf Alliance and Gulf Coastal Plain Ecosystem Partnership, Endangered Species Habitat Management at NOLF Holley, Reforestation, Forest Product Sales, Timber Stand Improvement, Construction and Maintenance of Forest Roads, Fire Management, Update Biological Inventory, Endangered Species Habitat Conservation, and Habitat Mapping and Endangered Species Surveys (see Appendix A for descriptions).

### **State-Listed Species**

#### **Alligator Snapping Turtle (*Macrolemys temminckii*).**

*Status: Species of Special Concern (State).*

Alligator snapping turtles are known to occur in the Blackwater River. They are highly aquatic, rarely basking and usually only emerging from the water to lay eggs, which occurs during spring. The species generally prefers shallow freshwater areas with mud substrate, aquatic vegetation, and/or natural debris. Nests will usually be within 50 feet of a river or lake bank, but it is unlikely that alligator snapping turtles use the river bank at Whiting Park for nesting due to the lack of steep banks. This INRMP protects habitat for alligator snapping turtles through active management of factors such as wetlands (Section 5.1.1), erosion control (Section 5.1.2), stormwater control (Section 5.1.3), and floodplain management (Section 5.1.4). Projects described in this INRMP that benefit and conserve alligator snapping turtle habitat include Wetlands Protection, Update Biological Inventory, and Habitat Mapping and Endangered Species Surveys (see Appendix A for descriptions).

**Chapman's Butterwort (*Pinguicula planifolia*).**

*Status: Threatened (State).*

Chapman's butterwort is an insectivorous plant that grows among grasses in very wet bogs, swamps, and ditches in the coastal plain, and requires exposure to sun. Threats to the species include land-use conversion, habitat fragmentation, and encroachment of woody shading species. Periodic growing-season prescribed burns will help reduce weedy shrubs, open canopy, and promote flowering and fruiting. This INRMP protects habitat for Chapman's butterwort through active management of factors such as wetland management (Section 5.1.1), erosion control (Section 5.1.2), invasive species control (Section 5.1.6), and silvicultural activities (particularly prescribed burns [Section 5.2.1]). Projects described in this INRMP that benefit and conserve Chapman's butterwort habitat include Invasive Plant Control, Wetlands Protection, Endangered Species Habitat Management at NOLF Holley, Fire Management, Update Biological Inventory, Endangered Species Habitat Conservation, and Habitat Mapping and Endangered Species Surveys (see Appendix A for descriptions).

**Crested Fringed Orchid (*Platanthera cristata*)**

*Status: Threatened (State).*

The crested fringed orchid grows in full sun or partial shade on bogs and moist banks of lakes, rivers, and streams. It has been found on the banks of many seepage streams and adjacent seepage slopes at NOLF Site 8-A. Natural resource management will prevent erosion and hydrologic alterations that may be caused by draining, ditching, and off-road vehicle use. Prescribed burns during the growing season in wet prairies will limit woody species encroachment, and should be allowed to burn through adjacent uplands into baygalls. This INRMP protects habitat for crested fringed orchids through active management of factors such as wetland management (Section 5.1.1), invasive species control (Section 5.1.6), silvicultural activities (particularly prescribed burns [Section 5.2.1]), and forest protection (Section 5.2.2). Projects described in this INRMP that benefit and conserve crested fringed orchid habitat include Invasive Plant Control, Wetlands Protection, Longleaf Alliance and Gulf Coastal Plain Ecosystem Partnership, Endangered Species Habitat Management at NOLF Holley, Reforestation, Forest Product Sales, Timber Stand Improvement, Construction and Maintenance of Forest Roads, Fire Management, Update Biological Inventory, Endangered Species Habitat Conservation, and Habitat Mapping and Endangered Species Surveys (see Appendix A for descriptions).

**Curtiss' Sandgrass (*Calamovilfa curtissii*)**

*Status: Threatened (State)*

Curtiss' sandgrass is a tufted perennial grass that grows in the moist sands or sands peats of pine savannahs and longleaf pine-saw palmetto flatwoods. It requires fire (or mechanical destruction of upper portions) for flowering and sexual reproduction. Mesic and wetland habitats should be managed using periodic growing-season prescribed burns to open canopy, reduce woody shrubs, and promote flowering and fruiting of herbaceous species. This INRMP protects habitat for Curtiss' sandgrass through active management of factors such as wetland management (Section 5.1.1), invasive species control (Section 5.1.6), silvicultural activities (particularly prescribed burns [Section 5.2.1]), and forest protection (Section 5.2.2). Projects described in this INRMP that benefit and conserve Curtiss' sandgrass habitat include Invasive Plant Control, Wetlands Protection, Longleaf Alliance and Gulf Coastal Plain Ecosystem Partnership, Endangered Species Habitat Management at NOLF Holley, Reforestation, Forest Product Sales, Timber Stand Improvement, Construction and Maintenance of Forest Roads, Fire Management, Update Biological Inventory, Endangered Species Habitat Conservation, and Habitat Mapping and Endangered Species Surveys (see Appendix A for descriptions).

**Florida Black Bear (*Ursus americanus floridanus*)**

*Status: Threatened (State).*

Florida black bears have very large home ranges, and utilize a wide variety of habitats depending upon food availability and other factors. Large undeveloped wooded tracts, pine flatwoods, hardwood swamps, cypress swamps, and mixed hardwood hammocks are all suitable, but areas with multiple forest types are most desirable. Growing-season prescribed burns promote the growth and fruiting of vegetation upon which the Florida black bear feeds. Winter burns promote the spread of saw palmetto, which has no nourishment value, and reduce the availability of berries and runner oak cover. This INRMP protects habitat for Florida black bears through active management of factors such as wetland management (Section 5.1.1), invasive species control (Section 5.1.6), silvicultural activities (particularly thinning and prescribed burns [Section 5.2.1]), and forest protection (Section 5.2.2). Projects described in this INRMP that benefit and conserve Florida black bear habitat include Invasive Plant Control, Wetlands Protection, Longleaf Alliance and Gulf Coastal Plain Ecosystem Partnership, Endangered Species Habitat Management at NOLF Holley, Reforestation, Forest Product Sales, Timber Stand Improvement, Construction and Maintenance of Forest Roads, Fire Management, Update Biological Inventory, Endangered Species Habitat Conservation, and Habitat Mapping and Endangered Species Surveys (see Appendix A for descriptions).

**Florida Pine Snake (*Pituophis melanoleucas mugitus*)**

*Status: Species of Special Concern (State).*

The Florida pine snake requires dry sandy soils for burrowing. It is most often found in open pine-turkey oak woodlands, abandoned fields, scrub, sandhills, and longleaf pine forest. It is known to occur at the NOLF Santa Rosa pine plantations and other upland habitats. Forest management strategies such as thinning and prescribed burning improve habitat for this species as well as for gopher tortoises, which dig burrows that can be used by the Florida pine snake. This INRMP protects habitat for Florida pine snakes through active management of factors such as invasive species control (Section 5.1.), landscaping and grounds maintenance (Section 5.1.5), silvicultural activities (particularly thinning and prescribed burns [Section 5.2.1]), and forest protection (Section 5.2.2). Projects described in this INRMP that benefit and conserve Florida pine snake habitat include Invasive Plant Control, Longleaf Alliance and Gulf Coastal Plain Ecosystem Partnership, Endangered Species Habitat Management at NOLF Holley, Reforestation, Forest Product Sales, Timber Stand Improvement, Construction and Maintenance of Forest Roads, Fire Management, Update Biological Inventory, Gopher Tortoise Biological Monitoring, Endangered Species Habitat Conservation, and Habitat Mapping and Endangered Species Surveys (see Appendix A for descriptions).

**Gopher Frog (*Rana capito*)**

*Status: Species of Special Concern (State).*

The gopher frog primarily inhabits xeric upland habitats, particularly longleaf pine-turkey oak sandhill associations. It is often associated with gopher tortoises because it utilizes gopher tortoise burrows for shelter. Gopher frogs breed during winter and early spring in ephemeral ponds. Natural resource management will protect and improve habitat for gopher frogs by prescribe burning pine plantations, sandhill, and other upland habitats every 2-5 years, particularly at NOLFs Santa Rosa and Harold. This INRMP protects habitat for gopher frogs through active management of factors such as wetland management (Section 5.1.1), erosion control (Section 5.1.2), silvicultural activities (particularly thinning and prescribed burns [Section 5.2.1]), and forest protection (Section 5.2.2). Projects described in this INRMP that benefit and conserve gopher frog habitat include Gopher Tortoise Biological Monitoring, Invasive Plant Control, Wetlands Protection, Longleaf Alliance and Gulf Coastal Plain Ecosystem Partnership, Endangered Species Habitat Management at NOLF Holley, Reforestation, Forest Product Sales, Timber Stand Improvement, Construction and Maintenance of Forest Roads, Fire Management, Update Biological Inventory, Endangered Species Habitat Conservation, and Habitat Mapping and Endangered Species Surveys (see Appendix A for descriptions).

**Hairy Wild Indigo (*Baptisia calycosa* var. *villosa*)**

*Status: Threatened (State).*

Hairy wild indigo is a bushy perennial herb that grows in longleaf pine-scrub oak barrens with deep sandy soil. It takes advantage of disturbance to expand its range. This INRMP protects habitat for hairy wild indigo through active management of factors such as invasive species control (Section 5.1.2), landscaping and grounds maintenance (Section 5.1.5), silvicultural activities (particularly prescribed burns [Section 5.2.1]), and forest protection (Section 5.2.2). Projects described in this INRMP that benefit and conserve hairy wild indigo habitat include Invasive Plant Control, Longleaf Alliance and Gulf Coastal Plain Ecosystem Partnership, Reforestation, Forest Product Sales, Timber Stand Improvement, Construction and Maintenance of Forest Roads, Fire Management, Update Biological Inventory, Endangered Species Habitat Conservation, and Habitat Mapping and Endangered Species Surveys (see Appendix A for descriptions).

**Parrot Pitcher Plant (*Sarracenia psittacina*).**

*Status: Threatened (State).*

The parrot pitcher plant requires open and sunny ecotones, bogs, wet prairies and savannas, and gaps along streams and swamps with moist, acidic soil that are low in nutrients. It occurs throughout the wettest part of the flatwoods/prairie mosaic at NOLF Holley. Natural resource management will maintain the hydrologic regime of sensitive areas by avoiding bedding, ditching, logging activities, and off-road vehicle use. Prescribed burns during the growing season will limit encroachment by woody vegetation and aid in successful reproduction of herbs. This INRMP protects habitat for parrot pitcher plants through active management of factors such as wetland management (Section 5.1.1), erosion control (Section 5.1.2), invasive species control (Section 5.1.6), and silvicultural activities (particularly prescribed burns [Section 5.2.1]). Projects described in this INRMP that benefit and conserve parrot pitcher plant habitat include Invasive Plant Control, Wetlands Protection, Longleaf Alliance and Gulf Coastal Plain Ecosystem Partnership, Endangered Species Habitat Management at NOLF Holley, Reforestation, Forest Product Sales, Timber Stand Improvement, Construction and Maintenance of Forest Roads, Fire Management, Update Biological Inventory, Endangered Species Habitat Conservation, and Habitat Mapping and Endangered Species Surveys (see Appendix A for descriptions).

**Purple Pitcher Plant (*Sarracenia purpurea*).**

*Status: Threatened (State).*

Purple pitcher plant is an insectivorous plant that grows in bogs, savannas, and wet meadows. Periodic moderate fires are necessary for the long-term viability of the species. Natural resource

management will prevent hydrologic alteration and damage to soils that may be caused by draining, ditching, bedding, logging activities, and off-road vehicle use. Prescribed burns during the growing season in wet prairies will limit encroachment by woody vegetation. This INRMP protects habitat for purple pitcher plants through active management of factors such as wetland management (Section 5.1.1), erosion control (Section 5.1.2), invasive species control (Section 5.1.6), and silvicultural activities (particularly prescribed burns [Section 5.2.1]). Projects described in this INRMP that benefit and conserve purple pitcher plant habitat include Invasive Plant Control, Wetlands Protection, Longleaf Alliance and Gulf Coastal Plain Ecosystem Partnership, Endangered Species Habitat Management at NOLF Holley, Reforestation, Forest Product Sales, Timber Stand Improvement, Construction and Maintenance of Forest Roads, Fire Management, Update Biological Inventory, Endangered Species Habitat Conservation, and Habitat Mapping and Endangered Species Surveys (see Appendix A for descriptions).

**Primrose-flowered Butterwort (*Pinguicula primuliflora*).**

*Status: Endangered (State).*

Primrose-flowered butterwort is an insectivorous plant that requires full sun and grows in shallow, usually flowing, water of small streams, swamps, and occasionally ditches. It is subject to threats such as land-use conversion, habitat fragmentation, and encroachment by woody shading species. Natural resource management will maintain the flow of water in streams by protecting surrounding uplands from logging, off-road vehicle use, and other potential erosion-causing activities, particularly with regard to the large sand pit upstream of Clear Creek. Prescribed burns during the growing season will reduce woody species encroachment. This INRMP protects habitat for primrose-flowered butterwort through active management of factors such as wetland management (Section 5.1.1), erosion control (Section 5.1.2), invasive species control (Section 5.1.6), and silvicultural activities (particularly prescribed burns [Section 5.2.1]). Projects described in this INRMP that benefit and conserve primrose-flowered butterwort habitat include Invasive Plant Control, Wetlands Protection, Endangered Species Habitat Management at NOLF Holley, Fire Management, Update Biological Inventory, Endangered Species Habitat Conservation, and Habitat Mapping and Endangered Species Surveys (see Appendix A for descriptions).

**Rose Pogonia (*Pogonia ophioglossoides*)**

*Status: Threatened (State).*

Rose pogonias typically grow under acidic boggy conditions in marshy meadows or grassy seepage slopes. Natural resource management will prevent erosion and hydrologic alterations that may be caused by draining, ditching, and off-road vehicle use, and reduce erosion into Clear Creek from the large upstream sand pit. This INRMP protects habitat rose pogonias through active management of factors such as wetland management (Section 5.1.1), invasive species

control (Section 5.1.6), silvicultural activities (Section 5.2.1), and forest protection (Section 5.2.2). Projects described in this INRMP that benefit and conserve rose pogonia habitat include Invasive Plant Control, Wetlands Protection, Endangered Species Habitat Management at NOLF Holley, Timber Stand Improvement, Fire Management, Update Biological Inventory, Endangered Species Habitat Conservation, Natural and Habitat Mapping and Endangered Species Surveys (see Appendix A for descriptions).

**Southern Red Lily (*Lilium catesbaei*).**

*Status: Threatened (State).*

The Southern red lily is a perennial lily that grows in pine savannahs, flatwoods, and bogs. Its orange-red flowers are more conspicuous following fire. Prescribed burns during the growing season can reduce shrub encroachment, release nutrients bound up in standing vegetation, promote flowering and fruiting, and facilitate seed germination. Draining, ditching, off-road vehicles, and logging activities should be limited in areas where the Southern red lily occurs in order to maintain natural hydrologic regimes. This INRMP protects habitat for Southern red lily through active management of factors such as wetland management (Section 5.1.1), invasive species control (Section 5.1.6), silvicultural activities (particularly prescribed burns [Section 5.2.1]), and forest protection (Section 5.2.2). Projects described in this INRMP that benefit and conserve Southern red lily habitat include Invasive Plant Control, Wetlands Protection, Longleaf Alliance and Gulf Coastal Plain Ecosystem Partnership, Endangered Species Habitat Management at NOLF Holley, Reforestation, Forest Product Sales, Timber Stand Improvement, Construction and Maintenance of Forest Roads, Fire Management, Update Biological Inventory, Endangered Species Habitat Conservation, and Habitat Mapping and Endangered Species Surveys (see Appendix A for descriptions).

**Spoon-leaf Sundew (*Drosera intermedia*).**

*Status: Threatened (State).*

The spoon-leaf sundew is an insectivorous plant that prefers nutrient-free soils and open sunny areas of marshes and wet prairies. It occurs in the vicinity of Clear Creek, and will benefit from reduced erosion into the creek from a large upstream sand pit. Off-road vehicle use should be prevented at Site 8-A and natural vegetation surrounding seepage streams should be protected. This INRMP protects habitat for spoon-leaf sundew through active management of factors such as wetland management (Section 5.1.1), invasive species control (Section 5.1.6), silvicultural activities (particularly prescribed burns [Section 5.2.1]), and forest protection (Section 5.2.2). Projects described in this INRMP that benefit and conserve spoon-leaf sundew habitat include Invasive Plant Control, Wetlands Protection, Endangered Species Habitat Management at NOLF Holley, Fire Management, Update Biological Inventory, Endangered Species Habitat

Conservation, and Habitat Mapping and Endangered Species Surveys (see Appendix A for descriptions).

**Sweetshrub (*Calycanthus floridus* var. *floridus*)**

*Status: Endangered (State).*

Sweetshrub is an aromatic deciduous shrub that inhabits moist woodlands of the southeast United States, particularly on slopes and along wooded streams. Natural resource managers will avoid plowing firelines on slopes between upland pine and baygall communities. Prescribed fire in surrounding uplands should be permitted to burn into baygall edges where it will extinguish naturally. This INRMP protects habitat for sweetshrub through active management of factors such as landscaping and grounds maintenance (Section 5.1.5), invasive species control (Section 5.1.6), silvicultural activities (particularly prescribed burns [Section 5.2.1]), and forest protection (Section 5.2.2). Projects described in this INRMP that benefit and conserve sweetshrub habitat include Invasive Plant Control, Longleaf Alliance and Gulf Coastal Plain Ecosystem Partnership, Reforestation, Forest Product Sales, Timber Stand Improvement, Construction and Maintenance of Forest Roads, Fire Management, Update Biological Inventory, Endangered Species Habitat Conservation, and Habitat Mapping and Endangered Species Surveys (see Appendix A for descriptions).

**White-top Pitcher Plant (*Sarracenia leucophylla*).**

*Status: Endangered (State).*

The white-top pitcher plant is a long-lived perennial insectivorous plant that inhabits bogs, wet pine savannahs, and flatwoods. Natural resource management will prevent hydrologic alterations and erosion that may be caused by draining, ditching, logging activities, and off-road vehicle use. Prescribed burns during the growing season in wet prairies will limit encroachment by woody vegetation that could adversely shade the species. This INRMP protects habitat for white-top pitcher plants through active management of factors such as wetland management (Section 5.1.1), erosion control (Section 5.1.2), invasive species control (Section 5.1.6), and silvicultural activities (particularly prescribed burns [Section 5.2.1]). Projects described in this INRMP that benefit and conserve white-top pitcher plant habitat include Invasive Plant Control, Wetlands Protection, Longleaf Alliance and Gulf Coastal Plain Ecosystem Partnership, Endangered Species Habitat Management at NOLF Holley, Reforestation, Forest Product Sales, Timber Stand Improvement, Construction and Maintenance of Forest Roads, Fire Management, Update Biological Inventory, Endangered Species Habitat Conservation, and Habitat Mapping and Endangered Species Surveys (see Appendix A for descriptions).



### **Yellow-fringed Orchid (*Platanthera ciliaris*)**

*Status: Threatened (State)*

The yellow-fringed orchid is tolerant of a variety of habitats, but, in Florida, typically grows in full sun or partial shade in moist, open, acidic bogs, prairies, and pine woods. It has been found in sphagnum mats adjacent to and along banks of many of the seepage slopes at NOLF Site 8-A. Natural resource management will prevent damage to soils and hydrologic alterations that may be caused by draining, ditching, and off-road vehicle use. Prescribed burns during the growing season in wet prairies will limit woody species encroachment. This INRMP protects habitat for yellow-fringed orchids through active management of factors such as wetland management (Section 5.1.1), invasive species control (Section 5.1.6), silvicultural activities (particularly prescribed burns [Section 5.2.1]), and forest protection (Section 5.2.2). Projects described in this INRMP that benefit and conserve yellow-fringed orchid habitat include Invasive Plant Control, Wetlands Protection, Longleaf Alliance and Gulf Coastal Plain Ecosystem Partnership, Endangered Species Habitat Management at NOLF Holley, Reforestation, Forest Product Sales, Timber Stand Improvement, Construction and Maintenance of Forest Roads, Fire Management, Update Biological Inventory, Endangered Species Habitat Conservation, and Habitat Mapping and Endangered Species Surveys (see Appendix A for descriptions).

### **Other Rare Species**

#### **Le Conte's Sparrow (*Ammodramus leconteii*)**

The le Conte's sparrow migrates to the southeastern United States during winter and inhabits old field and prairie habitats with dense cover of grass or sedge. They may particularly be associated with agricultural outleasings at NASWF. Strips (30-40 feet wide) should be left in agricultural outlease areas to provide better habitat diversity. This INRMP protects habitat for le Conte's sparrows through active management of factors such as erosion control (Section 5.1.2), landscaping and grounds maintenance (Section 5.2.5), invasive species control (Section 5.1.6), and agricultural outleasing (Section 5.1.8). Projects described in this INRMP that benefit and conserve le Conte's sparrow habitat include Invasive Plant Control, Agricultural Outleasing, Update Biological Inventory, Neotropical Migratory Bird Survey, and Habitat Mapping and Endangered Species Surveys (see Appendix A for descriptions).

### ***Integration with Other Natural Resources Management Activities***

- Wetlands, Section 5.1.1 – wetland provide habitat for many rare species;
- Soil Conservation and Erosion, Section 5.1.2 – control sedimentation into wetland habitat;

- Stormwater and Water Quality, Section 5.1.3 – control water quality for rare aquatic species;
- Floodplains, Section 5.1.4 – maintaining floodplain conditions benefits rare species;
- Landscaping and Grounds Maintenance, Section 5.1.5 – be aware of habitat utilization by rare species during grounds maintenance;
- Invasive, Exotic, and Noxious Species, Section 5.1.6 – control exotic species, especially those that compete with native rare species;
- Urban Forestry, Section 5.1.7 – utilize native tree species that provide habitat for rare animal species;
- Agricultural Outleasings, Section 5.1.8 – control pesticide and fertilizer runoff into aquatic and wetland habitats;
- Silviculture, Section 5.2.1 – thinning and controlled burns benefit upland rare species such as gopher tortoises;
- Forest Protection, Section 5.2.2 – controlling wildfires prevents damage to rare species;
- Fisheries Management 5.3.1 – ensure fisheries management is consistent with habitat management for rare aquatic species;
- Migratory Birds, Section 5.3.2 – combine migratory bird surveys with efforts to inventory protected species;
- Nuisance Wildlife and BASH, Section 5.3.4 – ensure BASH controllers are aware of rare species and reduce predation by nuisance carnivores;
- Outdoor Recreation, Section 5.4 – properly educate recreational participants in stewardship of the resource and aquatic environment;
- Natural Resources Training, Section 5.5.1 – ensure personnel are current on protected species rules and regulations; and
- GIS, Section 5.5.2 – utilize GIS tools to improve management of rare species and their habitats.

### ***Ecosystem Management***

The concepts presented in this section are consistent with ecosystem management. By effectively managing wildlife habitats and natural communities on the NASWF Complex, it is not only enhancing wildlife communities, but may also be providing opportunities for new species, including migratory species, to thrive. For example, increasing gopher tortoise habitat may also benefit other species, such as the gopher frog, eastern indigo snake, and pine snake, which often utilize gopher tortoise burrows for cover.

### ***Military Mission***

Federal law prohibits harassment and all other forms of take for federally-protected species. The NASWF Complex must maintain a working knowledge of the protected species and their required habitats on its properties and take prudent steps to protect those species and habitats. Failure to do so could result in regulatory action by the USFWS, NMFS, and FDEP, which could delay or

otherwise hinder military training operations at the Complex. The NASWF Complex must consult with NMFS for any action which may destroy or adversely modify critical habitat for the Gulf sturgeon.

***Laws, Executive Orders, Regulations, Directives, and Memoranda Relevant to Threatened and Endangered Species***

- Endangered Species Act, 16 U.S.C. 35, 32 CFR 190, provides for the identification and protection of threatened and endangered species of fish, wildlife, and plants and their critical habitats. It requires federal agencies to ensure that no agency action is likely to jeopardize the continued existence of a threatened or endangered species.
- Migratory Bird Treaty Act, as amended 16 U.S.C. 703-712, prohibits the taking or harming of a migratory bird, its eggs, nests, or young without the appropriate permit.
- Sikes Act, as amended 16 U.S.C. 670a-o, requires each military department to manage fish and wildlife resources in accordance with a tripartite cooperative plan agreed to by the USFWS and state wildlife agency.
- Marine Mammal Protection Act of 1972, 16 U.S.C. 1361-1407, prohibits the taking or harming of marine mammals without the appropriate permit.
- Bald and Golden Eagle Protection Act, 16 U.S.C. 668-668c, prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald eagles, including their parts, nests, or eggs.
- Magnuson-Stevens Fishery Conservation and Management Act (1996 Reauthorization), 16 U.S.C. 1855(b), federal agencies must consult with the Secretary of Commerce on all activities, or proposed activities, authorized, funded, or undertaken by the agency, that may adversely affect EFH.
- Fish and Wildlife Conservation Act, 16 U.S.C. 2901, encourages all federal departments and agencies to utilize their statutory and administrative authority, to the maximum extent practicable and consistent with each agency's statutory responsibilities, to conserve and promote conservation of nongame fish and wildlife and their habitats.
- Executive Order 13112, 3 February 1999, requires executive agencies to restrict the introduction of exotic organisms into natural ecosystems.
- OPNAVINST 5090.1D, 12-3.5, discusses laws that govern natural resources management relating to the protection and management of fish and wildlife resources.
- Florida Statutes, Chapter 370.12, regulates the taking, killing, destroying, harassing, disturbing, and molesting of any marine turtle.
- Florida Statutes, Chapter 370.12, Florida Endangered and Threatened Species Act, is to conserve, protect, and manage the threatened and endangered species and their habitats.

**Additional Sources of Information**

Habitat Conservation Planning Handbook  
<http://endangered.fws.gov/hcp/hcpbook.htm>

Florida Fish and Wildlife Conservation Commission  
<http://myfwc.com/>

U.S. Fish and Wildlife Service  
<http://www.fws.gov/>

Effects of Fire on Threatened and Endangered Plants  
<http://fire.r9.fws.gov/ifcc/T&EPlants/T&EPlants.htm#Abstract>

Fire Effects on Plants and Wildlife  
<http://www.fs.fed.us/database/feis/>

Prevention and Control of Wildlife Damage and Wildlife Diseases and Humans  
<http://www.ces.ncsu.edu/nreos/wild/wildlife/wdc/index.html>

Florida Natural Areas Inventory  
<http://www.fnai.org/>

#### **5.3.4 NUISANCE WILDLIFE AND BASH**

Nuisance wildlife causes inconveniences to humans, threatens health and safety of human populations, and has the potential to cause property damage. Effects can be relatively minor, such as reducing the aesthetic qualities of an area, or major, such as damaging landscaped areas, damaging property, and causing personal injury. Nuisance wildlife also may act as vectors for human disease.

Integrated Pest Management (IPM) is an acceptable, environmentally responsible, and economically practical method of controlling pest animal populations. IPM incorporates a variety of cultural, biological, and chemical methods to efficiently manage pest populations while lowering dependence on chemical controls. A number of animal pests occur on the NASWF Complex, including fire ants, cockroaches, termites, and other invertebrates, and the control of these pests is an integral part of ecosystem management practices.

Mammal and bird populations, especially in the vicinity of runways, pose a Bird-Aircraft Strike Hazard (BASH) risk to aircraft and must be minimized and controlled to prevent costly and potentially-deadly incidents.

##### ***Issues***

Termites, rodents, feral cats, and some species of birds and other small mammals have caused structural damage at buildings on NASWF Complex. Fire ants create nuisances and control costs by building ant mounds across the landscape. The climate and environment around the Complex are ideal for the proliferation of insects such as mosquitoes and ticks which act as vectors for blood-borne diseases. Many people suffer from allergens to dander and certain insect bites or stings. The wet habitats all across the Complex harbor alligators and venomous snakes that must be regarded with caution by base tenants and visitors. These habitats also attract numerous bird species in large populations, so the risk of BASH is always present; there were 115 strike reports submitted by NAS Whiting Field from September 2008 to May 2012 (Ron Cherry, NRM).

