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NAS CECIL FIELD, FL
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WETLANDS IMPACT LETTER REPORT FOR PROPOSED REMEDIAL ACTION AT OPERABLE UNIT 5 (OU 5) SITE 15 BLUE 10 ORDNANCE DISPOSAL AREA NAS CECIL FIELD FL

3/28/2007

TETRA TECH NUS INC

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March 28, 2007

Mr. Russell Price
Florida Department of Environmental Protection
7825 Baymeadows Way
Suite 200B
Jacksonville, Florida 32256

Subject: Wetland Impacts from Proposed Remedial Action at Site 15, Blue 10 Ordnance Disposal Area, Former Naval Air Station Cecil Field, Jacksonville, Florida

Dear Mr. Price:

Tetra Tech NUS, Inc. (Tetra Tech) is under contract to Naval Facilities Engineering Command Southeast to design a remedial action addressing contaminated surface soils at Operable Unit (OU) 5, Site 15 (Blue 10 Ordnance Disposal Area) at the former Naval Air Station (NAS) Cecil Field (Figure 1). NAS Cecil Field is on the National Priorities List (NPL) of sites identified by the United States Environmental Protection Agency (EPA) as requiring priority cleanup under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The following letter describes wetland impacts that will be unavoidable if the Navy implements a remedial action to clean up contaminated soils at Site 15 in accordance with the National Contingency Plan (NCP) (40 CFR 3000.415). The Navy will submit a complete design package for the remedial action as soon as the design is complete.

The Navy requests that the Florida Department of Environmental Protection (FDEP) review the wetland impacts described below and indicate whether further action or authorizations are required. The Navy believes that because the remedial action will be performed in the context of CERCLA, and because FDEP will review the wetland impacts as part of its overall review of the action, formal application for wetland permits is not necessary. The Navy plans to minimize impacts to wetlands over the course of the remedial action and to restore all impacted wetlands to their approximate present condition after the remedial action is complete.

Site Description: Site 15, the Blue 10 Ordnance Disposal Area (and former trap and skeet range), is located in the southwestern part of the Yellow Water Weapons Area, a remote part of NAS Cecil Field (Figure 1). No actively used structures exist at the site, although several building foundations, burn pads, and a burn chamber remain. The site, which encompasses

approximately 110 acres, is situated approximately 1,400 feet east of Caldwell Branch, which drains into Yellow Water Creek (NAVFAC, 1997).

From the early 1940s to the mid 1950s, the site was used as a skeet range. Ordnance was disposed at Site 15 from the mid 1960s through 1977. Disposal consisted of burning ordnance materials in a large metal chamber and static firing of rockets. The ordnance disposal structures were located west of the skeet range. The majority of ordnance disposed at the site was burned and included small arms munitions up to 20 millimeters in size, parachute and distress flares, Mark IV signal cartridges, rocket igniters, cartridge-activated devices, and 2.75-inch and 5-inch rockets. Rocket propellant also was reportedly placed on the ground and ignited in the area of the burn chamber. An unexploded ordnance (UXO) survey completed at the site in 1995 found no UXO; however, several pieces of metal, shell casings, and similar items were located and removed (NAVFAC, 2003).

Wetland Delineation: Wetlands on Site 15 were delineated by J. Peyton Doub, Professional Wetland Scientist (PWS) of Tetra Tech, between October 1 and 3, 2003. The delineation followed both federal (Environmental Laboratory, 1987) and Florida (FDEP, 1994) wetland delineation procedures. A report documenting the wetland delineation and containing field data sheets with vegetation, soils, and hydrology data for points on representative transects for each wetland is provided as Attachment A. The wetland delineation identified areas meeting the definitions for wetlands established by the United States Army Corps of Engineers (COE) (33 CFR 328), EPA (40 CFR 230), and State of Florida (Chapter 62-340, F.A.C). Site conditions have not substantially changed since October 2003.

Six areas at NAS Cecil Field Installation Restoration (IR) Program Site 15 meet the federal technical criteria recognized by EPA and COE for delineation as wetlands. These areas are designated as Wetlands A, B, C, D, E, and F and are depicted on Figure 2. All are non-tidal, freshwater wetlands. Wetlands A, C, D, and E possess surface connections to tributaries that ultimately discharge into navigable waters of the United States and thus are “adjacent” wetlands subject to regulation under Section 404 of the Clean Water Act. Wetland B is separated from Wetland A and its connection to navigable waters by a narrow road bed and thus would likely to be regarded as an “adjacent” wetland subject to Section 404 jurisdiction. Wetland F is contained within a small excavated pit situated more than 50 feet from the nearest wetland or other surface water. Wetland F is therefore likely to be regarded as an “isolated” wetland not under Section 404 jurisdiction.

All of the wetlands delineated at Site 15 meet the State definition of wetlands under Chapter 62-340 of the Florida Administrative Code (F.A.C.). Although the State wetland delineation methodology

(FDEP, 1994) differs from the federal methodology recognized by EPA and COE (Environmental Laboratory, 1987), the different methodologies resulted in the same sequence of wetland boundaries at Site 15. In contrast to Section 404, the Florida statutes for wetland protection do not distinguish between "adjacent" and "isolated" wetlands. Therefore, impacts to Wetland F as well as impacts to Wetlands A, B, C, D, and E are subject to Florida jurisdiction.

The three largest wetlands delineated at Site 15 (Wetlands A, C, and D) appear to be wetlands of natural origin. All appear to provide good habitat for terrestrial wildlife and could play substantial roles in exporting nutrients and prey sources (production export) to downgradient aquatic habitats in tributaries to Yellow Water Creek. All could be of substantial value as natural features of aesthetic and scientific value should Site 15 and surrounding lands ever be opened to the public. The three smaller wetlands (Wetlands B, E, and F) appear to be of man-made origin and are clearly of lower significance with respect to wetland values and functions than are Wetlands A, C, and D. Wetland B appears to be the result of ponded water resulting from a man-made road bed. Wetland E appears to be a man-made drainage ditch, and Wetland F is a man-made excavation pit.

Description of Proposed Remedial Action: The remedial action calls for excavation and proper off-site disposal of approximately 11,854 cubic yards of contaminated soil from 17 areas totaling approximately 315,439 square feet (7.25 acres) (Table 1 and Figure 3). Each area of proposed soil excavation is assigned an identifying letter (Excavation Areas A through Q). The Excavation Area identifications are independent of the letter identifications for the delineated wetlands. Excavation Area F includes separate sub-areas (F1 through F4), and Excavation Area L1 includes Area L2 within its boundaries. The depth of excavation will be 1 foot in all areas except Area F (0.095 acre), which will be excavated to a depth of 2 feet or to the water table (whichever is less), and Area L2 (0.01 acre), which will be excavated to 1 foot below the rest of Area L1 (to 2 feet). The soil proposed for excavation is contaminated by lead, benzo(a)pyrene (BaP), arsenic, and/or total recoverable petroleum hydrocarbons (TRPH) at concentrations exceeding remedial action concentrations protective of human health and the environment.

Anticipated Wetland Impacts: The proposed remedy includes excavation of approximately 382 cubic yards of contaminated soil from approximately 7,874 square feet (0.18 acre) of delineated wetlands (Table 1 and Figure 3) including the following:

- Excavation of approximately 20 cubic yards of soil contaminated by arsenic from approximately 266 square feet of Wetland D (Excavation Areas F1 and F2).
- Excavation of approximately 4 cubic yards of soil contaminated by BaP from approximately 57 square feet of Wetland D (Excavation Area F3).

- Excavation of approximately 157 cubic yards of soil contaminated by lead and arsenic from approximately 2,113 square feet of Wetland D (Excavation Area F4).
- Excavation of approximately 22 cubic yards of soil contaminated by BaP from approximately 590 square feet of Wetland B (Excavation Area O).
- Excavation of approximately 180 cubic yards of soil contaminated by lead from approximately 4,848 square feet of Wetland A (Excavation Area P).

Most of the Excavation Areas affecting wetlands are positioned at the edge of the wetland, and thus equipment can be staged in uplands and access gained to the contaminated wetland soils without any physical disturbance of uncontaminated wetlands. Excavation Areas F1 and F4 are located in the interior of Wetland D rather than at the edge, hence as much as 1,000 square feet of additional wetland surface disturbance in Wetland D will be necessary for equipment to gain access to the contaminated soils. Therefore, surface area disturbance within wetlands will total approximately 8,874 square feet (0.20 acre), including the approximately 7,874 square feet of contaminated wetland soil area plus an additional 1,000 square feet of wetland disturbance to gain access to Excavation Areas F1 and F4.

Efforts to Avoid Wetland Impacts: It is not possible to remedy the contaminated soil identified within the wetlands at Site 15 (approximately 382 cubic yards) without disturbing the overlying vegetation and ground surface. Taking no action would leave humans and ecological receptors entering the wetlands exposed to potentially harmful concentrations of arsenic, lead, BaP, and TRPH in the contaminated soils. Because the indicated contamination is located in wetlands, excavation and off-site disposal of contaminated soil is not possible without disturbing the wetlands. The wetland impacts resulting from the remedial action are therefore unavoidable. Not addressing the contamination would result in continued exposure of human and ecological receptors to adverse effects from the contamination. Leaving the contaminated soil in place and constructing a cap or other barrier to prevent receptor exposure would still require disturbing the subject wetlands.

Efforts to Minimize Wetland Impacts: The Navy will minimize disturbance to wetlands during the remedial action by staging excavation equipment outside of the wetlands. Prior to ground disturbance, the Navy will install silt fences around the perimeter of each area of soil contamination. The silt fences will minimize sedimentation of adjoining undisturbed wetlands during the remedial action. The silt fences will be left in place until the excavated areas are vegetatively stabilized.

Proposed Compensatory Wetland Mitigation: After the contaminated surface soils have been excavated for proper off-site disposal, the site will be available for restoring the wetlands in place

*(*in situ). The proposed compensatory wetland mitigation therefore consists of restoring the affected wetlands to a condition approximating their existing condition. The existing grade in the affected wetlands will be restored using clean fill soil and topsoil. Because the remedy does not involve adding an impervious surface to the site or surrounding landscape, the existing hydrological properties of the wetlands would be automatically restored once the existing grade is recreated.

All fill soil will consist of soil with a United States Department of Agriculture (USDA) textural class of sand, loamy sand, or sandy loam. A minimum of 6 inches of topsoil will be placed over the surface of the restored wetland area. The topsoil will consist of soil with a USDA textural class of loamy sand or sandy loam and a minimum organic matter content of 5 percent. All soil placed at the restored wetland will be obtained from sites free of the invasive wetland plant Phragmites (*Phragmites australis*) or will be treated prior to site application to kill Phragmites propagules. Fertilizer with a guaranteed analysis of 10-20-20 will be broadcast by hand over the soil surface at a rate of approximately 400 pounds per acre. The soil surface will then be disked to a minimum depth of 4 inches to incorporate the fertilizer and prepare a seedbed.

The soil surface will then be planted in accordance with Table 2. Herbaceous cover will be established by broadcast seeding switchgrass (*Panicum virgatum*), deertongue grass (*Dichanthelium clandestium*), and a nurse crop by hand at the rates indicated in Table 2. Switchgrass and deertongue grass are warm-season grasses typical of seasonally saturated or shallowly inundated wetlands. Both are of good value as food and cover for most waterfowl and many terrestrial birds and mammals. They are recognized as providing good erosion control. Both are indigenous to the coastal plain throughout the East Coast, including most of Florida. Neither is invasive. Neither produces allelopathic effects in soil whereby root secretions inhibit the natural establishment of other vegetation. They are commercially available as seed, but it may be necessary to purchase the seed from a supplier of native plant seed.

Because warm-season grasses can take two or more growing seasons to germinate and grow a dense stand, a seasonal nurse crop consisting of a fast-growing cool-season grass will also be planted to provide temporary cover until the warm-season grasses mature. The specific grass species used as the nurse crop will depend on the time of year planting takes place, as indicated in Table 2. Although the nurse crop species are not regionally indigenous, none are invasive and none should substantially hinder growth of the warm-season grasses.

Tree and shrubs will not be planted. It is expected that adjoining areas of intact vegetation will serve as a natural seed source to drive natural succession of the restored wetlands and uplands at the site toward native forest vegetation.

Proposed Maintenance and Monitoring: The completed wetland restoration project will be monitored for a minimum of two growing seasons following planting or until the vegetation has successfully established. Inspections will be conducted at least once annually by a qualified biologist during the latter part of the growing season, preferably sometime during the months of August through November. The inspections will include quantitative estimates of depth to soil saturation (or depth of inundation) and estimates of percent cover by regionally indigenous wetland vegetation. The inspections will also include qualitative observations on the presence of non-native invasive plant species (such as *Phragmites australis*), insect pests, and diseases.

Supplemental seeding will be performed if percent cover by the nurse crop is less than 75 percent in any area following the first growing season or if percent cover by warm-season grasses (or other non-invasive, regionally indigenous, perennial herbaceous plants) is less than 75 percent in any area following the second growing season. Supplemental seeding will be performed only in those parts of the project where the above coverage objectives are not met. A decision will be made at the time of inspection whether the supplemental seeding should utilize the same or a different plant species. If a species fails to establish well anywhere on the project site, the inspector may decide to substitute another non-invasive, regionally indigenous species.

Coverage consisting of planted (seeded) species and other non-invasive plant species that have volunteered on the site will be counted toward assessing whether the coverage objectives for the first growing season are met. Coverage consisting of the planted (seeded) warm-season grasses and other non-invasive, regionally indigenous, perennial herbaceous plants that have volunteered on the site will be counted toward assessing whether the coverage objectives for the second growing season are met.

Please call me at (301) 528-3089 if you have any questions regarding wetlands issues or Chris Neumann at (412) 921-8530 if you have any general questions about the project.

Sincerely,

for J. Peyton Doub, CEP, PWS
Professional Wetland Scientist #358

References

Environmental Laboratory, 1987. Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Mississippi.

FDEP (Florida Department of Environmental Protection), 1994. The Florida Wetland Delineation Manual. Prepared in cooperation with the South Florida Water Management District, St. Johns River Water Management District, Suwannee River Water Management District, Southwest Florida Water Management District, and Northwest Florida Water Management District.

NAVFAC (Naval Facilities Engineering Command, Southern Division), 1997. Remedial Investigation, Operable Unit 5, Sites 14 and 15, Naval Air Station Cecil Field, Jacksonville, Florida. Prepared by ABB Environmental Services, Inc., Tallahassee, Florida.

NAVFAC (Naval Facilities Engineering Command, Southern Division), 2003. Health and Safety Plan for Groundwater Monitoring and Wetland Delineation, Operable Unit 5, Site 15, Naval Air Station Cecil Field, Jacksonville, Florida. Prepared by Tetra Tech NUS, Inc., Pittsburgh, Pennsylvania. September.

Table 1
Areas Proposed for Excavation of Contaminated Soils
Site 15, Former NAS Cecil Field, Florida

Excavation Area	Percent in Wetland	Wetland Affected	Classi-fication	Description (October 2003)	Excavation Area (Square Feet)		Depth of Excavation	Excavation Volume (Cubic Yards)		Contaminant
					Total	Wetland		Total	Wetland	
A	0	None	N/A		3,205	0	1	119	0	Lead
B	0	None	N/A		14,981	0	1	555	0	Lead
C	0	None	N/A		2,904	0	1	108	0	Lead
D	0	None	N/A		19,454	0	1	721	0	Lead
E	0	None	N/A		64,080	0	1	2,373	0	BaP
F1	100	Wetland D	PFO	Depressional area with Pond Cypress and Slash Pine, mostly under 6" DBH	108	108	2	8	8	Arsenic
F2	20	Wetland D	PFO		791	158	2	59	12	Arsenic
F3	5	Wetland D	PFO		1,132	57	2	84	4	BaP
F4	100	Wetland D	PFO		2,113	2,113	2	157	157	Lead/Arsenic
G	0	None	N/A		14,446	0	1	535	0	BaP
H	0	None	N/A		16,503	0	1	611	0	BaP
I	0	None	N/A		22,749	0	1	843	0	BaP
J	0	None	N/A		6,308	0	1	234	0	BaP
K	0	None	N/A		4,404	0	1	163	0	BaP
L1[(1)]	0	None	N/A		94,477	0	1	3,499	0	BaP
L2[(1)]	0	None	N/A		448	0	1	17	0	TRPH
M	0	None	N/A		353	0	1	13	0	Lead
N	0	None	N/A		16,249	0	1	602	0	Lead
O	5	Wetland B	PFO	Low ditch with planted Slash Pine, mostly under 6" DBH.	11,802	590	1	437	22	BaP
P	30	Wetland A	PFO	Depressional area with Slash Pine and some Pond Cypress, mostly under 8" DBH.	16,159	4,848	1	599	180	Lead
Q	0	None	N/A		3,219	0	1	119	0	Lead
TOTAL					**315,439**	**7,874**		**11,854**	**382**	

1 All of Area L1 will be excavated to 1 foot below ground surface. Area L2, which is within Area L1, will be excavated an additional 1 foot (to 2 feet below ground surface). The total surface area of L1 (94,477 square feet) includes the surface area of L2 (448 square feet).