### **Goals and Objectives**

- Protect and maintain natural resources within the NASWF Complex by continuing and enhancing ecologically appropriate and beneficial land uses and management practices, while ensuring the continuation of the military mission;
- Protect, maintain, and restore native vegetative communities and plant and wildlife populations, while improving the quality of life and ensuring continuation of the military mission;
- Protect and conserve the ecological value and diversity of natural resources by fostering knowledge of, and participation in, adaptive ecosystem management;
- Control nuisance wildlife and wildlife diseases that may adversely affect human health or welfare, the health of the ecosystem, and the military mission;
- Continue existing, and establish new programs and procedures to monitor, maintain, and enhance wetlands and water quality;
- Maintain the ecological integrity of wetland and upland communities for the protection of native plant and animal species, including numerous federally and state listed species;
- Preserve and protect threatened and endangered species and species of special concern to ensure no reduction in population sizes;
- Ensure that land management and land use decisions comply with all applicable laws, executive orders, regulations, directives, and instructions, and that adverse impacts to the natural environment are minimized;
- Provide adequate staffing, equipment, technology, and training to the Natural Resources Program to ensure proper implementation of this INRMP; and
- Incorporate the concept of ecosystem management into all planning and management processes.

### **Projects**

- Timber Stand Improvement (Project 8 in Appendix A);
- Fire Management (Project 10 in Appendix A);
- Update Biological Inventory (Project 11 in Appendix A);
- Neotropical Migratory Bird Survey (Project 13 in Appendix A); and
- Endangered Species Habitat Conservation (Project 14 in Appendix A).

### **Management Strategies**

- Implement grounds maintenance practices consistent with the BASH Plan;
- The BASH Plan will be continuously updated and monitored to meet the needs of the Complex;
- Establish an awareness program to educate the public on indicators of wildlife population problems and diseases. Use pamphlets, flyers, and command units to disseminate information;
- Continue to monitor the health and size of animal populations, and control populations as needed;

- Monitor and forecast pest populations to determine whether insect infestations are present, and if so, the type of pests, degree of infestation (small, medium, or large), and the size of the area or number of plants under attack;
- Educate residents of the NASWF Complex about the ecological and health benefits of keeping pet cats indoors and eliminating resident populations of feral cats;
- Ensure grounds maintenance personnel receive a copy of the BASH plan and are aware of the locations in which to manage in accordance with the Plan;
- Use FWC guidelines for the protection of listed species from proposed development or land clearing impacts;
- Institute wildlife education and stewardship programs;
- Ensure implementation of policies that minimize adverse impacts to ecosystem resources from land disturbance activities;
- Maintain mowing schedule and grass height around the airfields to optimize BASH controls;
- Compile GIS data coverages and maintain and update data coverages of populations and habitats of nuisance wildlife problems and BASH issues; and
- Continually verify that natural resources personnel obtain proper training and certifications.

### ***Long-Term Management***

Aviator safety is among the Navy's highest priorities. BASH is one of the greatest threats to safety during flight training operations. The Navy therefore entered into a Memorandum of Understanding (MOU) with USDA Animal and Plant Health Inspection Service, Wildlife Services, on 1 October 2010 to establish and continue an Integrated Wildlife Damage Management (IWDM) program at various installations, including the NASWF Complex. The MOU will last five years. The primary objective of this program is to assist and provide technical recommendations regarding wildlife hazards to aircraft and the protection of human health and safety. A secondary objective of the MOU is to reduce damage to property and natural resources caused by wildlife. Additional objectives include:

- Supplement and enhance the overall Natural Resources Program;
- Monitor wildlife activity while evaluating the effectiveness of IWDM program efforts;
- Facilitate the acquisition and renewal of an annual migratory bird depredation/salvage permit and state depredation permits, as necessary;
- Assist in wildlife-strike reporting and monthly briefings on the status of the BASH program;
- Assist with the review and revision of the NASWF Complex BASH Plan to ensure updated, effective techniques are in place to reduce the threat of wildlife strikes to aircraft;
- Assist in the collection, preparation and shipment of wildlife strike remains to the Smithsonian Institution for positive identification;

- Serve as a member of the NASWF Complex Bird Hazard Working Group;
- Evaluate off-station airfields frequented by military aircraft where repeated BASH strikes have occurred, as directed by NASWF Complex points of contact.
- Train Navy personnel that may be part of a Bird Detection and Dispersal Team (BDDT) in accordance with the Weapons Division Qualification/Certification program;
- Train BDDT members on the use of active scare techniques and placement of static wildlife deterrent devices; and
- Train local squadrons detailing bird and animal strike hazards.

USDA APHIS WS has assigned one full-time wildlife biologist, subject to the MOU, who will employ appropriate methods for IWDM, including approved traps, pyrotechnics, firearms, and bird toxicants (e.g., Alpha Chloralose, Avitrol, and DRC-1339). IWDM will compliment activities of the Natural Resources Program and will coordinate activities with the NRM and Airfield Operations Officer, as well as local, state and federal officials.

The BASH Plan for the NASWF Complex is subject to CNIC Instruction 3700, *Navy BASH Program Implementing Guidance*, of 7 July 2011. This instruction holds the Environmental Department and NRM responsible for ensuring the BASH program is compliant with all applicable environmental laws and regulations and DoD and Navy policies, directives, and instructions. Section 5(c)(2)(g) of the Instruction requires oversight of the USDA Wildlife Biologist and regular coordination of efforts and strike identification with the NRM.

The NASWF Complex will manage all habitats surrounding an airfield, natural or man-made, in such a way as to discourage bird and wildlife hazards. Thorough and periodically updated ecological studies of airfields and their vicinity are vital to reduce BASH. The NASWF Complex will determine the management practices that will best discourage birds/animals from flying/congregating in areas likely to cause problems, and implement those management practices. Wildlife occurs at or near airfields generally because of food, water, or shelter, and because of local migrations. By managing areas to be less attractive to nuisance wildlife, it is possible to reduce hazards.

The NASWF Complex will continue to monitor the health and size of animal populations and control nuisance species as needed. A long-term management policy of public awareness (e.g., informing employees and visitors) for wildlife-related diseases focuses on, but is not limited to, the following issues:

- Knowledge of the diseases in the area and the specific times of year that present the greatest risk of exposure;
- Knowledge of and recognition of early symptoms of diseases and the condition of exposure;

- The use of extreme caution when approaching or handling a wild or feral animal, especially one that looks sick or abnormal;
- The use of protective measures against fungal diseases where there is an accumulation of animal feces (e.g., under a bird roost);
- Protection from vector-borne disease in high-risk areas using measures such as mosquito or tick repellent, and wearing special clothing; and
- Reduction in host populations and their ectoparasites.

In the event that the NASWF Complex identifies a wildlife conflict, a damage control program will be established. The program will have four parts (Dolbeer *et al.* 1994):

1. **Problem definition** to determine the species and number of animals causing the problem, the amount of loss or nature of the conflict, and other biological and social factors related to the problem;
2. **Ecology of the problem species** to understand the life history of the species, especially in relationship to the conflict;
3. **Control method** takes the information gained from parts 1 and 2 and develops an appropriate management program to alleviate or reduce the conflict; and
4. **Evaluation of control** assesses the reduction in damage in relation to costs and impact of the control on target and non-target populations and the environment.

The NASWF Complex would use recommended IPM practices to control pests occurring on properties. The primary pests include fire ants, mosquitoes, cockroaches, termites, and biting flies. Because of the technical nature of this program, the NASWF Complex would utilize sources of technical information, such as university researchers, to remain advised of current IPM techniques. Additionally, Complex grounds managers would be provided with continual training and education on the most recent IPM techniques and issues. Integrated pest management practices together form a total management system which includes chemical, cultural, biological, genetic, and mechanical controls.

- **Chemical Controls** often form part of an IPM strategy. The key is to use the pesticides to complement, rather than hinder, other strategy elements and to limit negative environmental effects. It is also important to understand the life cycle of a pest so that the pesticide can be applied when the pest is at its most vulnerable, and to achieve maximum effect at minimum levels of pesticide. Chemical controls include the following:
  - **Conventional:** include carbamates, chlorinated hydrocarbons, some botanicals and analogs, new compounds; and
  - **Biorational:** include pheromones, antifeedants, heat/cold, minerals, oils, some botanicals, and microbials
  - **Cultural Controls** include plant variety and site selection rotations, cultivations, and sanitation. These control measures are often referred to as the older forms of pest control.



- **Biological Controls** maintain pests at levels that do not cause great economic or aesthetic losses. The principle behind biological pest control is that a given pest can be killed by predators, parasites, or pathogens. By introducing or encouraging such adversaries, the population of pest organisms should decline. There are three general approaches to biological pest control: importation, augmentation, and conservation.
- **Importation** involves importing a specific organism to control another; however, there are dangers with this approach. This method requires extensive research before a control organism is released in order to determine whether it will attack species other than the pest species.
- **Augmentation** consists of manipulating existing natural enemies to increase their effectiveness. This can be achieved by mass production and periodic release of natural enemies of the pest, and by genetic enhancement of the enemies to increase their effectiveness at control.
- **Conservation** involves identifying and modifying factors that may limit the effectiveness of the natural enemy. In some situations, this may include reducing the application of pesticides, as pesticides may kill predators as well as killing pests. Sometimes part of a crop area is left untreated so that natural enemies will survive and re-colonize the treated areas.
- **Genetic Controls** include the transfer of resistance genes into a plant, or the engineering of a disadvantageous trait in the pest, then releasing modified individuals into the pest control area. Another method is the introduction of sterile members of the pest species.
- **Physical or Mechanical Controls** alter environmental factors in a way that reduces pest populations. These controls may be performed by the individual groundskeeper; examples include crop rotation and pruning. Another physical control method, sometimes called “mating disruption,” involves the use of sex pheromones produced by females to attract males for mating. Many of these pheromones are reproduced synthetically in the laboratory and are available commercially. Quantities of the pheromone placed around an orchard can disrupt mating by confusing male insects, which are then less likely to find a mate.

#### ***Integration with Other Natural Resources Management Activities***

- Wetlands, Section 5.1.1 – ensure pesticides do not contaminate wetlands and manage wetlands near airfields to reduce BASH;
- Soil Conservation and Erosion, Section 5.1.2 – control sedimentation into wetland habitat;
- Stormwater and Water Quality, Section 5.1.3 – prevent contamination of water quality by pesticides;
- Floodplains, Section 5.1.4 – ensure continued attenuation capacity of the floodplain;
- Landscaping and Grounds Maintenance, Section 5.1.5 – utilize IPM practices during landscaping and grounds maintenance;
- Invasive and Exotic Species, Section 5.1.6 – control of nuisance animals may correlate with control of invasive and exotic species;
- Urban Forestry, Section 5.1.7 – consider BASH risks when selecting trees and locations for urban forestry;

- Agricultural Outleasing, Section 5.1.8 – consider BASH risks when selecting crops to cultivate near airfields;
- Silviculture, Section 5.2.1 – utilize IPM to reduce risk of disease and infestation of forest trees;
- Forest Protection, Section 5.2.2 – burn to accentuate the environmental conditions of native plants and wildlife;
- Fisheries Management, Section 5.3.1 – ensure pesticide use does not contaminate fishing areas;
- Migratory Birds, Section 5.3.2 – ensure BASH control complies with the MBTA;
- Threatened and Endangered Species, Section 5.3.3 – control nuisance animals, such as feral cats, that predate on protect species;
- Outdoor Recreation, Section 5.4 – educate recreational users about precautions against disease-bearing insects and hazardous wildlife;
- Natural Resources Training, Section 5.5.1 – ensure personnel are current on IPM and BASH procedures and laws; and
- GIS, Section 5.5.2 – map habitat types around airfields to identify BASH risks and solutions.

### ***Ecosystem Management***

An integrated ecosystem approach compliant with the SAIA, as amended, is used to manage habitats for wildlife. Safety, health, and BASH issued must be considered when developing management plans to control nuisance wildlife.

### ***Military Mission***

Nuisance wildlife and the outbreak of disease on the NASWF Complex could pose a threat to implementation of the military mission through the infection of military personnel and the consequent limitation of access to areas of the Complex to control a problem. Structural damage to military infrastructure from infestation could also result in delays and costs to operations. BASH is a serious issue and can potentially threaten the military mission by causing accidents in the air and on the runway. Accidents may cause equipment damage as well as bodily harm to aircraft personnel.

### ***Laws, Executive Orders, Regulations, Directives, and Memoranda Relevant to Nuisance Wildlife and BASH***

- Endangered Species Act, 16 U.S.C. 35, 32 CFR 190, provides for the identification and protection of threatened and endangered species of fish, wildlife, and plants and their critical habitats. It requires federal agencies to ensure that no agency action is likely to jeopardize the continued existence of a threatened or endangered species.
- Migratory Bird Treaty Act, as amended 16 U.S.C. 703-712, prohibits the taking or harming of a migratory bird, its eggs, nests, or young without the appropriate permit.

- Bald and Golden Eagle Protection Act, prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald eagles, including their parts, nests, or eggs.
- EO 13186, Responsibilities of Federal Agencies to Protect Migratory Birds, imposes substantive obligations on the United States for the conservation of migratory birds and their habitats.
- 2003 National Defense Authorization Act, exempts the Armed Forces from the incidental taking of migratory birds during military readiness activities.
- NASWFINST 3571.1A, provides guidance for bird/animal strike hazard reduction and establishes areas of responsibility for bird control, bird hazard warning conditions, and local aircraft bird avoidance operating procedures.
- OPNAVINST 5090.1D, 12-3.12(b), discusses preparation and implementation of BASH plans.
- CNIC Instruction 3700, 7 July 2011, establishes policies and procedures for implementing the BASH plan, establishes mandatory BASH event reporting and remains collection procedure and establishes BASH program procedures.
- EO 13112, 3 February 1999, requires executive agencies to restrict the introduction of exotic organisms into natural ecosystems.
- OPNAVINST 5090.1D, 12-3.10, discusses Navy policy regarding invasive species.
- FIFRA, 7 U.S.C.136, states that a pesticide that is federally registered by the EPA is not legal for use until it is also registered by the individual state.
- Forest Pest Suppression Memorandum of Agreement between the Department of Agriculture and DOD, 11 December 1990, is the planning, coordination, and execution of field operations to prevent and suppress damaging forest insects and disease outbreaks.
- OPNAVINST 5090.1D, Chapter 24, discusses the use of pesticides on Navy installations.
- Armed Forces Pest Management Board, Technical Information Memorandum No. 37, presents guidelines for reducing feral cat populations on military installations in the U.S.
- CNO Policy Letter (Ser. N456M/1U595820), 10 Jan 2002, requires Navy commands to institute proactive pet management procedures to prevent the establishment of feral cat and dog populations.
- OPNAVINST 5090.1D, 12-3.10(b), discusses Navy policy regarding feral cat and dog control, and explicitly prohibits the use of Trap-Neuter-Release and similar programs.

#### **Additional Sources of Information**

Wildlife damage and diseases information provided by the University of Nebraska Cooperative Extension Service, Great Plains Agricultural Council, and the USDA  
<http://www.ces.ncsu.edu/nreos/wild/wildlife/wdc/index.html>

Nuisance Wildlife Control Information  
<http://www.aphis.usda.gov/ws>

USGS National Wildlife Health Center Web  
<http://www.nwhc.usgs.gov/>

USDA APHIS Wildlife Damage Management  
[http://www.aphis.usda.gov/wildlife\\_damage/](http://www.aphis.usda.gov/wildlife_damage/)

Wildlife Disease/Health Related Links  
<http://wildlifedisease.nbii.gov/>

National Integrated Pest Management Network  
[http://webipm.ento.vt.edu/ipm-www/nipmn/nipmn\\_presentation/nipmnhome.html](http://webipm.ento.vt.edu/ipm-www/nipmn/nipmn_presentation/nipmnhome.html)

Biological Control Virtual Information Center  
<http://cipm.ncsu.edu/ent/biocontrol/>

US Bird Avoidance Model  
<http://www.usahas.com/bam/>

DoD Partners in Flight BASH Planning  
<http://www.dodpif.org/groups/bash.php>

Air Force Safety Center  
<http://www.afsc.af.mil/organizations/bash/index.asp>

#### **5.4 OUTDOOR RECREATION**

Outdoor recreation is the use of natural resources, including indoor interpretive centers, where the primary focus is on the understanding and application of the natural environment. Outdoor recreation includes nature trails, picnic and camping areas, consumptive and non-consumptive uses of natural resources, establishment and management of recreational trails, scenic rivers, equestrian areas, the use of off-road vehicles, as well as other uses of natural resources. It does not include other highly developed outdoor uses such as golf courses, tennis courts, ball/athletic fields, or swimming pools. Outdoor recreation opportunities are dependent upon the natural environment and can be classified as concentrated or dispersed.

The MWR Department is the primary entity responsible for maintaining and developing recreational activities at NASWF, with the exception of natural resources-based outdoor recreational activities such as nature trails and primitive camping. The NASWF NRM is responsible for most natural resources-based outdoor recreation at the NASWF Complex.

The NPS completed an Outdoor Recreation Management Plan for selected properties within the NASWF Complex in 1999. This plan contains detailed information on dispersed and concentrated outdoor recreational opportunities, and is available from the NASWF NRM. Tables 11 and 12 list outdoor recreational opportunities at the NASWF Complex.

According to Florida's State Comprehensive Outdoor Recreation Plan (SCORP), the most popular outdoor activities in the west Florida region include coastal beach activities, bicycle riding, saltwater fishing (by boat), picnicking, hiking, and visiting archaeological/historical sites. The NASWF Complex and Blackwater River State Park and Forest provide many of these outdoor activities. Nature-based tourism or "Eco-tourism" and Watchable Wildlife are also popular. The NASWF Complex supports a Watchable Wildlife program, which includes the Clear Creek Nature Trail. In addition, two stormwater retention ponds at NASWF have been designated as Watchable Wildlife areas.

The majority of the outdoor recreation opportunities for the Complex are located at NASWF, Whiting Park, and NOLF Barin. The remaining NOLFs contribute to outdoor recreation opportunities by providing abundant natural resources areas, some of which are suitable for consideration as Special Interest Areas. The focus of the present natural resources-based outdoor recreation program at the NASWF Complex revolves around the Clear Creek Nature Trail, a Watchable Wildlife program, the Sandhill Pine Bike and Hike Trail, developed picnic areas, a target shooting range, skeet shooting range, and an archery range at NASWF. Also, Whiting Park, operated by MWR, provides fishing, swimming, and boating opportunities. In addition to outdoor recreational opportunities available at the NASWF Complex, the Blackwater River State Park and Forest provide numerous outdoor recreational opportunities including boating, fishing, canoeing, picnicking, horseback riding, and hiking, all within close proximity to NASWF.

### ***Issues***

Information pertaining to the demand for natural resources-based outdoor recreational activities at the NASWF Complex is limited; however, the demand is expected to increase. A participant survey is necessary to determine demand for specific natural resources-based outdoor recreational opportunities and to provide the detailed information needed for future planning. As deemed appropriate by the NRM, the NASWF Complex will provide additional natural resources-based outdoor recreational opportunities for Navy personnel as well as the public

### ***Goals and Objectives***

- Provide facilities and develop policies that allow for recreational and educational uses of natural resources, and result in positive effects to these natural resources while improving the quality of life;
- Protect and maintain natural resources within the NASWF Complex by continuing and enhancing ecologically appropriate and beneficial land uses and management practices, while ensuring the continuation of the military mission;
- Protect, maintain, and restore native vegetative communities and plant and wildlife populations, while improving the quality of life and ensuring continuation of the military mission;
- Protect and conserve the ecological value and diversity of natural resources by fostering knowledge of, and participation in, adaptive ecosystem management;
- Maintain existing and develop additional outdoor recreational trails, interpretive centers, and/or facilities to support present and future natural resources-based outdoor recreation at the NASWF Complex;
- Implement existing and further develop (where needed) natural resources-based outdoor recreation programs to support present and future outdoor recreation at the NASWF Complex;

- Control nuisance wildlife and wildlife diseases that may adversely affect human health or welfare, the health of the ecosystem, and the military mission;
- Continue existing, and establish new programs and procedures to monitor, maintain, and enhance wetlands and water quality;
- Maintain the ecological integrity of wetland and upland communities for the protection of native plant and animal species, including numerous federally and state listed species;
- Preserve and protect threatened and endangered species and species of special concern to ensure no reduction in population sizes;
- Ensure that land management and land use decisions comply with all applicable laws, executive orders, regulations, directives, and instructions, and that adverse impacts to the natural environment are minimized;
- Provide adequate staffing, equipment, technology, and training to the Natural Resources Program to ensure proper implementation of this INRMP; and
- Incorporate the concept of ecosystem management into all planning and management processes.

### **Projects**

- Wetlands Protection (Project 1 in Appendix A);
- Neotropical Migratory Bird Survey (Project 13 in Appendix A);
- Recreational Fishing (Project 15 in Appendix A); and
- Habitat Mapping and Endangered Species Surveys (Project 16 in Appendix A).

### **Management Strategies**

- Continue updating the baseline information pertaining to present usage of natural resources-based outdoor recreation activities;
- Continue to develop recreational trails and/or interpretive centers in areas exhibiting unique cultural, natural, historical, or archeological resources;
- Expand, improve, and provide additional facilities for outdoor recreational opportunities;
- Ensure distribution and review of the Outdoor Recreation Management Section report, prepared by the National Park Service for the NASWF Complex, by all appropriate programs and departments (e.g., MWR). As appropriate, develop report recommendations into projects and activities;
- Further develop recreational fishing opportunities at the Complex;
- Continue to implement BMPs to minimize stormwater pollution and erosion (FDOT and FDEP 2007; FDEP 2008; NASWF 2013);
- Promote 50-foot buffers for all wetlands, and ensure land use and land management practices that will not adversely affect wetland resources;
- Continue to implement programs and activities for the protection and enhancement of threatened and endangered plant and animal species and their habitats;
- Continue to develop a soil erosion control plan and reduce the rate of soil erosion through the implementation of long-term measures and projects;

- Continue to monitor the health and size of animal populations, and control populations as needed; and
- Continually verify that natural resources personnel obtain proper training and certifications.

### **Long-Term Management**

The Outdoor Recreation Plans prepared by the NPS (1999) for the NASWF Complex contain numerous management recommendations for outdoor recreation at the NASWF Complex. Using the NPS documents as a guide, the NASWF Complex will survey existing outdoor recreational opportunities and usage, and continue to develop natural resources-based outdoor recreational opportunities that do not adversely affect natural systems. In addition, MWR will seek guidance from the NRM to ensure that new projects do not negatively impact the natural environment. Recommended natural resources-based projects proposed by the NPS include the following:

- Use the expertise of university students and staff to help identify Special Interest Areas in exchange for letting them use the Installation as a study area;
- Implement and maintain appropriate ecosystem management practices and continue efforts to protect areas with significant natural resources (i.e., protected plant or animal communities);
- Provide access to the unique natural communities on the Complex for the purpose of environmental interpretation, particular consideration should be given to the NOLFs with significant natural communities;
- Develop and make available to users, a set of fishing regulations/instructions specifically for NASWF;
- Develop a regular maintenance program for all trails;
- Look into establishing hiking, nature trail and/or multi-use trails at one or more of the NOLFs;
- Develop a color brochure to promote the Clear Creek Nature Trail. Other promotional possibilities include video presentations in the Installation website. A contact person should be assigned to distribute accurate and up-to-date information on the trail;
- Establish a system to promote the existing, as well as future, outdoor recreation opportunities, such as fishing, bicycling, and hiking/nature trails. Develop special promotions, (i.e., a fishing derby, mountain bike races). Make information on these areas readily available to possible users;
- Continue to designate areas as Watchable Wildlife areas;
- Establish a plan to implement camping for the NASWF Complex. Whiting Park, Magda Village Housing, and NOLF Barin may be considered for future camping locations;
- Promote the existing jogging and fitness trails. Develop a map designating each trail and make it readily available to users and potential users. Place sign-in sheets at trail heads to get an estimate of use;
- Conduct a survey to determine if the existing picnic areas are adequately serving the demand on the Installation;

- Consider organizing an archery club on the Installation. The club could help with the up-keep of the archery range. Development of an archery course should also be looked into;
- Develop an outdoor education/interpretation program focusing on the natural resources around the Clear Creek Nature Trail and Whiting Park;
- Develop an orienteering program for the Installation, either at NASWF in a large natural resources area, or at any of the NOLFs;
- In coordination with the MWR and the local community, sponsor mountain bike races on the Sandhill Pine Trail; and
- Develop management for bicycling; potentially through appointing an Installation employee (possibly from the Natural Resources Division) to be responsible for special events and general maintenance of the existing and proposed trails.

The Sikes Act requires that sustainable use by the public of natural resources take place to the extent that the use is not inconsistent with the needs of the fish and wildlife resources. In general, access for outdoor recreation is limited to: active duty and reserve military personnel assigned to work at the Installation, their dependents and accompanied guests; federal civilian employees, their dependents and accompanied guests; and military retirees. In addition, the general public is allowed access to the Clear Creek Nature Trail, the Military Heritage Trail, Indian Heritage Trail and the Sandhill Bike and Hike Trail located at NASWF. Public access to additional areas at NASWF and the NOLFs may be granted for outdoor events on a reservation basis.

#### ***Integration with Other Natural Resources Management Activities***

- Wetlands, Section 5.1.1 – ensure recreational opportunities do not compromise wetlands;
- Soil Conservation and Erosion, Section 5.1.2 – control sedimentation during recreational activities;
- Stormwater and Water Quality, Section 5.1.3 – ensure recreational opportunities do not compromise water quality;
- Floodplains, Section 5.1.4 – development of new recreational facilities must not compromise attenuation capacity of the floodplain;
- Landscaping and Grounds Maintenance, Section 5.1.5 – develop aesthetically pleasing landscapes for recreation;
- Invasive and Exotic Species, Section 5.1.6 – reduce invasive and exotic species to enhance the outdoor recreational experience;
- Urban Forestry, Section 5.1.7 – utilize urban forestry principles to enhance recreational experiences;
- Agricultural Outleasing, Section 5.1.8 – avoid runoff of fertilizers and pesticides into recreational areas;
- Silviculture, Section 5.2.1 – use BMPs to reduce sedimentation and contamination of water quality for aquatic activities;



- Forest Protection, Section 5.2.2 – protect forest health to the benefit of pleasant recreational experiences;
- Fisheries Management, Section 5.3.1 – manage fisheries to the benefit of pleasant recreational experiences;
- Migratory Birds, Section 5.3.2 – avid bird watchers may be able to provide information;
- Threatened and Endangered Species, Section 5.3.3 – ensure recreational activities do not harass protected species, and make wildlife observers aware of rare species;
- Nuisance Wildlife and BASH, Section 5.3.4 – control nuisance wildlife to enhance the outdoor recreational experience;
- Natural Resources Training, Section 5.5.1 – ensure personnel are current on applicable laws and recreational policies and regulations; and
- GIS, Section 5.5.2 – utilize maps to the benefit of outdoor recreation.

### ***Ecosystem Management***

Ecosystem management practices are enhanced by environmental stewardship and by educating the general public about environmental conservation issues, problems, and solutions. By providing natural recreational and educational opportunities on the NASWF Complex, public awareness of vital environmental resources issues can be enhanced, thus providing a regional educational resource. Using volunteer groups and NASWF Complex personnel for the physical construction of recreational and educational facilities provides opportunities to educate group members on the values and characteristics of a healthy environment, and on the problems and solutions associated with human use of the environment.

### ***Military Mission***

Outdoor recreational opportunities are dependent upon the environment and the security and safety constraints of the military mission. At the same time, outdoor recreation serves to enhance the well-being and morale of base tenants. Outdoor recreational opportunities must be developed and used consistently with the sustainability of the land. The over-utilization or improper location of an outdoor recreation area could impact natural resources and the military mission.

### ***Laws, Executive Orders, Regulations, Directives, and Memoranda Relevant to Outdoor Recreation***

- Sikes Act and Improvement Act of 1997, 16 U.S.C. 670a(b)(1)(G), requires public access to a military Installation for the necessary, appropriate, and sustainable use of natural resources by the public to the extent that the use is not inconsistent with the needs of the fish and wildlife resources or with safety and military security.
- Outdoor Recreation – Federal/State Program Act, 16 U.S.C. 460c, defines a program for managing lands for outdoor recreation.

- OPNAVINST 5090.1D, 12-3.11, discusses natural resources management relating to the protection and management of outdoor recreational resources.
- National Historic Preservation Act, 16 U.S.C. 470-470m, establishes a program for the preservation of historic properties throughout the nation and for other purposes.
- Executive Order 11989, establishes policies and procedures to ensure the use of off-road vehicles on public lands will be controlled and directed so as to protect the resources of those lands.
- NAVFAC MO – 100.4, provides technical guidance for establishing goals and objectives and planning requirements for outdoor recreation.
- DODINST 4715.3 of May 1996, states DoD installations may engage in public awareness and outreach programs to educate the public regarding the resources on military lands and DoD efforts to conserve those resources.
- SECNAVINST 5090.8, requires integration of environmental protection, natural resources, and cultural resources programs into DoN operations and activities.
- State of Florida Freshwater and Saltwater Fishing Regulations.

#### **Additional Sources of Information**

FDEP, Division of Recreation and Parks  
<http://www.dep.state.fl.us/parks/>

National Park Service  
<http://www.nps.gov/index.htm>

Gulf Islands National Seashore  
<http://www.nps.gov/guis/index.htm>

FWC, Fishing in Florida  
<http://myfwc.com/fishing/>

## **5.5 TRAINING**

This section addresses the development and implementation of programs and techniques for training natural resources personnel. The training issues of this INRMP include training of GIS data integration, access, and reporting.

The natural resources program at the NASWF Complex shall support military readiness and sustainability while continuing to protect and conserve the natural resources on its properties. Natural resources and land management planning should be integrated with other base planning processes. All projects occurring on the NASWF Complex that potentially impact natural resources (e.g. wetlands, natural areas, urban forests, floodplains, water quality) will be evaluated prior to implementation. This will allow those projects to be reviewed by appropriate personnel so potential constraints (e.g. threatened and endangered species, wetlands, floodplains) can be identified.

Natural resources personnel will review pertinent literature to stay informed on current methodologies and techniques for natural resources management. Natural resources personnel should ensure that project plans, including military construction (MILCON) projects are consistent with the INRMP's management goals, objectives and strategies. The NASWF Complex will implement adaptive management to accommodate new strategies resulting from monitoring, scientific findings and new management guidelines.

Partnerships are often necessary and effective in implementing an INRMP while maintaining cost-effectiveness. Cooperative agreements are often used in partnerships with states, local governments, non-governmental organizations, and individuals to provide for the benefit, maintenance, and improvement of natural resources on DoD Installations. Cooperative agreements are authorized to implement INRMP projects (OPNAVINST 5090.1D, 12-3.4(c)(8)(b)). NAVFAC SE is tasked with providing the technical and administrative guidance for the development of cooperative agreements to implement natural resources plans and execute cooperative agreements on behalf of Installation commanders upon request.

#### **5.5.1 Training of Natural Resource Personnel**

Natural resources personnel at the NASWF Complex are expected to maintain a working knowledge of current research, issues, and technologies pertinent to natural resources management at the Complex. In addition, personnel engaged in wildland fire management, timber marketing, and pesticide application must receive specific training, as described below:

##### Wildland Fire Personnel Training

DoD has recently adopted the National Wildfire Coordination Group's (NWCG) Federal Wildland Fire Policy to govern all wildland fire activities carried out by DoD personnel. DoD is presently exploring the possibility of seeking membership in the NWCG. The NWCG is made up of all Federal agencies (except DoD) with wildland fire responsibilities and the National Association of State Foresters. The Federal Wildland Fire Policy requires that all personnel involved in prescribed fire and/or wildfire activities meet certain training and physical qualifications. DoD is presently reviewing how it will implement this requirement. Some military installations have already implemented this requirement with most of them making it mandatory for new hires and positions and voluntary for current employees. The NASWF Complex's requirements for personnel qualifications will be reviewed and the Prescribed Fire Plan within the Forest Management Plan will contain complete information on personnel qualifications.

### Timber Marketing

All personnel engaged in timber marking at the NASWF Complex, at a minimum, must meet the qualifications established by the Office of Personnel Management for Forestry Technician GS 0462-05 (see 'Additional Sources of Information' at the end of this section). Additional training will be given as to local requirements and procedures. This training will be under actual field conditions in a productive capacity.

### Pesticide Applicator Training

Pest Management is provided through implementation of the Integrated Pest Management Plan (IPMP). The IPMP provides a comprehensive, long-range document that captures all the pest management operations and pesticide-related activities conducted at the NASWF Complex. All Complex personnel who apply pesticides shall have received and maintained DoD (government staff) or Florida (contractors) certification as pesticide applicators for the categories of pest control engaged.

#### *Federal Personnel*

Federal personnel applying any pesticide on Federal land need DoD certification in accordance with OPNAVINST 6250.4B. Only Federal employees under hiring programs with duties as pesticide applicators can participate in the on-the-job (OTJ) training program. During this time, the new employee works under the direct supervision (see paragraph 2 below) of a certified pesticide applicator until they are qualified (1 year OTJ experience) and satisfactorily complete the DoD Pest Management Certification Course and can work independently.

#### *Civilian Contractors*

Civilian contractors applying any pesticide on the NASWF Complex require a Florida certification in the category or applicable sub-categories of work performed. All of the contractor's pest management staff who apply pesticides must be certified as pesticide applicators. Non-certified contractor employees are prohibited from applying pesticides.

#### *Inspectors*

Individuals who evaluate the quality of work of pest control contracts (QAEs) should also be trained in the pest management category or categories of work being performed.

### *Supervisor*

Direct supervision is defined in DoD Instruction 4150.7 as supervision that includes being at the specific location where pest management work is conducted, providing instruction and control, and maintaining a line-of-sight view of the work performed. Certain circumstances may temporarily remove the line-of-sight view of the application of pesticide from the supervisor such as topographic, vegetation, or structural constraints. Under these temporary circumstances, the supervisor shall be responsible for the actions of the pesticide applicators.

### *Training and Certification*

Training and certification will be conducted at government expense for DoD personnel. Certified pest control personnel shall be re-certified in accordance with Florida or DoD requirements as specified above. Employed pesticide applicators must be certified and the quality assurance evaluator must be trained in the following categories when appropriate. Certification and training is required when performing pest control operations that involve restricted-use or state-limited-use pesticides, to supervise other employees conducting pest control involving restricted-use or state-limited-use pesticides, or to evaluate contractor performance relating to pest control within these categories:

- Forest pest control (DoD & EPA category 2);
- Ornamental and turf pest control (DoD & EPA category 3);
- Aquatic pest control (DoD & EPA category 5);
- Right-of-way pest control (DoD & EPA category 6);
- Industrial, Institutional, Structural, and Health-related pest control (DoD & EPA category 7);
- Public health (DoD & EPA category 8); and
- Aerial Application (DoD & EPA category 11) if planned to be used.

### *Continuing Education and Training*

Personnel, who are involved in pesticide applications on a regular or seasonal basis, especially when mixing formulations is required, are encouraged to attend local pest management classes, workshops and seminars. This is important in order to keep abreast of pest problems and pest management techniques, which are unique to the area surrounding the installation. This is particularly true when dealing with vegetation control since many of the herbicide labels indicate that choices in strength and application technique should be based on local conditions.

The time and labor expended in this type of training is easily recouped through improved efficiency in pest management. Local pest management training may include on-site training in addition to any off-site re-certification training, such as the DoD course or state re-certification requirements. Other personnel who deal directly with pest control operations, but who may not need to be certified, are also encouraged to attend local seminars to better understand pest management needs.

### **Issues**

Training is important to ensure the limited staff at the NASWF Complex is able to accomplish all necessary facets of natural resources management on the Complex. Personnel should also be knowledgeable of environmental laws pertaining to federal lands and DoD installations.

### **Goals and Objectives**

- Protect and maintain natural resources within the NASWF Complex by continuation and enhancement of ecologically appropriate and beneficial land use and management practices, while ensuring the continuation of the military mission;
- Protect and enhance forest resources by practicing ecologically sound forest management leading to sustained yield of quality forest products, watershed protection, and wildlife habitat;
- Protect, maintain, and restore native communities of plant and animal life, while improving the quality of life and ensuring the military mission;
- Provide facilities and develop policies that allow for recreational and educational uses of natural resources, and result in positive effects to these natural resources while improving the quality of life;
- Protect and conserve the ecological value and diversity of natural resources by fostering knowledge of, and participation in, adaptive ecosystem management;
- Ensure that land management and land use decisions comply with all applicable laws, executive orders, regulations, directives, and instructions, and that adverse impacts to the natural environment are minimized;
- Provide adequate staffing, equipment, technology, and training to the Natural Resources Program to ensure proper implementation of this INRMP;
- Incorporate the concept of ecosystem management into all planning and management processes;
- Implement training, education, and stewardship initiatives for ecosystem management;
- Preserve and protect threatened and endangered species, and species of special concern, to prevent reduction of individuals or populations; and
- Establish a planning team to review and update the INRMP in accordance with OPNAVINST 5090.1D, 12-3.4(c)(4) and 12-3.4(c)(12).

### **Projects**

- Endangered Species Habitat Conservation (Project 14 in Appendix A).

- NAS Whiting Field INRMP (Project 17 in Appendix A).

### **Management Strategies**

- Staffing needs shall be continuously reviewed for adequacy and filled to meet those needs;
- Continue to purchase equipment (i.e., an all-terrain vehicle (ATV)/utility vehicle) needed for access areas too difficult to reach on the Complex, as well as other needed supplies;
- Continue to obtain tools and capabilities (e.g., GPS/GIS mapping and digital photography) that will assist in managing natural resources and meeting the goals of the INRMP;
- Continue to utilize the review board within the Public Works Department to review all projects that potentially affect natural resources, including soil and water quality. The NRM of the Natural Resources Program will continue to be a part of the review board;
- Continue to integrate the management concepts of the INRMP into all appropriate working programs and department plans (e.g., PMP, Urban Forestry Plan, Grounds and Surfaced Area Maintenance Plan, and SWPPP);
- Continue to implement BMPs to minimize stormwater pollution and erosion (FDOT and FDEP 2007; FDEP 2008; NASWF 2013);
- Continue using BMPs for forest management activities and ensure that they are used in agricultural outleasement activities to ensure watershed protection (FDOT 2003);
- Continue the use of Computer-Aided Drafting and a GIS for construction, environmental, engineering, and natural resources mapping. The NASWF Complex will continue to build and/or acquire appropriate Complex and region-wide data coverages;
- Continue to ensure that all cooperative agreements, memoranda, or other agreements between the Complex and federal and state agencies that oversee and regulate natural resources protection, are current, and those agreements have been established with all necessary agencies;
- Continue an ecosystem management awareness and training/education program available to all interested NASWF Complex personnel;
- Continue the technical education and training program for all contract and installation personnel involved in activities that may directly or indirectly affect ecosystem management success;
- Continue to implement programs and initiatives that foster citizen participation in ecosystem education and stewardship; and
- Evaluate the effectiveness of INRMP implementation and recommend improvements.

### **Long-Term Management**

Adequate staffing and training are essential components of long-term natural resources management at the NASWF Complex. Partnerships and cooperation with regulatory agencies, NAVFAC SE, university researchers, conservation groups, and non-government organizations are also vital to the continued success of management activities. The natural resources program will continue to enlist the assistance of interns through the Student Conservation Association

(SCA), a partnership that has proven valuable to accomplishing research on the NASWF Complex while helping to educate the next generation of natural resources managers.

### ***Integration with Other Natural Resources Management Activities***

Training natural resources personnel at the NASWF Complex is important to successfully accomplish every natural resources management activity described in this INRMP, from wetland management (Section 5.1.1) and soil conservation (Section 5.1.2) to grounds maintenance (Section 5.1.6), silvicultural activities (Section 5.2.1), BASH (Section 5.3.4), and threatened and endangered species conservation (Section 5.3.3). Staff training is not only integrated into all of these activities, but it is essential to successful integration *between* all of these activities as well.

### ***Ecosystem Management***

Ecosystem management is at the core of training for natural resources staff at the NASWF Complex, and would therefore be compromised by a lack of training.

### ***Military Mission***

A properly-trained natural resources staff is the NASWF Complex's first line of protection against activities that could result in violations of environmental laws and policies. Communication between the NRM and the chain of command and other departments is vital to ensure the NASWF Complex remains in compliance with environmental legislation, avoiding regulatory action that could delay or otherwise compromise the military mission.

### ***Laws, Executive Orders, Regulations, Directives, and Memoranda Relevant to Training of Natural Resources Personnel***

- Sikes Act, as amended 16 USC 670 a-o, requires each military department to manage fish and wildlife resources in accordance with a tripartite cooperative plan agreed to by the USFWS and state wildlife agency, to provide its personnel with professional training in fish and wildlife management.
- Fish and Wildlife Conservation Act, 16 USC 2901, encourages all federal departments and agencies to utilize their statutory and administrative authority, to the maximum extent practicable and consistent with each agency's statutory responsibilities, to conserve and promote conservation of nongame fish and wildlife and their habitats.
- OPNAVINST 6250.4B, 27 August 1998, DOD Pest Management Programs, provides the DON with policies for implementing pest management programs directed against pests that conflict with or adversely affect the mission of the DOD; affect the health and well-being of the DON personnel and their dependants; attach or damage real property, supplies, or equipment; adversely affect the environment; or are otherwise undesirable.
- DoD Instruction 4150.7, requires a supervisor to be at the specific location where pest management work is conducted, providing instruction and control, and maintaining a line-of-sight view of the work performed.



- OPNAVINST 5090.1D, Chapter 12, discusses natural resources management at Navy installations.

### **Additional Sources of Information**

Environmental Law Institute

<http://www.eli.org/>

FDACS, Pesticide Application

<http://www.freshfromflorida.com/onestop/aes/pestapp.html>

National Wildfire Coordination Group

<http://www.nwcg.gov/>

FDACS, Wildland Fire and Fire Prevention

<http://www.floridaforestservice.com/wildfire/>

Qualifications of a Forestry Technician GS 0462-04 and Greater

<http://www.opm.gov/qualifications/standards/IORs/gs0400/0462.htm>

Naval Civil Engineering Officer's Corps School (CECOS)

<http://www.cecoseweb.com/>

Student Conservation Association

<http://www.thesca.org/>

### **5.5.2 Geographical Information Systems, Data Integration, and Reporting**

Mapping and spatial analysis are integral components of natural resources management that are fulfilled through the use of Geographic Information Systems (GIS) data and software. Data provide documentation for the location and attributes of resources while software contains the tools necessary for the management, display, and analysis of these data. A major goal of any GIS is the development of rigorous organization and accuracy standards. These standards provide for a sound base dataset needed for rigorous analysis used in managing natural resources.

#### ***Issues***

Natural resources data gathered from surveys and studies should be integrated into the NASWF Complex's GIS and made available to planners and land managers to aid in decision making and ensure resource management techniques and planned land uses do not conflict with natural resources conservation. The NRM must ensure that newly-acquired and updated natural resources data is integrated into the Installation GIS database on a regular basis.

#### ***Goals and Objectives***

- Protect and maintain natural resources within the NASWF Complex by continuation and enhancement of ecologically appropriate and beneficial land use and management practices, while ensuring the continuation of the military mission;

- Protect and enhance forest resources by practicing ecologically sound forest management leading to sustained yield of quality forest products, watershed protection, and wildlife habitat;
- Protect, maintain, and restore native communities of plant and animal life, while improving the quality of life and ensuring the military mission;
- Provide facilities and develop policies that allow for recreational and educational uses of natural resources, and result in positive effects to these natural resources while improving the quality of life;
- Protect and conserve the ecological value and diversity of natural resources by fostering knowledge of, and participation in, adaptive ecosystem management;
- Ensure that land management and land use decisions comply with all applicable laws, executive orders, regulations, directives, and instructions, and that adverse impacts to the natural environment are minimized;
- Provide adequate staffing, equipment, technology, and training to the Natural Resources Program to ensure proper implementation of this INRMP; and
- Incorporate the concept of ecosystem management into all planning and management processes;

### **Projects**

- Endangered Species Habitat Conservation (Project 14 in Appendix A).
- Habitat Mapping and Endangered Species Surveys (Project 16 in Appendix A).

### **Management Strategies**

- Continue to obtain tools and capabilities (e.g., GPS/GIS mapping and digital photography) that will assist in managing natural resources and meeting the goals of the INRMP;
- Continue to integrate the management concepts of the INRMP into all appropriate working programs and department plans (e.g., PMP, Urban Forestry Plan, Grounds and Surfaced Area Maintenance Plan, and SWPPP);
- Continue the use of Computer-Aided Drafting and a GIS for construction, environmental, engineering, and natural resources mapping. The NASWF Complex will continue to build and/or acquire appropriate Complex and region-wide data coverages;
- Continue an ecosystem management awareness and training/education program available to all interested NASWF Complex personnel; and
- Continue the technical education and training program for all contract and installation personnel involved in activities that may directly or indirectly affect ecosystem management success.

### **Long-Term Management**

GIS databases and mapping capabilities will be used for daily decisions as well as long-term planning of natural resources management and its integration with the military mission. This work is driven by laws such as the NEPA, ESA, and Clean Water Act. All impacts on Federal land

from a proposed project must be considered before the project can be implemented, in accordance with NEPA. These impacts may affect natural resources such as endangered species, water, and timber, so detailed maps are required to assess the impacts potential on resources. A list of data layers that should be developed and maintained includes:

- Rare, threatened and endangered species occurrences;
- Streams and wetlands;
- Archaeological sites;
- Fishing areas;
- Forest stand inventory data;
- Fire breaks and prescribed burning areas;
- Solid waste management areas;
- Hazardous waste management;
- Groundwater and soil remediation areas;
- Stormwater pollution prevention; and
- Air pollution emission sources.

The NRM also have access to ancillary data such as infrastructure, installation boundaries, and geodetic reference points via the NAVFAC SE Geo-Readiness Center. The NAVFAC SE Geo-Readiness Center maintains a server where finalized data, intermediate working data, and all supporting files are stored. Data for the Navy's training mission, such as training area boundaries, short range fire ranges, and training impact areas, are maintained by the NASWF Complex.

### ***Integration with Other Natural Resources Management Activities***

Geographical Information Systems is integrated into every natural resources management activity described in this INRMP, from wetland management (Section 5.1.1) and soil conservation (5.1.2) to grounds maintenance (Section 5.1.6), silvicultural activities (Section 5.2.1), BASH (Section 5.3.4), and threatened and endangered species conservation (Section 5.3.3). Data from surveys, studies, and other projects completed for any all of these management activities should be submitted to the NRM and NAVFAC SE to ensure inclusion in the applicable GIS databases. This will also facilitate integration between the management activities themselves.

### ***Ecosystem Management***

The use of GIS enhances ecosystem management by making data available and decipherable across all components of the ecosystem. Air quality, water quality, land use, species presence,

forest stands, and urban development, among other factors, can more easily be consolidated into overall analyses of ecosystem function on the NASWF Complex.

### ***Military Mission***

Uninterrupted performance of the military mission at the NASWF Complex depends upon compliance with environmental laws and policies and delineating environmentally-sensitive areas such as wetlands and the occurrences of protected species and their habitats. GIS is a crucial tool in this delineation and the accessibility of GIS databases by various departments at the NASWF Complex facilitates the avoidance and minimization of impacts to sensitive areas.

### ***Laws, Executive Orders, Regulations, Directives, and Memoranda Relevant to Geographical Information Systems, Data Integration, and Reporting***

- Sikes Act, as amended 16 USC 670 a-o, requires each military department to manage fish and wildlife resources in accordance with a tripartite cooperative plan agreed to by the USFWS and state wildlife agency, to provide its personnel with professional training in fish and wildlife management.
- Fish and Wildlife Conservation Act, 16 USC 2901, encourages all federal departments and agencies to utilize their statutory and administrative authority, to the maximum extent practicable and consistent with each agency's statutory responsibilities, to conserve and promote conservation of nongame fish and wildlife and their habitats.
- OPNAVINST 5090.1D, Chapter 12, discusses natural resources management at Navy installations.

### ***Additional Sources of Information***

Geo-Readiness Explorer  
<https://rsims.navfac.navy.mil/RSIMS/MapView/Default.aspx?MapID=3879>  
GIS.com  
<http://www.gis.com/>

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# Implementation

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Over the course of its implementation, this INRMP will:

- Enable the NASWF Complex to make progress towards achieving a sustainable natural resources base and a realistic training environment which is embodied in the diversity of its natural ecosystems;
- Establish appropriate stewardship policies that serve to protect both natural resources;
- Ensure compliance with environmental laws;
- Provide a continuity of direction and effort that can accommodate changes in personnel and leadership;
- Promote cost-effectiveness through better planning and coordination;
- Promote good public relations by demonstrating the Complex's commitment to stewardship, as well as a multiple-use concept for the general public; and
- Make use of innovative strategies to accomplish specific management objectives.

## 6.1 PLAN IMPLEMENTATION AND REVIEW

The annual INRMP reviews and metrics located at the Natural Resources Data Call Station website (<https://clients.emainc.com/dcs/navfac/>) will be used to assess implementation. A general summary of major actions/projects during the next 5 years and programs they support are provided in Appendix A. Projects will be developed during the budgetary process and coordinated with CNRSE natural resources personnel.

## 6.2 PLANNING AND MISSION SUSTAINABILITY

The goal at the NASWF Complex is to maintain and enhance the capability of military lands to support the training mission while conserving natural resources. The implementation of projects, future revisions and updates of this INRMP will assist the NASWF Complex in maintaining natural habitats, assessing the impacts of military training activities on flora and fauna populations, controlling erosion and sedimentation in stream channels, roads and unvegetated areas, implementing ecosystem management, managing the Complex's forest areas, and providing recreational opportunities.

Frequent and close coordination between the NASWF Natural Resources Manager and the Airfield Operations office will be necessary to implement this plan and ensure minimal impacts and conflicts with military training. The Airfield Operations office will schedule and manage airfield use and must be aware of proposed management actions on the properties. All actions

that involve contractors or workers must coordinate with NASWF natural resources staff. These actions will include, but are not limited to, timber harvest, invasive species control, and plant and animal surveys. In addition, the natural resources staff must know when and where military training is occurring so work can be coordinated with those activities. Airfield Operations provides a list of the range and training areas scheduled for use on a regular basis to assist with work planning.

### **6.3 PARTNERSHIPS**

The magnitude and complexity of the management requirements necessitate outside assistance. This assistance can vary, but usually takes the form of a partnership, which may include funding, technical and logistical support, GIS or use of FWC biologists, or an agreement between agencies to achieve common goals. Agencies with shared goals include:

- NRCS to provide expertise on soil erosion control;
- USACE to develop wetland restoration and mitigation credit banks;
- USFWS to assist in identifying conservation measures for enhancement of threatened and endangered species and their habitat;
- FWC to assist in developing and implementing hunting and fishing regulations, feral hog depredation, and fish pond stocking;

### **6.4 FUNDING**

Funding for implementation of the INRMP will come from the CNRSE or NAVFAC SE natural resources fund. The natural resources programs and projects described in this INRMP are divided into mandatory and stewardship categories to reflect implementation priorities. Every effort will be made to acquire O&M(N) Environmental or other funding to implement DoD mandatory projects, in the timeliest manner possible. Stewardship projects will be funded through fish and wildlife licenses or other fund sources as funds and personnel become available.

Forestry funding is provided through NAVFAC SE from the sale of timber products. Funding for special projects in natural resources may be available from NAVFAC SE through surplus funding sources or forestry reserve accounts. Non-compliance funding may come from Legacy Act. Funding for compliance with environmental legislation and regulations is requested through the Navy Environmental Program Requirements Web (EPRWeb). Compliance projects falling under the EPRWeb include species surveys, assessments, management, protection, INRMPs, wetlands protection, conservation mapping, nonpoint source pollution, watershed management, cultural resource surveys, protection and plans, archaeological curation, conservation of soil and water or fish and wildlife, forest management and outdoor recreation (wildlife). All projects must be conducted in strict compliance with the Anti-Deficiency Act (13 USC 1341), which requires that all

obligations or commitments made by the Federal government be funded at levels that do not exceed the Congressional appropriations.

Table A-1 in Appendix A summarizes the projects scheduled at the NASWF Complex. One of the objectives of the INRMP is to plan for no net loss of military mission. Partnerships, proper funding, and compliance with NEPA requirements will ensure that the Navy will achieve its military mission.

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## List of Preparers

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# References

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**Projects of the INRMP**

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Appendix A describes the projects to be implemented by the NASWF Complex. Projects were identified by the NASWF Complex NRM in cooperation with foresters, fish and wildlife biologists, and soil conservationists at NAVFAC, SE, as well as with federal, state, and county wildlife biologists, foresters, and land managers. Appendix A discusses the purpose, relevance to the goals and objectives listed in Section 4, location, description, baselines, monitoring, and legal requirements of each project..

The NASWF Complex intends to implement the projects as described in Appendix A to the greatest extent possible. The implementation of projects is largely dependent upon availability of funds. Funding for implementation of the INRMP will come from the CNRSE or NAVFAC SE natural resources fund. Every effort will be made to acquire O&M(N) Environmental or other funding to implement DoD mandatory projects, in the timeliest manner possible. Stewardship projects will be funded through fish and wildlife licenses or other fund sources as funds and personnel become available. Forestry funding is provided through NAVFAC SE from the sale of timber products. Funding for special projects in natural resources may be available from NAVFAC SE through surplus funding sources or forestry reserve accounts. Non-compliance funding may come from Legacy Act. Funding for compliance with environmental legislation and regulations is requested through the Navy Environmental Program Requirements Web (EPRWeb). The natural resources programs and projects described here are divided into mandatory and stewardship categories to reflect implementation priorities. Every effort will be made to acquire O & M(N) Environmental or other funding to implement DoD mandatory projects in the most timely manner possible. Stewardship projects will be funded through forestry, agricultural outlease, fish and wildlife, Legacy, or other fund sources as funding and personnel resources become available.

Table A-1 summarizes the projects.