Table 2
NAS Cecil Field Site 15
Proposed Seeding Mix

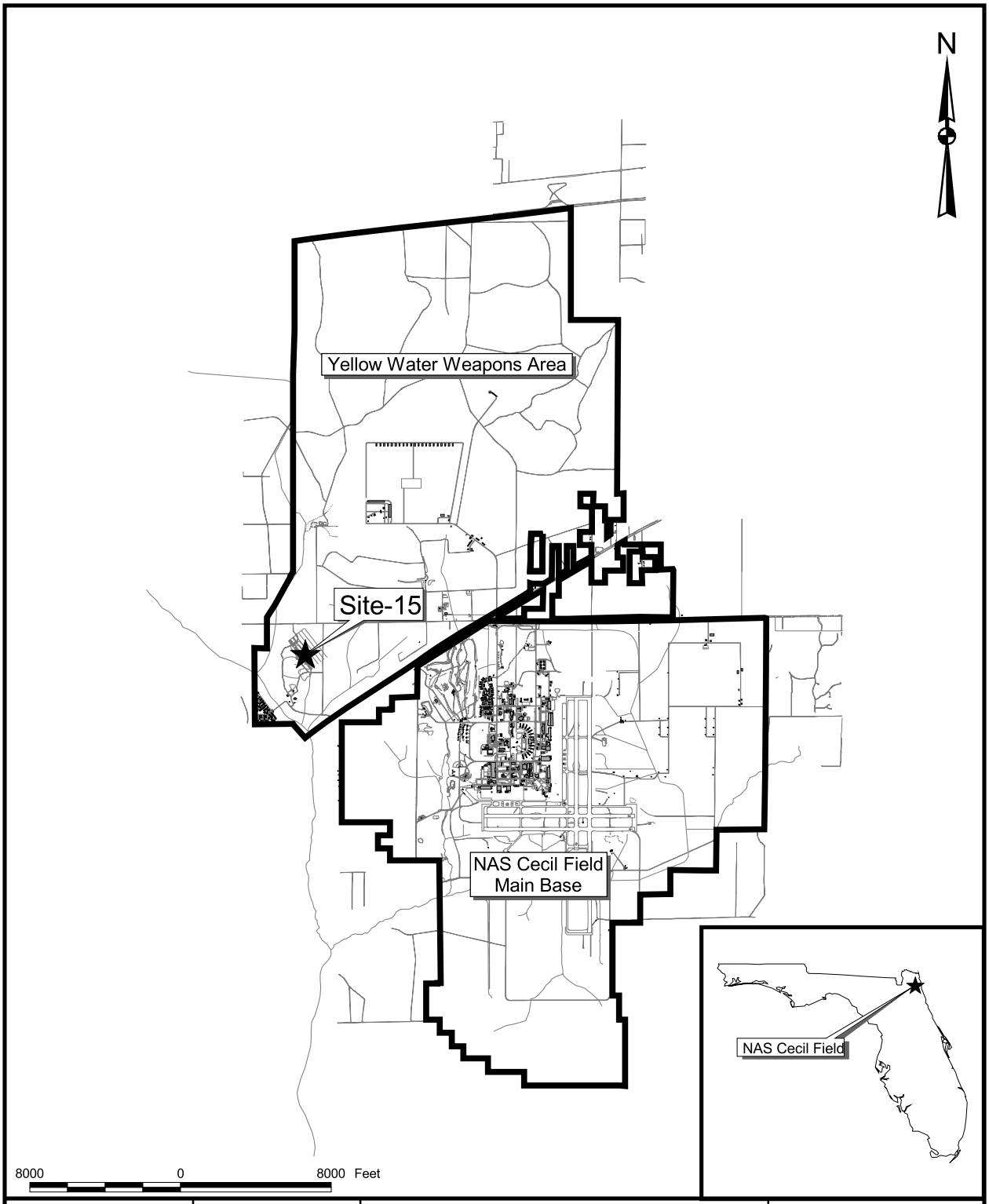
Scientific Name	Common Name	Seeding Rate (lb. PLS/A[1])	Comments
Panicum virgatum	Switchgrass	25	Warm-season grass typical of seasonally saturated or shallowly inundated wetlands. Good value to wildlife. FACW[(2)].
Dichanthelium clandestium	Deertongue Grass	12	Warm-season grass typical of seasonally saturated or shallowly inundated wetlands. Good value to wildlife. FACW[(2)].
Seasonal Nurse Crop[(3)]		20	Feb. 1 – Apr. 30: Annual Rye May 1 – Aug. 31: Foxtail Millet Sep. 1 – Nov. 15: Annual Rye Nov.15 – Jan. 31: Winter Rye These cool season grasses are introduced but not invasive.

Notes:

1. PLS/A = Pounds Pure Live Seed per Acre. To calculate PLS, multiply actual weight by [(Percent Purity of the Seed X Germination Percentage)/100].

2. FACW = Facultative Wetland. Refers to plant species recognized as naturally occurring in wetlands 67 – 99 percent of the time.

3. Because seed of most warm seeded grasses can require 2 to 3 weeks to germinate, faster germinating “nurse crops” are often sown to provide earlier temporary stabilization.



DRAWN BY MJJ	DATE 14Jan00	LOCATION MAP OU 5, SITE 15 NAS CECIL FIELD JACKSONVILLE, FLORIDA	CONTRACT NUMBER 7653
CHECKED BY	DATE		APPROVED BY DATE
COST/SCHEDULE-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 1 / REV 0

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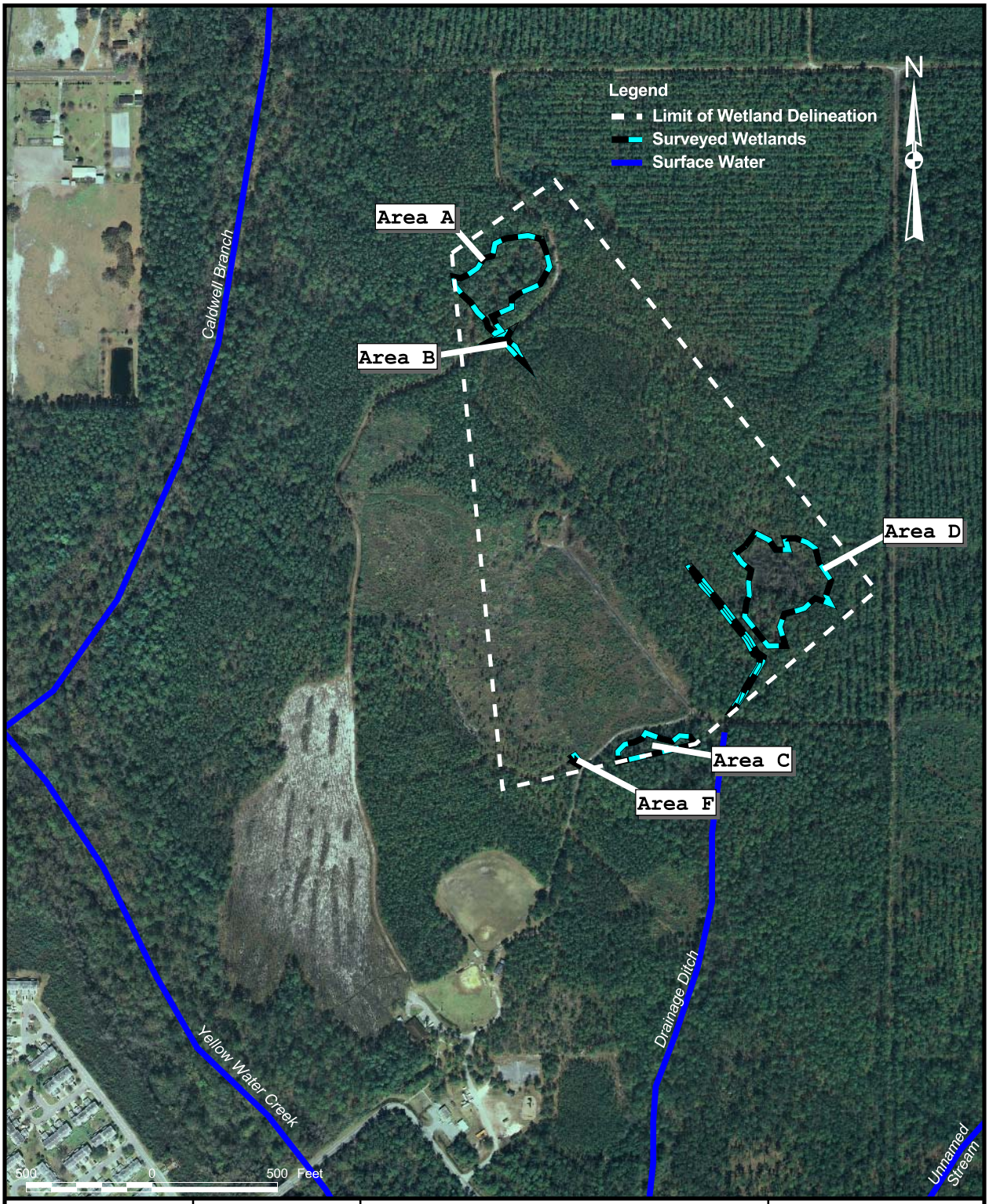

DRAWN BY MJJ	DATE 02Jan07	WETLANDS DELINEATION MAP OPERABLE UNIT 5, SITE 15 NAVAL AIR STATION CECIL FIELD JACKSONVILLE, FLORIDA	CONTRACT NUMBER 7653
CHECKED BY	DATE		APPROVED BY DATE
COST/SCHEDULE-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 2 / REV 0

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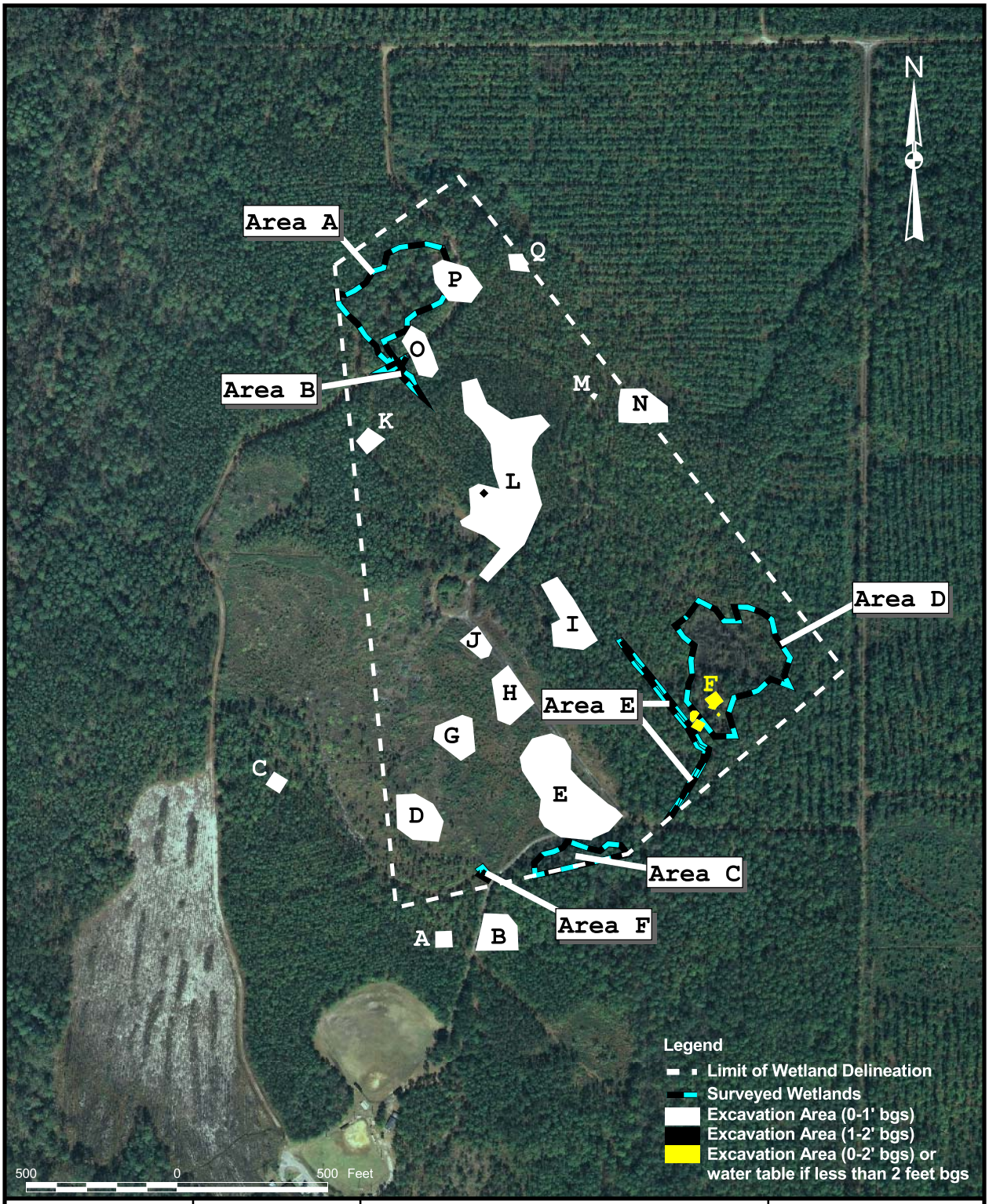

DRAWN BY MJJ	DATE 02Jan07	PROPOSED SOIL EXCAVATION AREAS OPERABLE UNIT 5, SITE 15 NAVAL AIR STATION CECIL FIELD JACKSONVILLE, FLORIDA	CONTRACT NUMBER 7653
CHECKED BY	DATE		APPROVED BY DATE
COST/SCHEDULE-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 3 / REV 0

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ATTACHMENT A

Wetland Delineation Report
Site 15
Former NAS Cecil Field, Florida
December 2003

Wetland Delineation Report
for
Operable Unit 5, Site 15

Naval Air Station Cecil Field
Jacksonville, Florida

Southern Division
Naval Facilities Engineering Command
Contract Number N62467-94-D-0888

Contract Task Order 0039

December 2003

120301/P

WETLAND DELINEATION REPORT
FOR
OPERABLE UNIT 5, SITE 15

NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT

Submitted to:
Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
North Charleston, South Carolina 29406

Submitted by:
Tetra Tech NUS, Inc.
661 Andersen Drive
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CONTRACT NUMBER N62467-94-D-0888
CONTRACT TASK ORDER 0039

DECEMBER 2003

PREPARED UNDER THE SUPERVISION OF:

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ACRONYMS

ABB-ES	ABB Environmental Services, Inc.
BCT	BRAC Cleanup Team
BRAC	Base Realignment and Closure
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CLEAN	Comprehensive Long-Term Environmental Action Navy
CFR	Code of Federal Register
COE	United States Army Corps of Engineers
CTO	Contract Task Order
DBH	Diameter at breast height
F.A.C.	Florida Administrative Code
FAC	Facultative plant
FACU	Facultative upland plant
FACW	Facultative wet plant
FDEP	Florida Department of Environmental Protection
FLUCFCS	Florida Land Use, Cover, and Form Classification System
FWS	United States Fish and wildlife Service
HASP	Health and Safety Plan
IR	Installation Restoration
NAS	Naval Air Station
NAVFACENGCOM	Naval Facilities Engineering Command
NRCS	Natural Resources Conservation Service
NPL	National Priorities List
OBL	Obligate plant
OU	Operable Unit
PFO	Palustrine Forested
SAF	Society of American Foresters
SCS	Soil Conservation Service
TtNUS	Tetra Tech NUS, Inc.
UPL	Upland plant
USC	United States Code
USCS	United Soil Classification System
U.S. EPA	United States Environmental Protection Agency
UST	Underground storage tank
UXO	Unexploded ordnance
WRPA	Wetlands Rapid Assessment Procedure

1.0 INTRODUCTION

A wetland delineation was conducted in October 2003 for that part of the Naval Air Station (NAS) Cecil Field in Jacksonville, Florida designated as Installation Restoration (IR) Program Site 15. Chemical contamination on Site 15 will be remediated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) [42 United States Code (USC) 9601 *et seq.*]. The delineation was performed by J. Peyton Doub, CEP, PWS of the Germantown, Maryland office of Tetra Tech NUS and Michael Whitten of the Aiken, South Carolina office of Tetra Tech NUS. The delineation identified areas meeting the definition of wetlands used by the U.S. Environmental Protection Agency (U.S. EPA) and U.S. Army Corps of Engineers (COE) under Section 404 of the Clean Water Act (33 USC 1344). The delineation also identified areas meeting the definition of wetlands used by the Florida Department of Environmental Protection (FDEP) and St. Johns River Water Management District under Chapter 62-340 of the Florida Administrative Code (F.A.C.).

Federal Wetland Definition: The definition of wetlands recognized by COE and U.S. EPA is:

> "those areas that are inundated or saturated 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" [40 Code of Federal Register (CFR) 230.3 and 33 CFR 328.3].

Under this definition, wetlands may be either under the influence of tides (tidal) or unaffected by tides (nontidal). All wetlands in western Duval County, Florida (which includes NAS Cecil Field) are nontidal wetlands.

State of Florida Wetland Definition: Wetlands are defined in Subsection 373.019(17) of the Florida Statutes as:

> "those areas that are inundated or saturated by surface water or ground water at a frequency and a duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soils. Soils present in wetlands generally are classified as hydric or alluvial, or possess characteristics that are associated with reducing soil conditions. The prevalent vegetation in wetlands generally consists of facultative or obligate hydrophytic macrophytes that are typically adapted to areas having soil conditions described above. These species, due to morphological, physiological, or reproductive adaptations, have the ability to grow, reproduce or persist in aquatic environments or anaerobic soil conditions. Florida wetlands generally include swamps, marshes, bayheads, bogs, cypress domes and strands,

sloughs, wet prairies, riverine swamps and marshes, mangrove swamps and other similar areas. Florida wetlands generally do not include longleaf or slash pine flatwoods with an understory dominated by saw palmetto."

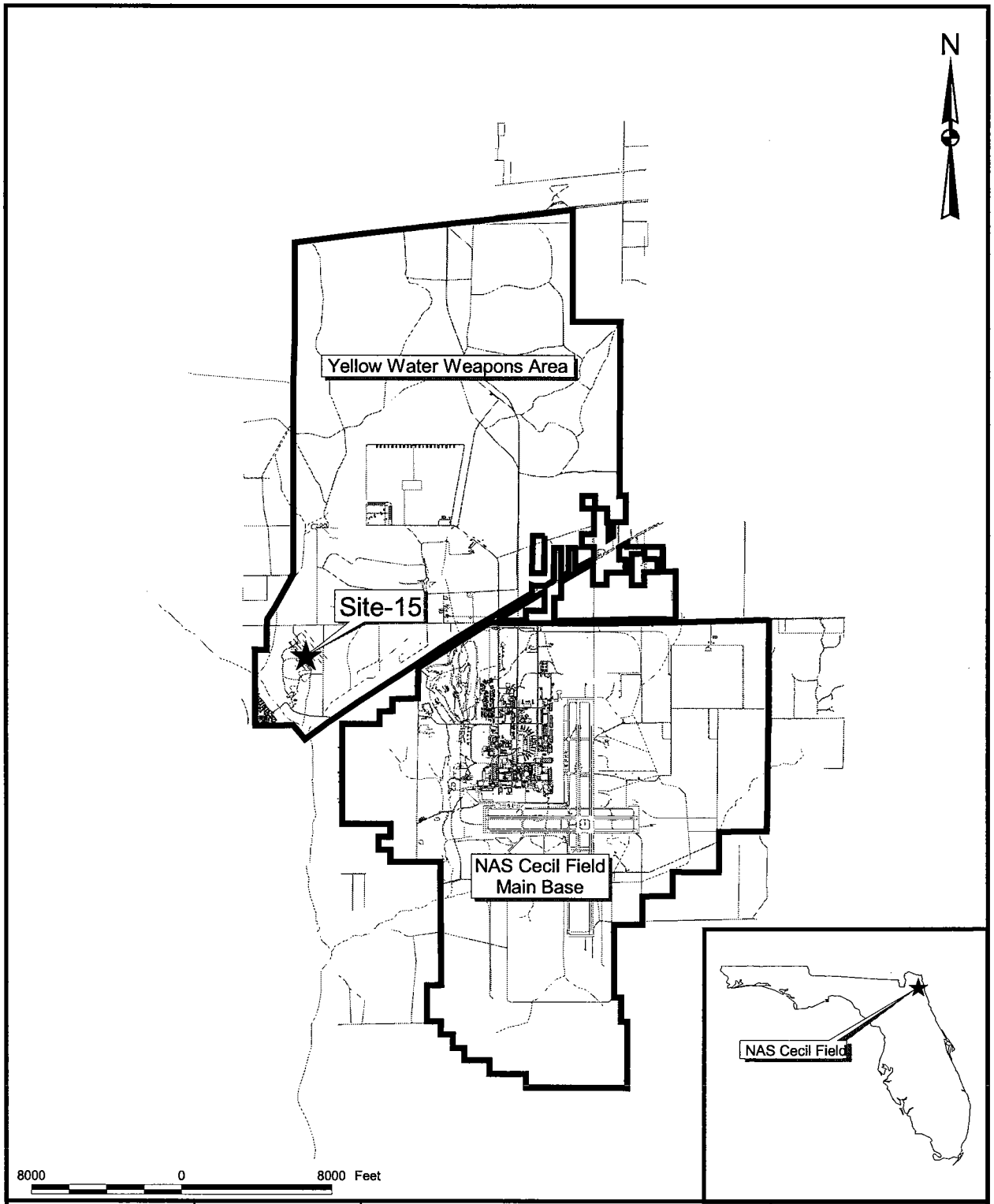
The federal and the Florida wetland definitions are generally similar. However, the Florida definition specifically clarifies that certain pine flatwood settings dominated by longleaf pine (*Pinus palustris*) or slash pine (*Pinus elliottii*) with an understory of saw palmetto (*Serenoa repens*) are not wetlands, even if they contain poorly drained soils that experience surface saturation for brief periods following heavy rainfall.