**Table A-1  
NASWF COMPLEX PROJECTS**

<b>Project No.</b>	<b>Project Description</b>	<b>INRMP Page Ref.</b>	<b>Scheduled Implementation (FY)</b>	<b>Prime Legal Driver</b>	<b>Funding Priority (*1)</b>	<b>Environ. Readiness Level (*2)</b>	<b>Guidebook Number (*3)</b>	<b>Fund Source</b>	<b>NEPA Requirement</b>
1	Wetlands Protection	A-4	2012 - 2018	4, 6, 7, 11	M	4	12105	ENV, STA	No
2	Invasive Plant Control	A-5	2013 - 2023	1, 9	M	4	12106	ENV, STA	No
3	Longleaf Alliance and the Gulf Coastal Plain Ecosystem Partnership	A-6	2013 - 2023	N/A	S	1	N/A	STA, AO	No
4	Endangered Species Habitat Management at NOLF Holley	A-7	2013 - 2023	3, 8	M	4	12104	ENV	No
5	Agricultural Outleasing	A-8	2013 - 2023	2, 8	M	4	N/A	AO	No
6	Reforestation	A-9	2013 - 2023	8	M	N/A	N/A	FR, FOR	No
7	Forest Product Sales	A-10	2013 - 2023	8	M	N/A	N/A	FR, FOR	No
8	Timber Stand Improvement	A-11	2013 - 2023	8	M	N/A	N/A	FR, FOR	No
9	Construction and Maintenance of Forest Roads	A-12	2013 - 2023	8	M	N/A	N/A	FR, FOR	No
10	Fire Management	A-13	2013 - 2023	8	M	N/A	N/A	FR, FOR	No
11	Update Biological Inventory	A-15	2013 - 2023	3, 8	M	4	12101	ENV, STA	No
12	Gopher Tortoise Biological Monitoring	A-16	2014 - 2018	8	M	4	12104	ENV, STA	No
13	Neotropical Migratory Bird Survey	A-17	2013 - 2023	3, 5, 8	M	4	N/A	ENV	No
14	Endangered Species Habitat Conservation	A-18	2013 - 2023	3, 8	M	4	12104	ENV, STA, LY	No
15	Recreational Fishing	A-19	2013 - 2023	2, 10	M	4	N/A	ENV, STA, NRR, MWR	No
16	Habitat Mapping and Endangered Species Surveys	A-20	2013 - 2023	3, 8	M	4	12104	ENV, STA, AO, LY	No
17	NAS Whiting Field INRMP	A-21	2013 - 2023	2	M	4	12103	ENV	No

**Key**

- (\*1) M = Mandatory Project S = Stewardship Project
- (\*2) From the EPRWeb Guidebook
- (\*3) Chapter 12 of the EPRWeb Guidebook

**Fund Sources**

- AO - Agricultural Outlease
- ENV - Environmental O&MN
- FOR - Forestry
- FR - Forestry Reserve
- LY - Legacy
- MWR - Morale, Welfare, and Recreation
- NRR - Natural Resources Reserve
- STA - Station O&MN

**Primary Legal Drivers**

- |                        |  |                 |                                      |
|------------------------|--|-----------------|--------------------------------------|
| (1) 7 USC 2814         | Federal Noxious Weed Act                 | (7) 16 USC 590A | Soil and Water Conservation Act      |
| (2) 16 USC 670a-f      | Sikes Act Improvement Act                | (8) 32 CFR 190  | Natural Resources Management Program |
| (3) 16 USC 1531 & 1536 | Endangered Species Act                   | (9) EO 13112    | Invasive Species                     |
| (4) 33 USC 1251        | Clean Water Act                          | (10) EO 12962   | Recreational Fisheries               |
| (5) 16 USC 703         | Migratory Bird Treaty Act                | (11) EO 11990   | Wetlands Protection                  |
| (6) 16 USC 2912        | North American Wetlands Conservation Act |                 |                                      |

## **Project No. 1: Wetlands Protection**

<b>Purpose:</b>	Ensure the conservation and protection of wetlands at the NASWF Complex.
<b>Goals and Objectives:</b>	<p>Goal 1, Objective 1.1, Strategy 1.1.4 – Inventory wetlands, assess their function and quality, establish buffers, and prevent adverse effects.</p> <p>Goal 3, Objective 3.1, Strategy 3.1.2 – Monitor and enhance natural communities.</p> <p>Goal 3, Objective 3.2, Strategy 3.2.2 – Protect and enhance protected species and their habitats.</p>
<b>Location:</b>	Complex-wide.
<b>Description:</b>	<p>This project protects wetlands at the NASWF Complex by preventing their destruction, loss and degradation and preserving and enhancing their natural values. Work performed will include marking and designating wetland boundaries to prevent unwanted intrusion, particularly from recreational all-terrain vehicles, establishing a 50-foot buffer around wetlands, and producing materials to educate groundskeepers, personnel, and the public.</p> <p>Wetland signage posted at NOLF Holley will protect habitat for the endangered reticulated flatwoods salamander and Alabama pearlshell mussels. Signage will also be posted and maintained at other locations.</p>
<b>Baseline:</b>	NWI maps. There are a total of approximately 280 acres of wetlands at the NASWF Complex (see Section 2.2.6).
<b>Monitoring:</b>	Annual monitoring for wetland protection ensuring no net loss of wetlands.
<b>Legal Drivers:</b>	Section 404 of the Federal Water Pollution Control Act (Clean Water Act), as amended, 33 U.S.C. 1251; North American Wetlands Conservation Act, 16 U.S.C. 4808; and Executive Order (EO) 11990 – <i>Protection of Wetlands</i> , Section 5.
<b>Related Legal:</b>	Endangered Species Act, 16 U.S.C. 1531 et seq.; Clean Water Act: Section 401 Water Quality Certification, 1986, 33 U.S.C. 1341; OPNAVINST 5090.1D, par 12-3.8 (b).
<b>Accomplishments:</b>	Wetlands surveys were completed across the NASWF Complex between 2009 and 2010. Properties surveyed were NAS Whiting Field <sup>1</sup> and OLFs Barin <sup>2</sup> , Harold <sup>3</sup> , Holley <sup>4</sup> , Pace <sup>5</sup> , Santa Rosa <sup>6</sup> ,

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<sup>1</sup> Gulf South Research Corporation (GSRC). 2013. Wetlands delineation report, Naval Air Station Whiting Field, Santa Rosa County, Florida. Prepared for NAVFAC SE by GSRC, Baton Rouge, Louisiana.

<sup>2</sup> GSRC. 2010. Wetlands delineation report, Naval Air Station Whiting Field, Barin Outlying Field, Baldwin County, Alabama. Prepared for NAVFAC SE by GSRC, Baton Rouge, Louisiana.

Silverhill<sup>7</sup>, Spencer<sup>8</sup>, Summerdale<sup>9</sup>, Wolf<sup>10</sup>, and 8A<sup>11</sup>. Wetland conservation efforts are now programmed for funding on an annual basis.

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<sup>3</sup> GSRC. 2012. Wetland delineation report Naval Air Station Whiting Field Harold Outlying Field, Santa Rosa County, Florida. Prepared for NAVFAC SE by GSRC, Baton Rouge, Louisiana.

<sup>4</sup> GSRC. 2012. Wetland delineation report Naval Air Station Whiting Field Holley Outlying Field, Santa Rosa County, Florida. Prepared for NAVFAC SE by GSRC, Baton Rouge, Louisiana.

<sup>5</sup> GSRC. 2013. Wetlands delineation report, Naval Air Station Whiting Field, Pace Outlying Field, Santa Rosa County, Florida. Prepared for NAVFAC SE by GSRC, Baton Rouge, Louisiana.

<sup>6</sup> GSRC. 2013. Wetlands delineation report, Naval Air Station Whiting Field, Santa Rosa Outlying Field, Santa Rosa County, Florida. Prepared for NAVFAC SE by GSRC, Baton Rouge, Louisiana.

<sup>7</sup> GSRC. 2010. Wetlands delineation report, Naval Air Station Whiting Field, Silverhill Outlying Field, Baldwin County, Alabama. Prepared for NAVFAC SE by GSRC, Baton Rouge, Louisiana.

<sup>8</sup> GSRC. 2013. Wetlands delineation report, Naval Air Station Whiting Field, Spencer Outlying Field, Santa Rosa County, Florida. Prepared for NAVFAC SE by GSRC, Baton Rouge, Louisiana.

<sup>9</sup> GSRC. 2010. Wetlands delineation report, Naval Air Station Whiting Field, Summerdale Outlying Field, Baldwin County, Alabama. Prepared for NAVFAC SE by GSRC, Baton Rouge, Louisiana.

<sup>10</sup> GSRC. 2010. Wetlands delineation report, Naval Air Station Whiting Field, Wolf Outlying Field, Baldwin County, Alabama. Prepared for NAVFAC SE by GSRC, Baton Rouge, Louisiana.

<sup>11</sup> GSRC. 2013. Wetlands delineation report, Naval Air Station Whiting Field, Site 8-A Outlying Field, Escambia County, Florida. Prepared for NAVFAC SE by GSRC, Baton Rouge, Louisiana.

## **Project No. 2: Invasive Plant Control**

<b>Purpose:</b>	Control invasive and exotic plant species at the NASWF Complex to acceptable levels to promote native ecosystems.
<b>Goal and Objective:</b>	Goal 1, Objective 1.5, Strategy 1.5.1- Landscape management.  Goal 1, Objective 1.5, Strategy 1.5.2 – Xeriscape with native plants.  Goal 3, Objective 3.1, Strategy 3.1.2 - Monitor and enhance natural communities.  Goal 3, Objective 3.2, Strategy 3.2.2 – Protect and enhance protected species and their habitats.
<b>Location:</b>	Complex-wide.
<b>Description:</b>	Invasive species such as cogon grass, Chinese Tallow, Kudzu, Privet, and Japanese Cimbing Fern exist at properties on the NASWF Complex. This project will focus on controlling invasive and exotic plant species and protecting and enhancing native ecosystems. This project will identify invasive plant species, map their locations, provide GIS map layers, and provide recommendations and a schedule for control. A combination of chemical and mechanical methods will be used to control and eradicate invasive species. This project supports habitat protection for protected species such as the reticulated flatwoods salamander.
<b>Baseline:</b>	Baseline will be established during the survey phase of the project.
<b>Monitoring:</b>	Previously treated areas will be monitored annually to determine the effectiveness of the implemented removal methods. A Complex-wide inventory will be conducted every three years to ensure no new establishment of invasive and exotic species and to determine new areas requiring treatment.
<b>Legal Drivers:</b>	Federal Noxious Weed Act of 1974, 7 U.S.C. 2801, Sec. 2814 (a); Executive Order (EO) 13112 – <i>Invasive Species</i> .
<b>Related Legal:</b>	DOD Pest Management Program; Endangered Species Act, 16 U.S.C. 1531 et seq.; Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), 7 U.S.C. 136; OPNAVINST 5090.1D, 12-3.10.
<b>Accomplishments:</b>	The NASWF Complex executed funds in 2013 and 2014 to control invasive species, including cogon grass, Chinese tallow trees, and privet. This project also supports training and certification of installation natural resources personnel as well as their participation in the Six Rivers Cooperative Invasive Species Management Area (CISMA).



## **Project No. 3: Longleaf Alliance and the Gulf Coastal Plain Ecosystem Partnership**

<b>Purpose:</b>	Ensure the conservation of longleaf pine habitats on the NASWF Complex.
<b>Goal and Objective:</b>	<p>Goal 2, Objective 2.1, Strategy 2.1.3 – Perpetuate the prevailing pine forests.</p> <p>Goal 3, Objective 3.1, Strategy 3.1.1 – Use prescribed burns and thinning to improve forest habitat quality.</p>
<b>Location:</b>	Complex-wide. The NASWF Complex has longleaf pine habitat at NASWF and at three NOLFs: 290 acres of natural longleaf pine habitat at NOLF Harold; 124 acres of planted longleaf pine at NOLF Santa Rosa; and 40-50 acres along the south side of NOLF Summerdale.
<b>Description:</b>	<p>The mission of the Longleaf Alliance (LA) is to promote the ecological and economic values of longleaf pine ecosystems. The LA's goal is to encourage better management practices and reverse the decline of the longleaf pine ecosystem. Membership to this organization is open to individuals, private landowners, organizations, industries, and government agencies. LA efforts include education, outreach, research, and recovery programs.</p> <p>The Gulf Coastal Plain Ecosystem Partnership (GCPEP) is a voluntary landowner collaborative effort of The Nature Conservancy, Eglin Air Force Base, International Paper, Blackwater River State Forest, the Northwest Florida Water Management District, and National Forests in Florida and Alabama. The partners manage more than 845,000 acres; they have shared resources and expertise to increase endangered species management and recovery, increase prescribed burning, and conduct watershed restoration projects, among other efforts.</p> <p>In addition to joining the membership of these two organizations, the NASWF Complex will participate in organization programs. The NRM, or other designated individual, will attend annual meetings and conferences and make presentations. Where appropriate, management and restoration activities will be planned and developed as future projects if they do not fall under current management activities and programs.</p>
<b>Baseline:</b>	None (Baseline is the current quantity and quality of longleaf pine resources at NOLF Harold, Santa Rosa, and Summerdale).
<b>Monitoring:</b>	None.
<b>Legal Drivers:</b>	None.
<b>Related Legal:</b>	Natural Resources Management Program, 32 C.F.R. 190; OPNAVINST 5090.1D, 12-3.8(j).

**Accomplishments:**

The NASWF Complex continues to support the GCPEP partners with their projects. GCPEP also supports the NASWF Complex, especially with prescribed fire.

## **Project No. 4: Endangered Species Habitat Management at NOLF Holley**

<b>Purpose:</b>	Conduct prescribed burns to manage habitat for the protection and enhancement of rare species at NOLF Holley.
<b>Goal and Objective:</b>	Goal 3, Objective 3.1, Strategy 3.1.1 – Use prescribed burns and thinning to improve forest habitat quality.  Goal 3, Objective 3.2, Strategy 3.2.2 – Protect and enhance protected species and their habitats.
<b>Location:</b>	NOLF Holley.
<b>Description:</b>	This project ensures the management of habitats essential for protected species on NOLF Holley. In particular, NOLF Holley has a unique combination of pitcher plant prairies and endangered reticulated flatwoods salamander breeding areas, as well as habitat for other state-protected pitcher plant species and the gopher tortoise. The project includes costs for habitat improvements such as vegetation control and longleaf pine planting and restoration, protection from unauthorized activities, and other enhancement actions to promote the species and habitats present. Materials and supplies are also included for management.
<b>Baseline:</b>	None.
<b>Monitoring:</b>	Monitoring for this project will be conducted under Projects 11 and 12.
<b>Legal Drivers:</b>	Endangered Species Act, 16 U.S.C. 1531 et seq.; Natural Resources Management Program, 32 C.F.R. 190.
<b>Related Legal:</b>	Conservation Programs on Military Installations (Sikes Act) as amended, 16 U.S.C. 670 (a) et seq.; Fish and Wildlife Conservation Act, 16 U.S.C. 2901 et seq.; and EO 1990 – <i>Wetlands Protection</i> ; OPNAVINST 5090.1D, 12-3.5.
<b>Accomplishments:</b>	Surveys for reticulated flatwoods salamanders were conducted at NOLF Holley in 2009 and 2010 <sup>12</sup> . Several larvae, a recently-metamorphosed juvenile, and a gravid female were found associated with a pond in the northeastern portion of the property. The results have been used to shape management of the species on NOLF Holley. This project is programmed for continued funding.

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<sup>12</sup> Buhlmann, K.A., B.S. Metts, and A.M. Grosse. 2010. Final report: flatwood salamanders (*Ambystoma bishop*) on the U.S. Navy's OLF Holley Field, Milton, Florida. University of Georgia, Savannah River Ecology Laboratory. Aiken, South Carolina. 27 pp.

## **Project No. 5: Agricultural Outleasing**

<b>Purpose:</b>	Implement and manage the DoD's Agricultural Outleasing Program on NASWF properties.
<b>Goal and Objective:</b>	Goal 1, Objective 1.1, Strategy 1.1.5 – Ensure best management practices (BMPs) are used in agricultural outleasing activities.
<b>Location:</b>	NOLF Summerdale, NOLF Silverhill, and NOLF Wolf.
<b>Description:</b>	<p>Agricultural Outleasing is the use of DoD lands under a lease to an agency, organization, or person for the purpose of growing crops or grazing domestic animals. Lessees must comply with the conservation provisions of the Food Security Act of 1985, administered by the NRCS. The benefits of the program include demonstrating good stewardship of government lands and saving money on grounds maintenance.</p> <p>This project involves renewing the leases, re-bidding the leases, conducting inspections throughout the year to ensure that conditions of the leases are being followed, and ensuring that proper management practices are followed (e.g., the appropriate use of pesticides).</p> <p>The NAS Pensacola NRM (rather than the NASWF NRM) is designated as the Agricultural Outleasing Quality Assurance Evaluator and staffing is accounted for in the NAS Pensacola INRMP.</p>
<b>Baseline:</b>	None.
<b>Monitoring:</b>	There are no requirements directly associated with this project; however, the Complex will closely monitor the carrying capacity of the resources being utilized.
<b>Legal Drivers:</b>	Conservation Programs on Military Installations (Sikes Act) as amended, 16 U.S.C. 670 (a) et seq.; Natural Resources Management Program, 32 C.F.R. 190.
<b>Related Legal:</b>	OPNAVINST 5090.1D, 12-3.8(i); Food Security Act of 1985.
<b>Accomplishments:</b>	Currently, approximately 742 acres of land, at three NASWF NOLFs (e.g., Summerdale, Silverhill, and Wolf), are in the program. The leases are for a period of one year, but they may be renewed for four additional one-year periods. Leases are re-bid at least every five years.

## **Project No. 6: Reforestation**

<b>Purpose:</b>	Reforest property on the NASWF Complex.
<b>Goal and Objective:</b>	<p>Goal 2, Objectives 2.1, Strategy 2.1.1 – Manage forest stands as outlined in the Forest Management Plan (Appendix B).</p> <p>Goal 2, Objective 2.1, Strategy 2.1.3 – Perpetuate the prevailing pine forests.</p> <p>Goal 3, Objective 3.1, Strategy 3.1.2 - Monitor and enhance natural communities.</p>
<b>Location:</b>	Complex-wide.
<b>Description:</b>	<p>Reforestation is completed in two parts. The first part consists of preparing the site for planting, and may also involve the application of herbicides and roller-drum chopping. The second part consists of hand planting seedling longleaf pine trees.</p> <p>Unplanned reforestation activities will be conducted as needed.</p>
<b>Baseline:</b>	None.
<b>Monitoring:</b>	Monitoring for seedling survival and invasive species will be conducted.
<b>Legal Driver(s):</b>	Natural Resources Management Program, 32 C.F.R. 190.
<b>Related Legal:</b>	Conservation Programs on Military Reservations (Sikes Act), 16 U.S.C. 670 et seq.; OPNAVINST 5090.1D, 12-3.8(j); Military Construction Authorization Act – Sale of Certain Interest in Lands, Logs, 10 U.S.C. 2665.
<b>Accomplishments:</b>	A subsoiler was purchased in 2010 to facilitate site preparation for reforestation projects.

## **Project No. 7: Forest Product Sales**

<b>Purpose:</b>	Properly manage forest resources and improve ecosystem health by removing low quality trees, lowering forest stand density, and producing periodic revenue.
<b>Goal and Objective:</b>	<p>Goal 1, Objective 1.1, Strategy 1.1.5 – Ensure best management practices (BMPs) are used in forest management activities.</p> <p>Goal 2, Objective 2.1, Strategy 2.1.1 – Manage forest stands as outlined in the Forest Management Plan (Appendix B).</p> <p>Goal 2, Objective 2.1, Strategy 2.1.3 – Perpetuate the prevailing pine forests.</p>
<b>Location:</b>	Complex-wide where there are forest resources.
<b>Description:</b>	This project involves the periodic sale of forest products, such as timber. An annual salvage contract is available for timber removal from construction sites and/or following natural events such as fire, insect or disease infestations, hurricanes, tornadoes, or other natural disasters. Thinning sales will occur in three years of the 10-year plan. Estimated income from forest products is approximately \$2,000 for salvage and \$80,000-\$120,000 for regularly scheduled sales. Other possible sales include pine straw.
<b>Baseline:</b>	The NASWF Complex, in coordination with NAVFAC SE, will update the FMIS to serve as the baseline for all forestry work.
<b>Monitoring:</b>	Annual monitoring for update of forestry plan.
<b>Legal Driver(s):</b>	Natural Resources Management Program, 32 C.F.R. 190.
<b>Related Legal:</b>	Conservation Programs on Military Installations (Sikes Act), 16 U.S.C. 670 (a)-(o); Military Construction Authorization Act – Sale of Certain Interests in Lands, Logs, 10 U.S.C. 2665; Forest Resources Conservation and Shortage Relief Act, 16 U.S.C. 620; OPNAVINST 5090.1D, 12-3.8(j).
<b>Accomplishments:</b>	This project is funded entirely by forestry reimbursable funding from the DOD and Navy Forestry accounts. The objective of timber sales is to properly manage commercial forests for sustained yield of forest benefits including the protection and management of habitat for listed species. In addition, the DOD and Navy Forestry accounts depend on the income from timber sales for solvency. Timber sales are periodic at NAS Whiting Field and generally occur every 2-3 years. Hurricane Ivan in 2004 damaged over \$2 million of standing commercial timber at NAS whiting Field and NAS Pensacola and only \$115,000 value was recovered through salvage operations. In 2008, NAS whiting Field and NAS Pensacola had their first timber sale since the 2004 hurricane salvage harvesting, and both bases are back on track for periodic timber sales. In the past two years, timber sales at both bases managed by this project have yielded \$117,000 in timber income while contributing to the enhancement of listed species habitat through timber thinnings to control forest cover and stand density. A small area was cut at NOLF Barin in 2011. The

Contractor paid for timber through the use of the payback clause. A Timber sale was executed at NOLF Barin in 2012 in preparation for the runway extension project. Another timber sale is planned for 2014-15.

## **Project No. 8: Timber Stand Improvement**

<b>Purpose:</b>	Improve the health and productivity of forest stands on the NASWF Complex.
<b>Goal and Objective:</b>	<p>Goal 1, Objective 1.1, Strategy 1.1.5 – Ensure best management practices (BMPs) are used in forest management activities.</p> <p>Goal 2, Objective 2.1, Strategy 2.1.1 - Manage forest stands as outlined in the Forest Management Plan (Appendix B).</p> <p>Goal 2, Objective 2.1, Strategy 2.1.3 – Perpetuate the prevailing pine forests.</p>
<b>Location:</b>	NAS Whiting Field and NOLFs Harold, Holley, and Barin.
<b>Description:</b>	<p>Timber stand improvement (TSI) activities include herbicide application to control understory vegetation and forest fertilization to improve site quality. Timber harvesting and prescribed burning may also be considered TSI activities, but they are addressed in Projects 7 and 10. This project focuses on the use of fertilizers and herbicides in stand management.</p> <p>Herbicide applications are scheduled to release young pine stands from competing vegetation and to reduce fuel loads in stands where burning cannot be accomplished. The use of herbicides on forest stands is an infrequent activity and does not contribute significantly to pesticide use on the Complex.</p> <p>Forest fertilization is used to improve timber production rates on average to poor quality sites. Combined with herbicide applications, prescribed burning, and thinning, fertilization will promote the more rapid development of the forest stand so that other ecosystem values can be realized.</p>
<b>Baseline:</b>	The Complex, in coordination with NAVFAC, SE, will update the FMIS to serve as the baseline for all forestry work.
<b>Monitoring:</b>	Annual monitoring will occur to ensure effectiveness of herbicide and fertilizer applications and to determine needs for additional unplanned work.
<b>Legal Driver(s):</b>	Natural Resources Management Program, 32 C.F.R. 190.
<b>Related Legal:</b>	Conservation Programs on Military Installations (Sikes Act), 16 U.S.C. 670 (a)-(o); Environmental Natural Resources Protection Manual, 11015.2; Federal Noxious Weed Act of 1974, 7 U.S.C. 2801; Executive Order 13112 – <i>Invasive Species</i> ; DODINST 7310.5; OPNAVINST 5090.1D, 12-3.8(j); Military Construction Authorization Act – Sale of Certain Interest in Lands, Logs, 10 U.S.C. 2665.
<b>Accomplishments:</b>	Herbicides were purchased in 2011 to aid in the control of invasive species in forest stands on the NASWF Complex. Otherwise, this project has not been funded in recent years. Future plans have aligned this project with the removal of competing vegetation at NOLF Harold for a longleaf pine restoration project.



**Project No. 9: Construction and Maintenance of Forest Roads**

- Purpose:** Construct and maintain forest roads to provide access for management activities.
- Goal and Objective:** Goal 1, Objective 1.1, Strategy 1.1.5 - Ensure best management practices (BMPs) are used in forest management activities.  
Goal 2, All Objectives – Protect and enhance forest resources.
- Location:** NASWhiting Field and NOLFs Santa Rosa, Site 8-A, Holley, and Barin.
- Description:** Constructing and maintaining forest roads is necessary for access to conduct INRMP project work. Forest roads are often used as fire breaks and forests stand boundaries. In addition to those areas listed above, new road construction will be determined as needed to accomplish planned projects. Maintenance includes resurfacing roads with additional crushed rocks or other material. Proper ditch construction and maintenance to control surface runoff from forest roads are also included in this project.
- Baseline:** None.
- Monitoring:** None.
- Legal Driver(s):** Natural Resources Management Program, 32 C.F.R. 190; OPNAVINST 5090.1D, 12-3.8(j).
- Related Legal:** Military Construction Authorization Act – Sale of Certain Interest in Lands, Logs, 10 U.S.C. 2665.
- Accomplishments:** Fire breaks are continually maintained in order to use them for access to forest stands. Several new fire breaks were added in 2013 with the use of the Gyrotrac.

## **Project No. 10: Fire Management**

<b>Purpose:</b>	This project provides for the equipment necessary to conduct prescribed burns. Prescribed fire is the primary management tool for many INRMP goals and objectives.
<b>Goal and Objective:</b>	<p>Goal 1, Objective 1.1, Strategy 1.1.5 – Ensure best management practices (BMPs) are used in forest management activities.</p> <p>Goal 2, Objective 2.1, Strategy 2.1.1 – Manage forest stands as outlined in the Forest Management Plan (Appendix B).</p> <p>Goal 2, Objective 2.1, Strategy 2.1.3 – Perpetuate the prevailing pine forests.</p> <p>Goal 2, Objective 2.2, Strategy 2.2.1 – Evaluate forest management practices and their effects on ecosystems and wildlife habitat.</p> <p>Goal 3, Objective 3.1, Strategy 3.1.1 – Use prescribed burns and thinning to improve forest habitat quality.</p>
<b>Location:</b>	See Appendix B, Table B-2 for specific areas and acreages to be burned. Urban forest prescription precautions will be in effect when burning close to base housing, administrative areas, and training areas. Wildfire control will be administered where needed.
<b>Description:</b>	<p>Fire Management includes prescribed burning and wildfire control. The NASWF Complex will burn forest stands on a three-year rotation or at the discretion of the Regional NRM. On pine sites, burns will be hot enough to kill invasive hardwoods. Burns will be scheduled in the winter to reduce fuel loads to allow growing season burns in subsequent years. Prescribed burns will also be scheduled in wetlands for habitat management. Dormant season burns can be alternated with growing season burns as long as fuel loading is reduced first. Prescribed burning is dependent upon weather conditions and mission-related activities. Wildfire control will be administered as needed.</p> <p>Existing barriers (e.g., roads and wetlands) will be used as fire breaks where feasible, but firebreaks must be established and maintained where existing barriers are not present. Equipment necessary to conduct fire management includes: crawler tractor; transport truck; all-terrain vehicles (ATV's); and other fire ignition and suppression equipment. Equipment available to the Regional Forestry Program is also available to NASWF, and personnel are provided by NAS Pensacola.</p>
<b>Baseline:</b>	The NASWF Complex, in coordination with NAVFAC, SE, will update the FMIS to serve as the baseline for all forestry work.
<b>Monitoring:</b>	Annual review of Forest Management to determine necessary program changes.
<b>Legal Driver(s):</b>	Natural Resources Management Program, 32 C.F.R. 190.

**Related Legal:**

Endangered Species Act, 16 U.S.C. 1531 et seq.; Federal Noxious Weed Act of 1974, 7 U.S.C. 2801; Executive Order 13112 – *Invasive Species*; Sikes Act, as amended 16 U.S.C. 670 a-o; DODINST 7310.5; OPNAVINST 5090.1D, 12-3.8(j); Military Construction Authorization Act – Sale of Certain Interest in Lands, Logs, 10 U.S.C. 2665.

**Accomplishments:**

A scraper blade was purchased in 2010 for use in refurbishing firebreaks after prescribed burning. The blade is also used to maintain and scrape out forest roads that can be used as firebreaks. Gyrotrac operations were funded in 2012 to reduce the need for prescribed burning in areas that cannot be effectively managed by fire and to facilitate prescribed burning in forest stands that require supplemental clearing, extra firebreak management, and interface treatments.