Overview of NAS Cecil Field: NAS Cecil Field is located in western Duval County, Florida, within the limits of the City of Jacksonville (Figure 1-1). In 1989, NAS Cecil Field was placed on U.S. EPA's CERCLA National Priorities List (NPL) as a result of pollution resulting from past waste disposal practices that predate CERCLA. In 1990, the Navy entered into a Federal Facilities Agreement with U.S. EPA to define the overall extent of contamination. NAS Cecil Field was closed in 1999 under the Base Closure and Realignment Act (BRAC). NAS Cecil Field includes approximately 35 individual sites where hazardous wastes may have been handled, spilled, or buried. As a result, work at the various sites has been grouped into eight operable units (OUs), as well as more than 100 other areas undergoing evaluation in the BRAC Underground Storage Tank (UST) program (TtNUS, 2003).

Overview of Site 15: Site 15, the Blue 10 Ordnance Disposal Area (and former trap and skeet range), is located in the southwestern part of the Yellow Water Weapons Area, a remote part of NAS Cecil Field (Figure 1-2). No actively used structures exist at the site, although several building foundations, burn pads, and a burn chamber remain. The site, which encompasses approximately 110 acres, is situated approximately 1,400 feet east of Caldwell Branch, which drains into Yellow Water Creek (ABB-ES, 1997).

From the early 1940s to the mid 1950s, the site was used as a skeet range. Ordnance was disposed of at Site 15 from the mid 1960s through 1977. Disposal consisted of burning ordnance materials in a large metal chamber and static firing of rockets. The ordnance disposal structures were located west of the skeet range. The majority of ordnance disposed of at the site was burned and included small arms munitions up to 20 millimeters in size, parachute and distress flares, Mark IV signal cartridges, rocket igniters, cartridge activated devices, and 2.75-inch and 5-inch rockets. Rocket propellant also was reportedly placed on the ground and ignited in the area of the burn chamber. An unexploded ordnance (UXO) survey completed at the site in 1995 found no UXO; however, several pieces of metal, shell casing, and similar items were located and removed (TtNUS, 2003).

Vegetative communities identified on Site 15 and adjoining areas in a 1995 site reconnaissance include mesic and wet slash pine flatwoods, disturbed uplands, mesic and wet mixed pine/hardwoods, pine flatwoods with attributes of a dry prairie, floodplain swamps with cypress dome swamp characteristics, man-made drainage ditches, and tannin-stained tributaries (ABB-ES, 1997). Investigations since 1995 have condensed the site to a smaller area consisting of mesic and wet pine flatwoods, disturbed uplands, mesic and wet mixed pine/hardwoods, and man-made drainage ditches. Of these habitats, wet pine flatwoods [generally corresponding to Florida Land Use, Cover, and Forms Classification System (FLUCFCS) Code 620], wet mixed pine/hardwoods (generally corresponding to FLUCFCS Code 630), and the man-made drainage ditches are wetland habitats. Mesic pine flatwoods (generally corresponding to FLUCFCS Code 411), mesic mixed pine/hardwoods (generally corresponding to FLUCFCS Code 434) and disturbed uplands are upland habitats. Almost all of the mesic pine flatwoods and mesic pine/hardwoods have been strongly influenced by past logging and planting of slash pine and might thus be better characterized as pine plantation land (FLUCFCS Code 441). A large area of mesic pine flatwoods in the central part of the site was recently clearcut and presently supports herbaceous and woody shrub and seedling vegetation, with scattered volunteer slash pine seedlings.



DRAWN BY MJJ	DATE 04Dec03	GENERAL LOCATION MAP OU 5, SITE 15 WETLAND DELINEATION REPORT NAS CECIL FIELD JACKSONVILLE, FLORIDA	CONTRACT NUMBER 7653
CHECKED BY	DATE		APPROVED BY DATE
COST/SCHEDULE-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 1-1 / REV 0

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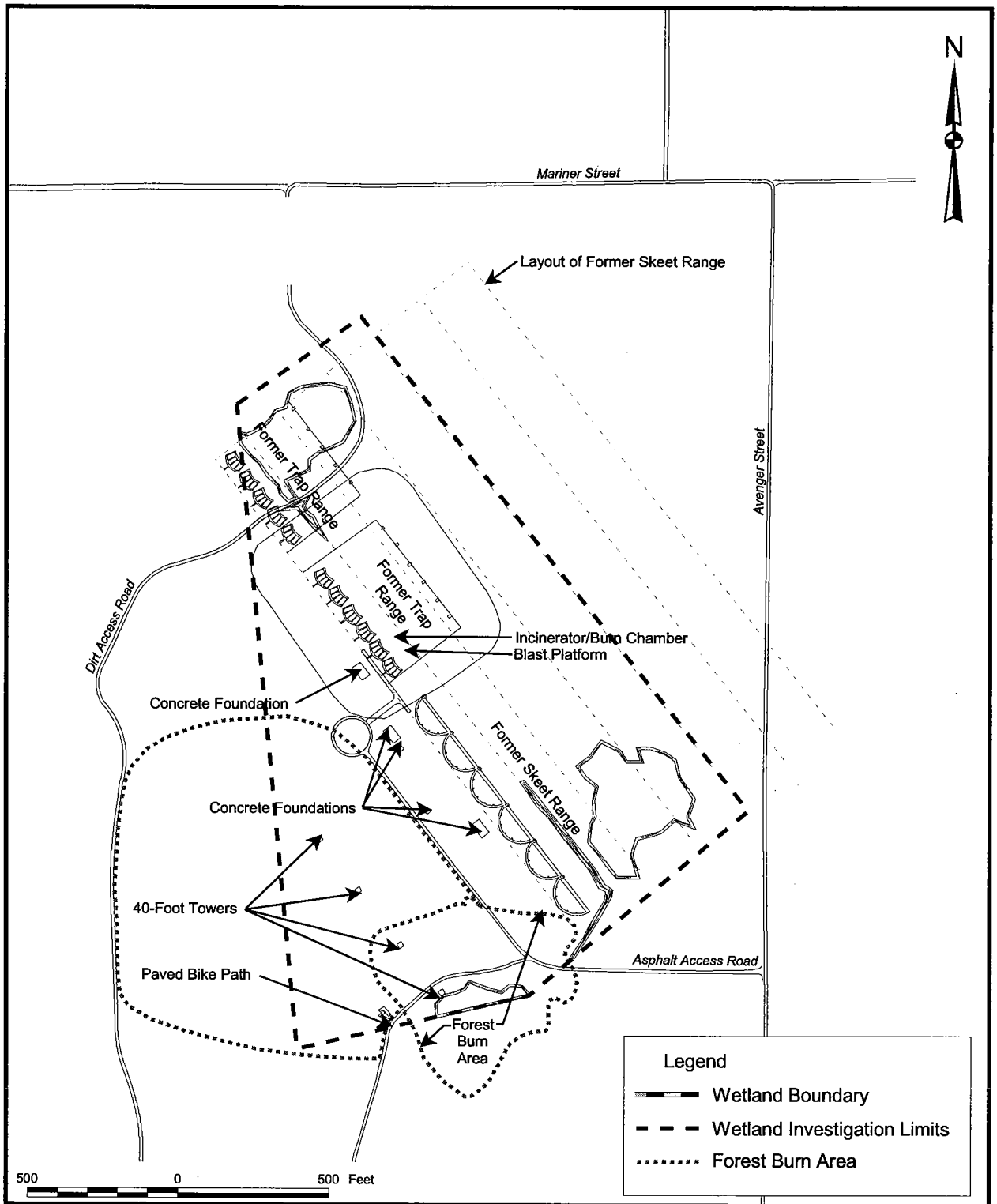

DRAWN BY	DATE			CONTRACT NUMBER
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COST/SCHEDULE-AREA				APPROVED BY / DATE
SCALE				DRAWING NO. / REV
AS NOTED				FIGURE 1-2 / 0

SITE MAP
OU 5, SITE 15
WETLAND DELINEATION REPORT
NAS CECIL FIELD
JACKSONVILLE, FLORIDA

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2.0 METHODOLOGY

Fieldwork for the wetland delineation was conducted between October 1 and 3, 2003. The wetland delineation followed two methodologies:

1) the routine onsite methodology outlined in the COE Wetlands Delineation Manual (1987 Manual) (Environmental Laboratory, 1987) and the COE memorandum on clarification and interpretation of that manual (COE, 1992); and
2) methodology outlined in the Florida Wetlands Delineation Manual (FDEP, 1994)

Federal Methodology: With a few exceptions referred to as problem areas, any area identified as a wetland according to the federal methodology (1987 Manual) must display positive evidence of each of the following three parameters indicative of wetland conditions:

- Hydrophytic Vegetation – Defined as the sum total of macrophytic plant life growing in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content (Environmental Laboratory, 1987).

- Hydric Soil – Defined as a soil that is saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions that favor the growth and regeneration of hydrophytic vegetation (Environmental Laboratory, 1987). The 1987 Manual includes a list of field indicators of hydric soils for sandy and non-sandy soils which is designed for national application. The COE also allows the use of an expanded list of hydric soil field indicators that was developed by the National Technical Committee for Hydric Soils (NRCS, 1998).

- Wetland Hydrology – Defined as the sum total of wetness characteristics in areas that are inundated or have saturated soils for a sufficient duration to support hydrophytic vegetation (Environmental Laboratory, 1987). The 1987 Manual includes a list of six "primary" field indicators of wetland hydrology, designed for national application; and the COE has developed additional "secondary" field indicators that provide corroborating evidence of wetland hydrology (COE, 1992).

State of Florida Methodology: The Florida methodology requires that an area meet one of four tests to be identified as wetlands. Applying the tests requires that the vegetation, soils, and hydrology be characterized. To characterize the vegetation, the percent aerial cover for each plant species at representative locations must be estimated. The Florida methodology assigns one of the wetland indicator statuses listed in Table 2-1 to each plant species. The methodology requires identification of

one or more field indicators to determine whether hydric soils and wetland hydrology are present. The tests include:

- "A" Test [62-340.300(2)(a), F.A.C.]: The percent aerial cover by obligate (OBL) plant species must exceed the percent aerial cover by upland (UPL) plant species; and the presence of one or more field indicators of hydric soils <u>or</u> wetland hydrology.

- "B" Test [62-340.300(2)(b), F.A.C.]: The percent aerial cover by OBL and facultative wetland (FACW) plant species must total at least 80 percent of the total percent aerial cover by OBL, FACW, and UPL plant species; and the presence of one or more field indicators of hydric soils <u>or</u> wetland hydrology.

- "C" Test [62-340.300(2)(c), F.A.C.]: The presence of hydric soils in areas that have not been subject to artificial drainage, and are not pine flatwoods or improved pastures. Because Site 15 includes areas of pine flatwoods, the "C" Test can not be used.

- "D" Test [62-340.300(2)(d), F.A.C.]: The presence of field indicators for both hydric soils <u>and</u> wetland hydrology.

The FDEP has developed a list of field indicators applicable to those physiographic areas occurring in Florida (FDEP, 2003). Section 62-340.500 of the F.A.C. lists 13 field indicators of wetland hydrology. The Florida lists of hydric soil and wetland hydrology field indicators differ somewhat from the national lists recognized by the COE and U.S. EPA. Determining the presence of hydric soils and wetland hydrology for use in the Florida methodology requires the use of the field indicators approved by FDEP.

Description of Fieldwork: The fieldwork commenced with walking the site to identify areas potentially meeting the federal and/or Florida definitions of wetlands. Representative data collection points were selected at each potential wetland to record data used as the basis for determining the boundary. The data points were oriented on representative transects perpendicular to the hydrological gradient. For each transect, one data point was positioned approximately 10 feet down-gradient of the boundary (i.e., inside of the wetland) and one data point was positioned approximately 10 feet up-gradient of the boundary (i.e., outside of the wetland). For boundaries where the transition from wetlands to uplands is gradual, an additional data point was positioned on the boundary.

The percent aerial cover for each plant species in each vegetative stratum (tree canopy, subcanopy, and ground cover, as defined in Section 62-340.200 F.A.C.) was estimated for circular plots surrounding each data point (Table 2-2). Wetland indicator statuses developed by the U.S. Fish & Wildlife Service (FWS) (Reed, 1988; Table 2-3) and by the FDEP (in the "Vegetative Index" in Section 62-340.450 of the F.A.C.;

Table 2-1) were assigned to each plant species. A soil pit was hand augured at each data point location to a minimum depth of 18 inches and the color, texture, and other descriptive data were recorded for each encountered soil horizon. These observations were used to determine whether field indicators of hydric soils, as listed in the 1987 Manual and by the FDEP (FDEP, 2003), were present. Surface and subsurface observations were made at each data point to determine which field indicators of wetland hydrology, as listed in the 1987 Manual and Section 62-340.500 F.A.C., were present.

Wetland delineation data sheets presenting vegetation, soil, and hydrology data for each data point were completed and are provided in Appendix A. The data sheets are patterned after the format that is recommended by the COE (1992) but have been modified to present data required for the Florida methodology as well. Six wetland areas were identified on the site (designated as Wetlands A through F, see Section 3.0). Each wetland boundary was marked in the field using wooden stakes and orange ribbon. Each stake was labeled "WET 15-X-N", with "X" as a letter from A to F corresponding to the wetland area and "N" as the numeric order of the stake. The "15" refers to Site 15. A land survey depicting the location of each stake was subsequently completed in October 2003 and is the basis for the wetland delineation map provided in Section 3.0. Stakes were also placed at each data point location on each transect.

Consideration of Functions and Values: Wetland functions are physical, chemical, and biological processes or attributes of wetlands that are vital to the integrity of a wetland system, regardless of how those benefits are perceived by society. Wetland values are attributes that are not necessarily important to the integrity of a wetland system but which are perceived as valuable to society (Adamus et al., 1991). Table 2-4 lists several commonly recognized functions and values provided by wetlands. The discussion of the functions and values presented in this report for the wetlands delineated on Site 15 is subjective, and is intended only to contribute to a general description of the delineated wetlands. More rigorous quantitative and semi-quantitative models are available for assessing the functions and values of wetlands but are rarely necessary to support most permitting and planning decisions affecting wetlands.

The functions and values discussion for each wetland also includes an evaluation using the Wetland Rapid Assessment Procedure (WRAP) (Miller and Gunsalus, 1999). WRAP is a standardized rating index that can be used in combination with professional judgment to assess the relative quality and importance of a wetland. Variables considered in WRAP include:

1. Wildlife utilization;
2. Wetland overstory/shrub canopy;
3. Wetland vegetative ground cover;
4. Adjacent upland support/wetland buffer;

5. Field indicators of wetland hydrology; and
6. Water quality input and treatment systems.

Variables 1 and 4 correspond directly to the wildlife diversity/abundance and aquatic diversity/abundance functions. Variables 2, 3, and 4 pertain indirectly to habitat functions in that diverse and intact vegetation in the wetland and adjoining buffer generally indicate good habitat quality. Variable 6 corresponds directly to the sediment/toxicant retention and nutrient removal/transformation functions. Variables 2 and 3 consider the vegetative integrity of the wetland and thus indirectly pertain to its ability to perform functions dependent (at least in part) on vegetation such as groundwater recharge, floodflow alteration, sediment/shoreline stabilization, production export, and habitat quality. Variable 5 considers the hydrological integrity of the wetland and thus indirectly pertains to its ability to perform functions dependent (at least in part) on wetland hydrology such as groundwater recharge, groundwater discharge, and floodflow alteration. The four values listed in Table 2-4 are not directly addressed in WRAP, but the parameters addressed by Variables 2, 3, 4, and 5 are indirectly relevant to the aesthetic, cultural, and/or educational value of a wetland.

TABLE 2-1

STATE OF FLORIDA WETLAND PLANT INDICATOR STATUSES
SITE 15 WETLAND DELINEATION
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

Indicator Status	Abbreviation	Definition[1,2]
Obligate Plant	OBL	Plant species which under natural conditions are only found or achieve their greatest abundance in an area which is subject to surface water inundation and/or soil saturation. Some obligate plant species can be observed in an upland, especially under a controlled environment. Included in this category are the littoral plants and emergent aquatics, such as *Nymphaea* spp. (water lilies), *Nelumbo* spp. (lotus), and *Nuphar luteum* (spatterdock).
Facultative Wet Plant	FACW	Plants which under natural conditions typically exhibit their maximum cover in areas subject to surface water inundation and/or soil saturation, but can also be found in an upland.
Facultative Plant	FAC	Plants which are so problematic in their distribution as to render them inappropriate for indicating inundation or soil saturation. Specifically included are exotic plants with a weedy distribution. Facultative plants are not used when evaluating the dominance of plants species or when determining the appropriate strata.
Upland Plant	UPL	Plants not specifically identified as OBL, FACW, or FAC in the "Vegetative Index" in Section 62-340.450 of the F.A.C.

1 - Source: FDEP, 1994 and "Vegetative Index" in Section 62-340.450 of the F.A.C.
2 - The State of Florida does not recognize definitions for facultative upland or obligate upland plants.

TABLE 2-2

DEFINITIONS OF VEGETATION STRATA USED IN WETLAND DELINEATION
SITE 15 WETLAND DELINEATION
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

Stratum	Symbol	Definition[1]	Plot Diameter[2] (feet)
Canopy	C	Often referred to as the top layer of the forest. The definition in the rule further qualifies the characteristics as woody plants or palms with a main trunk at least 4 inches in diameter (four inches wide) at a point 4.5 feet above the base of the tree (Diameter at Breast Height - DBH). If the tree is on a slope, the diameter is measured from the midpoint of the base of the tree on the slope. Vines are not considered for this or any other vegetative evaluation.	30
Subcanopy	S	Generally thought of as the smaller trees and tall shrubs in the forest. It is typically the middle of the three vegetative layers considered in the vegetation analysis. A plant must have a main stem more than 4.5 feet tall and greater than 1" in diameter to be in the subcanopy. Most species of palms will not be in the subcanopy category if their diameter is greater than 4.5" when the trunk is at least 4.5 feet tall.	15
Ground Cover (Herbaceous)	H	Includes all plants which are less than 4.5' tall or have a DBH of less than 1". Vines are not considered. Groundcover is the lower most of the three layers of vegetation which are evaluated for the vegetation analysis.	5

1 - Source: FDEP, 1994.
2 - Plot size used for visually estimating percent aerial cover for plant species (circular plots).

TABLE 2-3

FEDERAL PLANT WETLAND INDICATOR STATUSES
SITE 15 WETLAND DELINEATION
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

Indicator Status	Abbreviation	Definition[1]
Obligate Wetland	OBL	Species recognized as occurring in wetlands greater than 99 percent of the time.
Facultative Wetland	FACW	Species recognized as occurring in wetlands 67 to 99 percent of the time.
Facultative	FAC	Species equally likely to occur in wetlands or uplands (nonwetlands).
Facultative Upland	FACU	Species recognized as occurring in wetlands 1 to 33 percent of the time.
Obligate Upland	UPL	Species recognized as occurring in wetlands less than 1 percent of the time.

1 - Source: Reed, 1988.

TABLE 2-4

COMMON FUNCTIONS AND VALUES OF WETLANDS[1]
SITE 15 WETLAND DELINEATION
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

Function	Description
Groundwater Recharge	Some wetlands function to catch and detain surface runoff, allowing at least some of the detained water to leach down into underlying aquifers. Wetlands capable of best performing this function tend to receive runoff from a large watershed, support dense vegetation, and have a narrow (constricted) outlet (or no outlet).
Groundwater Discharge	Some wetlands function as areas where groundwater is discharged to the surface. Such wetlands are commonly referred to as seeps or springs and represent a means by which wildlife inhabiting the surface can access water reserves held in the ground.
Floodflow Alteration	Some wetlands function to slow the overland runoff of floodwaters, thereby reducing peak flow levels following heavy precipitation events. Wetlands capable of best performing this function tend to be located in the upper parts of the watershed to stream systems.
Sediment/ Shoreline Stabilization	Vegetation in wetlands bordering streams and other water bodies can stabilize banks and shorelines against erosion caused by currents and waves.
Sediment/ Toxicant Retention	Some wetlands serve to detain surface flow (surface runoff or channel flow) allowing some suspended sediments, toxicants, and/or pathogens to settle out into the wetland soil, thereby preventing their migration into downstream waters. Wetlands capable of best performing this function tend to support dense vegetation, have constricted (or no) outlets, and be located near disturbed soils or toxicant sources.
Nutrient Removal/ Transformation	Some wetlands serve to detain surface flow (surface runoff or channel flow) allowing nutrients such as nitrogen and phosphorus to settle out into the wetland soil, thereby preventing their migration into downstream waters. High nutrient levels in water bodies cause eutrophication, a condition where undesirable algal growths deplete dissolved oxygen and interfere with other aquatic biota. Wetlands capable of best performing this function tend to support dense vegetation, have constricted (or no) outlets, and be located near areas of heavy fertilizer use.
Production Export	Some wetlands serve as sources of biomass, nutrients, and food sources supporting aquatic ecosystems in downgradient water bodies. Wetlands capable of best performing this function tend to have dense, diverse vegetation and be connected to areas of open water.
Aquatic Diversity/ Abundance	Wetlands adjoining or forming a part of streams, lakes, and other areas of open water tend to provide specialized habitat for many species of fish and other aquatic biota, thereby enhancing the diversity of aquatic ecosystems.
Wildlife Diversity/ Abundance	Wetlands provide favored habitat for many amphibian, reptile, bird, and mammal species. The exact species of wildlife attracted by a wetland depends largely on the wetland's vegetation composition.

TABLE 2-4

COMMON FUNCTIONS AND VALUES OF WETLANDS[1]
SITE 15 WETLAND DELINEATION
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

Function	Description
Recreation	Many wetlands provide opportunities for recreational activities such as hiking, canoeing, boating, fishing, and hunting. The recreational value of a wetland depends not only on its physical characteristics but also on its public accessibility and proximity to population centers.
Uniqueness/ Heritage	Many wetlands are inherently "special" places that reflect or contribute to the history and/or culture of the surrounding region.
Educational/ Scientific Value	Many wetlands, especially wetlands that have experienced little human alteration or disturbance, are of value for scientific research and/or for public outdoor education. The location of a wetland on public land and/or in close proximity to schools enhances this value.
Visual Quality/ Aesthetics	Especially in urban/suburban settings, many wetlands are visually pleasing natural areas that can buffer, screen, or offset the visual impacts of developed areas.

1 - Source: Adamus et al., 1991 and De Santo and Flieger, 1995.

3.0 RESULTS AND DISCUSSION

Six wetland areas (Wetlands A, B, C, D, E, and F) were identified within the area addressed by the wetland delineation (Figures 3-1, 3-2, and 3-3).

1. Wetland A is a forested wetland situated in the northwest part of Site 15 (Figure 3-1). It lies within a shallow topographic depression of roughly 1.7 acres that is connected by a narrow drainage ditch to a broader zone of forested wetlands adjoining Caldwell Branch, a non-tidal tributary to Yellow Water Creek.

2. Wetland B is a forested wetland situated in a narrow swale immediately east of Wetland A (Figure 3-1). It encompasses less than 0.1 acre. The wetland status of the swale appears to be the result of past construction of an elevated road bed without a culvert or other feature to allow surface water to drain out and into Wetland A. Wetland B is separated from Wetland A only by the road bed.

3. Wetland C is a forested wetland situated in the south-central part of Site 15 (Figure 3-3). Wetland C comprises the northern edge of a broad wetland area associated with the headwaters of an unnamed tributary to Yellow Water Creek.

4. Wetland D is a forested wetland situated in the southeast part of Site 15 (Figure 3-2). It is a roughly ovular depression suggestive of a small cypress dome, although the characteristic cypress-dominated vegetation has been altered by past logging and pine planting activity.

5. Wetland E is a drainage ditch roughly 10 to 20 feet in width beginning just northwest of Wetland D and proceeding directly south (Figure 3-2). The ditch is a headwater of the unnamed tributary to Yellow Water Creek associated with Wetland C.

6. Wetland F is a small man-made pit measuring less than 0.1 acre situated in the southwestern part of Site 15 (Figure 3-3). The pit is surrounded by uplands that have been recently clearcut.

Appendix A includes completed data sheets for each data point shown in Figures 3-1, 3-2, and 3-3. The data sheets summarize field observations of vegetation, soils, and hydrology for each data point on representative transects perpendicular to the delineated wetland boundaries. The sections below summarize the vegetation, soils, hydrology, classification, and functions and values for each delineated wetland. The sections focus on each wetland as a whole rather than on specific data point locations.

3.1 WETLAND A

Wetland A is a forested wetland situated in the northwest part of Site 15 (Figure 3-1; Photo 1). It lies within a shallow topographic depression of roughly 1.7 acres that is connected by a narrow drainage ditch to a broader zone of forested wetlands adjoining Caldwell Branch, a tributary to Yellow Water Creek. The wetland delineation addressed the entire depression but did not extend to the broader band of wetlands adjoining Caldwell Branch, which lies outside of Site 15.

Vegetation: Vegetation throughout Wetland A is dominated by slash pine, a needle-leaved evergreen tree. Many of the slash pines are 12 to 18 inches in diameter at breast height (DBH). Pond cypress (*Taxodium ascendens*), a needle-leaved deciduous tree, occurs throughout the wetland, especially in the center. Most of the pond cypress trees are less than 6 inches DBH. The subcanopy consists of widely scattered red maple (*Acer rubrum*), sweetbay (*Magnolia virginiana*), wax myrtle (*Myrica cerifera*), and gallberry (*Ilex glabra*). The groundcover consists of scattered patches of cinnamon fern (*Osmunda cinnamomea*), pitcher plants (*Sarracenia* sp.), royal fern (*Osmunda regalis*), and Virginia chain fern (*Woodwardia virginica*) (Photos 2 and 3). Occasional seedlings of gallberry and wax myrtle also occur in the groundcover.

Vegetation in the uplands adjoining Wetland A consists of rows of planted slash pine with a dense understory of saw palmetto (Photo 4). In contrast to the wetlands, most of the slash pine in the uplands is less than 8 inches DBH. The saw palmetto understory terminates abruptly close to the delineated wetland boundary, and its presence is the most visible contrast between the upland and wetland vegetation. Pond cypress occurs only inside the wetland boundary. The dense patches of fern groundcover occur primarily within the wetland boundary although a few small patches, especially of cinnamon fern, occur in isolated locations in the uplands.

The vegetation in Wetland A appears to correspond to the Society of American Foresters (SAF) Forest Cover Type 84, Slash Pine Forest (Eyre, 1980). The native range of Slash Pine Forest reportedly extends from the southern tip of South Carolina south to central Florida and west along the Coastal Plain to southeast Louisiana. Typical undergrowth in Slash Pine Forest on moist to wet sites (such as Wetland A) is described as including wax myrtle, gallberry, buckwheat tree (*Cliftonia monophylla*), dahoon (*Ilex cassine*), yaupon (*Ilex vomitoria*), and pitcher plant. Typical undergrowth in Slash Pine Forest on better drained soils includes pineland three-awn (*Aristida stricta*), saw-palmetto, gallberry, Curtis dropseed (*Sporobolus curtissii*), dwarf huckleberry (*Gaylussacia dumosa*), ground blueberry (*Vaccinium* sp.), yaupon, and dahoon (Eyre, 1980).

All of the dominant plant species in Wetland A are assigned indicator statuses of OBL, FACW, or FAC for the southeastern United States by the FWS (Appendix A, Data Point 15A-1-1), and hence the vegetation

is hydrophytic according to the Federal criteria. The frequent occurrence of pond cypress knees, a morphological plant adaptation to wet conditions, supports the hydrophytic status of the vegetation. Two out of the three dominant species in the adjoining upland vegetation also have a FWS indicator status of FACW (Appendix A, Data Point 15A-1-3), and thus that vegetation also technically meets the minimum Federal criteria for hydrophytic vegetation. However, the dense undergrowth by saw palmetto, which is a plant that favors well-drained soils and which is assigned an indicator status of UPL by the FWS, and the absence of morphological plant adaptations suggests that the upland vegetation does not meet the intent of the federal definition of hydrophytic vegetation.

The State of Florida considers slash pine, which is dominant in the canopy, to be an UPL species. However, the canopy and subcanopy vegetation has been substantially altered by past forest management activities. Reasonable scientific judgment suggests that the vegetation is indicative of wetlands, considering the frequency of state-designated FACW and OBL fern species in the groundcover, the presence of morphological plant adaptations, and the ability of slash pine and gallberry to grow in wetland as well as upland conditions.

Soils: Soils in the vicinity of Wetland A (including the surrounding uplands) are mapped as Olustee fine sand, which is described as a nearly level, poorly drained soil in broad flatwood areas. The typical soil profile is described as including a 6-inch surface layer (topsoil) of black fine sand. The upper part of the subsoil is described as consisting of a 5-inch layer of very dark gray fine sand overlying a 10-inch layer of black fine sand. Below the upper subsoil is a 15-inch layer of gray fine sand. The lower part of the subsoil (between 36 and 54 inches below the surface) is described as gray sandy clay loam. Under natural conditions, the water table is described as occurring at a depth of less than 10 inches below the surface for 2 to 4 months and at a depth of 10 to 30 inches below the surface for 2 to 8 months in a normal year (SCS, 1978).

Soils observed in the wetland during the wetland delineation (Appendix A, Data Point 15A-1-1) displayed a roughly 3-inch surface layer of black (2.5Y 2.5/1) fine sand overlying more than 15 inches of gray and dark gray (polychromatic mixture of 2.5Y 5/1 and 2.5Y 4/1) fine sand. This is generally consistent with the upper part of the typical soil profile description for an Olustee fine sand. The upper part of the soil profile in the adjoining uplands did not differ distinctively from that in the wetlands. The placement of the delineated wetland boundary reflected changes in vegetation and observed hydrological field indicators rather than changes in soil characteristics.

The dark surface layer reflects a high organic content, which (for a sandy soil) is one of the Federal hydric soil field indicators presented in the 1987 Manual. The dark surface layer is also one of the field indicators of hydric soil recognized by the FDEP (Field Indicator S7). The adjoining upland soils (Appendix A, Data Point 15A-1-3) displayed a less pronounced dark surface layer, but the transition from a hydric to clearly non-hydric

soil morphology is very gradual. This observation is consistent with the fact that the entire landscape surrounding Wetland A is mapped in the poorly drained Olustee and Ridgeland soil series, including areas that clearly display upland vegetation and/or hydrology.

Hydrology: Soils were saturated to the surface throughout Wetland A at the time of the wetland delineation. The observed depth to the water table at the outer edge of the wetland (Appendix A, Data Point 15A-1-1) was 6 inches below the surface. The capillary fringe was keeping the surface saturated. Isolated pools of shallow (1-2 inches) standing water were observed in the central part of the wetland (Photo 5).

June through September are typically the rainiest months in Jacksonville, with October beginning a relatively dry fall and winter period. For a period between 1961 and 1990, Jacksonville has averaged about 7.1 inches of rain in September, compared to only about 2.9 inches for October (World Weather Information Service, 2003). Precipitation over a broad period preceding the wetland delineation has generally been normal, with Jacksonville receiving 39.55 inches of rain in 2003 as of October 1, 2003 versus an average of 43.79 inches for the same period (Weather Underground, 2003). The most recent substantial rainfall preceding the delineation was approximately 1.5 inches on September 26, 2003 (Weather Underground, 2003). Jacksonville's growing season is long. The average data of the first freeze is December 16, and the average date of the last freeze is February 6 (SCS, 1978). The wetland delineation, which was conducted in October, therefore clearly fell during the growing season. Based on the data summarized above, the visual observation of saturated surface soils at the time of the delineation therefore supports the presence of wetland hydrology. Likewise, one would expect the visual absence of saturated soil conditions at that time to indicate the absence of wetland hydrology.

It is furthermore noted that the pond cypress knees observed throughout much of Wetland A (Photo 1) constitute a morphological plant adaptation to saturated soil conditions. Such morphological plant adaptations constitute one of the field indicators of wetland hydrology listed in Section 62-340.500 of the F.A.C. Additionally, the soil surface throughout much of Wetland A displayed distinct hummocks, another wetland hydrology field indicator in Section 62-340.500 of the F.A.C.

Soils just outside of the delineated wetland boundary (Appendix A, Data Point 15A-1-3) were not saturated to the surface at the time of the wetland delineation and did not display morphological plant adaptations or hummocking.

Classification: Wetland A meets both the federal and Florida criteria for a wetland. Wetland A would be classified as Palustrine Forested (PFO). The Palustrine system is described by the FWS as consisting of nontidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses or lichens (as well as tidal wetlands whose salinity is less than 0.5 parts per thousand) (Cowardin et al., 1979).

Functions and Values: Groundwater recharge and discharge are not key issues in northern Florida, which has abundant precipitation and extensive areas of surface water. Flooding, which can be reduced by the presence of wetlands, is likewise not a key issue in inland areas of northern Florida, considering the nearly level topography and substantial distance from the coast. Wetland A lacks and is not contiguous to open water, thus it does not play a role in sediment and shoreline stabilization.

The dense understory in Wetland A helps enable it to effectively retain sediments and toxicants. The vegetation may have helped toxicants related to Site 15's history from migrating offsite and into Caldwell Creek. However, the watershed contributing runoff to Wetland A is completely forested; thus, the ability of the wetland to trap sediment and nutrients is likely of little importance. The dense and diverse vegetation in Wetland A and its surface connection to Caldwell Creek suggest a possible role with respect to production export.

The diverse vegetation in, and minimal human disturbance of, Wetland A and the surrounding uplands suggest that the wetland may provide good wildlife habitat (wildlife diversity/abundance function). Because Wetland A lacks open water, it does not directly provide aquatic habitat (aquatic diversity/abundance function), but its production export function could contribute to the quality of aquatic habitat in Caldwell Creek.

Wetland A appears to be of substantial importance with respect to each of the four wetland values noted in Table 2-4. Once Site 15 is successfully cleaned up, it and the surrounding area will likely be open to the public and provide valuable opportunities for hiking, bird watching, and perhaps hunting to residents of nearby urban areas. As urban areas in the City of Jacksonville expand westward, the complex of natural wetlands and uplands on and around Site 15 (including Wetland A) could be of increasing importance with respect to uniqueness/heritage, educational/ scientific value, and visual quality/aesthetics. The aesthetics and educational importance of Wetland A are strengthened by the fact that the adjoining uplands and up-gradient watershed are almost completely forested rather than used for urban uses or agriculture.

Wetland A scored 0.81 (out of a possible 1.00) using WRAP (Appendix B). This score suggests a wetland of relatively high ecological and human value that deserves protection to the extent possible. The high score primarily reflects the wetland's natural vegetation, relatively intact hydrology, and relatively undeveloped forest setting.

3.2 WETLAND B

Wetland B is a forested wetland situated in a narrow swale immediately east of Wetland A (Figure 3-1; Photo 6). It encompasses less than 0.1 acre. Wetland conditions appear to be the result of past construction of an elevated dirt road bed across the swale without including a culvert or other feature that

allows surface water to drain from the swale to Wetland A. Wetland B is separated from Wetland A only by the dirt road bed. Wetland B lies entirely within Site 15 and was therefore delineated in its entirety.

Vegetation: Wetland B supports planted slash pine trees in rows that are part of the same grid of planted pine rows in the adjoining uplands. Most of the pines are under 6 inches DBH. Pines closest to the western (down-gradient) part of the swale appear to have been stressed by excessive soil saturation, and a gap in the pine canopy in that part of the wetland supports a dense and diverse patch of herbaceous vegetation (Appendix A, Data Point 15B-1-1) (Photo 7). The herbaceous vegetation includes plants of the genera *Rhynchospora*, *Iris*, and others.

Soils: Soils in the vicinity of Wetland B (including the surrounding uplands) are mapped as Ridgeland fine sand and as Olustee fine sand. The Ridgeland fine sand is described as a nearly level, poorly drained soil in broad flatwood areas. The typical soil profile is described as including a 6-inch surface layer (topsoil) of very dark gray fine sand. The upper part of the subsoil is described as a dark brown fine sand extending from 6 to 16 inches below the surface. Below the upper subsoil is a 15-inch thick layer described as very pale brown fine sand. The lower part of the subsoil, extending to a depth of 80 inches beneath the surface, is described as dark reddish brown and black fine sand (SCS, 1978).