## **Project No. 11: Update Biological Inventory**

<b>Purpose:</b>	Monitor the status and population of rare, threatened and endangered plant and animal species, as well as natural communities, present on the NASWF Complex.
<b>Goal and Objective:</b>	<p>Goal 2, Objective 2.2, Strategy 2.2.1 – Evaluate forest management practices and their effects on ecosystems and wildlife habitat.</p> <p>Goal 3, Objective 3.1, Strategy 3.1.2 – Monitor and enhance natural communities.</p> <p>Goal 3, Objective 3.2, Strategy 3.2.1 – Conduct surveys of rare, threatened, and endangered species every five years.</p>
<b>Location:</b>	Complex-wide.
<b>Description:</b>	FY 2014 and 2018 biological surveys will update the Complex-wide biological survey and accomplish the biological inventory necessary for INRMP updates and revisions. Inventories will include rare, threatened, and endangered plants and animals, as well as neotropical birds.
<b>Baseline:</b>	Existing, most recent surveys.
<b>Monitoring:</b>	The monitoring components of this project will determine the need for activities to be carried out under Project No. 14, Endangered Species Habitat Conservation.
<b>Legal Driver(s):</b>	Endangered Species Act, 16 U.S.C. 1531 et seq.; Natural Resources Management Program, 32 C.F.R. 190.
<b>Related Legal:</b>	Sikes Act, as amended 16 USC 670 a-o; Migratory Bird Treaty Act, as amended, 16 U.S.C. 703 et seq.; Fish and Wildlife Conservation Act, 16 U.S.C. 2901; OPNAVINST 5090.1D, 12-3.5.
<b>Accomplishments:</b>	The NASWF Complex conduct a rare plant and animal survey in 2009 at the main station and OLFs 8A, Barin, Evergreen, Harold, Holley, Pace, Santa Rosa, Silverhill, Spencer, Summerdale, Wolf, Whiting Pines, and the Navy Recreation Boat Docks <sup>13</sup> . The results are discussed in Section 2.3.2 of this INRMP. The project is scheduled for renewal every four-to-five years and, in 2014, the Complex spent \$73,820 to update its biological inventory. That study is underway.

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<sup>13</sup> Surdick, J. A., and P. Russo. 2010. Rare plant and animal inventory of Naval Air Station Whiting Field and Associated Properties. Florida Natural Areas Inventory, Tallahassee, Florida.

## Project No. 12:

## Gopher Tortoise Biological Monitoring

<b>Purpose:</b>	Biological monitoring and field survey data is needed to develop and focus management goals and objectives set forth in this INRMP to protect flora and fauna. Such effort is also a responsibility under the Candidate Conservation Agreement, of which the Navy is a participant. This project will assist the Complex in developing management prescriptions and will provide written management guidance needed to protect and enhance the species and its habitat.
<b>Goal and Objective:</b>	<p>Goal 2, Objective 2.2, Strategy 2.2.1 – Evaluate forest management practices and their effects on ecosystems and wildlife habitat.</p> <p>Goal 3, Objective 3.1, Strategy 3.1.2 – Monitor and enhance natural communities.</p> <p>Goal 3, Objective 3.2, Strategy 3.2.1 – Conduct surveys of rare, threatened, and endangered species every five years.</p>
<b>Location:</b>	Complex-wide.
<b>Description:</b>	This project will focus on surveys of gopher tortoises, their burrows, and commensal species, and will provide spatial and temporal distribution data.
<b>Baseline:</b>	Existing, most recent surveys.
<b>Monitoring:</b>	Future monitoring is scheduled to occur annually from 2014-2018.
<b>Legal Driver(s):</b>	Endangered Species Act, 16 U.S.C. 1531 et seq.; Natural Resources Management Program, 32 C.F.R. 190.
<b>Related Legal:</b>	Sikes Act, as amended 16 USC 670 a-o; Migratory Bird Treaty Act, as amended, 16 U.S.C. 703 et seq.; Fish and Wildlife Conservation Act, 16 U.S.C. 2901; OPNAVINST 5090.1D, 12-3.5.
<b>Accomplishments:</b>	Several gopher tortoise monitoring surveys have been completed at the NASWF Complex. Gopher tortoises and burrows were surveyed in 2007 at the main station and OLFs Harold, Holley, Santa Rosa, Silverhill, Barin, and Wolf <sup>14</sup> . Another survey, completed, in 2008, identified and scoped gopher tortoise burrows at Whiting Field and OLFs 8A, Harold, Holley, Pace, Santa Rosa, Spencer, Barin, Evergreen, Silverhill, Summerdale, and Wolf <sup>15</sup> . This study included management and relocation recommendations. In 2010, the Complex conducted a comprehensive gopher tortoise survey using

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<sup>14</sup> Davis, Aubrey and Paul Russo. 2007. Naval Air Station Whiting Field, Whiting Pines Housing and Navy Outlying Landing Fields Harold, Choctaw, Brewton, Evergreen, Santa Rosa, Holley, Site 8A, Pace, Spencer, Wolf, Barin, Summerdale, and Silverhill. Florida Natural Areas Inventory, Tallahassee, Florida.

<sup>15</sup> The Nature Conservancy. 2008. A report to NAS Whiting Field: status of gopher tortoises (*Gopherus polyphemus*) on NAS Whiting Field and associated outlying fields in Florida and Alabama. Altamonte Springs, Florida.

burrow scopes<sup>16</sup>. The NASWF Complex initiated another gopher tortoise monitoring project in 2013 and this project is ongoing.

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<sup>16</sup> Tuberville, T. and A. Grosse. 2010. A survey for gopher tortoises and burrow commensals on NAS Whiting Field and its associated outlying landing fields. University of Georgia's Savannah River Ecology Laboratory. Aiken, Georgia.

## **Project No. 13: Neotropical Migratory Bird Survey**

<b>Purpose:</b>	Determine neotropical migratory bird species at the NASWF Complex and potential migratory bird management practices. Neotropical migratory birds are those species that breed in North America and winter in the Neotropics (Central and South America).
<b>Goal and Objective:</b>	Goal 3, Objective 3.2, Strategy 3.2.1 – Conduct surveys of rare, threatened, and endangered species every five years.
<b>Location:</b>	Complex-wide.
<b>Description:</b>	<p>NASWF will complete a neotropical migratory bird inventory on the NASWF Complex, particularly during spring and fall migrations. This project will include GIS data layers as a product.</p> <p>The DoD is an active participant in international bird conservation partnerships including Partners in Flight (PIF) and the North American Bird Conservation Initiative (NABCI). The NASWF Complex may have high quality habitat for migratory bird species of concern, and this project will provide valuable data that could be used by DoD as it continues its leadership role in bird conservation partnerships.</p>
<b>Baseline:</b>	None.
<b>Monitoring:</b>	Existing, most recent surveys.
<b>Legal Driver(s):</b>	Migratory Bird Treaty Act, 16 U.S.C. 703; Natural Resources Management Program, 32 C.F.R. 190.
<b>Related Legal:</b>	Fish and Wildlife Conservation Act, 16 U.S.C. 2901; Endangered Species Act, 16 U.S.C. 1531 et seq.; DOD 4715, Sikes Act, as amended, 16 U.S.C. 670 a-o; OPNAVINST 5090.1D, 12-3.5(b)(1).

## **Project No. 14: Endangered Species Habitat Conservation**

<b>Purpose:</b>	Conduct management and implement projects to enhance habitat for rare, threatened, and endangered species, as well as other wildlife and natural communities.
<b>Goal and Objective:</b>	<p>Goal 2, Objective 2.2, Strategy 2.2.1 – Evaluate forest management practices and their effects on ecosystems and wildlife habitat.</p> <p>Goal 3, Objective 3.1, Strategy 3.1.1 – Use prescribed burns and thinning to improve forest habitat quality.</p> <p>Goal 3, Objective 3.1, Strategy 3.1.2 – Monitor and enhance natural communities.</p>
<b>Location:</b>	Complex-wide.
<b>Description:</b>	This project will enhance, protect and modify species habitat and resources for rare, threatened and endangered plants and animals throughout the NASWF Complex. Numerous natural community and habitats improvements are included in this project, including prescribed burning in pitcher-plant and longleaf habitats, non-fire brush removal, and limiting access to sensitive areas, among others.
<b>Baseline:</b>	Existing biological inventories and management activities.
<b>Monitoring:</b>	Results of specific projects will be monitored as needed. Formal monitoring will be conducted through Projects 11, 12, and 13.
<b>Legal Driver(s):</b>	Natural Resources Management Program, 32 C.F.R. 190.
<b>Related Legal:</b>	Endangered Species Act, 16 U.S.C. 1531 et seq.; Conservation Programs on Military Installations (Sikes Act) as amended, 16 U.S.C. 670 (a) et seq; Fish and Wildlife Conservation Act, 16 U.S.C 2901 et seq.; Executive Order 11990 – <i>Wetlands Protection</i> ; Executive Order 13112 – <i>Invasive Species</i> ; OPNAVINST 5090.1D, 12-3.5.
<b>Accomplishments:</b>	NAS Whiting Field funds endangered species habitat conservation on an annual basis.



## **Project No. 15: Recreational Fishing**

<b>Purpose:</b>	Develop and maintain recreational freshwater fishing opportunities at the NASWF Complex for active-duty and reserve military personnel, their dependents, and accompanied guests. These opportunities also exist for military retirees and federal civilian employees, their dependents, and accompanied guests.
<b>Goal and Objective:</b>	<p>Goal 4, Objective 4.1, Strategy 4.1.3 – Expand, improve, and provide facilities for outdoor recreational opportunities.</p> <p>Goal 4, Objective 4.2, Strategy 4.2.2 – Further develop recreational fishing opportunities at the NASWF Complex.</p>
<b>Location:</b>	NASWF stormwater retention ponds.
<b>Description:</b>	<p>This project has five potential components:</p> <ul style="list-style-type: none"><li>▪ Develop a catch and release fishing program;</li><li>▪ Develop fishing instructions and coordinate fishing regulations with security personnel;</li><li>▪ Implement a fishing program for children;</li><li>▪ Construct a fishing pier and platform (with gazebo) at the stormwater retention pond;</li><li>▪ Stock the ponds with freshwater fish (e.g., bass, bluegill, sunfish, and catfish), and maintain stocking, feeding, and pond fertilization programs.</li></ul> <p>Through a cooperative agreement, the FWC will provide fish for stocking and other services such as water quality analysis. Volunteer groups will participate in management activities.</p>
<b>Baseline:</b>	None.
<b>Monitoring:</b>	Fisheries management needs will be determined on an annual basis. Also, the NASWF Complex will closely monitor the provision of outdoor recreational opportunities and the carrying capacity of the resources being utilized.
<b>Legal Driver(s):</b>	Conservation Programs on Military Installations (Sikes Act) as amended, 16 U.S.C. 670 (a) et seq.; Executive Order 12962 - <i>Recreational Fisheries</i> .
<b>Related Legal:</b>	Recreational Coordination and Outdoor Recreation - Federal/State Programs Act, 16 U.S.C. 4601; Military Construction Authorization Act - Military Reservations and Facilities - Hunting, Fishing, and Trapping, 10 U.S.C. 2671; Americans with Disabilities Act of 1990, Public Law 101-336; OPNAVINST 5090.1D, 12-3.5.
<b>Accomplishments:</b>	Signs we placed at the retention ponds, informing base personnel of the catch and release program. A children's fishing tournament was held at the retention ponds in 2012; this was a joint Natural Resources and MWR Project.

## **Project No. 16: Habitat Mapping and Endangered Species Surveys**

<b>Purpose:</b>	Survey and map important habitats, special interest areas, and habitats critical for threatened and endangered species in all areas of the NASWF Complex. Mapping and monitoring these resources is necessary for proper management and to avoid conflicts between natural resources conservation and operational mission requirements. Obtain capabilities for GPS/GIS mapping for monitoring projects, color printing, digital photography, and other recently developed tools that would assist in natural resources management.
<b>Goal and Objective:</b>	<p>Goal 3, Objective 3.1, Strategy 3.1.2 – Monitor and enhance natural communities.</p> <p>Goal 5, Objective 5.1, Strategy 5.1.4 – Obtain tools and capabilities to assist in managing natural resources and meeting INRMP goals.</p> <p>Goal 5, Objective 5.2, Strategy 5.2.3 – Continue to use GIS to build and acquire appropriate Complex-wide coverages.</p> <p>Goal 5, Objective 5.3, Strategy 5.3.1 – Continue ecosystem management and technical training programs.</p>
<b>Location:</b>	Complex-wide.
<b>Description:</b>	This project will map and identify the location and habitats of rare, threatened, and endangered species and provide data about changes and impacts to sensitive habitats, invasive species, forest stands, natural communities, soil units, and others. Data gathered in these surveys will be incorporated into this INRMP and complement DoD partnerships such as the Partners in Amphibian and Reptile Conservation (PARC) and Partners in Flight. All areas will be included in a GIS database and the installation INRMP. Mapping and monitoring of these resources is necessary for proper management and plan preparation to avoid conflicts between natural resources conservation and operational mission requirements.
<b>Baseline:</b>	None.
<b>Monitoring:</b>	None.
<b>Legal Driver(s):</b>	Endangered Species Act of 1973 (ESA) as amended, 16 U.S.C. 1531 et. seq.; Natural Resources Management Program, 32 C.F.R. 190.
<b>Related Legal:</b>	Section 404 of the Federal Water Pollution Control Act (CWA), as amended, 33 U.S.C. 1251 et. seq.; Executive Order 11990 – Wetlands Protection; Executive Order 13112 – Invasive Species; OPNAVINST 5090.1D, 12-3.5.
<b>Accomplishments:</b>	NAS Whiting Field maintains habitat maps on an annual basis. Although not funded by this project, a survey for eastern indigo

snakes at NAS Whiting Field and OLF Holley using a wildlife detector dog has been initiated by Navy Region Southeast. The field work will commence in winter 2014/15.

## **Project No. 17: NAS Whiting Field INRMP**

<b>Purpose:</b>	Ensure the NASWF Complex INRMP is kept current reflecting: Installation and Region management direction, current projects, new natural resources information, current regulatory concerns and policies, and mission requirements.
<b>Goal and Objective:</b>	Goal 5, Objective 5.4, Strategy 5.4.1 – Evaluate the effectiveness of this INRMP and recommend improvements.
<b>Location:</b>	Complex-wide.
<b>Description:</b>	This INRMP's was revised in FY12. The INRMP must be regularly revised to address species management to prevent impacts to the mission or delays to construction projects. Data from species surveys will be incorporated into this INRMP as soon as possible upon acquisition. INRMP updates will document survey results and add newly listed species and their habitat requirements, as well as management actions herein that benefit and conserve the species and their habitats.
<b>Baseline:</b>	Existing INRMP; current surveys.
<b>Monitoring:</b>	None.
<b>Legal Driver(s):</b>	Conservation Programs on Military Installations (Sikes Act) as amended, 16 U.S.C. 670 (a) et seq.
<b>Related Legal:</b>	DODINST 7310.5; OPNAVINST 5090.1D, 12-3.4; USMC-MCO P5090.2.; National Environmental Policy Act (NEPA) of 1969, 42 U.S.C. 4321 et seq.
<b>Accomplishments:</b>	Over the past five years, NAS Whiting Field has completed three minor INRMP revisions and one comprehensive update (2013) as a direct result of annual partnering and INRMP annual reviews by the stakeholders. As a result, species lists, past project summaries, and INRMP structure and organization were all updated. In addition, information regarding climate change was incorporated into the INRMP. As a result, the NAS Whiting Field INRMP is updated with current data and information, project lists, and signatures by the stakeholders. The INRMP process achieved by this project has resulted in a document that is mutually agreed upon by the stakeholders with a record of proven benefits to rare, threatened, and endangered species, as well as all other aspects of natural resources.

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**B**

**Forest Management Plan**

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**Table B-1  
Stand Information (FMIS 024)  
NASWF Complex, Florida**

**Compartment: 1 - NASWF**

Stand No.	Acres	Cover Code	Cond	Orgn	O Year	Land	Trees Per Acre	DBH	Height	BA	S Vol	% S Vol	H Vol	% H Vol	Growth (RPI)	Site	Year
1	1	83	31	1	1943	1	72	12	60	30	411	71	0	0	9.40	80	1995
2	3	84	31	2	1966	1	125	10	64	68	1202	53	0	0	5.10	85	1989
3	0	99	2	1	0	40	0	0	0	0	0	0	0	0	0.00	0	2000
4	0	99	2	1	0	40	0	0	0	0	0	0	0	0	0.00	0	2000
5	0	120	2	1	0	40	0	0	0	0	0	0	0	0	0.00	0	2000
6	0	120	2	1	0	40	0	0	0	0	0	0	0	0	0.00	0	2000
7	40	70	31	1	1941	1	20	14	80	21	580	100	0	0	10.00	85	1994
8	6	84	30	2	1972	1	116	9	55	58	851	10	0	0	3.30	85	1989
9	25	84	21	2	1987	19	900	3	28	44	0	0	0	0	5.20	85	1995
10	0	120	2	1	0	40	0	0	0	0	0	0	0	0	0.00	0	2000
11	3	84	30	2	1968	1	165	9	66	72	980	20	0	0	6.30	90	1994
12	66	84	31	2	1967	1	110	10	71	60	840	70	0	0	7.50	90	1994
13	14	84	31	2	1967	1	123	10	72	68	1051	60	0	0	6.40	95	1994
14	2	84	21	2	1982	1	400	1	12	2	0	0	0	0	0.00	90	1986
15	31	84	21	2	1988	1	775	3	25	17	0	0	0	0	4.80	90	1995
16	3	84	30	2	1966	1	192	9	67	84	872	13	0	0	8.60	90	1994
17	24	71	30	1	1951	1	96	8	70	34	924	40	106	0	10.21	80	1994
18	14	84	21	2	1987	19	680	2	20	15	0	0	0	0	6.50	85	1995
19	8	84	121	2	1979	1	400	3	30	20	0	0	0	0	8.20	70	1995
20	41	71	31	1	1941	11	73	9	64	37	524	70	124	13	13.40	65	1989
21	3	84	30	2	1964	1	100	7	51	30	547	22	0	0	7.50	80	1986
22	11	104	30	1	1930	11	131	8	70	53	93	0	773	24	13.50	70	1986
23	15	112	18	1	1965	30	0	0	0	0	0	0	0	0	0.00	80	1986
24	6	84	30	2	1966	1	186	9	64	82	821	40	0	0	6.70	90	1994
25	6	84	21	2	1987	1	780	3	21	38	0	0	0	0	6.20	85	1995
26	19	84	21	2	1987	11	680	3	30	33	0	0	0	0	5.60	85	1995
27	48	71	30	1	1949	1	44	9	55	24	399	69	127	8	10.90	68	1989
28	7	84	30	2	1971	18	62	5	38	25	208	6	109	0	6.50	80	1986
29	33	84	30	2	1967	1	287	9	67	116	918	40	0	0	7.30	90	1994
30	9	84	30	2	1978	1	480	4	36	42	1728	0	0	0	6.50	70	1995
31	7	84	30	2	1975	1	390	5	40	53	1404	0	0	0	5.90	80	1995
32	9	84	30	2	1969	1	207	9	67	81	1042	40	25	0	6.40	95	1994
33	20	103	30	1	1960	30	131	8	56	39	16	100	613	13	6.80	80	1986
34	5	71	31	1	1941	1	70	13	77	62	1501	94	407	16	12.80	85	1986

**Table B-1  
Stand Information (FMIS 024)  
NASWF Complex, Florida**

Stand No.	Acres	Cover Code	Cond	Orgn	O Year	Land	Trees Per Acre	DBH	Height	BA	S Vol	% S Vol	H Vol	% H Vol	Growth (RPI)	Site	Year
35	14	84	21	2	1987	19	820	3	21	40	0	0	0	0	5.70	85	1995
36	45	71	31	1	1935	11	84	12	68	52	1142	79	92	33	16.40	70	1986
37	9	88	31	1	1940	1	200	11	68	92	271	88	1236	47	17.00	70	1986
38	1	97	30	1	1958	1	430	8	46	146	2340	31	256	14	12.90	85	1986
39	2	112	18	1	1965	30	0	0	0	0	0	0	0	0	0.00	80	1986
40	9	84	30	2	1958	1	289	8	71	102	1180	30	0	0	11.30	85	1994
41	14	72	2	1	1994	1	30	6	40	6	0	0	0	0	12.50	80	1994
42	34	84	30	2	1966	1	195	8	68	68	1084	35	0	0	11.20	95	1994
43	0	84	21	2	1987	19	860	3	31	42	0	0	0	0	5.30	85	1995
44	0	120	2	1	0	40	0	0	0	0	0	0	0	0	0.00	0	2000
45	108	84	30	2	1967	1	236	8	62	82	1349	21	0	0	7.90	90	1989
46	4	84	21	2	1987	1	860	3	27	42	0	0	0	0	4.70	85	1995
47	2	84	21	2	1987	1	920	3	21	45	0	0	0	0	4.80	75	1995
48	18	70	31	1	1951	1	68	12	72	53	780	75	97	27	9.50	80	1994
49	7	70	21	1	1990	1	840	2	15	18	0	0	0	0	7.30	70	1995
50	0	99	2	1	0	40	0	0	0	0	0	0	0	0	0.00	0	2000
51	4	84	30	2	1974	1	341	6	26	70	1060	0	0	0	4.70	80	1986
52	9	84	30	2	1968	1	229	9	64	90	1306	10	0	0	7.00	90	1989
53	2	84	21	1	1970	19	311	3	21	15	0	0	0	0	6.00	70	1995
54	6	70	30	1	1960	1	155	9	64	68	870	40	32	0	9.80	75	1994
55	12	71	30	1	1960	19	60	7	47	16	180	0	270	0	8.50	70	1992
56	34	84	21	2	1987	19	900	3	32	44	0	0	0	0	5.20	85	1995
57	6	70	31	1	1926	11	98	13	80	90	2350	90	0	0	12.90	70	1994
58	0	99	2	1	0	40	0	0	0	0	0	0	0	0	0.00	0	2000
59	25	84	21	2	1994	1	450	1	2	2	0	0	0	0	4.60	80	1995
60	7	118	20	1	1983	3	195	6	25	35	150	0	300	0	7.50	65	1998
61	16	116	2	1	1983	3	0	0	0	0	0	0	0	0	0.00	65	1998
62	27	84	2	2	1998	600	0	0	0	0	0	0	0	0	0.00	80	2000
63	8	84	2	2	1998	600	0	0	0	0	0	0	0	0	0.00	80	2000
64	28	84	2	2	1998	600	0	0	0	0	0	0	0	0	0.00	80	2000
65	15	84	2	2	1998	600	0	0	0	0	0	0	0	0	0.00	80	2000

Sub- Totals      945

30974

4567



**Table B-1  
Stand Information (FMIS 024)  
NASWF Complex, Florida**

**Compartment: 2 - NOLF Harold**

Stand No.	Acres	Cover Code	Cond	Orgn	O Year	Land	Trees Per Acre	DBH	Height	BA	S Vol	% S Vol	H Vol	% H Vol	Growth (RPI)	Site	Year
1	221	70	31	1	1923	1	65	10	58	32	681	69	32	0	17.10	60	1986
2	17	70	30	1	1925	1	78	9	60	28	596	40	0	0	16.60	65	1986
3	6	70	31	1	1933	1	88	10	61	38	778	68	0	0	14.90	60	1986
4	7	84	30	2	1969	1	35	5	26	5	95	0	0	0	18.10	60	1986
5	8	70	30	1	1948	1	152	7	49	41	850	20	0	0	15.50	60	1986
6	13	70	31	1	1949	19	40	11	56	30	642	86	52	0	6.70	65	1986
7	5	104	30	1	1947	18	130	7	56	32	168	0	371	0	12.50	70	1986

Sub- Totals      277

3810

455

**Compartment: 3 - NOLF Santa Rosa**

Stand No.	Acres	Cover Code	Cond	Orgn	O Year	Land	Trees Per Acre	DBH	Height	BA	S Vol	% S Vol	H Vol	% H Vol	Growth (RPI)	Site	Year
1	4	84	21	2	1990	1	670	2	18	15	0	0	0	0	5.00	80	1995
2	9	84	21	2	1990	1	680	2	15	15	0	0	0	0	5.00	80	1995
3	2	114	20	1	1976	18	15	4	25	2	0	0	5	0	7.50	40	1987
4	14	84	21	2	1988	1	540	3	28	27	0	0	0	0	5.60	80	1995
5	51	69	21	2	1990	1	880	2	16	19	0	0	0	0	5.00	80	1995
6	0	120	2	1	0	40	0	0	0	0	0	0	0	0	0.00	0	2000
7	0	120	2	1	0	40	0	0	0	0	0	0	0	0	0.00	0	2000
8	16	81	21	2	1989	1	860	3	31	42	0	0	0	0	4.80	80	1995
9	13	69	20	2	1987	19	600	2	4	13	0	0	0	0	5.00	60	1990
10	124	70	20	2	1990	1	900	1	1	1	0	0	0	0	5.00	70	1990
11	27	71	20	1	1962	19	73	4	39	8	0	0	72	0	6.70	65	1987
12	15	71	30	2	1962	1	106	7	38	27	213	29	197	0	10.60	65	1987
13	6	71	30	1	1964	1	186	6	42	40	644	8	97	0	9.80	65	1987
14	12	70	20	2	1990	1	900	1	1	1	0	0	0	0	5.00	70	1990
15	5	84	2	2	1998	440	0	0	0	0	0	0	0	0	0.00	75	2000
16	3	84	2	2	1998	440	0	0	0	0	0	0	0	0	0.00	75	2000
17	8	84	2	2	1998	440	0	0	0	0	0	0	0	0	0.00	75	2000
18	5	84	2	2	1998	440	0	0	0	0	0	0	0	0	0.00	75	2000

Sub- Totals      314

857

371



**Table B-1  
Stand Information (FMIS 024)  
NASWF Complex, Florida**

**Compartment: 7 - NOLF Barin**

Stand No.	Acres	Cover Code	Cond	Orgn	O Year	Land	Trees Per Acre	DBH	Height	BA	S Vol	% S Vol	H Vol	% H Vol	Growth (RPI)	Site	Year
1	14	84	30	2	1973	1	199	8	58	90	1562	10	0	0	5.40	80	1992
2	6	70	31	1	1959	1	39	13	70	36	1100	90	0	0	9.40	75	1992
3	2	84	30	1	1966	1	280	9	65	105	2701	60	0	0	9.20	90	1992
4	9	84	21	2	1989	1	860	3	21	42	0	0	0	0	4.10	80	1995
5	0	99	2	1	0	40	0	0	0	0	0	0	0	0	0.00	0	2000
6	1	84	21	2	1989	1	540	2	12	12	0	0	0	0	7.20	70	1995
7	3	71	30	1	1956	1	228	9	51	59	582	45	533	0	10.00	80	1986
8	1	84	21	2	1989	1	610	2	12	12	0	0	0	0	7.20	70	1995
9	15	117	31	1	1955	18	205	10	64	76	1551	63	252	16	7.10	85	1990
10	0	99	2	1	0	40	0	0	0	0	0	0	0	0	0.00	0	2000
11	6	70	31	1	1939	1	191	10	63	66	1133	80	201	11	12.10	70	1986
12	4	84	30	1	1963	18	57	9	41	16	266	37	32	0	5.70	75	1986
13	6	70	30	1	1954	1	128	9	54	37	678	30	77	0	9.00	70	1986
14	14	84	21	2	1989	1	840	3	31	43	0	0	0	0	5.20	80	1995
15	17	84	30	2	1967	1	289	8	60	98	2270	20	0	0	9.10	80	1992
16	14	84	30	2	1971	1	193	9	62	85	1862	20	0	0	4.70	85	1992
17	3	84	30	2	1968	1	176	8	61	61	1217	40	0	0	5.70	85	1992
18	4	84	30	2	1967	1	352	8	66	122	2760	30	0	0	11.10	85	1992
19	38	84	21	2	1989	1	785	3	24	39	0	0	0	0	5.00	85	1995
20	4	84	30	2	1967	1	196	8	60	78	1524	30	0	0	6.00	85	1992
21	1	84	30	2	1973	1	605	7	51	130	2700	10	0	0	4.50	80	1992
22	2	70	31	1	1925	1	30	13	70	28	880	90	0	0	25.00	60	1992
23	12	88	30	1	1970	1	243	6	43	40	37	0	533	0	6.40	70	1990
24	4	84	31	2	1954	1	90	12	78	74	1296	68	78	0	7.00	85	1993
25	3	88	30	1	1949	1	90	8	60	31	0	0	770	0	10.00	70	1990
26	4	84	20	2	1994	1	700	1	1	1	0	0	0	0	0.00	80	1994
27	4	84	21	1	1974	1	200	4	25	17	0	0	0	0	4.00	80	1990
28	9	84	20	2	1994	1	700	1	1	1	0	0	0	0	0.00	80	1994
29	0	99	2	1	0	40	0	0	0	0	0	0	0	0	0.00	0	1994
30	13	99	2	1	1994	1	0	0	0	0	0	0	0	0	0.00	85	1995
31	5	85	30	1	1978	1	200	5	24	27	450	0	0	0	7.20	85	1995
32	10	84	30	2	1972	1	480	8	65	170	1728	10	0	0	4.30	90	1995
33	2	84	30	2	1982	1	580	4	22	51	450	0	0	0	6.10	85	1995
34	4	85	31	1	1953	1	81	12	56	58	1890	60	0	0	9.80	80	1995
35	8	85	31	1	1950	1	110	14	65	120	2100	60	450	0	11.50	80	1995
36	5	116	2	1	1990	1	0	0	0	0	0	0	0	0	0.00	85	1995
37	1	84	30	2	1978	1	320	8	56	110	2170	0	0	0	7.20	85	1995
38	1	85	30	2	1982	1	220	7	35	59	540	0	0	0	7.20	80	1995
39	17	85	31	1	1956	1	180	11	60	118	2460	60	540	0	11.20	85	1995



**Table B-2**

<b>NAS Whiting Field 10 Year Forest Management Plan Summary</b>												
<b>Location</b>	<b>Action</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
<b>WHITING FIELD</b>	Forest Thinnings									491		
	Prescribed Burning		752			752			752			
	Herbicide Veg Control											
	Fertilization											
	Site Preparation	25										
	Reforestation	25										
	Salvage Thinning											
<b>OLF HAROLD</b>	Forest Thinnings								272			
	Prescribed Burning	277			277			277		277		
	Herbicide Veg Control		272									
<b>OLF SANTA ROSA</b>	Forest Thinnings	43		51								
	Prescribed Burning		197		27		277			277		
	Reforestation											
<b>OLF HOLLEY</b>	Forest Thinnings							163				
	Prescribed Burning		123	137			137		290			
	Reforestation								57			
<b>OLF SITE 8-A</b>	Forest Thinnings			97								
	Prescribed Burning		150					150			150	
	Herbicide Veg Control						58					
<b>OLF WOLF</b>	Forest Thinnings										9	
	Prescribed Burning		9			9			9			
	Salvage Thinning											
<b>OLF BARIN</b>	Forest Thinnings								165			
	Prescribed Burning	177			177			177			177	
	Salvage Thinning											

**Table B-2**

<b>NAS Whiting Field 10 Year Forest Management Plan Summary (continued)</b>												
<b>Location</b>	<b>Action</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
<b>OLFSUMMERDALE</b>	Forest Thinnings											
	Prescribed Burning	20		20		20			20			20
	Herbicide Veg Control		20									
<b>OLF SILVERHILL</b>	Forest Thinnings			5								
	Prescribed Burning		25			25			25			25
<b>TOTALS</b>	Forest Thinnings			148								
	Prescribed Burning	474	1256	157	454	806	414	163	165	491	9	
	Herbicide Veg Control		292				58	604	1368	554	327	45
	Salvage Thinning	43		5								
	Site Preparation	25										
	Reforestation	25		49					57			

NUMBERS INDICATE PLANNED ACRES

**Table B-3**

NAS Whiting Field 10 Year Forest Management Plan Compartment 01: Whiting Field													
Stand	Acres	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Remarks
1	1		R044			R044			R044	R018		R044	
2	3		R044			R044			R044	R018		R044	
3	0												Stand Deleted
4	0												Stand Deleted
5	0												Stand Deleted
6	0												Stand Deleted
7	40		R044			R044			R044			R044	
8	6		R044			R044			R044			R044	
9	25		R044			R044			R044			R044	
10	0												Stand Deleted
11	3		R044			R044			R044	R018		R044	
12	66		R044			R044			R044	R018		R044	
13	14		R044			R044			R044	R018		R044	
14	2		R044			R044			R044	R018		R044	
15	31		R044			R044			R044			R044	
16	3		R044			R044			R044	R018		R044	
17	24		R044			R044			R044	R018		R044	Survey Boundary
18	14		R044			R044			R044	R018		R044	
19	8		R044			R044			R044	R018		R044	
20	41		R044			R044			R044	R018		R044	Protect Recreation
21	3		R044			R044			R044	R018		R044	Protect Recreation
22	11												No Mgt This Period
23	15												No Mgt This Period
24	6		R044			R044			R044	R018		R044	
25	6		R044			R044			R044	R018		R044	
26	19		R044			R044			R044	R018		R044	Protect Recreation
27	48		R044			R044			R044	R018		R044	Protect Recreation
28	7		R044			R044			R044	R018		R044	
29	33		R044			R044			R044	R018		R044	
30	9		R044			R044			R044	R018		R044	
31	7		R044			R044			R044	R018		R044	
32	9		R044			R044			R044	R018		R044	
33	20												No Mgt This Period
34	5		R044			R044			R044	R018		R044	
35	14		R044			R044			R044	R018		R044	
36	45		R044			R044			R044			R044	
37	9												No Mgt This Period
38	1												No Mgt This Period
39	2												No Mgt This Period
40	9		R044			R044			R044	R018		R044	

**Table B-3**

<b>NAS Whiting Field 10 Year Forest Management Plan                      Compartment 01: Whiting Field (continued)</b>													
Stand	Acres	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Remarks
41	14												No Mgt This Period
42	34		R044			R044			R044	R018		R044	
43	0												Stand Deleted
44	0												Stand Deleted
45	108	R028	R044			R044			R044			R044	Replant 25 acres
46	4		R044			R044			R044	R018		R044	
47	2		R044			R044			R044	R018		R044	
48	18		R044			R044			R044	R018		R044	
49	7												No Mgt This Period
50	0												Stand Deleted
51	4		R044			R044			R044	R018		R044	
52	9		R044			R044			R044	R018		R044	
53	2												No Mgt This Period
54	6		R044			R044			R044	R018		R044	
55	12												
56	34		R044			R044			R044	R018		R044	
57	6		R044			R044			R044			R044	
58	0												Stand Deleted
59	25		R044			R044			R044	R018		R044	
60	7												No Mgt This Period
61	16												
62	27												No Mgt This Period
63	8												No Mgt This Period
64	28												No Mgt This Period
65	15												No Mgt This Period
<b>Total Acres</b>	<b>945</b>		<b>752</b>			<b>752</b>			<b>752</b>	<b>491</b>		<b>752</b>	



**Table B-3**

<b>NAS Whiting Field 10 Year Forest Management Plan Compartment 02: OLF Harold</b>													
Stand	Acres	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Remarks
1	221	R044	R045		R044			R044	R018	R044			
2	17	R044	R045		R044			R044	R018	R044			
3	6	R044	R045		R044			R044	R018	R044			
4	7	R044	R045		R044			R044	R003	R044			Clearcut for natural regeneration
5	8	R044	R045		R044			R044	R018	R044			
6	13	R044	R045		R044			R044	R018	R044			
7	5	R044			R044			R044		R044			
<b>Total Acres</b>	<b>277</b>	<b>277</b>	<b>272</b>		<b>277</b>			<b>277</b>	<b>272</b>	<b>277</b>			

**Table B-'**

NAS Whiting Field 10 Year Forest Management Plan Compartment 03: OLF Santa Rosa													
Stand	Acres	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Remarks
1	4	R018					R044			R044			Salvage thin
2	9	R018					R044			R044			Salvage thin
3	2						R044			R044			
4	14	R018					R044			R044			Salvage thin
5	51			R018			R044			R044			
6	0												Stand Deleted
7	0												Stand Deleted
8	16	R018											Salvage thin
9	13		R044				R044			R044			
10	124		R044				R044			R044			
11	27		R044		R025		R044			R044			Herbicide and Plant
12	15		R044				R044			R044			
13	6		R044				R044			R044			
14	12		R044				R044			R044			
15	5												No Mgt This Period
16	3												No Mgt This Period
17	8												No Mgt This Period
18	5												No Mgt This Period
<b>Total Acres</b>	<b>314</b>	<b>43</b>	<b>197</b>	<b>51</b>	<b>27</b>		<b>277</b>			<b>277</b>			

**Table B-3**

NAS Whiting Field 10 Year Forest Management Plan Compartment 04: OLF Holley													
Stand	Acres	2006	2007	2008	2009	2010	2011	2012	2013	2013	2015	2016	Remarks
1	45		R044*	R044*			R044*	R018*		R044*			
2	3		R044	R044			R044	R018		R044			
3	57							R003	R025	R044			Convert to Longleaf
4	7									R044			
5	28									R044			
6	15		R044*	R044			R044	R018		R044			
7	20		R044	R044			R044			R044			
8	3			R044			R044	R018		R044			
9	4			R044			R044			R044			
10	7			R044			R044			R044			
11	29									R044			
12	62									R044			
13	40		R044*	R044			R044	R018		R044			
<b>Total Acres</b>	<b>320</b>		<b>123</b>	<b>137</b>			<b>137</b>	<b>163</b>		<b>290</b>			

\* MANAGEMENT INVOLVES THE EASTERN MOST 19 ACRES ONLY.

**Table B-3**

<b>NAS Whiting Field 10 Year Forest Management Plan                      Compartment 05: OLF Site 8-A</b>													
Stand	Acres	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Remarks
1	14		R044				R045	R044			R044		
2	44		R044	R018			R045	R044			R044		
3	1		R044					R044			R044		
4	19		R044	R018				R044			R044		
5	10		R044	R018				R044			R044		
6	24		R044					R044			R044		
7	14		R044					R044			R044		
8	6												No Mgt This Period
9	4		R044	R018				R044			R044		
10	12		R044	R018				R044			R044		
11	5		R044	R018				R044			R044		
12	3		R044	R018				R044			R044		
<b>Total Acres</b>	<b>156</b>		<b>150</b>	<b>97</b>			<b>58</b>	<b>150</b>			<b>150</b>		

**Table B-3**

<b>NAS Whiting Field 10 Year Forest Management Plan</b>													
<b>Compartment 09: OLF Silverhill</b>													
Stand	Acres	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Remarks
1	5		R044	R017		R044			R044			R044	Thin with Salvage
2	17		R044			R044			R044			R044	Contract
3	1		R044			R044			R044			R044	
4	2		R044			R044			R044			R044	
<b>Total Acres</b>	<b>25</b>		<b>25</b>	<b>5</b>		<b>25</b>			<b>25</b>			<b>25</b>	

**Table B-3**

<b>NAS Whiting Field 10 Year Forest Management Plan                      Compartment 08: OLF Summerdale</b>													
Stand	Acres	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Remarks
1	0												Combined with # 2
2	17	R044	R045	R044		R044			R044			R044	
3	3	R044	R045	R044		R044			R044			R044	
4	12												No Mgt This Period
5	7												No Mgt This Period
<b>Total Acres</b>	<b>39</b>	<b>20</b>	<b>20</b>	<b>20</b>		<b>20</b>			<b>20</b>			<b>20</b>	

**Table B-3**

NAS Whiting Field 10 Year Forest Management Plan													
Compartment 07: OLF Barin													
Stand	Acres	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Remarks
1	14	R044			R044			R044	R018		R044		
2	6	R044			R044			R044	R018		R044		
3	2	R044			R044			R044	R018		R044		
4	9	R044			R044			R044	R018		R044		
5	0												Stand Deleted
6	1	R044			R044			R044			R044		
7	3	R044			R044			R044			R044		
8	1	R044			R044			R044			R044		
9	15	R044			R044			R044			R044		
10	0												Stand Deleted
11	6	R044			R044			R044			R044		
12	4	R044			R044			R044	R018		R044		
13	6	R044			R044			R044			R044		
14	14	R044			R044			R044	R018		R044		
15	17	R044			R044			R044	R018		R044		
16	14	R044			R044			R044	R018		R044		
17	3	R044			R044			R044			R044		
18	4	R044			R044			R044	R018		R044		
19	38	R044			R044			R044	R018		R044		
20	4	R044			R044			R044	R018		R044		

R018 = FOREST THINNING  
R044 = PRESCRIBED BURNING

**Table B-3**

NAS Whiting Field 10 Year Forest Management Plan Compartment 07: OLF Barin (continued)												
21	4	R044			R044			R044	R018		R044	
22	3											No Mgt This Period
23	4											No Mgt This Period
24	4	R044			R044			R044	R018		R044	
25	9								R018			
26	0											Stand Deleted
27	13								R018			
28	5	R044			R044			R044	R018		R044	
29	10											Stand Deleted
30	2											Stand Deleted
31	4											Stand Deleted
32	8											No Mgt This Period
33	5											No Mgt This Period
34	1											No Mgt This Period
35	1											No Mgt This Period
36	17											No Mgt This Period
<b>Total Acres</b>	<b>237</b>	<b>153</b>			<b>177</b>			<b>177</b>	<b>165</b>		<b>177</b>	

R018 = FOREST THINNING  
R044 = PRESCRIBED BURNING



**Table B-3**

<b>NAS Whiting Field 10 Year Forest Management Plan Compartment 06: OLF Wolf</b>													
Stand	Acres	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Remarks
1	1		R044			R044			R044		R018		
2	8		R044			R044			R044		R018		
<b>Total Acres</b>	<b>9</b>		<b>9</b>			<b>9</b>			<b>9</b>		<b>9</b>		

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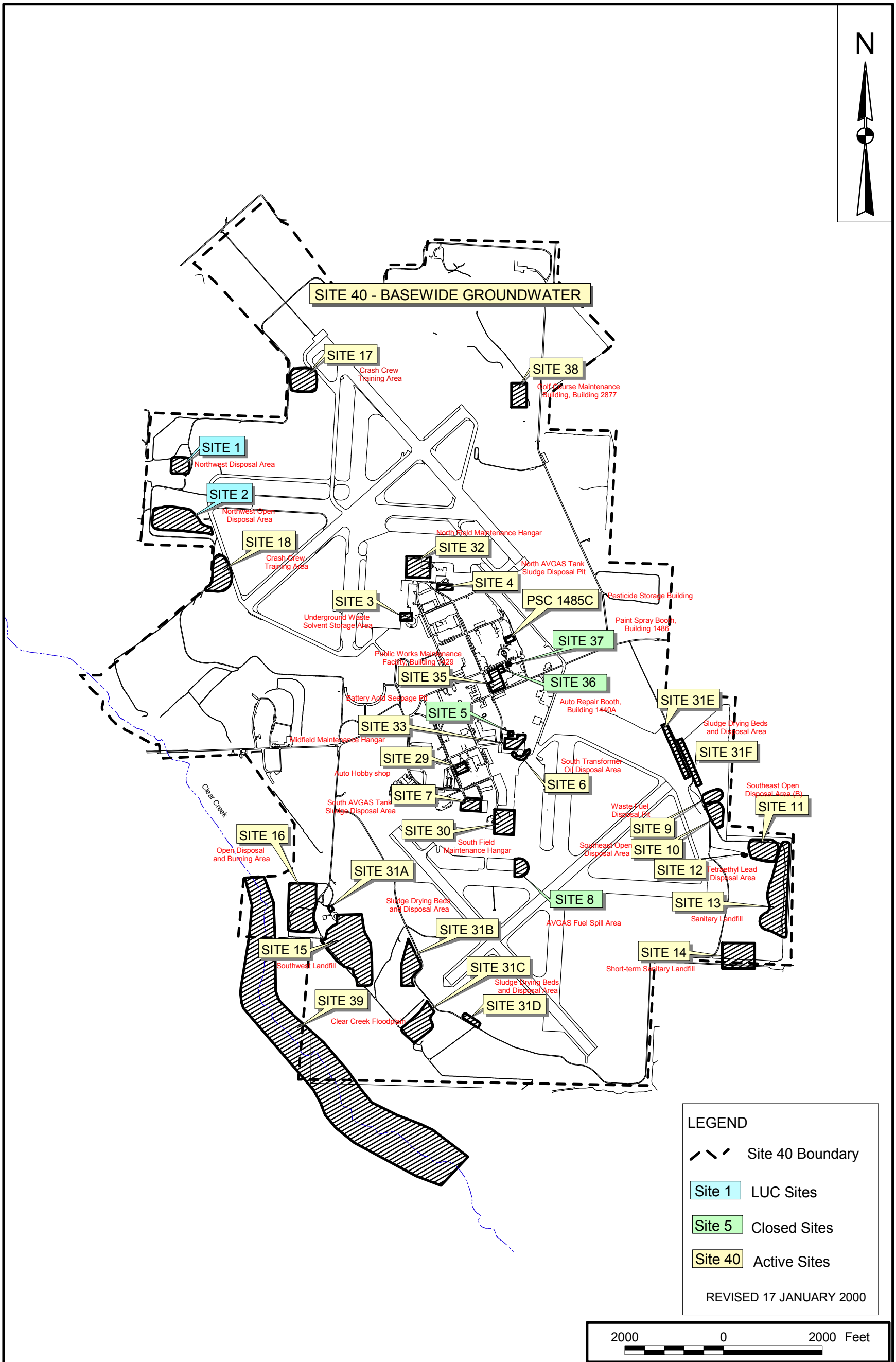
**C**

**IRP Sites at NASWF**

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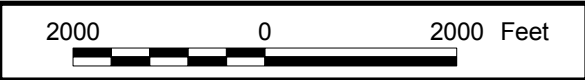
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**LEGEND**

- Site 40 Boundary
- Site 1 LUC Sites
- Site 5 Closed Sites
- Site 40 Active Sites

REVISED 17 JANUARY 2000



DRAWN BY J. BELLONE CHECKED BY COST/SCHEDULE-AREA SCALE AS NOTED		SITES STATUS MAP WHITING FIELD, MILTON, FLORIDA	CONTRACT NUMBER 0052 APPROVED BY _____ DATE _____ APPROVED BY _____ DATE _____ DRAWING NO. _____ REV 0
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**D**

**Agency Correspondences**

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DEPARTMENT OF THE NAVY

SOUTHERN DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
P.O. BOX 190010  
2155 EAGLE DRIVE  
NORTH CHARLESTON, S.C. 29419-9010

11015/49  
Code ES13  
October 16, 2001

Mr. Nick Wiley, Chief  
Bureau of Wildlife Management, Division of Wildlife  
Florida Fish & Wildlife Conservation Commission  
620 South Meridian Street  
Tallahassee, FL 32399-1600

SUBJ: INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN (INRMP)  
FOR THE NAVAL AIR STATION WHITING FIELD (NASWF) COMPLEX,  
MILTON, FLORIDA

Dear Mr. Wiley:

The enclosed final version of the NASWF Complex INRMP has undergone an extensive review and comment period by the United States Fish & Wildlife Service (Panama City and Daphne Field Offices), the Florida Fish & Wildlife Conservation Commission (FFWCC), and the Alabama Department of Conservation and Natural Resources. Comments provided by these agencies are included in this INRMP as Appendix D. For your review, a table of the Navy response to the FFWCC comments is provided as an attachment.

We feel that the comments identified by the fish and wildlife agencies have been addressed appropriately within the INRMP document. Please review the correspondence from the agencies and provide concurrence by endorsing the signature page at the beginning of the document.

If you should have any questions, please contact Patty Valentine-Darby at (850) 435-8925.

Sincerely,

*William A. Drawdy*  
For WILLIAM A. DRAWDY  
Head, Natural Resources Branch

Enclosures:

- (1) Final Version of the INRMP for NAS Whiting Field
- (2) Correspondence from Agencies

**FFWCC Agency Review Comments on the Proposed Integrated Natural Resources Management Plan  
for NAS Whiting Field Complex, Milton, Florida (see attached pages for entire FFWCC comment).  
Comments Received September 2001**

Reviewer	Comment	Response
Sermons	<p><b>Page 1: Signatures Page</b>                      "...installation staff (or contractors) would... conduct scoping and pre-planning.... This was not done on NASWF."</p>	<p>We strongly disagree that efforts were not made to work with the FFWCC in the preparation of the INRMP.</p> <ul style="list-style-type: none"> <li>▪ A scoping letter announcing the project and requesting input was sent to Dr. Allan Egbert, Executive Director on 4-10-00. We received a letter back from Mr. Bradley Hartman (5-22-01) stating that Mr. Rick McCann was our point of contact.</li> <li>▪ The Preliminary Draft INRMP was sent to Mr. Rick McCann on 1-12-01. The letter requested a review (60 days) by the FFWCC and stated that E &amp; E would be happy to meet with FFWCC staff at their office to discuss the document and any relevant issues.</li> <li>▪ Received no response from FFWCC. Numerous follow-up phone calls were made.</li> <li>▪ Mr. Billy Drawdy, Southern Division, Naval Facilities Engineering Command, began coordinating with FFWCC to obtain agency review and input.</li> <li>▪ FFWCC comments received September 2001.</li> </ul>
Sermons	<p><b>Page 4: Provide facilities</b>                      Why is the general public not given broader access to facilities and outdoor recreational opportunities?...</p>	<p>The general public is not provided greater access due to the availability of opportunities/resources and security concerns. The primary purpose of the recreational facilities on base is to serve the military community. Except for the facilities that the public is able to use, the demand for the facilities is being met by DoD personnel; not all facilities are expansive enough to also include the public. As opportunities to include the public do become available, they are taken. For example, until the 9-11-01 terrorist attacks, the golf course was recently opened to the public.</p> <p>No changes were made to the INRMP based on this comment.</p>
Sermons	<p><b>Page 36: Function and Use of the INRMP</b>                      ... Text of the draft plan is inconsistent with the SAIA.</p>	<p>Comment pertains to Section 1.5.2 on page 1-9. We agree that one sentence in these two paragraphs seemed contradictory. To address this comment, the following sentence has been deleted from this section: "It is not necessarily the function of the INRMP to define specific projects for specific locations, nor to define specific practices or schedules for the individual components of natural resources management, which include land management, forestry, fish and wildlife, and outdoor recreation."</p>
Sermons	<p><b>Page 56: 2.6.3 OLFs</b>                      Other factors to consider are the impacts of those OLFs on management of surrounding natural areas. OLF Harold is circumscribed by the Blackwater River State Forest... and constrains management of the forest, especially prescribed burning, and hinders public access to ... the area.</p> <p>If excess procedures are undertaken, priority should be given to the State.</p>	<p>Comment refers to page 2-16 of the INRMP. OLF Harold borders the BRSF on one side only. It does not constrain management, such as prescribed burning, of the forest. As a participant in the Cooperative Smoke Management Meetings, the Navy has been a prime player in facilitating prescribed burns in the area. This year's Smoke Management Meeting is the 17th annual meeting and is being hosted and funded by the Navy. The meeting at the Naval Aviation Museum will include approximately 80 personnel from the forestry community to facilitate the upcoming annual prescribed burn program for the region, including NW Florida and Alabama. Additionally, the Navy does not believe that it in any way hinders public access to the state forest.</p> <p>If Navy property, such as an OLF, is excessed, specific procedures must be followed. Excessing of land is overseen by the General Services Administration (GSA). The state is one of the possible recipients.</p> <p>Section 2.6.3 of the INRMP deals with potential land use changes concerning OLFs. Therefore, no changes were made to the INRMP based on the comment.</p>

**FFWCC Agency Review Comments on the Proposed Integrated Natural Resources Management Plan  
for NAS Whiting Field Complex, Milton, Florida (see attached pages for entire FFWCC comment).  
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Reviewer	Comment	Response
Sermons	<p><b>Page 97: Recreational Activities</b> This passage wants to imply that demand for hunting is being met by local supply, and thus, is not warranted on NASWF to meet recreational demand. However, acreage open to public hunting...has declined...</p>	<p>Comment refers to Section 3.10 on page 3-50. There was no intent to imply that demand for hunting is being met by local supply, and therefore not warranted on the NASWF Complex; the intent of this section is to describe existing conditions relative to recreation.</p> <p>Section 3.10 of the INRMP was modified per FFWCC comments. The last two sentences of Page 3-50 were changed to read "Public hunting is available at Eglin AFB and Blackwater Forest, as well as state wildlife management areas in Escambia and Santa Rosa counties, although public hunting acreage in the vicinity has declined in recent years (Sermons, 2001). Also, chartered hunting clubs are available in both counties." Text was modified to note that public hunting acreage has recently declined, and the word "numerous" was deleted from the last sentence.</p> <p>Additionally, the last sentence of the second paragraph was clarified as follows "Hunting is not authorized at the NASWF Complex primarily due to safety considerations and incompatibility with the military mission (i.e., student aviation flight training). There is also limited acreage potentially available for hunting and a lack of management staff to oversee a hunting program."</p>
Sermons	<p><b>Strategies 4.1.2 and 4.1.3</b> These initiatives are commendable and supported, but are lost or negated by pervasive language stating that public access is limited and that hunting is compatible with present uses. The language is simply too vague and lacks specificity or commitment.</p>	<p>Comment refers to page 4-18 and 4-19 of the INRMP. The two strategies were re-examined in response to the FFWCC comment. The INRMP was modified as follows:</p> <p>Strategy 4.1.2, Initiative (5): "Review issues that currently affect public access to outdoor recreational resources, and modify access to provide for greater recreational opportunities to the extent possible based on security and mission requirements."</p> <p>Strategy 4.1.3, Initiative (2): Develop rules and regulations for outdoor recreational activities, and incorporate them into NASWF Instructions.</p>
Sermons	<p><b>Page 170-177: Forest Management</b> Desired conditions regarding forest management are conspicuously absent....Emphasis is clearly on increasing production of roundwood products over basic ecological values and function. Application of fertilizer is cited as a tool to improve health....</p>	<p>Comment refers to Section 5.2, which starts on page 5-45. We disagree with much of this comment (as discussed below), but agree that the goal of the program (already stated in Section 4) should be reiterated at the beginning of Section 5.2 on page 5-45. The following language was added to Section 5.2: "The NASWF Complex will protect and enhance forest resources by practicing ecologically-sound forest management leading to sustained yield of quality forest products, watershed protection, and wildlife habitat protection and management. Ecologically-sound stewardship involves managing forestland for various components, including forest products, wildlife habitat, aesthetics, and recreation. Components of the NASWF Complex annual work plan generally include prescribed burning, timber sales, timber inventory, site preparation, and reforestation. To protect and enhance forest resources, the Complex will implement the strategies, projects, and initiatives described in Section 4 of the INRMP."</p> <p>We disagree that the emphasis of the forest management program at NASWF is on "increasing production of roundwood products over basic ecological values and function." An 80-year rotation with only light thinnings scheduled once per location during the 10-year INRMP period is not concentrating on timber. Emphasis on timber production would be a 30-year rotation, with thinnings every year, clearcuts every year, and numerous</p>

**FFWCC Agency Review Comments on the Proposed Integrated Natural Resources Management Plan  
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Reviewer	Comment	Response
		<p>site preparation and reforestation projects. This is not the case at the NASWF Complex. Additionally, fertilization is a practice used in timber management; it will increase the health of the trees by decreasing their susceptibility to insects and disease. As shown in Appendix B of the INRMP, only 38 acres (out of 2,350) would be fertilized over the 10-year period.</p>
<p>Sermons</p>	<p><b>Page 187: Fish and Wildlife</b> The INRMP states that "Hunting presently is not authorized at NASWF primarily due to safety considerations and incompatibility with the military mission. Areas at NASWF that have a potential for hunting are incompatible with other outdoor recreation uses such as hiking and biking.</p> <p>Comment: Appear to be hiding behind the military mission....How is hunting incompatible with NASWF's mission? How does this area differ from other installations of comparable size that offer hunting? What are the safety considerations?...</p>	<p>Comment pertains to page 5-62 of the INRMP. The mission of the NASWF Complex is to support the training of student naval aviators in the primary and intermediate phases of fixed-wing aviation, and in the advanced phases of helicopter training. Hunting is incompatible during flight training, which occurs up to 6 days per week. The archery and sporting gun range are in a specific area and use occurs only during non-flight training periods (i.e., some Sundays).</p> <p>The NASWF Complex differs from other installations of comparable size in that the Complex consists of 13 separate properties (plus housing areas), with flight training occurring at all properties (except the Navy Boat Docks). There are only small areas at two of these properties that have the potential for hunting. As stated in the INRMP, areas that have the potential for hunting at the Complex are not compatible with other activities such as hiking and biking, for which demand is high.</p> <p>To address this and subsequent comments, the INRMP will be modified as shown under the next comment response.</p>
<p>Sermons</p>	<p><b>Page 187: Fish and Wildlife</b> Comment on same paragraph: Few public recreation areas that allow hunting are dedicated exclusively to hunting...Potential conflicts among user groups may be easily averted by temporal or spatial partitioning.</p>	<p>Comment pertains to same paragraph as above comment, page 5-62 of INRMP. Hunting is incompatible because of acreage limitations (i.e., acreage available for hunting) and demand for other recreational uses that exceed that for hunting. At the NASWF Complex, only a small area is available for recreation, and this area is not of a sufficient size to partition for uses. Furthermore, as stated above, hunts could only be conducted during non-flight periods.</p> <p>To address several of the comments related to this paragraph, the INRMP was modified as follows: "Hunting is presently not authorized at the NASWF Complex, primarily due to safety considerations and incompatibility with the military mission (i.e., student aviation flight training). There is also limited acreage potentially available for hunting and a lack of management staff to oversee a hunting program. Areas at NASWF that have a potential for hunting are incompatible with other outdoor recreation uses such as hiking and biking, for which demand is high. Hunting may be considered at a later date at NASWF and at OLF Harold if land were available for hunting, if the flying mission were relaxed, if there were a change in the demand for hunting, if installation managers or staff were available for monitoring, and if it would not interfere with other outdoor recreation activities."</p>
<p>Sermons</p>	<p><b>Page 187: Fish and Wildlife</b> INRMP stated "Hunting is not allowed at OLFs due to the potential for poaching and</p>	<p>Comment refers to same paragraph on page 5-62 of the INRMP. This sentence was deleted from the INRMP (see above response). Hunting is not allowed at OLFs for the reasons previously stated.</p>