The Olustee fine sand is described as a nearly level, poorly drained soil in broad flatwood areas. The typical soil profile is described as including a 6-inch surface layer (topsoil) of black fine sand. The upper part of the subsoil is described as consisting of a 5-inch layer of very dark gray fine sand overlying a 10-inch layer of black fine sand. Below the upper subsoil is a 15-inch layer of gray fine sand. The lower part of the subsoil (between 36 and 54 inches below the surface) is described as gray sandy clay loam. Under natural conditions, the water table is described as occurring at a depth of less than 10 inches below the surface for 2 to 4 months and at a depth of 10 to 30 inches below the surface for 2 to 8 months in a normal year (SCS, 1978).

Soils observed in Wetland B during the wetland delineation displayed a roughly 3-inch surface layer of very dark gray (2.5Y 3/1) fine sand overlying more than 15 inches of dark grayish brown (2.5Y 4/2) fine sand (Appendix A, Data Point 15B-1-1). This is generally consistent with the upper part of the typical soil profile described for the Ridgeland fine sand soils (SCS, 1978). However, the shallow thickness of the dark surface layer and the absence of distinctly black or gray coloration in the upper subsoil suggest a history of better drainage than is expected for Ridgeland soils. The soil profile in Wetland B is not as visibly suggestive of hydric soils as are the soil profiles observed in the larger wetlands on Site 15 (i.e., Wetlands A, C, and D). Wetland B may not have historically been a wetland. Its wetland characteristics appear to instead be the result of runoff ponded by the adjoining roadbed. However, any soils that are ponded for a long or very long duration during the growing season still meet the technical definition of hydric soils used by Florida and

federal agencies. Thus, the soils in Wetland B still appear to be hydric, despite the weak evidence provided by the soil profile. The soil profile in the adjoining upland soils (Appendix A, Data Point 15B-1-2) generally appeared similar to that in the wetland, but is even less suggestive of hydric soil.

Hydrology: The soil surface was saturated in the downgradient (northern) part of Wetland B at the time of the wetland delineation (Appendix A, Data Point 15B-1-1). Watermarks on the trunks of pine trees in the remainder of Wetland B (faintly visible in Photo 6) suggest that ponded water is periodically present throughout the wetland. Wetland B appears to be the result of localized ponding of surface runoff caused by the adjoining roadbed rather than the result of a seasonal high water table. The soil surface outside of the delineated wetland boundary was not saturated at the time of the wetland delineation, and the trunks of pine trees outside of the delineated wetland boundary did not display evidence of water marks.

Classification: Wetland B meets both the federal and Florida criteria for a wetland. Wetland B would be classified as Palustrine Forested (PFO). The Palustrine system is described by the FWS as consisting of nontidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses or lichens (as well as tidal wetlands whose salinity is less than 0.5 parts per thousand) (Cowardin et al., 1979).

Functions and Values: Groundwater recharge and discharge are not key issues in northern Florida, which has abundant precipitation and extensive areas of surface water. Flooding, which can be reduced by the presence of wetlands, is likewise not a key issue in inland areas of northern Florida, considering the nearly level topography and substantial distance from the coast. Wetland B lacks and is not contiguous to open water, thus it does not play a role in sediment and shoreline stabilization.

The dense understory in much of Wetland B may enable it to retain sediments and toxicants. The vegetation may have helped reduce the entry of some toxicants originating in areas to the south (upgradient) from migrating in runoff to Wetland A. However, the watershed contributing runoff to Wetland A is completely forested; thus, the ability of the wetland to trap sediment and nutrients is likely of little importance. Wetland B is too small and lacks a direct surface outlet to other wetlands and water; therefore it does not likely play a significant role with respect to production export.

Although the diverse vegetation in Wetland B could provide quality habitat for some wildlife, the wetland's small size and proximity of several larger wetlands (including Wetland A) could render it of little importance as wildlife habitat (wildlife diversity/abundance function). Because Wetland B lacks permanent open water, it does not directly provide substantial aquatic habitat (aquatic diversity/abundance function).

Although most wetlands on Site 15 could be of substantial importance with respect to each of the wetland values noted in Table 2-4, its small size and artificial origin likely render its contribution insignificant.

Wetland B scored 0.61 (out of a possible 1.00) using WRAP (Appendix B). This score suggests a wetland of mediocre ecological and human value, but still a habitat deserving of protection to the extent possible. The lower score relative to that for Wetland A primarily reflects its artificial hydrology (runoff impounded by man-made road bed) and dominance by planted pine.

3.3 WETLAND C

Wetland C is a forested wetland situated in the south-central part of Site 15 (Figure 3-3; Photo 8). Wetland C comprises the northern edge of a broad wetland area associated with the headwaters of an unnamed tributary to Yellow Water Creek. Because Wetland C is located on the southern edge of Site 15, only the northern boundary of the wetland was delineated. The wetland extends southward for an undetermined distance and is contiguous to large areas of undelineated wetlands adjoining the unnamed tributary.

Vegetation: Vegetation in the northern part of Wetland C (that part addressed in the wetland delineation for Site 15) is dominated by slash pine, a needle-leaved evergreen tree. Many of the slash pines are 12 to 18 inches DBH. In contrast to pine-dominated vegetation in Wetlands A and B, pond cypress does not occur in the northern part of Wetland C, but black gum (*Nyssa sylvatica*) occurs frequently in the canopy and subcanopy. The subcanopy generally resembles that described for Wetland A. The groundcover is characterized by scattered patches of cinnamon fern and Virginia chain fern. The vegetation in Wetland C appears to correspond to SAF Forest Cover Type 84, Slash Pine Forest (Eyre, 1980), which is described above in Section 3.1 for Wetland A.

The northern boundary of Wetland C (upper part of Photo 8) generally corresponds to the southern edge of a large upland clearcut occupying much of the central part of Site 15. The clearcut (overview in Photo 9) consists of a dense cover of slash pine and hardwood seedlings, gallberries and myrtles (shrubs), patches of blackberry (*Rubus* sp.), and herbaceous old field vegetation.

All of the dominant plant species in Wetland C are assigned indicator statuses of OBL, FACW, or FAC for the southeastern United States by the FWS, and hence the vegetation is hydrophytic according to the Federal criteria. The State of Florida considers slash pine, which is dominant in the canopy, to be an UPL species. However, the canopy and subcanopy vegetation has been substantially altered by past forest management activities. Reasonable scientific judgment suggests that the vegetation is indicative of wetlands, considering the frequency of FACW and OBL fern species in the groundcover and the ability of slash pine and gallberry to grow in wetland as well as upland conditions.

Soils: Soils in the vicinity of Wetland C (including the surrounding uplands) are mapped as Olustee fine sand, which is described as a nearly level, poorly drained soil in broad flatwood areas. The typical soil profile is described as including a 6-inch surface layer (topsoil) of black fine sand. The upper part of the subsoil is described as consisting of a 5-inch layer of very dark gray fine sand overlying a 10-inch layer of black fine sand. Below the upper subsoil is a 15-inch layer of gray fine sand. The lower part of the subsoil (between 36 and 54 inches below the surface) is described as gray sandy clay loam. Under natural conditions, the water table is described as occurring at a depth of less than 10 inches below the surface for 2 to 4 months and at a depth of 10 to 30 inches below the surface for 2 to 8 months in a normal year (SCS, 1978).

Soils observed in the wetland during the wetland delineation (Appendix A, Data Point 15C-1-1) displayed a roughly 3-inch surface layer of black (2.5Y 2.5/1) fine sand overlying more than 15 inches of gray and black (polychromatic mixture of 2.5Y 5/1 and 2.5Y 2.5/1) fine sand. This is generally consistent with the upper part of the typical soil profile description for an Olustee fine sand. The dark surface layer reflects a high organic content, which (for a sandy soil) is one of the Federal hydric soil field indicators presented in the 1987 Manual. The dark surface layer is also one of the field indicators of hydric soil recognized by the FDEP (Field Indicator S7).

The upper part of the soil profile in the adjoining uplands (Appendix A, Data Point 15C-1-2) was generally similar but included a narrow band of very dark grayish brown soils (2.5Y 3/2) at an approximate depth of 3 to 8 inches. The transition from a hydric to clearly non-hydric soil morphology is very gradual. This observation is consistent with the fact that the entire landscape surrounding Wetland C is mapped in the poorly drained Olustee and Ridgeland soil series, including areas that clearly display upland vegetation and/or hydrology.

Hydrology: Soils were saturated to the surface throughout Wetland C at the time of the wetland delineation. The observed depth to the water table at the northern edge of the wetland (Appendix A, Data Point 15C-1-1) was 3 inches below the surface. The capillary fringe was keeping the surface saturated. As explained in Section 3.1 in the hydrology discussion for Wetland A, the wetland delineation, which was conducted in October, clearly fell during the growing season. The visual observation of saturated surface soils at the time of the delineation supports the presence of wetland hydrology. Saturated surface soils did not extend outside of the delineated wetland boundary for Wetland C (Appendix A, Data Point 15C-1-2).

Classification: Wetland C meets both the federal and Florida criteria for a wetland. Wetland C would be classified as Palustrine Forested (PFO). The Palustrine system is described by the FWS as consisting of nontidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses or lichens (as well as tidal wetlands whose salinity is less than 0.5 parts per thousand) (Cowardin et al., 1979).

Functions and Values: Groundwater recharge and discharge are not key issues in inland areas of northern Florida, which has abundant precipitation and extensive areas of surface water. Flooding, which can be reduced by the presence of wetlands, is likewise not a key issue in inland areas of northern Florida, considering the nearly level topography and substantial distance from the coast. Wetland A lacks and is not contiguous to open water, thus it does not play a role in sediment and shoreline stabilization.

The dense understory in Wetland C helps enable it to effectively retain sediments and toxicants. The vegetation may have helped toxicants related to Site 15's history from migrating offsite and into the tributary to Caldwell Creek. However, the watershed contributing runoff to Wetland C is completely forested; thus, the ability of the wetland to trap sediment and nutrients is likely of little importance. The dense and diverse vegetation in Wetland C and its surface connection to a tributary of Caldwell Creek suggest a possible role with respect to production export.

The diverse vegetation in, and minimal human disturbance of, Wetland C and the surrounding uplands suggest that the wetland may provide good wildlife habitat (wildlife diversity/abundance function). Because Wetland C lacks open water, it does not directly provide aquatic habitat (aquatic diversity/abundance function), but its production export function likely contributes to the quality of aquatic habitat in the tributary of Caldwell Creek.

Wetland C appears to be of substantial importance with respect to each of the four wetland values noted in Table 2-4. Once Site 15 is successfully cleaned up, it and the surrounding area could be opened to the public and provide valuable opportunities for hiking, bird watching, and perhaps hunting to residents of nearby urban areas. As urban areas in the City of Jacksonville expand westward, the complex of natural wetlands and uplands on and around Site 15 (including Wetland C) could be of increasing importance with respect to uniqueness/heritage, educational/ scientific value, and visual quality/aesthetics. The aesthetics and educational importance of Wetland A are strengthened by the fact that the adjoining uplands and up-gradient watershed are almost completely forested rather than used for urban uses or agriculture.

Wetland C scored 0.81 (out of a possible 1.00) using WRAP (Appendix B). This score suggests a wetland of relatively high ecological and human value that deserves protection to the extent possible. The high score primarily reflects the wetland's natural vegetation, relatively intact hydrology, and relatively undeveloped forest setting.

3.4 WETLAND D

Wetland D is a forested wetland situated in the southeast part of Site 15 (Figure 3-2; Photo 10). It is a roughly ovular depression suggestive of a small cypress dome, although the characteristic cypress-

dominated vegetation has been altered by past logging and pine planting activity. Wetland D lies entirely within Site 15 and therefore its entire boundary was delineated.

Vegetation: Vegetation throughout most of Wetland D consists of a sparse stand of widely scattered pond cypress with occasional slash pine saplings (Photo 10; Appendix A, Data Point 15D-1-1). All trees are under 6 inches DBH. Understory and groundcover vegetation is sparse to absent throughout most of the wetland. Vegetation in the southwestern quadrant of Wetland D; southwest of an imaginary line connecting wetland boundary flags 15-D-21 and 15-D-29 in Figure 3-2); generally resembles that described for Wetland A (Photo 11; Appendix A, Data Point 15D-2-1). It is dominated by mature slash pine trees, generally between 6 and 18 inches DBH, with scattered pond cypress saplings and dense understory and groundcover vegetation.

Vegetation in Wetland D is suggestive of a cypress dome that has been disturbed by logging and planting of slash pine. The few slash pines in the main part of Wetland D occur in rows suggestive of planting (Photo 12). Unlike in the adjoining uplands, the planted slash pines appear to be struggling, apparently stressed by inundated soil conditions suggested by watermarks on the bases of the tree trunks (see hydrology discussion below). It is not apparent why the pines in the southwestern quadrant of the wetland appear to be older, spared from recent logging activity. It is not clear whether the vegetation throughout Wetland D historically resembled that in the southwestern quadrant prior to logging or whether Wetland D once supported a stand of mature pond cypress.

Vegetation in the uplands adjoining Wetland D consists of rows of planted slash pine with a dense understory of saw palmetto. In contrast to the wetlands, most of the slash pine in the uplands is less than 8 inches DBH. As is true for Wetland A, the saw palmetto understory terminates abruptly close to the delineated wetland boundary, and its presence is the most visible contrast between the upland and wetland vegetation. Pond cypress occurs only inside the wetland boundary. The dense patches of fern groundcover occur primarily within the wetland boundary although a few small patches, especially of cinnamon fern, occur in isolated locations in the uplands.

The vegetation in the southwest quadrant of Wetland D appears to correspond to SAF Forest Cover Type 84, Slash Pine Forest (Eyre, 1980), which is described above in Section 3.1 for Wetland A. The vegetation in main part of Wetland D has been substantially disturbed and does not clearly resemble a particular forest cover type. It could be characterized as a disturbed example of either SAF Forest Cover Type 84 (Slash Pine Forest) or SAF Forest Cover Type 100 (Pondcypress Forest), which is described as forest vegetation dominated by pondcypress (Eyre, 1980).

All of the dominant plant species in Wetland A are assigned indicator statuses of OBL, FACW, or FAC for the southeastern United States by the FWS (Appendix A, Data Points 15D-1-1 and 15D-2-1), and hence the vegetation is hydrophytic according to the Federal criteria. The frequent occurrence of pond cypress knees, a morphological plant adaptation to wet conditions, supports the hydrophytic status of the vegetation. Most of the dominant species in the adjoining upland vegetation are FACW (Appendix A, Data Points 15D-1-3, 15D-1-4, and 15D-2-3), and thus that vegetation also technically meets the minimum Federal criteria for hydrophytic vegetation. However, the dense undergrowth by saw palmetto, an UPL plant that favors well-drained soils, and the absence of morphological plant adaptations suggests that the upland vegetation does not meet the intent of the federal definition of hydrophytic vegetation.

The State of Florida considers slash pine, which is dominant in the canopy, to be an UPL species. However, the canopy and subcanopy vegetation has been substantially altered by past forest management activities. Reasonable scientific judgment suggests that the vegetation is indicative of wetlands, considering the frequency of FACW and OBL fern species in the groundcover, the presence of morphological plant adaptations, and the ability of slash pine and gallberry to grow in wetland as well as upland conditions.

Soils: Soils in the vicinity of Wetland D (including the surrounding uplands) are mapped as Ridgeland fine sand, which is described as a nearly level, poorly drained soil in broad flatwood areas. The typical soil profile is described as including a 6-inch surface layer (topsoil) of very dark gray fine sand. The upper part of the subsoil is described as a dark brown fine sand extending from 6 to 16 inches below the surface. Below the upper subsoil is a 15-inch thick layer described as very pale brown fine sand. The lower part of the subsoil, extending to a depth of 80 inches beneath the surface, is described as dark reddish brown and black fine sand (SCS, 1978).

Soils observed in the wetland during the wetland delineation (Appendix A, Data Point 15D-1-1) displayed a roughly 2-inch surface layer of black (2.5Y 2.5/1) fine sand overlying more than 16 inches of dark gray (2.5Y 4/1) fine sand with streaks of very dark gray (2.5Y 3/1) fine sand. This is perhaps more consistent with the upper part of the typical soil profile description for an Olustee fine sand (see soils discussion for Wetland B), but is still clearly suggestive of a poorly drained soil. Soils in the southwestern quadrant of Wetland D displayed a generally similar soil profile (Appendix A, Data Point 15D-2-1). The dark surface layer reflects a high organic content, which (for a sandy soil) is one of the Federal hydric soil field indicators presented in the 1987 Manual. The dark surface layer is also one of the field indicators of hydric soil recognized by the FDEP (Field Indicator S7).

The upper part of the soil profile in the adjoining uplands did not greatly differ from that in the wetlands. The placement of the delineated wetland boundary generally reflects changes in vegetation and observed hydrological field indicators rather than changes in soil characteristics.

The adjoining upland soils (Appendix A, Data Points 15D-1-3 and 15D-2-3) displayed a generally similar soil profile to the soils in the wetland, and therefore also displayed similar Federal and Florida field indicators for hydric soils. The transition from hydric to clearly non-hydric soil morphology is obviously very gradual. This observation is consistent with the fact that the entire landscape surrounding Wetland D is mapped in the poorly drained Olustee and Ridgeland soil series, including areas that clearly display upland vegetation and/or hydrology.

Hydrology: Soils were saturated to the surface throughout Wetland D at the time of the wetland delineation. The observed depth to the water table at the outer edge of the wetland (Appendix A, Data Points 15D-1-1 and 15D-2-1) was 5-7 inches below the surface. The capillary fringe was keeping the surface saturated.

Classification: Wetland D meets both the federal and Florida criteria for a wetland. Wetland D would be classified as Palustrine Forested (PFO). The Palustrine system is described by the FWS as consisting of nontidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses or lichens (as well as tidal wetlands whose salinity is less than 0.5 parts per thousand) (Cowardin et al., 1979).

Functions and Values: Groundwater recharge and discharge are not key issues in inland areas of northern Florida, which has abundant precipitation and extensive areas of surface water. Flooding, which can be reduced by the presence of wetlands, is likewise not a key issue in inland areas of northern Florida, considering the nearly level topography and substantial distance from the coast. Wetland A lacks and is not contiguous to open water, thus it does not play a role in sediment and shoreline stabilization.

Unlike Wetlands A and C, most of Wetland D lacks a dense understory, and thus it could lack the capability to effectively retain sediments and toxicants, and it could possess a reduced capability to contribute to production export. It is unclear why a dense understory (at least one comprised of plant seedlings) is not present or whether a dense understory will result from natural succession. However, as for Wetlands A and C, the watershed contributing runoff to Wetland D is completely forested; thus, the ability of the wetland to trap sediment and nutrients could be of little importance.