**FFWCC Agency Review Comments on the Proposed Integrated Natural Resources Management Plan  
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	<p>other game law violations."</p> <p>Comment said that this statement is difficult to follow as hunting does not promote or facilitate poaching.</p>	
Sermons	<p><b>Page 187: Fish and Wildlife INRMP</b> stated "Hunting may be considered at a later date at NASWF and at OLF Harold if resources were deemed sufficient, security personnel were available for monitoring, and it would not interfere with other outdoor recreation activities."</p> <p>Comment stated: What resources are being referred to? Wildlife? Equipment? Man-power? What population levels are deemed sufficient?...</p>	<p>Comment refers to same paragraph on page 5-62 of the INRMP. This sentence has been clarified as shown in the above paragraph to address this comment. The resources being referred to were land available for hunting.</p>
Sermons	<p><b>Page 200: Fish and Wildlife Management, Red-cockaded woodpecker</b></p> <p>Little or no mention of objectives...Recruitment of active clusters, especially in those areas that border known populations should be a management priority.</p>	<p>The comment pertains to page 5-75 of the INRMP. The focus of all management activities planned at OLF Harold (and one stand at NASWF) is to perpetuate longleaf pine stands and potential red-cockaded woodpecker habitat. Over the 10-year period at OLF Harold, four prescribed burns will be conducted, as well as one chemical treatment to decrease the hardwood component.</p> <p>To address this comment, the INRMP (p. 5-75) was modified as follows: "Although no colonies presently exist on the NASWF Complex, red-cockaded woodpecker nesting sites have been identified in the Blackwater River State Forest, approximately 0.25 miles north of OLF Harold. To encourage use by red-cockaded woodpeckers, the NASWF Complex will promote longleaf pine and maintain sandhill communities at OLF Harold through the use of prescribed fire and herbicide applications."</p>
Sermons	<p><b>Page 205: Nuisance Wildlife and BASH Issue</b></p> <p>Strategies in this section address only birds; silent to management of mammals. However, project #16 notes "trapping and relocating deer and coyotes" as management options. These options are poor alternatives to hunting, euthanasia, exclusion, etc...</p>	<p>Comment refers to Section 5.3.3, Pages 5-82 to 5-83. It is true that the subsection on BASH (Bird/Animal Aircraft Strike Hazard) focuses on birds. Birds are the main threat during flight training hours. Mammals such as deer and coyote also may be a threat, primarily during early morning or late evening hours. Project No. 16, second component, focuses on monitoring and managing deer and coyote that encroach runway areas. Page A-32 states that only where appropriate will deer/coyote be trapped and relocated. Deer/coyote in runway areas may also be killed as part of the base depredation program; Project #16 would provide funding to process the meat of deer necessarily killed and provide it to a non-profit organization.</p> <p>To address this comment, the INRMP has been modified as follows:</p> <p>Third paragraph under "BASH" on page 5-82: The following techniques relate primarily to birds, which are the main threat to flight training operations during flight hours at the NASWF Complex. Some of these</p>

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		<p>techniques, however, can also be used for mammals such as deer and coyote, which may be a threat during early morning or late evening hours, and at OLFs with night-time operations. Birds and mammals may be discouraged from the vicinity of the airfield using various techniques. Guidelines for dispersing animals on the airfield are provided below."</p>
Sermons	<p><b>Page 299: Recreational Fishing</b> INRMP Project No. 21, Description: "Through a cooperative agreement, the FFWCC will provide fish for stocking, as well as other service (such as pond analysis)."</p> <p>Comment stated: The Commission can provide neither fish nor other services for limited or exclusive use. These opportunities must be available to broad segments of the public.</p>	<p>Comment refers to Project No. 21, Recreational Fishing, Page A-39 in Appendix A. The statement that the FFWCC will provide fish for stocking, as well as other services, is based on a 1979 Cooperative Agreement that, to the Navy's knowledge, is still in effect. The Navy has used the agreement several times. The agreement states that "The Department of the Interior and the States will, subject to the limitations of available funds and resources, give technical assistance; provide professional advice; provide a program of research and development (as needed); provide fish and game as available for restocking as recommended; assist and advise in formulating annual incremental plans for the maintenance and development of fish, wildlife and the natural habitat."</p> <p>Concerning public use, the agreement states that "The public will be allowed to participate in the harvest of fish and game on the activity equally with military personnel, except where such public participation must necessarily be limited because of military objectives as determined by the Commanding Officer." At NASWF, the military objectives determined by the CO that limit public participation are security issues, as well as demand issues (i.e., the recreational fishing resources are being fully utilized by military demand).</p> <p>The Navy requests that the FFWCC notify the Navy if this Cooperative Agreement is no longer in effect. At this time, no change has been made to the INRMP.</p>
Lamonte	<p><b>Section 2.5.3 Land Use</b> Recommended replacing "treeless" areas with a phrase such as "disturbed areas" in this section.</p>	<p>The comment pertains to Section 2.5.3 on page 2-13. This sentence or two within the INRMP was not changed per the comment, because this information came directly out of the Complex's master plan. The intent here is a commendable one-- to preserve trees when possible. The guideline of using previously disturbed or cleared areas as a first priority in development is important, and it will be incorporated elsewhere in the INRMP (see comment and response on Strategy 1.4.1).</p>
Lamonte	<p><b>Section 4, Strategy 1.1.5</b> While BMPs do provide a baseline for timber management activities, BMPs often fall short of the mark when it comes to management to enhance forest habitats for wildlife. Forest management activities may have to go beyond BMPs to achieve objectives for wildlife.</p>	<p>Comment refers to Strategy 1.1.5 on page 4-7 of the INRMP. We agree that forest management must go beyond using BMPs. There are many goals, objectives, strategies, projects, and initiatives listed on the pages following 4-7 that focus on managing forests to provide wildlife habitat (e.g., see Objective 2.2 and its strategy, projects, and initiatives).</p>
Lamonte	<p><b>Section 4, Strategy 1.4.1</b> ...No mention is made in this strategy of re-using already disturbed but no longer functional areas. Impacts to natural areas would be avoided</p>	<p>Comment refers to Strategy 1.4.1 on page 4-9. The recommendation was incorporated into the INRMP by adding an item to the Site Plan Activity Guidelines in Section 5.5, mentioned in Initiative (1). The following was added to the Site Plan Activity Guidelines on Page 5-94 (i.e., second bullet):</p>

**FFWCC Agency Review Comments on the Proposed Integrated Natural Resources Management Plan  
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	natural areas would be avoided by removing decommissioned buildings and structures and using those locations for new facilities.	<ul style="list-style-type: none"> <li>▪ Whenever possible, previously disturbed areas or decommissioned/vacant buildings or structures will be given a first priority for use when siting new facilities.</li> </ul>
Lamonte	<p><b>Strategy 3.2.2, Initiative 2</b> Refers to using the Commission's "habitat relocation and management guidelines" for listed species. It is unclear what guidelines this initiative refers to. Also, the Commission does not necessarily recommend relocation as the solution to listed species/development conflicts.</p>	<p>The comment pertains to Initiative 2 of Strategy 3.2.2 on page 4-16. To address the comment, this initiative was modified (i.e., made more general). Relocation of an animal would only be conducted if necessary, in coordination with the appropriate agency(ies), and in compliance with applicable laws. Initiative 2 was modified to read:</p> <p>"The NASWF Complex will use FFWCC guidelines for the protection of listed species from proposed development or land clearing impacts. The NASWF Complex will consult with FFWCC, USFWS, and/or Southern Division's wildlife biologists to implement this initiative."</p>
Lamonte	<p><b>Section 5.1.2, Noxious, Invasive, and Exotic species and Pests</b> This section lists exotic species and pests...This listing seems to imply that these native species are always pests....these species should not be wholly characterized as pests.</p>	<p>Comment refers to Page 5-9. To incorporate the comment, the last bullet concerning pests was modified as follows:</p> <p>"Vertebrate pests- vertebrates such as rodents, pocket gophers, feral cats, opossums, armadillos, coyotes, starlings, and pigeons may be considered pests under certain circumstances (e.g., when they occur in high numbers or in certain locations in urban or developed areas). Vertebrate pests are also discussed as nuisance wildlife in Section 5.3.3."</p>
Lamonte	<p><b>Section 5.2, Forest Mgmt.</b> 1st Comment: Agree with ...Sermons' comments that this section is lacking in goals and objectives....Provide more detailed discussion of desired future conditions and maintenance and enhancement for wildlife.</p>	<p>This comment (from Sermons) was previously addressed. See comment (referred to as Page 170-177 Forest Management) and response above.</p>
Lamonte	<p><b>Section 5.2, Forest Mgmt.</b> 2nd Comment: Caution should be used when implementing site preparation activities at OLF Holley...All site preparation at OLF Holley should be compatible with management for flatwoods salamanders.</p>	<p>No site preparation activities are schedule for OLF Holley in the INRMP's 10-year period. If site preparation becomes an unscheduled activity, the Navy will work with the USFWS to ensure protection of the flatwoods salamander.</p> <p>As stated on pages 5-74 and 5-75 of the INRMP, the Navy is currently consulting with the USFWS on the presence of the flatwoods salamander at OLF Holley. The Navy will ensure that their operations are consistent with ESA requirements.</p>

**FFWCC Agency Review Comments on the Proposed Integrated Natural Resources Management Plan  
for NAS Whiting Field Complex, Milton, Florida (see attached pages for entire FFWCC comment).  
Comments Received September 2001**

Reviewer	Comment	Response
Lamonte	<p><b>Section 5.2, Forest Mgmt.</b> 3rd Comment: This section states that some timber harvesting will occur in forested wetlands...Cypress logging can be detrimental to the wetland, altering the hydrology and ecology of the site. Due to the importance to wildlife, cypress logging should be avoided.</p>	<p>The logging of cypress trees is not a scheduled activity in the INRMP.</p>
Lamonte	<p><b>Section 5.2, Forest Mgmt.</b> 4th Comment: This section states that wetlands will be used as firebreaks. Tying in to wetland areas to create firebreaks can prove detrimental to that wetland system. Wetland systems require periodic fire and establishment of permanent fire breaks at wetlands can be detrimental.</p>	<p>Firebreaks are a necessary part of prescribed burning. Firebreaks are primarily established on the property boundary to prevent the escape of fire to adjacent lands. Firebreaks are not intentionally tied into wetlands. It is the desire of the Natural Resources Program to introduce fire, a natural component of the system, into wetlands.</p> <p>No changes were made to the INRMP based on this comment.</p>
Lamonte	<p><b>Section 5.2, Forest Mgmt.</b> 5th Comment: ...Agree with ...Sermons' comment that fertilization of forest stands implies forest stands are being managed to maximize timber production rather than supporting ecological restoration goals.</p>	<p>This comment was addressed previously. See Sermons comments (referred to as Page 170-177: Forest Management) and response.</p>
Lamonte	<p><b>Section 5.3.2 Wildlife Habitat Management and T &amp; E Species</b> 1st Comment: The Special Management Initiative for gopher tortoises states that most of the xeric uplands are currently unsuitable for tortoises due to dense canopy cover and lack of herbaceous ground cover. ...unclear...whether any effort will be made to open up these xeric uplands to encourage...use by gopher tortoises...</p>	<p>Comment pertains to page 5-74 of the INRMP. Page 5-74 states that "Proper management of the xeric uplands in which the gopher tortoise lives is critical to the species' long-term viability at any site. Xeric uplands will be burned approximately every 2 to 5 years and potential predators such as coyotes, dogs, feral cats, and raccoons will be controlled."</p> <p>The following sentence will be added to this paragraph: "Additionally, forest thinnings are scheduled (see Appendix B) to assist in opening the forest canopy and increasing sunlight to the forest floor."</p> <p>Management relating to gopher tortoises is also discussed in Project No. 13, Species Surveys and Monitoring, Page A-27, and Table 5-16.</p>
Lamonte	<p><b>Section 5.3.2 Wildlife Habitat</b></p>	<p>The flatwoods salamander and management of its habitat are discussed on</p>



**FFWCC Agency Review Comments on the Proposed Integrated Natural Resources Management Plan  
for NAS Whiting Field Complex, Milton, Florida (see attached pages for entire FFWCC comment).  
Comments Received September 2001**

Reviewer	Comment	Response
	<p><b>Management and T &amp; E Species</b> 2nd Comment: The Special Management Initiative for flatwoods salamanders is quite vague. This section states survey and monitoring is needed, but no plan is provided...</p>	<p>Pages 5-74 - 75 and other pages of Section 5, as well as Project No. 13. As stated on Page 5-75, the NASWF Complex is currently consulting with the USFWS on the presence of the species at OLF Holley. One of the immediate needs is a survey for the species (this is further discussed in Project No. 13). We disagree that more details need to be provided in the INRMP at this time. That is one of the purposes for Project No. 13. Furthermore, the INRMP is not intended to provide all details on all species, habitats, and management issues. As the INRMP is reviewed and updated, and projects are implemented, new information will be incorporated.</p> <p>No changes were made to the INRMP based on this comment.</p>
Lamonte	<p><b>Section 5.3.2 Wildlife Habitat Management and T &amp; E Species</b> 3rd Comment: I agree with ...Sermons' comments that the red-cockaded woodpecker initiative is lacking in objectives. Also, management priority should be given to recruitment of active RCW clusters from bordering natural areas.</p>	<p>This comment was addressed previously under Sermons comments.</p>
Lamonte	<p><b>Section 5.3.3 Wildlife Damage and Diseases and Nuisance Wildlife</b> 1st Comment: On Page 5-80, several species are referred to as nuisances...The language here should make it clear that not all squirrels or coyotes...are nuisances.</p>	<p>This comment was incorporated, and the first sentence of the paragraph under Nuisance Wildlife and BASH (page 5-80) now reads: "Animals such as mice and rats, raccoon, opossum, armadillo, coyote, and squirrel may cause problems in urban/developed areas (such as when they occur in high numbers or in certain locations), and may be considered nuisance wildlife under such circumstances. Some birds, such as house sparrows, starlings, pigeons, grackles, and crows, may also be considered nuisance wildlife in some instances."</p>
Lamonte	<p><b>Section 5.3.3 Wildlife Damage and Diseases and Nuisance Wildlife</b> 2nd Comment: The statement "Migratory birds are protected under the Migratory Bird Treaty Act, while many non-migratory game birds are protected by state law," is incorrect. Non-migratory game birds are protected under the federal Migratory Bird Treaty Act as well.</p>	<p>Comment refers to bullet on page 5-83. To incorporate this comment, the bullet was changed to read: "Migratory birds, and certain other birds, are protected under the Migratory Bird Treaty Act."</p>
Lamonte	<p><b>Section 5.3.3 Wildlife Damage and Diseases and Nuisance Wildlife</b> 3rd Comment: Dr. Jeff Gore should be</p>	<p>Comment refers to page 5-84. Change has been made.</p>

**FFWCC Agency Review Comments on the Proposed Integrated Natural Resources Management Plan  
for NAS Whiting Field Complex, Milton, Florida (see attached pages for entire FFWCC comment).  
Comments Received September 2001**

Reviewer	Comment	Response
	removed as the BASH contact for the FFWCC. Karen Lamonte is the appropriate contact.	
Lamonte	<b>Section 5.5 Land Impact Guidelines</b> See comments above for Section 2.5.3 Land Use.	See response under Lamonte Comment on Section 2.5.3 Land Use. Page 5-94 was modified to include the priority of using previously disturbed areas and decommissioned facilities first in siting new facilities.
Lamonte	<b>Appendix A NASWF Complex Projects</b> A project for migratory bird surveys is outlined in this section. Additionally, mention is made in several sections of the plan of use of habitats by migratory birds. However, no mention is made of impacts to migratory birds from communication towers on site or of ways to minimize such impacts. This issue should be addressed in this plan. Siting and operation of communication tower facilities should follow the guidelines established by the USFWS...	To incorporate this recommendation, a bullet item was added to the list of Site Plan Activity Guidelines (to minimize impacts to the Complex's environmental and ecological resources) on page 5-94 and 5-95. The bullet begins "Implement guidelines recommended by the USFWS for reducing impacts to migratory birds (especially night-migrating species) from new communication towers..."

END OF COMMENTS



DEPARTMENT OF THE NAVY

SOUTHERN DIVISION

NAVAL FACILITIES ENGINEERING COMMAND

P.O. BOX 190010

2155 EAGLE DRIVE

NORTH CHARLESTON, S.C. 29419-9010

OCT 15 2001

11015/49  
Code ES13  
October 11, 2001

U.S. Fish & Wildlife Service  
Attn: Tom Sinclair, Regional Sikes Act Coordinator  
1875 Century Boulevard, Suite 250  
Atlanta, GA 30345

SUBJ: INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN (INRMP)  
FOR THE NAVAL AIR STATION WHITING FIELD (NASWF) COMPLEX,  
MILTON, FLORIDA

Dear Mr. Sinclair:

The enclosed final version of the NASWF Complex INRMP has undergone an extensive review by the United States Fish & Wildlife Service (Panama City and Daphne Field Offices), the Florida Fish and Wildlife Conservation Commission, and the Alabama Department of Conservation and Natural Resources. Comments provided by these agencies are included in this INRMP as Appendix D.

We believe that the comments identified by the wildlife agencies have been addressed appropriately within the INRMP document. For your review, a table of the Navy responses to the USFWS comments is provided as an attachment. Please review the correspondence from the wildlife agencies and provide concurrence by endorsing the signature page at the beginning of the document.

If you should have any questions, please contact Patty Valentine-Darby at (850) 435-8925.

Sincerely,

FOR  
WILLIAM A. DRAWDY  
Head, Natural Resources Branch



STATE OF FLORIDA  
**DEPARTMENT OF COMMUNITY AFFAIRS**

*"Dedicated to making Florida a better place to call home"*

JEB BUSH  
Governor

STEVEN M. SEIBERT  
Secretary

October 9, 2001

Mr. Gene Stillman  
Ecology and Environment, Inc.  
1950 Commonwealth Lane  
Tallahassee, Florida 32303

RE: Department of the Navy - Integrated Natural Resources Management Plan and  
Environmental Assessment - Naval Station Whiting Field - Santa Rosa County,  
Florida  
SAI: FL200107300734C

Dear Mr. Stillman:

The Florida State Clearinghouse, pursuant to Presidential Executive Order 12372,  
Gubernatorial Executive Order 95-359, the Coastal Zone Management Act, 16 U.S.C. §§ 1451-  
1464, as amended, and the National Environmental Policy Act, 42 U.S.C. §§ 4321, 4331-4335,  
4341-4347, as amended, has coordinated a review of the above-referenced project.

Based on the information contained in the integrated natural resources management plan  
and environmental assessment and the enclosed comments provided by our reviewing agencies,  
the state has determined that the above-referenced project is consistent with the Florida Coastal  
Management Program. In addition, comments received from the West Florida Regional Planning  
Council are enclosed for your review and consideration.

Thank you for the opportunity to review this project. If you have any questions regarding  
this letter, please contact Ms. Jasmin Raffington at (850) 922-5438.

Sincerely,

Shirley W. Collins, Acting Administrator  
Florida Coastal Management Program

SWC/cc  
Enclosures

cc: John Willem, West Florida Regional Planning Council

2555 SHUMARD OAK BOULEVARD • TALLAHASSEE, FLORIDA 32399-2100  
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Internet address: <http://www.dca.state.fl.us>

CRITICAL STATE CONCERN FIELD OFFICE  
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Marathon, FL 33050-2227  
(305) 289-2402

COMMUNITY PLANNING  
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Tallahassee, FL 32399-2100  
(850) 488-2356

EMERGENCY MANAGEMENT  
2555 Shumard Oak Boulevard  
Tallahassee, FL 32399-2100  
(850) 413-9969

HOUSING & COMMUNITY DEVELOPMENT  
2555 Shumard Oak Boulevard  
Tallahassee, FL 32399-2100  
(850) 488-7956

COMMENTS FROM FLORIDA FISH & WILDLIFE CONSERVATION COMMISSION

REVIEW COMMENTS: 2005

September 2001

**Naval Air Station Whiting Field Complex  
Integrated Natural Resources Management Plan  
2001-2010**

**Page 1: Signature page**

☞ "Mutual agreement is required only with respect to those elements of this Plan that are subject to the otherwise applicable legal authority (i.e., authority derived from a source other than the Sikes Act, such as the Endangered Species Act) of the Fish & Wildlife Service and State Fish and Wildlife Agency to conserve, protect and manage fish and wildlife resources."

Comment: While not directly relevant to the plan, this language is antithetical to the spirit and intent (in my opinion) of the Sikes Improvement Act. I agree that DOD is not legally bound to bend to the will of the USFWS or any state agency in the absence of applicable law. However, it should be recognized too that States are not compelled to concur with or sign the plans. Although the Act does not increase States' authority or diminish that of DOD, it's my expectation that States would have input and influence beyond simple regulatory authority. Otherwise, I see little need for participation. Moreover, I believe this was the intent of those who crafted the Sikes Improvement Act and who shepherded it through Congress. I know that they wrestled with including language in the bill that would address situations where mutual agreement could not be reached. However, rather than trying to legislate protocol for resolving such conflict, they ultimately decided that resources professionals should be able to resolve such. It was also their vision that installation staff (or contractors) would sit down Day 1 with partners to conduct scoping and pre-planning and to share their ideas about the end product. This was not done on NASWF.

**Page 4: Provide facilities...**

☞ "...outdoor recreation is limited: active duty and reserve military personnel assigned to work at the Installation, their dependents and accompanied guests; federal civilian employees, their dependents and accompanied guests; and military retirees. However, ...the general public is allowed access to Clear Creek Nature Trail, the Military Heritage Trail, and the Sandhill Pine Bike and Hike Trail..."

Comments: Why is the general public not given broader access to facilities and outdoor recreational opportunities? The plan gives little insight other than to state that the CO decides. This seems inconsistent with Sikes and operations on many other installations.

**Page 36: Function and Use of the INRMP**

☞ Passage states that the plan is intended to "provide a philosophy and direction"; "not necessarily the function of the INRMP to define specific projects for specific locations;

nor to define specific practices or schedules...”; these are “addressed in existing management plans...”

Comment: SAIA lists required elements of plans. These include “(E) establishment of **specific natural resource management goals and objectives and time frames** for proposed actions” (emphasis mine). In this sense, text in the draft plan is inconsistent with the Act.

**Page 56: 2.6.3 OLFs**

☞ “There is potential for OLF Site 8-A, OLF Spencer, and possibly other OLFs to be exceeded due to mission changes and/or surrounding development.”

Comment: Other factors to consider are the impacts of those OLFs on management of surrounding natural areas. For example, OLF Harold is circumscribed by Blackwater River State Forest. The OLF constrains management of the state forest, especially prescribed burning, and hinders public access to and use of portions of the area. In that regard, the military mission is impacting resources not only on lands entrusted to DoN, but also those of the State. These impacts could be substantially reduced by divestment of small satellite fields. If “excess” procedures are undertaken, priority should be given to the State.

**Page 97: Recreational Activities**

☞ “Public hunting is available at Eglin AFB and Blackwater Forest as well as state wildlife areas in Escambia and Santa Rosas counties. Also, numerous chartered hunting clubs are available in both counties”.

Comment: This passage wants to imply that demand for hunting is being met by local supply and, thus, is not warranted on NASWF to meet recreational demand. However, acreage open to public hunting acreage in this vicinity has declined (e.g., loss of Escambia River WMA), while populations and sale of hunting licenses have increased in recent years.

**Page 119: Strategy 4.1.2 and 4.1.3**

- ☞ “(5) Review issues that currently prohibit public access.”
- ☞ “(2) Develop fishing, hunting, and trapping instructions for NASWF.”

Comments: These initiatives are commendable and supported, but are lost or negated by pervasive language stating that public access is limited and that hunting is compatible with present uses. The language is simply too vague and lacks specificity or commitment.

**Page 170-177: Forest Management**

☞ Defines terminology; lists treatment types that will be applied to forest stands; notes management of forest resources “primarily for wildlife protection and enhancement, aesthetics, and recreation, where possible”.

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Comments: Desired conditions regarding forest management are conspicuously absent. Instead, forest management tools (e.g., thinning, prescribed fire) are described as though they are the goals or end points. Emphasis is clearly on increasing production of roundwood products over basic ecological values and function. Application of fertilizer is cited as a tool to improve forest "health". More discussion of how these stands will be enhanced and maintained for wildlife is needed.

#### Page 187: Fish and Wildlife

☞ "Hunting presently is not authorized...primarily due to safety considerations and incompatibility with the military mission."

Comments: Appear to be hiding behind the military mission. This is very vague and never explained. How is hunting incompatible with NASWF's mission? How does this area differ from other installations of comparable size that offer hunting? What are the "safety considerations"? There's already an archery range and sporting gun range. Are these compatible?

☞ "Areas that have a potential for hunting are incompatible with other outdoor recreation uses such as hiking and biking".

Comments: Few public recreation areas that allow hunting are dedicated exclusively to hunting. Most allow an array of other nature-based recreation. Potential conflicts among user groups may be easily averted by temporal or spatial partitioning. This statement in the plan is not supported or accurate.

☞ "Hunting is not allowed at OLFs due to the potential for poaching and other game law violations"

Comments: This statement is difficult to follow as hunting does not promote or facilitate "poaching". To the contrary, prohibiting hunting on OLFs likely increases the incidence of poaching. Moreover, at least one OLF (OLF-Harold) is entirely circumscribed by a public hunting area (Blackwater WMA-Hutton Unit).

☞ "Hunting may be considered at a later date...if resources were deemed sufficient, security personnel were available for monitoring, and it will not interfere with other outdoor recreational activities".

Comments: What resources are being referred to? Wildlife? Equipment? Man-power? What population levels are deemed sufficient? What other resources and in what quantity are necessary? Abbreviated or truncated hunting seasons could be established and safety footprints designed to ensure that conflicts did not arise among user groups and to minimize safety risks.

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**Page 200: Fish and Wildlife Management**

☞ Red-cockaded woodpecker

Comments: Little or no mention of objectives. Instead, “promote longleaf through fire and herbicide”. Recruitment of active clusters, especially in those areas that border known populations should be a management priority.

**Page 205: Nuisance Wildlife and BASH Issue**

☞ “Deer, coyote, and bird populations, especially in the vicinity of runways, must be minimized and controlled to prevent BASH-related incidents.”

Comments: Strategies in this section address only birds; silent to management of mammals. However, project #16 (p. 292) notes “trapping and relocating deer and coyotes” as management options. These options are poor alternatives to hunting, euthanasia, exclusion, etc. They are costly, inefficient, man-power intensive, and may harm recipient populations.