The diverse vegetation in the surrounding uplands suggest that Wetland D could provide good wildlife habitat (wildlife diversity/abundance function), but the sparse understory suggests that the value of the wetland to wildlife could be less than that of Wetlands A and C. Because Wetland D lacks permanent open water, it does not directly provide substantial aquatic habitat (aquatic diversity/abundance function).

Wetland D appears to be of substantial importance with respect to each of the four wetland values noted in Table 2-4. Once Site 15 is successfully cleaned up, it and the surrounding area could be opened to the public and provide valuable opportunities for hiking, bird watching, and perhaps hunting to residents of nearby urban areas. As urban areas in the City of Jacksonville expand westward, the complex of natural wetlands and uplands on and around Site 15 (including Wetland D) could be of increasing importance with respect to uniqueness/heritage, educational/ scientific value, and visual quality/aesthetics. The aesthetics and educational importance of Wetland D are strengthened by the fact that the adjoining uplands and up-gradient watershed are almost completely forested rather than used for urban uses or agriculture.

Wetland D scored 0.67 (out of a possible 1.00) using WRAP (Appendix B). This score suggests a wetland of mediocre ecological and human value, but still a habitat deserving of protection to the extent possible. The lower score relative to that for Wetlands A and C primarily reflect the substantially sparser vegetation.

3.5 WETLAND E

Wetland E is a drainage ditch roughly 10 to 20 feet in width beginning just northwest of Wetland D and proceeding directly south (Figure 3-2; Photo 13). The ditch is a headwater of the unnamed tributary of Yellow Water Creek associated with Wetland C. The ditch is straight and of generally uniform width, suggesting that it is of man-made origin. It is between 5 and 15 feet wide on Site 15 and its banks are between 6 inches and 2 feet in height. It may have been dug to help drain Wetland D to facilitate the growth of planted pine. A segment of the ditch extending north from the asphalt access road to the ditch terminus north of Wetland D were delineated. That part of the ditch south of the asphalt access road is located outside of Site 15 and hence was not delineated.

Vegetation: Vegetative cover in the ditch is influenced by the shade of slash pines growing on the banks and adjoining uplands and therefore is generally sparse. Most of the plants that do grow in the ditch are FACW or OBL according to Federal and Florida criteria (Appendix A, Data Point 15E-1-1). It is therefore reasonable scientific judgment to conclude that the vegetation within the ditch is hydrophytic.

Soils: Soils were not a consideration in the delineation of Wetland E, which is a sharply defined drainage ditch. Because saturated and inundated conditions were observed in the ditch during the growing season, it is reasonable scientific judgment to assume that the soils in the ditch meet one of the following two technical criteria for hydric soil established by the Natural Resources Conservation Service (NRCS):

- Soils that are frequently ponded for long duration or very long duration during the growing season,

or

- Soils that are frequently flooded for long duration or very long duration during the growing season.

The NRCS further defines "frequently" with respect to ponding or flooding as an event likely to occur often under usual weather conditions (more than 50 percent chance in any year, or more than 50 times in 100 years).

Hydrology: Portions of the ditch were saturated at the time of the wetland delineation, and portions contained as much as an inch of standing water. Considering the typical regional precipitation patterns (discussed for hydrology for Wetland A in Section 3.1), it is reasonable scientific judgment to assume that the ditch possesses wetland hydrology.

Classification: Wetland E meets the criteria for federal regulation as a water of the United States (as defined in 33 CFR 328) and the criteria for Florida regulation as a surface water (as defined in Section 62-340.600 F.A.C.). Waters of the United States and Florida surface waters are regulated in a manner generally similar to wetlands even though they lack the persistent vegetation typical of wetlands. Wetland E would be classified as Riverine Intermittent (R4). The Riverine system is described by the FWS as consisting of wetlands and deepwater habitats contained within a channel, except for wetlands dominated by trees, shrubs, persistent emergents, emergent mosses, or lichens and for habitats with water containing ocean-derived salts in excess of 0.5 parts per thousand (Cowardin et al., 1979). Although the most applicable of the FWS classifications, Wetland E is a man-made drainage ditch that lacks many of the characteristics of natural intermittent streams.

Functions and Values: Because Wetland E is a man-made drainage ditch rather than a natural wetland, it does not display most of the functions and values typical of natural wetlands. As is true for the other Site 15 wetlands, groundwater recharge and discharge are not key issues in northern Florida, which has abundant precipitation and extensive areas of surface water. Flooding, which can be reduced by the presence of wetlands, is likewise not a key issue in inland areas of northern Florida, considering the nearly level topography and substantial distance from the coast.

The upland vegetation on the embankments to Wetland E could play a role in stabilizing the embankments and reducing sedimentation entering the ditch and hence the natural streams ultimately receiving flow from the ditch. The same is true for areas within the ditch that contain vegetation. However, the presence of the ditch as opposed to natural uplands can not be credited with playing a significant regional role with respect to sediment and shoreline stabilization.

Wetland E lacks dense vegetation, and thus it could lack the capability to effectively retain sediments and toxicants or to provide substantial production export. Other surface water features are abundant in the area, hence Wetland E does not likely serve as an important drinking water source for terrestrial wildlife.

Wetland E could provide habitat for some aquatic organisms (primarily benthos or small fish), but its narrow width and artificial character likely render it insignificant as aquatic habitat. Although most wetlands on Site 15 could be of substantial importance with respect to each of the wetland values noted in Table 2-4, Wetland E's status as a man-made drainage ditch could render its contribution insignificant.

Wetland E scored 0.64 (out of a possible 1.00) using WRAP (Appendix B). This score suggests a wetland of mediocre ecological and human value. The lower score relative to that for Wetlands A, C, and D primarily reflect the status of the wetland as an artificial drainage ditch.

3.6 WETLAND F

Wetland F consists of land at the bottom of a small man-made excavation pit measuring less than 0.1 acre situated in the southwestern part of Site 15 (Figure 3-3, Photo 14). The pit is surrounded by uplands that have been recently clearcut. The pit lacks a surface connection with other wetlands or bodies of water. The wetlands contained within the pit are therefore isolated wetlands and hence are not subject to Federal jurisdiction under Section 404 of the Clean Water Act. The pit lies entirely within Site 15 and thus its entire boundary was delineated.

Vegetation: Vegetation within lands at the bottom of the pit is variable but consists of species typical of wetlands such as willow (*Salix* sp.) and beakrushes (*Rhynchospora* sp.) (Appendix A, Data Point 15F-1-1). All willow species are designated by Florida as OBL, and most beakrush species are designated by Florida as OBL or FACW.

Soils: Soils were not a consideration in the delineation of Wetland F, which consists of the bottom of a small, sharply defined man-made excavation pit. Because saturated and inundated conditions were observed in the bottom of the pit during the growing season, it is reasonable scientific judgment to assume that the soils in the bottom of the pit meet one of the following two technical criteria for hydric soil established by the NRCS:

- Soils that are frequently ponded for long duration or very long duration during the growing season,

or

- Soils that are frequently flooded for long duration or very long duration during the growing season.

The NRCS further defines "frequently" with respect to ponding or flooding as an event likely to occur often under usual weather conditions (more than 50 percent chance in any year, or more than 50 times in 100 years).

Hydrology: Portions of the bottom of the pit were saturated at the time of the wetland delineation, and portions contained as much as an inch of standing water. Considering the typical regional precipitation

patterns (discussed for hydrology for Wetland A in Section 3.1), it is reasonable scientific judgment to assume that the bottom of the pit possesses wetland hydrology.

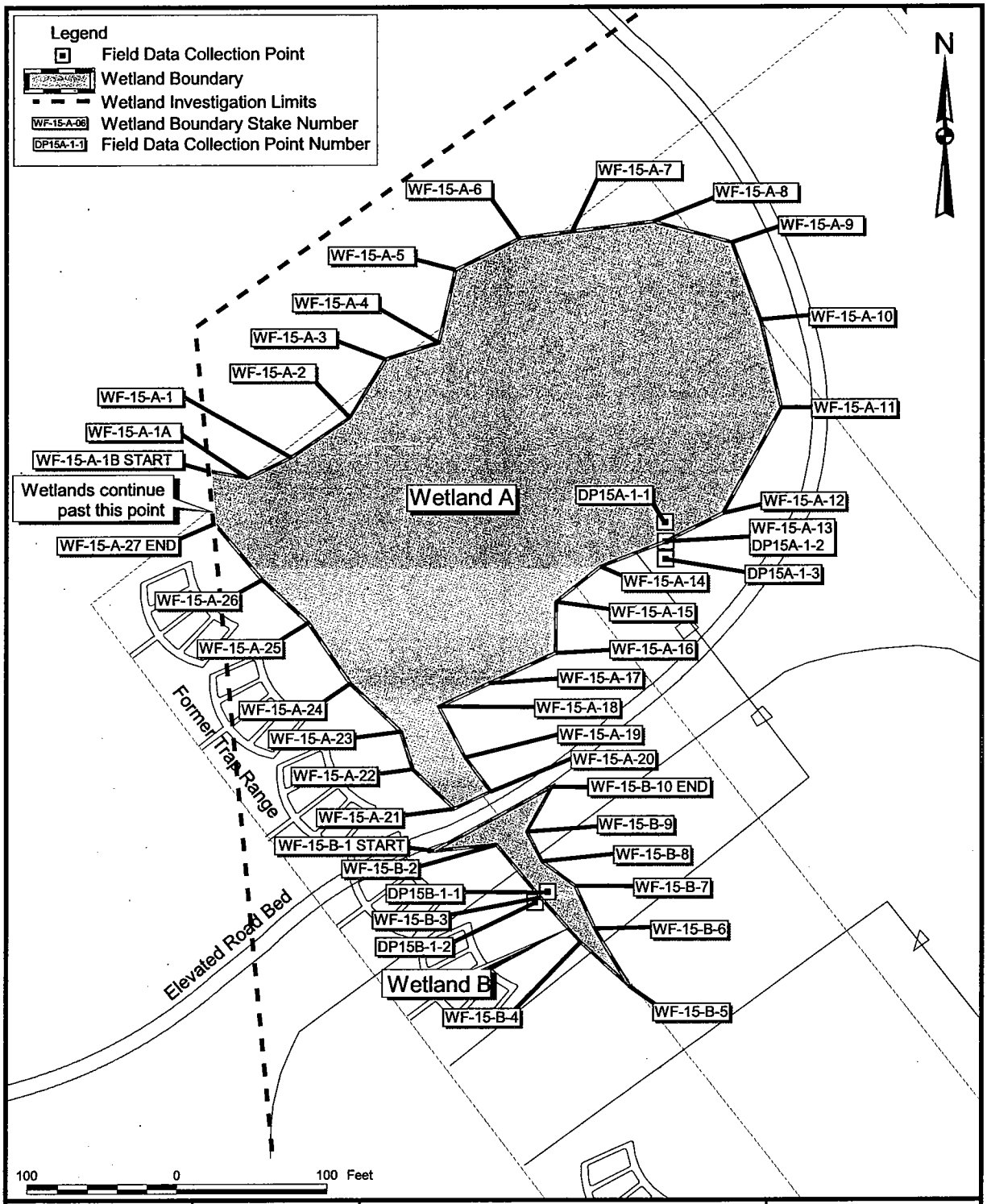
Classification: Wetland F meets both the federal and Florida criteria for a wetland. However, unlike the other wetlands on Site 15, Wetland F lacks a surface connection to tributaries to navigable waters of the United States. It therefore is not subject to federal regulation under Section 404 of the Clean Water Act even though it meets the definition of a wetland. Wetland F is still regulated by Florida, whose regulations do not exclude regulation of isolated wetlands.

Wetland F would be classified as Palustrine Emergent (PFO). The Palustrine system is described by the FWS as consisting of nontidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses or lichens (as well as tidal wetlands whose salinity is less than 0.5 parts per thousand) (Cowardin et al., 1979).

Functions and Values: Because Wetland F is a small man-made excavation pit rather than a natural wetland, it does not display most of the functions and values typical of natural wetlands. As is true for the other Site 15 wetlands, groundwater recharge and discharge are not key issues in northern Florida, which has abundant precipitation and extensive areas of surface water. Flooding, which can be reduced by the presence of wetlands, is likewise not a key issue in inland areas of northern Florida, considering the nearly level topography and substantial distance from the coast. The pit does not contain or adjoin open water, thus it does not play a in sediment and shoreline stabilization. Because of the small size of the pit, it does not likely contribute substantially to detaining surface runoff and hence does not likely play a significant role with respect to sediment/toxicant retention or nutrient removal/transformation. Because the pit is hydrologically isolated from other wetlands and surface water features, it may not substantially contribute to production export.

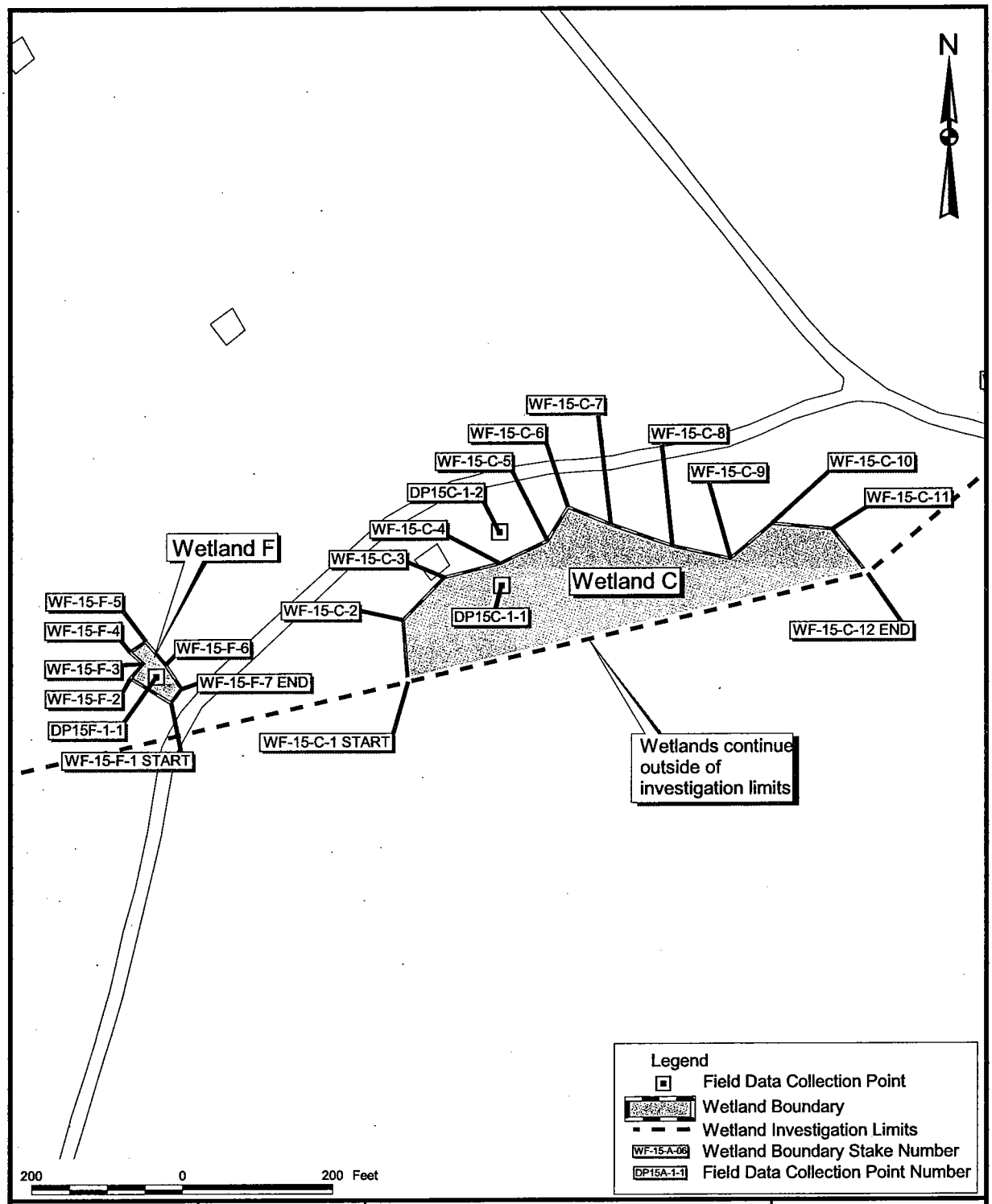
Other surface water features are abundant in the area, hence Wetland F does not likely serve as an important drinking water source for terrestrial wildlife. Wetland F does not contain permanent standing water and therefore does not provide aquatic habitat. Although most wetlands on Site 15 could be of substantial importance with respect to each of the wetland values considered, Wetland F's status as a man-made excavation pit could render its contribution insignificant.

Wetland F scored 0.58 (out of a possible 1.00) using WRAP (Appendix B). This score suggests a wetland of mediocre ecological and human value. The lower score relative to that for Wetlands A, C, and D primarily reflect the status of the wetland as a small man-made excavation pit.