**Page 299: Recreational Fishing**

☞ “Purpose: To develop and maintain recreational freshwater fishing opportunities at NASWF for: active duty and reserve...” “Through a cooperative agreement, the FFWCC will provide fish for stocking, as well as other services (such as pond analysis).”

Comments: The Commission can provide neither fish nor other services for limited or exclusive use. These opportunities must be available to broad segments of the public.



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**Naval Air Station Whiting Field Complex  
Integrated Natural Resources Management Plan  
2001-2010**

**Comments by Karen M. Lamonte, Bureau of Wildlife Diversity Conservation**

**Section 2.5.3 Land Use**

This section states that facility development on site is targeted primarily at "treeless" areas. While I believe the term "treeless" is meant to imply areas that have previously undergone human disturbance, the term "treeless" is rather misleading. Many natural areas could be characterized as treeless (e.g., wet prairie). A better phrase may be disturbed areas.

**Section 4 Natural Resources Goals, Objectives, and Strategies**

**Strategy 1.1.5** calls for using BMPs for forest management activities. While BMPs do provide a baseline for timber management activities, BMPs often fall short of the mark when it comes to management to enhance forest habitats for wildlife. Forest management activities may have to go beyond BMPs to achieve objectives for wildlife.

**Strategy 1.4.1** outlines initiatives to minimize impacts of future development on site. However, no mention is made in this section of re-using already disturbed but no longer functional areas. Impacts to natural areas would be avoided by removing decommissioned buildings and structures and using those locations for new facilities.

**Strategy 3.2.2 – Initiative 2** refers to using the Commission's "habitat relocation and management guidelines" for listed species. It is unclear what guidelines this initiative refers to. Also, the Commission does not necessarily recommend relocation as the solution to listed species/development conflicts.

**Section 5.1.2 Noxious, Invasive, and Exotic Species and Pests**

This section lists exotic species and pests occurring in the Whiting Field complex. Some of the species listed include opossum, pocket gophers, and rodents. This listing seems to imply that these native species are always pests. It is true that in certain concentrations or locations these animals can be pests or nuisances. However, these species should not be wholly characterized as pests.

**Section 5.2 Forest Management**

I agree with Mr. Billy Sermons' comments that this section is lacking in measurable goals and objectives. This sections needs to provide more detailed

discussion of desired future conditions and maintenance and enhancement for wildlife.

Caution should be used when implementing site preparation activities at Holley OLF. This area contains flatwoods salamanders which have declined in part due to silvicultural site preparation activities. All site preparation at Holley OLF should be compatible with management for flatwoods salamanders.

This section states that some timber harvesting will occur in forested wetlands. Forested wetlands, particularly cypress domes, provide important wildlife habitat. Cypress logging can be detrimental to the wetland, altering the hydrology and ecology of the site. Due to the importance to wildlife, cypress logging should be avoided.

This section states that wetlands will be used as firebreaks. "Tying in" to wetland areas to create firebreaks can prove detrimental to that wetland system. Wetland systems require periodic fire and establishment of permanent fire breaks at wetlands can be detrimental to that system. This is particularly true in areas containing flatwoods salamanders. The practice of tying in to wetlands should be reevaluated here.

I agree with Mr. Billy Sermons' comments that fertilization of forest stands implies forest stands are being managed to maximize timber production rather than supporting ecological restoration goals.

### **Section 5.3.2 Wildlife Habitat Management and Threatened and Endangered Species**

The Special Management Initiative for gopher tortoises states that most of the xeric uplands are currently unsuitable for tortoises due to dense canopy cover and lack of herbaceous ground cover. However, it is unclear from this plan whether any effort will be made to open up these xeric uplands to encourage more herbaceous growth and perhaps encourage use by gopher tortoises. There needs to be some measurable goal for gopher tortoise management.

The Special Management Initiative for flatwoods salamanders is quite vague. This section states survey and monitoring is needed, but no plan is provided. Goals and objectives for flatwoods salamanders are absent. This section needs to be more detailed with clear objectives for survey, monitoring, and management of flatwoods salamander populations.

I agree with Mr. Billy Sermons' comments that the red-cockaded woodpecker initiative is lacking in objectives. Also, management priority should be given to recruitment of active RCW clusters from bordering natural areas.

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### **Section 5.3.3 Wildlife Damage and Diseases and Nuisance Wildlife**

On page 5-80, several species are referred to as nuisances. This language is misleading. The language used here should make it clear that not all squirrels or coyotes or opossums or crows are nuisances. But rather, that sometimes these animals in certain concentrations or in certain locations may constitute a nuisance. The language used here wholly characterizes all of these species as nuisances, which is untrue.

The statement, "Migratory birds are protected under the Migratory Bird Treaty Act, while many non-migratory game birds are protected by state law," is incorrect. Non-migratory game birds are protected under the federal Migratory Bird Treaty Act as well.

Dr. Jeff Gore should be removed as the BASH contact for the FFWCC. Ms. Karen Lamonte is the appropriate contact.

### **Section 5.5 Land Impact Guidelines**

See comments above for **Section 2.5.3 Land Use**.

### **Appendix A NASWF Complex Projects**

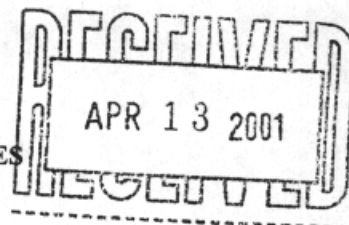
A project for migratory bird surveys is outlined in this section. Additionally, mention is made in several sections of the plan of use of habitats by migratory birds. However, no mention is made of impacts to migratory birds from communication towers on site or of ways to minimize such impacts. This issue should be addressed in this plan. Siting and operation of communication tower facilities should follow the guidelines established by the U.S. Fish and Wildlife Service. These guidelines should be followed at new facilities, and lighting should be retrofitted at existing facilities. Additionally, decommissioned tower facilities should be removed since they are a potential migratory bird hazard.



DON SIEGELMAN  
GOVERNOR

STATE OF ALABAMA  
DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

P.O. BOX 301450  
64 NORTH UNION STREET, SUITE 468  
MONTGOMERY, ALABAMA 36130-1450  
(334)242-3486  
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www.dcnr.state.al.us



RILEY BOYKIN SMITH  
COMMISSIONER

RICHARD LILES  
ASSISTANT COMMISSIONER

April 9, 2001

Mr. David Trimm  
Ecology and Environment  
220 W. Garden Street Suite 404  
Pensacola, Florida 32501

RE: Naval Air Station Whiting Field INRMP Agency Draft

Dear Mr. Trimm:

The Department of Conservation and Natural Resources is in agreement with the proposal to manage the natural resources of the three outlying landing fields in accordance with federal guidelines. I would point out, however, that the Navy may also need to consider state regulations or concerns regarding protected species, state-owned waterbottoms, air and water quality, cultural resources, Indian affairs, water withdrawals, stream and wetland habitat impacts, Coastal Consistency, etc.

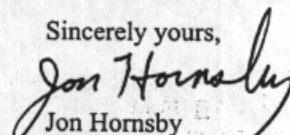
Certain species are protected by the State of Alabama, but are not federally protected; therefore, consultation with both the U. S. Fish and Wildlife Service (334-441-5181) and the Natural Heritage Section of the State Lands Division (334-353-7998) is required to address protected species concerns. The Natural Heritage Section will provide data on both state- and federally-protected species, whereas the Fish and Wildlife Service only comments on federally-protected species.

All tidally influenced bays and streams and some non-tidally influenced streams are designated as state-owned waterbottoms in Alabama. Therefore, consultation with the State Lands Division (334-242-3484) is required whenever a stream is impacted by certain activities; examples of such activities including the bridging of streams, trenching of stream beds or banks, instream blasting, pipeline crossings, powerline crossings, etc. It is also necessary to coordinate water withdrawals/releases associated with the hydrostatic testing of pipelines and instream blasting with the Wildlife and Freshwater Fisheries Division (334-242-3420); 48 hours advance notice is required for an instream blast. If instream blasting results in a fish kill or other significant damage to the Public Trust Resources of the Department of Conservation and Natural Resources, the party responsible for the blast will be required to provide compensation for damages and for all costs associated with damage assessment and reporting. Any water withdrawal in excess of 100,000 gallons per day from a stream must be reported to the Office of Water Resources (334-242-5697).

My agency is concerned about the loss or degradation of stream and wetland habitat which might result from filling, dredging, excessive siltation (often the result of inadequate erosion control practices at construction sites), channel realignment, streamflow alterations, etc. We routinely request mitigation for such losses through Public Notices issued by the Army Corps of Engineers.

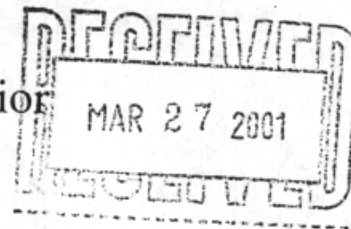
Impacts to historical or cultural resources should be coordinated with the Alabama Historical Commission (334-242-3184). Water and air quality impacts are regulated by ADEM (the Alabama Department of Environmental Management: phone 334-272-7700). Coastal consistency is handled by the Coastal ADEM office (334-432-6533). The telephone number of the (state) Indian Affairs Commission is 334-242-2831.

Sincerely yours,

  
Jon Hornsby  
Environmental Coordinator



# United States Department of the Interior



FISH AND WILDLIFE SERVICE  
P. O. Drawer 1190  
Daphne, Alabama 36526

IN REPLY REFER TO:

March 22, 2001

Mr. David L. Trimm  
Ecology and Environment, Inc.  
220 West Garden Street, Suite 404  
Pensacola, FL 32501

Dear Mr. Trimm:

This is in response to your letter, dated January 12, 2001, soliciting comments and suggestions pursuant to the preparation of an Integrated Natural Resources Management Plan (INRMP) for Whiting Field Naval Air Station (NAS), Florida including Outlying Landing Fields (OLF) in Alabama.

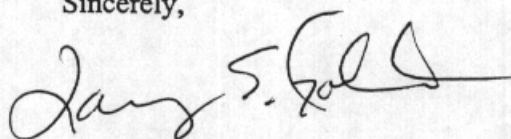
The Daphne Field Office is responsible for those OLF facilities in Alabama and our comments will be directed to those facilities. Although the gopher tortoise (*Gopherus polyphemus*) is not federally protected in Baldwin County, Alabama, the Service is concerned that farming practices and herbicide use on the OLF's within Alabama are not compatible with this imperiled species. Because tortoises in Baldwin County are not under the protection of the Endangered Species Act (ESA), the Navy is not obligated to carry out its activities while giving full deference to the requirements of the species. However, because we believe the tortoise has and is experiencing large scale decline in Baldwin County and other areas, we are soliciting the Navy's help in our effort to stem the downward slide of this species so that it does not need to be listed under the ESA. We believe that through strategic efforts, we can turn the situation around and avoid listing the species. A buffer zone of 50 feet surrounding burrow entrances is suggested to minimize the impacts to this species. Land clearing and maintenance within this 50 foot buffer should be accomplished using hand tools rather than heavy machinery. Because the gopher tortoise is a herbivorous animal, herbicide use around tortoise colonies should be restricted to granular types and not the typical spray applicators normally found in farming operations. These restrictions should be a part of any agricultural lease agreement or any landscape management plan on the OLF's in Alabama.

The mission of the Service is to protect the nation's natural resources for future generations. With that in mind, the Service is continually looking for ways to proliferate a species to keep them from becoming threatened or endangered. The Navy has a real opportunity here to help in that venture by creating habitat conducive to population growth for the gopher tortoise. This is an ideal situation to pursue because of the restricted access to the OLF's and the amount of unused buffer that exist at those locations. The creation of micro refuges for the gopher tortoise and the possible reintroduction of the federally threatened eastern indigo snake (*Drymarchon corais couperi*) could be the catalyst to maintain or recover these species from protected status. In the event the Navy agrees to adopt such an approach, the Service looks forward to working in partnership with the Navy to implement these measures. We believe that substantial conservation benefits can be achieved for these species on Navy lands without compromising your ability

to carry out necessary mission work. We would welcome the opportunity to discuss our suggestions with you.

Other than the comments above, the Service concurs with the INRMP as written. If you have questions or need additional information, please call Mr. Bruce Porter at (334) 441-5181, ext 37 or via email [bruce\\_porter@fws.gov](mailto:bruce_porter@fws.gov).

Sincerely,

A handwritten signature in cursive script that reads "Larry E. Goldman". The signature is written in dark ink and includes a horizontal line extending to the right from the end of the name.

Larry E. Goldman  
Field Supervisor

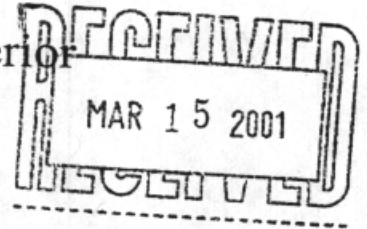
cc: ADCNR, Montgomery, AL  
ADCNR, Spanish Fort, AL



IN REPLY REFER TO:

# United States Department of the Interior

FISH AND WILDLIFE SERVICE  
Field Office  
1612 June Avenue  
Panama City, FL 32405-3721



Tel: (850) 769-0552  
Fax: (850) 763-2177

March 14, 2001

David L. Trimm  
Project Manager  
Ecology and Environment, Inc.  
220 West Garden Street, Suite 404  
Pensacola, Florida 32501

FWS Log # 4-P-00-114  
NAS Whiting Field Complex  
Integrated Natural Resources  
Management Plan (INRMP)  
Preliminary Draft  
Escambia and Santa Rosa Counties, Florida  
Baldwin and Conecuh Counties, Alabama

Dear Mr. Trimm:

This letter is in response to the preliminary draft, dated January 2001, for the Integrated Natural Resources Management Plan (INRMP) for the Naval Air Station Whiting Field complex. The Whiting Field complex includes 15 facilities in Florida and Alabama. We are responding for the Florida portion of the project pursuant to the requirements of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.) and the Sikes Act amendments. For the portions of your project that occur in Alabama, we recommend that you contact our Daphne Field Office at P.O. Drawer 1190, Daphne, Alabama 36526, tel. #334/441-5181.

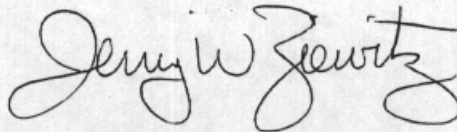
The plan provides an excellent framework for future management of natural resources. It accurately identifies important natural resource components and presents a practical program for implementation of specific management projects. Some suggestions for future updates to the plan include the following:

1. A specific program for restoring sand pine plantations to native pine habitats.
2. Implementing integrated pest management (IPM) practices at golf courses and other landscaped areas.

3. Environmental education and public awareness opportunities at Navy Recreation Boat Docks. Also, add Gulf sturgeon (*Acipenser oxyrinchus desotoi*) to the species list for this location.
4. Setting a minimum 300-foot buffer from wetlands where feasible. Recommended buffer widths and justifications can be found in the literature.

Thank you for the opportunity to provide suggestions to the draft plan. We look forward to future coordination with the staff in implementing and updating the plan as necessary. If you have any questions or comments, please contact Mr. Hildreth Cooper at extension 221.

Sincerely yours,



Gail A. Carmody  
Project Leader

*Acting for*

cc:  
FWS, Daphne, AL

HC/kh/C:\endspp\4p00114-1.wpd





# ecology and environment, inc.

International Specialists in the Environment

220 West Garden Street, Suite 404  
Pensacola, FL 32501  
Tel: (850) 435-8925, Fax: (850) 435-9135

January 12, 2001

Mr. Rick McCann  
Florida Fish & Wildlife Conservation Commission  
620 S. Meridian Street  
Tallahassee, FL 32399-1600

Re: Preliminary Draft Integrated Natural Resources Management Plan, Naval Air Station  
Whiting Field Complex

Dear Mr. McCann,

E & E and the Navy would appreciate your review, comments and suggestions on the enclosed Preliminary Draft Integrated Natural Resources Management Plan for the Naval Air Station Whiting Field (NASWF) Complex.

Due to the Navy's implementation schedule, we would appreciate you adhering to a 60-day review period. If comments are not received by March 14, 2001 it will be assumed that your agency has no comments. To expedite this review process, we are more than willing to meet with you at your office to confer on any issues that you feel are warranted.

If you have questions concerning the document or schedule please feel free to give me a call at (850) 435-8925.

Sincerely,

David L. Trimm  
Project Manager

dlt

cc: P. Clline (SOUTHDIV)  
G. Gallagher (E & E)  
D. Heatwole (E & E)  
file



# ecology and environment, inc.

International Specialists in the Environment

220 West Garden Street, Suite 404

Pensacola, FL 32501

Tel: (850) 435-8925, Fax: (850) 435-9135

January 12, 2001

Mr. Bill Tucker  
District Supervisor  
Alabama Dept Conserv. & Natural Resources  
P.O. Box 7245  
Spanish Fort, AL 36577

Re: Preliminary Draft Integrated Natural Resources Management Plan, Naval Air Station  
Whiting Field Complex

Dear Mr. Tucker,

E & E and the Navy would appreciate your review, comments and suggestions on the enclosed Preliminary Draft Integrated Natural Resources Management Plan for the Naval Air Station Whiting Field (NASWF) Complex. Your office has been included on the review list based on the presence of several NASWF Outlying Fields in your district.

Due to the Navy's implementation schedule, we would appreciate you adhering to a 60-day review period. If comments are not received by March 14, 2001 it will be assumed that your agency has no comments. To expedite this review process, we are more than willing to meet with you at your office to confer on any issues that you feel are warranted.

If you have questions concerning the document or schedule please feel free to give me a call at (850) 435-8925.

Sincerely,

David L. Trimm  
Project Manager

dlt

cc: P. Cline (SOUTHDIIV)  
G. Gallagher (E & E)  
D. Heatwole (E & E)



# ecology and environment, inc.

International Specialists in the Environment

220 West Garden Street, Suite 404

Pensacola, FL 32501

Tel: (850) 435-8925, Fax: (850) 435-9135

January 12, 2001

Field Office Manager  
U.S. Fish and Wildlife Service  
P.O. Box 1190  
Daphne, AL 36526

Re: Preliminary Draft Integrated Natural Resources Management Plan, Naval Air Station Whiting Field Complex

Dear Sir,

E & E and the Navy would appreciate your review, comments and suggestions on the enclosed Preliminary Draft Integrated Natural Resources Management Plan for the Naval Air Station Whiting Field (NASWF) Complex. Your office has been included on the review list based on the presence of several NASWF Outlying Fields in your district.

Due to the Navy's implementation schedule, we would appreciate you adhering to a 60-day review period. If comments are not received by March 14, 2001 it will be assumed that your agency has no comments. To expedite this review process, we are more than willing to meet with you at your office to confer on any issues that you feel are warranted.

If you have questions concerning the document or schedule please feel free to give me a call at (850) 435-8925.

Sincerely,

David L. Trimm  
Project Manager

dlt

cc: P. Cline (SOUTHDIIV)  
G. Gallagher (E & E)  
D. Heatwole (E & E)  
file



## ecology and environment, inc.

International Specialists in the Environment

220 West Garden Street, Suite 404  
Pensacola, FL 32501  
Tel: (850) 435-8925, Fax: (850) 435-9135

January 12, 2001

Mr. Hildreth Cooper  
U.S. Fish and Wildlife Service  
1612 June Avenue  
Panama City, FL 32405-3721

Re: Preliminary Draft Integrated Natural Resources Management Plan, Naval Air Station  
Whiting Field Complex

Dear Mr. Cooper,

Per previous correspondence, E & E and the Navy would appreciate your review, comments and suggestions on the enclosed Preliminary Draft Integrated Natural Resources Management Plan for the Naval Air Station Whiting Field Complex.

Due to the Navy's implementation schedule, we would appreciate you adhering to a 60-day review period. If comments are not received by March 14, 2001 it will be assumed that your agency has no comments. To expedite this review process, we are more than willing to meet with you at your office to confer on any issues that you feel are warranted.

If you have questions concerning the document or schedule please feel free to give me a call at (850) 435-8925.

Sincerely,

David L. Trimm  
Project Manager

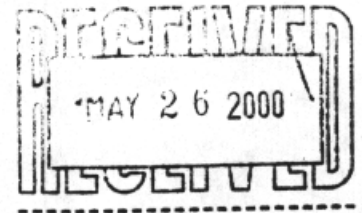
dlt

cc: P. Cline (SOUTHDIV)  
G. Gallagher (E & E)  
D. Heatwole (E & E)  
file



# United States Department of the Interior

FISH AND WILDLIFE SERVICE  
P. O. Drawer 1190  
Daphne, Alabama 36526



IN REPLY REFER TO:

May 25, 2000

Mr. David L. Trimm  
Ecology and Environment, Inc.  
220 West Garden Street, Suite 404  
Pensacola, FL 32501

Dear Mr. Trimm:

This is in response to your letter, dated April 12, 2000, requesting endangered species information pursuant to the preparation of an Environmental Assessment for Whiting Field Naval Air Station (NAS), Florida including Outlying Landing Fields (OLF) in Florida and Alabama.

The Daphne Field Office is responsible for those OLF facilities in Alabama and our comments will be directed to those facilities. Whiting Field and the OLF's within Florida is the responsibility of our Panama City Field Office that may be reached at (850) 769-0552.

The Service has determined that the following endangered or threatened species need to be considered in an Environmental Assessment for Wolf, Barin, Summerdale, Silverhill and Evergreen Outlying Landing Fields:

#### Baldwin County

Red-cockaded woodpecker	<i>Picoides borealis</i>
Bald eagle	<i>Haliaeetus leucocephalus</i>
Flatwoods salamander	<i>Ambystoma cingulatum</i>
Eastern indigo snake	<i>Drymarchon corais couperi</i>

#### Conecuh County

Red-cockaded woodpecker	<i>Picoides borealis</i>
Eastern indigo snake	<i>Drymarchon corais couperi</i>
Red hills salamander	<i>Phaeognathus hubrichti</i>
Gray bat	<i>Myotis grisescens</i>

If you have questions or need additional information, please call Mr. Bruce Porter at (334) 441-5181, ext 37.

Sincerely,

Larry E. Goldman  
Field Supervisor

# FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION



JAMES L. "JAMIE" ADAMS, JR.  
Bushnell

BARBARA C. BARSH  
Jacksonville

QUINTON L. HEDGEPEETH, DDS  
Miami

H.A. "HERKY" HUFFMAN  
Deltona

DAVID K. MEEHAN  
St. Petersburg

JULIE K. MORRIS  
Sarasota

TONY MOSS  
Miami

EDWIN P. ROBERTS, DC  
Pensacola

JOHN D. ROOD  
Jacksonville

ALLAN L. EGBERT, Ph.D., Executive Director  
VICTOR J. HELLER, Assistant Executive Director

OFFICE OF ENVIRONMENTAL SERVICES  
BRADLEY J. HARTMAN, DIRECTOR  
(850)488-6661 TDD (850)488-9542  
FAX (850)922-5679

May 22, 2000

Mr. David Trimm  
Ecology and Environment, Inc.  
220 West Garden Street, Suite 104  
Pensacola, FL 32501

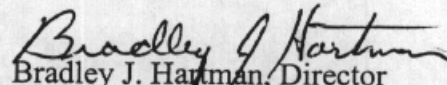
Re: Integrated Natural Resource  
Management Plan and Environmental  
Assessment for the Naval Air Station  
Whiting Field, Milton, Florida

Dear Mr. Trimm:

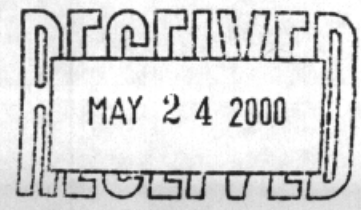
Your letter of April 13, 2000, to Dr. Allan Egbert has been referred to me for response. In your letter, you requested (1) input concerning natural resources in the vicinity of a set of sites associated with Whiting Field Naval Air Station, (2) a point of contact for consultation during the development of a natural resources management plan and an environmental assessment, and (3) the person ultimately responsible for the approval of the plan by our agency. The Office of Environmental Services (OES) of the Florida Fish and Wildlife Conservation Commission (FWC) is the part of our agency responsible for intergovernmental coordination on matters such as those described in your letter. Although we typically have no authority for approval of plans such as the one you describe, we are more than willing to provide you with information concerning fish and wildlife resources in the study area and to coordinate the review of the eventual documents within FWC. I am designating Mr. Rick McCann as our point of contact for this project. You may contact Mr. McCann in writing at the address above or by calling 850-488-6661.

If you need additional information concerning this matter, please contact either Mr. McCann or me at your earliest convenience.

Sincerely,

  
Bradley J. Hartman, Director  
Office of Environmental Services

ENV 1-1  
cc: Mr. Rick McCann





IN REPLY REFER TO:

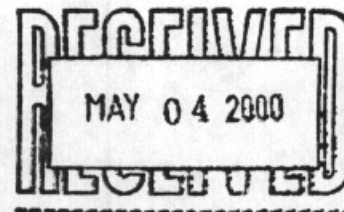
# United States Department of the Interior

## FISH AND WILDLIFE SERVICE

Field Office  
1612 June Avenue  
Panama City, FL 32405-3721

Tel: (850) 769-0552  
Fax: (850) 763-2177

May 2, 2000



David L. Trimm  
Project Manager  
Ecology and Environment, Inc.  
220 West Garden Street, Suite 404  
Pensacola, Florida 32501

FWS Log # 4-P-00-114  
NAS Whiting Field Complex  
Integrated Natural Resources  
Management Plan (INRMP)  
Escambia and Santa Rosa Counties, Florida  
Baldwin and Conecuh Counties, Alabama

Dear Mr. Trimm:

This is in response to your letter dated April 11, 2000, regarding preparation of an Integrated Natural Resources Management Plan (INRMP) for Naval Air Station (NAS) Whiting Field complex. Information also was requested for the Navy's preparation of an environmental assessment (EA) for implementation of the plan. The Whiting Field complex includes a total of 9,398 acres at 15 facilities in Florida and Alabama. We are responding for the Florida portion of the project and are providing recommendations pursuant to the requirements of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.). For the portions of your project that occur in Alabama, we recommend that you contact our Daphne Field Office at P.O. Drawer 1190, Daphne, Alabama 36526.

We have no site-specific information on federally listed species for most of the facilities, but we can provide county-wide information. Enclosed are tables of listed species and their habitats for Santa Rosa and Escambia counties in Florida. The tables are a combination of species occurrence and habitat information developed by the Florida Natural Areas Inventory (FNAI), and species status data compiled by the Florida Fish and Wildlife Conservation Commission (FWC).

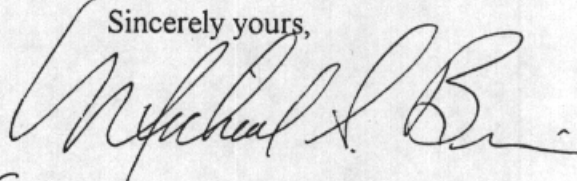
The FNAI is a statewide database housing extensive information on the occurrence of rare and endangered species and high quality natural communities in Florida. The FNAI can be

contacted at 1018 Thomasville Road, Suite 200-C, Tallahassee, Florida 32303, (850) 224-8207. The FWC may have additional information on State-listed species and important habitats. The FWC Environmental Services Division is at 620 South Meridian Street, Tallahassee, Florida 32399-1600, (850) 488-6661. We suggest coordinating with the FNAI and the FWC.

Although we do not have information for each of the facilities within the Whiting Field complex, we are aware of the documented occurrence of flatwoods salamanders (*Ambystoma cingulatum*) at Holley OLF. We have worked with the NAS Natural Resources Manager on issues related to management of salamander habitats. Potential impacts of the INRMP to salamanders and other listed species should be evaluated pursuant to Section 7(a)(2) of the Act. In addition, we recommend identification of management actions that would assist in the conservation and recovery of listed species pursuant to Section 7(a)(1) of the Act.

Thank you for your interest in listed species. If you have any questions or comments regarding the information provided, please contact Mr. Hildreth Cooper at extension 221.

Sincerely yours,



(for) Gail A. Carmody  
Project Leader

Enclosures (2)  
Santa Rosa County List  
Escambia County List

cc:  
FWS, Daphne, AL (w/incoming)

HC/kh/C:\endssp/4p00114