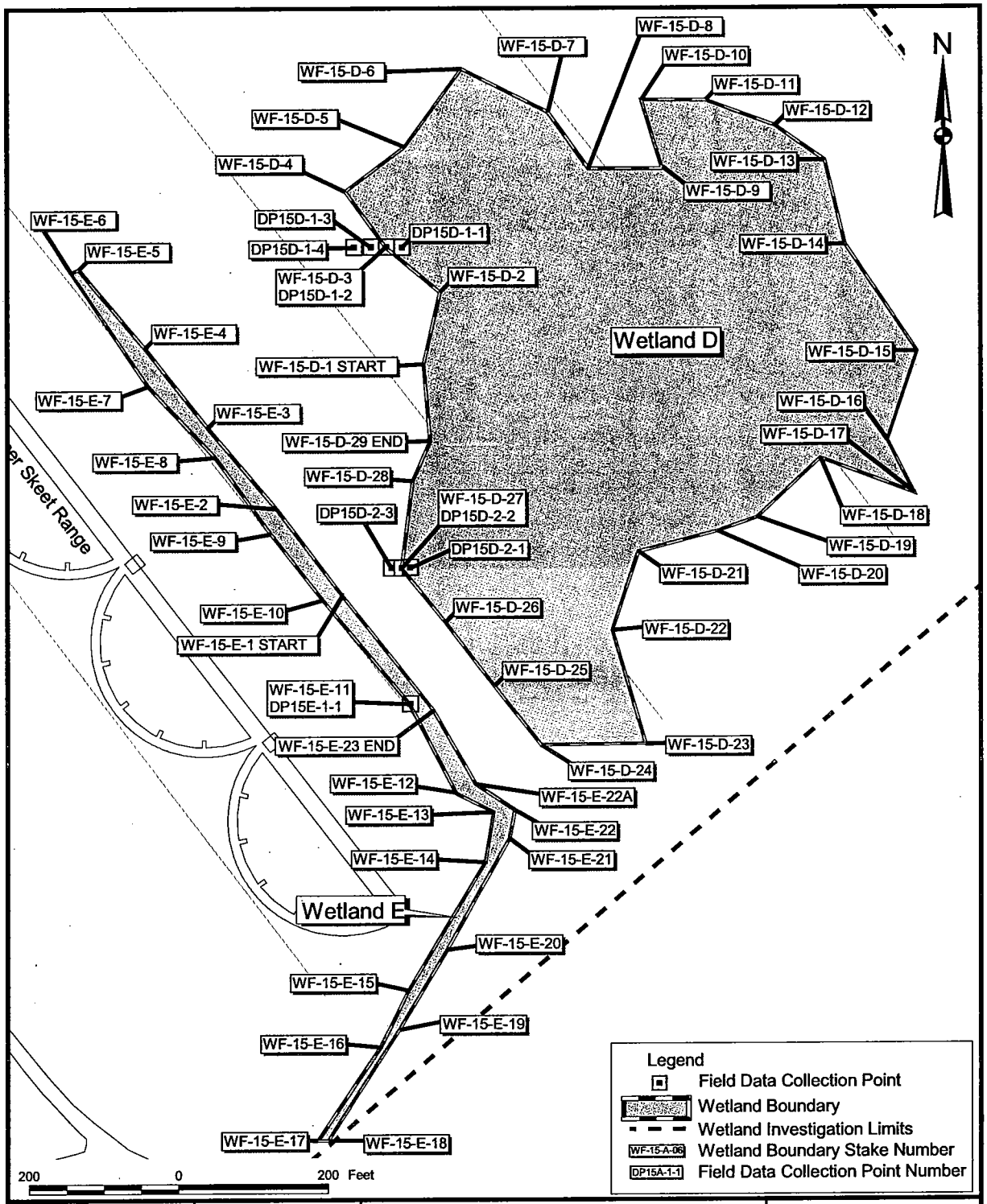
DRAWN BY MJJ	DATE 04Dec03	WETLAND DELINEATION MAP NORTHERN PART OF SITE 15 OU 5, SITE 15 WETLAND DELINEATION REPORT NAS CECIL FIELD JACKSONVILLE, FLORIDA	CONTRACT NUMBER 7653
CHECKED BY	DATE		APPROVED BY DATE
COST/SCHEDULE-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 3-1 REV 0

P:\GIS\Cecil\Site-15_Wwetlands.apr 16Dec03 MJJ 02-Layout



DRAWN BY MJJ	DATE 04Dec03	WETLAND DELINEATION MAP SOUTHERN PART OF SITE 15 OU 5, SITE 15 WETLAND DELINEATION REPORT NAS CECIL FIELD JACKSONVILLE, FLORIDA	CONTRACT NUMBER 7653
CHECKED BY	DATE		APPROVED BY DATE
COST/SCHEDULE-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 3-2 REV 0

P:\GIS\Cecil\Site-15_Wwetlands.apr 16Dec03 MJJ 04-Layout



DRAWN BY MJJ	DATE 04Dec03	WETLAND DELINEATION MAP SOUTHEASTERN PART OF SITE 15 OU 5, SITE 15 WETLAND DELINEATION REPORT NAS CECIL FIELD JACKSONVILLE, FLORIDA	CONTRACT NUMBER 7653
CHECKED BY	DATE		APPROVED BY DATE
COST/SCHEDULE-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 3-3 / REV 0

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4.0 SUMMARY

Six areas on NAS Cecil Field IR Program Site 15 meet the Federal technical criteria recognized by the U.S. EPA and COE for delineation as wetlands. These areas are designated as Wetlands A, B, C, D, E, and F and are depicted in Figures 3-1, 3-2, and 3-3. All are non-tidal, freshwater wetlands. Wetlands A, C, D, and E possess surface connections to tributaries that ultimately discharge into navigable waters of the United States and thus are "adjacent" wetlands subject to regulation under Section 404 of the Clean Water Act. Wetland B is separated from Wetland A and its connection to navigable waters by a narrow road bed and thus would likely to be regarded by U.S. EPA and COE as an "adjacent" wetland subject to Section 404 jurisdiction. Wetland F is contained within a small excavated pit situated more than 50 feet from the nearest wetland or other surface water. The U.S. EPA and COE would therefore regard Wetland F as an "isolated" wetland not under Section 404 jurisdiction.

All of the wetlands delineated on Site 15 meet the delineation of wetlands used by the FDEP and St. Johns River Water Management District under Chapter 62-340 of the Florida Administrative Code (F.A.C.). Although the wetland delineation methodology recognized by FDEP and St. Johns River Water Management District differs from that recognized by the U.S. EPA and COE, the different methodologies result in a substantially similar sequence of wetland boundaries on Site 15. In contrast to Section 404, the Florida statutes for wetland protection do not distinguish between "adjacent" and "isolated" wetlands. Therefore, impacts to Wetland F as well as impacts to Wetlands A, B, C, D, and E are subject to Florida jurisdiction.

The three largest wetlands delineated on Site 15 (Wetlands A, C, and D) appear to be wetlands of natural origin. All appear to provide good habitat for terrestrial wildlife and could play substantial roles in exporting nutrients and prey sources (production export) to down-gradient aquatic habitats in tributaries to Yellow Water Creek. All could be of substantial value as natural features of aesthetic and scientific value should Site 15 and surrounding lands ever be opened to the public. Efforts to minimize disturbance of these three wetland features during the remediation of Site 15 are recommended, as are efforts to restore in place (*in situ*) any areas that must be disturbed to satisfactorily accomplish the remedial action objectives.

The three smaller wetlands (Wetlands B, E, and F) appear to be of man-made origin and are clearly of lower significance with respect to wetland values and functions than are Wetlands A, C, and D. Wetland B appears to be the result of ponded water resulting from a man-made road bed. Wetland E appears to be a man-made drainage ditch, and Wetland F is a man-made excavation pit. Although these smaller, man-made wetlands are still subject to federal and/or state regulation, extraordinary efforts to minimize their disturbance or to restore the wetlands *in situ* are not recommended.

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APPENDIX A

WETLAND DELINEATION DATA SHEETS

DATA POINT 15A-1-1
10 FEET WETLAND (NORTH) OF STAKE "WET 15-A-13"
FORMER NAS CECIL FIELD, JACKSONVILLE, FLORIDA – IR SITE 15
WETLAND DELINEATION DATA FORM, PAGE 1

Project/Site:	NAS CECIL FIELD – IR SITE 15	Date:	10/02/03
Applicant:	SOUTHERN DIVISION NAVFAC	County:	DUVAL
Investigator:	J. PEYTON DOUB, PWS	State:	FLORIDA

Do Normal Circumstances exist on the site?:	[redacted]	No	Community ID:	WET PINE FLATWOODS (FLUCFCS CODE 620)
Is the site significantly disturbed (Atypical Situation)?:	Yes	[redacted]	Transect ID:	A-1
Is the area a potential Problem Area?: (If needed, explain on reverse)	Yes	[redacted]	Plot ID:	1

VEGETATION

Dominant Plant Species	Stratum (%)	Indicator (FL/FWS)	Other Plant Species	Stratum (%)	Indicator
PINUS ELLIOTTII	C (40)	UPL/FACW	MYRICA CERIFERA	S (1)	FAC/FAC
ACER RUBRUM	S (7)	FACW/FAC	MYRICA CERIFERA	H (1)	FAC/FAC
PINUS ELLIOTTII	S (5)	UPL/FACW			
MAGNOLIA VIRGINIANA	S (5)	OBL/FACW			
SERENOA REPENS	S (5)	UPL/UPL			
ILEX GLABRA	H (20)	UPL/FACW			
OSMUNDA CINNAMOMEA	H (20)	FACW/FACW			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). FLORIDA: 100 (BASED ON CANOPY) FWS: 100 (ALL STRATA)

Remarks: HYDROPHYTIC VEGETATION. HERBACEOUS GROUNDCOVER USED AS "APPROPRIATE VEGETATIVE STRATUM" BECAUSE CANOPY IS PLANTED PINE AND SUBCANOPY IS STRONGLY INFLUENCED BY PLANTED PINE. ALSO MEETS EPA/COE DEFINITION FOR HYDROPHYTIC VEGETATION.

HYDROLOGY

____ Recorded Data (Described in Remarks):	Wetland Hydrology Indicators:
____ Stream, Lake, or Tide Gauge	Primary Indicators:
____ Aerial Photographs	____ Inundated
____ Other	X Saturated in Upper 12 inches
X No Recorded Data Available	____ Water Marks
	____ Drift Lines
Field Observations:	____ Sediment Deposits
Depth of Surface Water: NONE (in.)	____ Drainage Patterns in Wetlands
Depth to Free Water in Pit: 6 (in.)	Secondary Indicators (2 or more required):
Depth to Saturated Soil: SURFACE (in.)	____ Oxidized Root Channels in Upper 12 inches
	X Water-Stained Leaves
	X Local Soil Survey Data
	X FAC-Neutral Test
	____ Other (Explain in Remarks)

Remarks: WETLAND HYDROLOGY. IN ADDITION TO THE INDICATORS CHECKED ABOVE, SOIL SURFACE DISPLAYED DISTINCT VEGETATIVE HUMMOCKS. THE FOLLOWING HYDROLOGICAL INDICATORS FROM 62-340.500 F.A.C. WERE OBSERVED: (8) HYDROLOGICAL DATA (DIRECT OBSERVATION OF SURFACE SATURATION DURING GROWING SEASON) AND (12) VEGETATED TUSSOCKS OR HUMMOCKS.

DATA POINT 15A-1-1
10 FEET WETLAND (NORTH) OF STAKE "WET 15-A-13"
FORMER NAS CECIL FIELD, JACKSONVILLE, FLORIDA – IR SITE 15
WETLAND DELINEATION DATA FORM, PAGE 2

SOIL

Map Unit Name (Series and Phase):	OLUSTEE FINE SAND	Drainage Class:	POORLY DRAINED
Taxonomy (subgroup):	ULTISOLS – ULTIC HAPLAQUODS	Field Observations Confirmed Mapped Type?	Yes **No**

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-3	A1	2.5Y 2.5/1	NONE	N/A	MUCKY FINE SAND
3-18+	A2 OR B2h	2.5Y 5/1	2.5Y 4/1	50:50	MUCKY FINE SAND
				POLYCHROMATIC	
				MATRIX	

Hydric Soil Indicators:

___	Histosol	___	Concretions
___	Histic Epipedon	___	High Organic Content in Surface Layer in Sandy Soil
___	Sulfidic Odor	___	Organic Streaking in Sandy Soils
___	Aquic Moisture Regime	X	Listed on Local Hydric Soils List
___	Reducing Conditions	X	Listed on National Hydric Soils List
___	Gleyed or Low-Chroma Colors	___	Other (Explain in Remarks)

Remarks: HYDRIC SOIL. FDEP HYDRIC SOIL FIELD INDICATOR S7 "DARK SURFACE".

WETLAND DETERMINATION (FLORIDA)

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	Yes	**No**	Is this Sampling Point Within a Wetland?	**Yes**	No
Wetland Hydrology Present?	**Yes**	No			
Hydric Soils Present?	**Yes**	No			

Remarks: THIS AREA IS A FLORIDA WETLAND BASED ON THE "D" TEST, 62-340.300(2)(d), WHICH IS BASED ON THE PRESENCE OF A HYDRIC SOIL AND A HYDROLOGIC INDICATOR.

THIS AREA IS A FEDERAL WETLAND BASED ON THE PRESENCE OF HYDROPHYTIC VEGETATION, HYDRIC SOIL, AND WETLAND HYDROLOGY, BASED ON DEFINITIONS IN THE "CORPS OF ENGINEERS WETLANDS DELINEATION MANUAL (ENVIRONMENTAL LABORATORY, 1987).

FLORIDA CLASSIFICATION: WETLAND (FLUCFCS CODE 624)
USFWS CLASSIFICATION: PALUSTRINE FORESTED WETLAND, NEEDLE-LEAVED EVERGREEN (PFO4).

DATA POINT 15A-1-2
AT STAKE "WET 15-A-13"
FORMER NAS CECIL FIELD, JACKSONVILLE, FLORIDA – IR SITE 15
WETLAND DELINEATION DATA FORM, PAGE 1

Project/Site:	NAS CECIL FIELD – IR SITE 15	Date:	10/02/03
Applicant:	SOUTHERN DIVISION NAVFAC	County:	DUVAL
Investigator:	J. PEYTON DOUB, PWS	State:	FLORIDA
Do Normal Circumstances exist on the site?:	[redacted] No	Community ID:	ECOTONE (FLUCFCS CODES 624-441)
Is the site significantly disturbed (Atypical Situation)?:	Yes [redacted]	Transect ID:	A-1
Is the area a potential Problem Area?: (If needed, explain on reverse)	Yes [redacted]	Plot ID:	2

VEGETATION

Dominant Plant Species	Stratum (%)	Indicator (FL/FWS)	Other Plant Species	Stratum (%)	Indicator
PINUS ELLIOTTII	C (60)	UPL/FACW	ACER RUBRUM	C (5)	FACW/FAC
ACER RUBRUM	S (10)	FACW/FAC	NYSSA SYLVATICA	C (5)	UPL/FAC
SERENOA REPENS	S (15)	UPL/UPL	QUERCUS NIGRA	S (<1)	FACW/FAC
ILEX GLABRA	H (30)	UPL/FACW	OSMUNDA CINNAMOMEA	H (5)	FACW/FACW

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). FLORIDA: 40 (BASED ON SUBCANOPY) FWS: 100 (ALL STRATA)

Remarks: ON TRANSITION FROM AN AREA THAT MEETS FLORIDA DEFINITION OF HYDROPHYIC VEGETATION AND AN AREA THAT DOES NOT. SUBCANOPY USED AS "APPROPRIATE VEGETATIVE STRATUM" BECAUSE CANOPY IS PLANTED PINE. VEGETATON ON BOTH SIDES OF THIS POINT MEETS THE FEDERAL CRITERIA FOR HYDROPHYTIC VEGETATION.

HYDROLOGY

____ Recorded Data (Described in Remarks):	Wetland Hydrology Indicators:
____ Stream, Lake, or Tide Gauge	Primary Indicators:
____ Aerial Photographs	____ Inundated
____ Other	____ Saturated in Upper 12 inches
X No Recorded Data Available	____ Water Marks
	____ Drift Lines
Field Observations:	____ Sediment Deposits
Depth of Surface Water: NONE (in.)	____ Drainage Patterns in Wetlands
Depth to Free Water in Pit: 15 (in.)	Secondary Indicators (2 or more required):
Depth to Saturated Soil: 10 (in.)	____ Oxidized Root Channels in Upper 12 inches
	____ Water-Stained Leaves
	X Local Soil Survey Data
	X FAC-Neutral Test
	____ Other (Explain in Remarks)

Remarks: POINT LIES ON A TRANSITION FROM WETLAND HYDROLOGY TO NON-WETLAND (UPLAND) HYDROLOGY. VEGETATED HUMMOCKS OBSERVED ONLY DOWNGRADIENT (WET SIDE) OF THIS POINT.

DATA POINT 15A-1-2
AT STAKE "WET 15-D-13"
FORMER NAS CECIL FIELD, JACKSONVILLE, FLORIDA – IR SITE 15
WETLAND DELINEATION DATA FORM, PAGE 2

SOIL

Map Unit Name (Series and Phase):	OLUSTEE FINE SAND	Drainage Class:	POORLY DRAINED
Taxonomy (subgroup):	ULTISOLS – ULTIC HAPLAQUODS	Field Observations Confirmed Mapped Type?	Yes [redacted]

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-3	A1	2.5Y 2.5/1	NONE	N/A	MUCKY FINE SAND
3-18+	A2 OR B2h	2.5Y 5/1	2.5Y 3/1 STREAKS	50:50 POLYCHROMATIC MATRIX	MUCKY FINE SAND

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soil
- ___ Organic Streaking in Sandy Soils
- X Listed on Local Hydric Soils List
- X Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: POINT ON TRANSITION FROM HYDRIC TO NON-HYDRIC SOILS.

WETLAND DETERMINATION (FLORIDA)

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	[redacted]	No	Is this Sampling Point Within a Wetland?	[redacted]	No
Wetland Hydrology Present?	[redacted]	No			
Hydric Soils Present?	[redacted]	No			

Remarks: THIS AREA IS TRANSITIONAL FROM A FLORIDA WETLAND TO A NON-WETLAND.

THIS AREA IS A FEDERAL WETLAND BASED ON THE PRESENCE OF HYDROPHYTIC VEGETATION, HYDRIC SOIL, AND WETLAND HYDROLOGY, BASED ON DEFINITIONS IN THE "CORPS OF ENGINEERS WETLANDS DELINEATION MANUAL (ENVIRONMENTAL LABORATORY, 1987). HOWEVER, IT IS IN TRANSITION TO A NON WETLAND.

FLORIDA CLASSIFICATION: ECOTONE BETWEEN FLUCFCS CODES 624 AND 441
USFWS CLASSIFICATION: ECOTONE BETWEEN PALUSTRINE FORESTED WETLAND, NEEDLE-LEAVED EVERGREEN (PFO4) WETLAND AND UPLAND (U).

DATA POINT 15A-1-3
10 FEET UPLAND (SOUTH) OF STAKE "WET 15-A-13"
FORMER NAS CECIL FIELD, JACKSONVILLE, FLORIDA – IR SITE 15
WETLAND DELINEATION DATA FORM, PAGE 1

Project/Site:	NAS CECIL FIELD – IR SITE 15	Date:	10/01/03
Applicant:	SOUTHERN DIVISION NAVFAC	County:	DUVAL
Investigator:	J. PEYTON DOUB, PWS	State:	FLORIDA

Do Normal Circumstances exist on the site?:	[redacted]	No	Community ID:	PINE PLANTATION (FLUCFCS CODE 441)
Is the site significantly disturbed (Atypical Situation)?:	Yes	[redacted]	Transect ID:	A-1
Is the area a potential Problem Area?: (If needed, explain on reverse)	Yes	[redacted]	Plot ID:	3

VEGETATION

Dominant Plant Species	Stratum (%)	Indicator (FL/FWS)	Other Plant Species	Stratum (%)	Indicator
PINUS ELLIOTTII	C (60)	UPL/FACW	NYSSA SYLVATICA	C (5)	FAC/FAC
SERENOA REPENS	S (50)	UPL/UPL	ACER RUBRUM	C (5)	FACW/FAC
ILEX GLABRA	H (25)	UPL/FACW	NYSSA SYLVATICA	S (5)	FAC/FAC
			MYRICA CERIFERA	H (5)	FAC/FAC

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). FLORIDA: 0 (BASED ON SUBCANOPY) FWS: 67 (ALL STRATA)

Remarks: DOES NOT MEET FLORIDA DEFINITION OF HYDROPHYTIC VEGETATION. DOES MEET EPA/COE DEFINITION FOR HYDROPHYTIC VEGETATION. SUBCANOPY USED AS "APPROPRIATE VEGETATIVE STRATUM" BECAUSE CANOPY IS PLANTED PINE.

HYDROLOGY

Recorded Data (Described in Remarks):
- ____ Stream, Lake, or Tide Gauge
- ____ Aerial Photographs
- ____ Other
- X No Recorded Data Available

Field Observations:

Depth of Surface Water:	NONE	(in.)
Depth to Free Water in Pit:	15	(in.)
Depth to Saturated Soil:	10	(in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ____ Inundated
- ____ Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- X Local Soil Survey Data
- X FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: NOT WETLAND HYDROLOGY. NONE OF THE HYDROLOGICAL INDICATORS FROM 62-340.500 F.A.C. WERE OBSERVED. EVIDENCE OF WETLAND HYDROLOGY PER FEDERAL CRITERIA IS VERY WEAK.

DATA POINT 15A-1-3
10 FEET UPLAND (SOUTH) OF STAKE "WET 15-A-13"
FORMER NAS CECIL FIELD, JACKSONVILLE, FLORIDA – IR SITE 15
WETLAND DELINEATION DATA FORM, PAGE 2

SOIL

Map Unit Name (Series and Phase):	OLUSTEE FINE SAND	Drainage Class:	POORLY DRAINED
Taxonomy (subgroup):	ULTISOLS – ULTIC HAPLAQUODS	Field Observations Confirmed Mapped Type?	Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-3	A1	2.5Y 2.5/1	NONE	N/A	MUCKY FINE SAND
3-18+	A2 OR B2h	2.5Y 2.5/1	2.5Y 5/1 STREAKS	50:50 POLYCHROMATIC MATRIX	FINE SAND

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soil
- ___ Organic Streaking in Sandy Soils
- X Listed on Local Hydric Soils List
- X Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: POINT ON TRANSITION FROM HYDRIC TO NON-HYDRIC SOILS. DARK SURFACE HORIZON LESS PRONOUNCED THAN IN THE WETLANDS.

WETLAND DETERMINATION (FLORIDA)

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland?	Yes	No
Wetland Hydrology Present?	Yes	No			
Hydric Soils Present?	Yes	No			

Remarks: THIS AREA DOES NOT MEET ANY OF THE CRITERIA FOR A FLORIDA WETLAND IN 62-340.300(2) F.A.C. ALTHOUGH THE AREA DISPLAYS MARGINAL EVIDENCE OF EACH OF THE THREE FEDERAL WETLAND PARAMETERS (ENVIRONMENTAL LABORATORY, 1987), REASONABLE SCIENTIFIC JUDGEMENT SUGGESTS THAT THE AREA FUNCTIONS MORE LIKE AN UPLAND THAN A WETLAND.

FLORIDA CLASSIFICATION: FLUCFCS CODE 441 (PINE PLANTATION)
USFWS CLASSIFICATION: UPLAND (U).

DATA POINT 15B-1-1
10 FEET WETLAND (NORTH) OF STAKE "WET 15-B-3"
FORMER NAS CECIL FIELD, JACKSONVILLE, FLORIDA – IR SITE 15
WETLAND DELINEATION DATA FORM, PAGE 1

Project/Site:	NAS CECIL FIELD – IR SITE 15	Date:	10/02/03
Applicant:	SOUTHERN DIVISION NAVFAC	County:	DUVAL
Investigator:	J. PEYTON DOUB, PWS	State:	FLORIDA

Do Normal Circumstances exist on the site?:		No	Community ID:	WET SWALE IN PINE PLANT. (FLUCFCS 441)
Is the site significantly disturbed (Atypical Situation)?:	Yes		Transect ID:	B-1
Is the area a potential Problem Area?: (If needed, explain on reverse)	Yes		Plot ID:	1

VEGETATION

Dominant Plant Species	Stratum (%)	Indicator (FL/FWS)	Other Plant Species	Stratum (%)	Indicator
PINUS ELLIOTTII	C (5)	UPL/FACW	RHYNCHOSPORA ODORATA (?)	H (5)	FACW/OBL
ACER RUBRUM	S (10)	FACW/FAC	ACER RUBRUM	H (5)	FACW/FAC
IRIS SP.	H (25)	OBL/FACW	GALEUM TINCTORIUM (?)	H (5)	FACW/FACW
RHYNCHOSPORA TRACYI (?)	H (10)	OBL/OBL	HYPOXIS SP.	H (5)	FACW/FAC
			LYCOPUS SP.	H (5)	OBL/OBL
			DICHONDRA CAROLINENSIS	H (5)	FAC/FACW
			LINUM SP.	H (5)	FAC/FAC

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). FLORIDA: 100 (BASED ON SUBCANOPY) FWS: 100 (ALL STRATA)

Remarks: HYDROPHYTIC VEGETATION. SUBCANOPY IS USED AS "APPROPRIATE VEGETATIVE STRATUM" BECAUSE CANOPY IS PLANTED PINE. ALSO MEETS EPA/COE DEFINITION FOR HYDROPHYTIC VEGETATION.

HYDROLOGY

____ Recorded Data (Described in Remarks):	Wetland Hydrology Indicators:
____ Stream, Lake, or Tide Gauge	Primary Indicators:
____ Aerial Photographs	____ Inundated
____ Other	X Saturated in Upper 12 inches
X No Recorded Data Available	X Water Marks (1-2" ABOVE GROUND SURFACE)
	____ Drift Lines
Field Observations:	____ Sediment Deposits
Depth of Surface Water: NONE (in.)	____ Drainage Patterns in Wetlands
Depth to Free Water in Pit: NONE TO 20"+ (in.)	Secondary Indicators (2 or more required):
Depth to Saturated Soil: SURFACE (in.)	____ Oxidized Root Channels in Upper 12 inches
	X Water-Stained Leaves
	X Local Soil Survey Data
	X FAC-Neutral Test
	____ Other (Explain in Remarks)

Remarks: WETLAND HYDROLOGY. SURFACE WATER APPEARS TO BE PERCHED, PERHAPS RUNOFF THAT COLLECTS IN SWALE BUT CAN NOT PASS UNDER ROADWAY (NO CULVERT OBSERVED). THE FOLLOWING HYDROLOGICAL INDICATORS FROM 62-340.500 F.A.C. WERE OBSERVED: (8) HYDROLOGICAL DATA (DIRECT OBSERVATION OF SURFACE SATURATION DURING GROWING SEASON) AND (13) WATER MARKS.

DATA POINT 15B-1-1
10 FEET WETLAND (NORTH) OF STAKE "WET 15-B-3"
FORMER NAS CECIL FIELD, JACKSONVILLE, FLORIDA – IR SITE 15
WETLAND DELINEATION DATA FORM, PAGE 2

SOIL

Map Unit Name (Series and Phase):	RIDGELAND FINE SAND	Drainage Class:	POORLY DRAINED
Taxonomy (subgroup):	ULTISOLS – ULTIC HAPLAQUODS	Field Observations Confirmed Mapped Type?	Yes [redacted]

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-3	A1	2.5Y 3/1	NONE	N/A	MUCKY FINE SAND
3-18+	A2 OR B2h	2.5Y 4/2	NONE	N/A	FINE SAND

Hydric Soil Indicators:

___	Histosol	___	Concretions
___	Histic Epipedon	___	High Organic Content in Surface Layer in Sandy Soil
___	Sulfidic Odor	___	Organic Streaking in Sandy Soils
X	Aquic Moisture Regime	X	Listed on Local Hydric Soils List
___	Reducing Conditions	X	Listed on National Hydric Soils List
___	Gleyed or Low-Chroma Colors	___	Other (Explain in Remarks)

Remarks: APPEARS TO BE A HYDRIC SOIL ONLY BECAUSE OF THE EVIDENT PONDING OF SURFACE WATER. PONDING LIKELY CAUSED BY FACT THAT ADJOINING ROADWAY WAS CONSTRUCTED ACROSS THIS SWALE WITHOUT A CULVERT OR OTHER FEATURE ALLOWING THE DOWN-GRADIENT FLOW OF SURFACE WATER.

WETLAND DETERMINATION (FLORIDA)

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	[redacted]	No	Is this Sampling Point Within a Wetland?	[redacted]	No
Wetland Hydrology Present?	[redacted]	No			
Hydric Soils Present?	[redacted]	No			

Remarks: THIS AREA IS A FLORIDA WETLAND BASED ON THE "B" TEST, 62-340.300(2)(d), WHICH IS BASED ON THE PRESENCE OF 80% OF PLANT COVER IN APPROPRIATE STRATUM (IN THIS CASE, THE SUBCANOPY) CONSISTING OF OBL AND FACW SPECIES VS. LESS THAN 20% OF THE PLANT COVER CONSISTING OF UPL SPECIES.

THIS AREA IS A FEDERAL WETLAND BASED ON THE PRESENCE OF HYDROPHYTIC VEGETATION, HYDRIC SOIL, AND WETLAND HYDROLOGY, BASED ON DEFINITIONS IN THE "CORPS OF ENGINEERS WETLANDS DELINEATION MANUAL (ENVIRONMENTAL LABORATORY, 1987).

FLORIDA CLASSIFICATION: WETLAND (FLUCFCS CODE 441)
USFWS CLASSIFICATION: PALUSTRINE FORESTED WETLAND, NEEDLE-LEAVED EVERGREEN (PFO4).

DATA POINT 15B-1-2
10 FEET UPLAND (SOUTH) OF STAKE "WET 15-B-3"
FORMER NAS CECIL FIELD, JACKSONVILLE, FLORIDA – IR SITE 15
WETLAND DELINEATION DATA FORM, PAGE 1

Project/Site:	NAS CECIL FIELD – IR SITE 15	Date:	10/01/03
Applicant:	SOUTHERN DIVISION NAVFAC	County:	DUVAL
Investigator:	J. PEYTON DOUB, PWS	State:	FLORIDA
Do Normal Circumstances exist on the site?:	Yes [redacted] No	Community ID:	PINE PLANTATION (FLUCFCS CODE 441)
Is the site significantly disturbed (Atypical Situation)?:	Yes [redacted]	Transect ID:	B-1
Is the area a potential Problem Area?: (If needed, explain on reverse)	Yes [redacted]	Plot ID:	2

VEGETATION

Dominant Plant Species	Stratum (%)	Indicator (FL/FWS)	Other Plant Species	Stratum (%)	Indicator
PINUS ELLIOTTII	C (60)	UPL/FACW			
MYRICA CERIFERA	S (10)	FAC/FAC			
ACER RUBRUM	S (5)	FACW/FAC			
PTERIDIUM AQUILINUM	H (5)	UPL/UPL			
QUERCUS NIGRA	H (5)	FACW/FAC			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). FLORIDA: 100 (BASED ON SUBCANOPY) FWS: 80 (ALL STRATA)

Remarks: ALTHOUGH TECHNICALLY MEETING BOTH THE FLORIDA AND FEDERAL CRITERIA FOR HYDROPHYTIC VEGETATION, THIS AREA OF PLANTED PINES WITH SPARSE UNDERSTORY APPEARS TO FUNCTION MORE AS UPLAND.

HYDROLOGY

Recorded Data (Described in Remarks):
- ____ Stream, Lake, or Tide Gauge
- ____ Aerial Photographs
- ____ Other
- X No Recorded Data Available

Field Observations:

Depth of Surface Water:	NONE	(in.)
Depth to Free Water in Pit:	24	(in.)
Depth to Saturated Soil:	18	(in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ____ Inundated
- ____ Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- X Local Soil Survey Data
- X FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: NOT WETLAND HYDROLOGY. NONE OF THE HYDROLOGICAL INDICATORS FROM 62-340.500 F.A.C. WERE OBSERVED. EVIDENCE OF WETLAND HYDROLOGY PER FEDERAL CRITERIA IS VERY WEAK.

DATA POINT 15B-1-3
10 FEET UPLAND (SOUTH) OF STAKE "WET 15-B-2"
FORMER NAS CECIL FIELD, JACKSONVILLE, FLORIDA – IR SITE 15
WETLAND DELINEATION DATA FORM, PAGE 2

SOIL

Map Unit Name (Series and Phase):	RIDGELAND FINE SAND	Drainage Class:	POORLY DRAINED
Taxonomy (subgroup):	ULTISOLS – TYPIC HAPLAQUODS	Field Observations Confirmed Mapped Type?	Yes **No**

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-10	A	2.5Y 5/1	NONE	N/A	FINE SAND
10-15	B	10YR 4/3	NONE	N/A	FINE SANDY LOAM
15-20	B	10YR 4/4	NONE	N/A	FINE SANDY LOAM
20-30	B	10YR 4/3	10YR 4/1	50:50 POLYCHROMATIC MATRIX	FINE SANDY LOAM

Hydric Soil Indicators:

___	Histosol	___	Concretions
___	Histic Epipedon	___	High Organic Content in Surface Layer in Sandy Soil
___	Sulfidic Odor	___	Organic Streaking in Sandy Soils
___	Aquic Moisture Regime	X	Listed on Local Hydric Soils List
___	Reducing Conditions	X	Listed on National Hydric Soils List
___	Gleyed or Low-Chroma Colors	___	Other (Explain in Remarks)

Remarks: NON-HYDRIC SOILS.

WETLAND DETERMINATION (FLORIDA)

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	Yes	**No**
Wetland Hydrology Present?	Yes	**No**			
Hydric Soils Present?	Yes	**No**			

Remarks: THIS AREA DOES NOT MEET ANY OF THE CRITERIA FOR A FLORIDA WETLAND IN 62-340.300(2) F.A.C. AND DOES NOT MEET THE FEDERAL SOILS OR HYDROLOGY CRITERIA (ENVIRONMENTAL LABORATORY, 1987).

FLORIDA CLASSIFICATION: FLUCFCS CODE 441 (PINE PLANTATION)
USFWS CLASSIFICATION: UPLAND (U).

DATA POINT 15C-1-1
10 FEET WETLAND (SOUTH) OF STAKE "WET 15-C-4"
FORMER NAS CECIL FIELD, JACKSONVILLE, FLORIDA – IR SITE 15
WETLAND DELINEATION DATA FORM, PAGE 1

Project/Site:	NAS CECIL FIELD – IR SITE 15	Date:	10/02/03
Applicant:	SOUTHERN DIVISION NAVFAC	County:	DUVAL
Investigator:	J. PEYTON DOUB, PWS	State:	FLORIDA

Do Normal Circumstances exist on the site?:	[redacted]	No	Community ID:	WET PINE FLATWOODS (FLUCFCS CODE 620)
Is the site significantly disturbed (Atypical Situation)?:	Yes	[redacted]	Transect ID:	C-1
Is the area a potential Problem Area?: (If needed, explain on reverse)	Yes	[redacted]	Plot ID:	1

VEGETATION

Dominant Plant Species	Stratum (%)	Indicator (FL/FWS)	Other Plant Species	Stratum (%)	Indicator
PINUS ELLIOTTII	C (20)	UPL/FACW	ILEX GLABRA	S (<1)	UPL/FACW
NYSSA SYLVATICA	C (20)	OBL/OBL	MYRICA CERIFERA	S (<1)	FAC/FAC
PINUS ELLIOTTII	S (5)	UPL/FACW	OSMUNDA CINNAMOMEA	H (20)	FACW/FACW
QUERCUS NIGRA	S (5)	FACW/FAC			
NYSSA SYLVATICA	S (5)	OBL/OBL			
WOODWARDIA AREOLATA	H (30)	OBL/OBL			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-).

FLORIDA: 100 (BASED ON GROUNDCOVER) FWS: 100 (ALL STRATA)

Remarks: HYDROPHYTIC VEGETATION. HERBACEOUS GROUNDCOVER USED AS "APPROPRIATE VEGETATIVE STRATUM" BECAUSE CANOPY IS PLANTED PINE AND SUBCANOPY IS SPARSE AND STRONGLY INFLUENCED BY PLANTED PINE. ALSO MEETS EPA/COE DEFINITION FOR HYDROPHYTIC VEGETATION.

HYDROLOGY

Recorded Data (Described in Remarks):
- ____ Stream, Lake, or Tide Gauge
- ____ Aerial Photographs
- ____ Other
- X No Recorded Data Available

Field Observations:

Depth of Surface Water:	NONE	(in.)
Depth to Free Water in Pit:	3	(in.)
Depth to Saturated Soil:	SURFACE	(in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ____ Inundated
- X Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- X Local Soil Survey Data
- X FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: WETLAND HYDROLOGY. IN ADDITION TO THE INDICATORS CHECKED ABOVE, SOIL SURFACE DISPLAYED SLIGHT VEGETATIVE HUMMOCKS. THE FOLLOWING HYDROLOGICAL INDICATORS FROM 62-340.500 F.A.C. WERE OBSERVED: (8) HYDROLOGICAL DATA (DIRECT OBSERVATION OF SURFACE SATURATION DURING GROWING SEASON) AND (12) VEGETATED TUSSOCKS OR HUMMOCKS.

DATA POINT 15C-1-1
10 FEET WETLAND (SOUTH) OF STAKE "WET 15-C-4"
FORMER NAS CECIL FIELD, JACKSONVILLE, FLORIDA – IR SITE 15
WETLAND DELINEATION DATA FORM, PAGE 2

SOIL

Map Unit Name (Series and Phase):	OLUSTEE FINE SAND	Drainage Class:	POORLY DRAINED
Taxonomy (subgroup):	ULTISOLS – ULTIC HAPLAQUODS	Field Observations Confirmed Mapped Type?	Yes [redacted]

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-3	A1	2.5Y 2.5/1	NONE	N/A	MUCKY FINE SAND
3-18+	A2 OR B2h	2.5Y 2.5/1	2.5Y 5/1	70:30	MUCKY FINE SAND
				POLYCHROMATIC	
				MATRIX	

Hydric Soil Indicators:

___	Histosol	___	Concretions
___	Histic Epipedon	X	High Organic Content in Surface Layer in Sandy Soil
___	Sulfidic Odor	___	Organic Streaking in Sandy Soils
___	Aquic Moisture Regime	X	Listed on Local Hydric Soils List
___	Reducing Conditions	X	Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors	___	Other (Explain in Remarks)

Remarks: HYDRIC SOIL. FDEP HYDRIC SOIL FIELD INDICATOR S7 "DARK SURFACE" AND S6 "STRIPPED MATRIX".

WETLAND DETERMINATION (FLORIDA)

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	Yes	[redacted]	Is this Sampling Point Within a Wetland?	[redacted]	No
Wetland Hydrology Present?	[redacted]	No			
Hydric Soils Present?	[redacted]	No			

Remarks: THIS AREA IS A FLORIDA WETLAND BASED ON THE "A" TEST, 62-340.300(2)(a), WHICH IS BASED ON THE PREVALENCE OF OBLIGATE VEGETATION OVER UPLAND VEGETATION AND ALSO THE PRESENCE OF FIELD INDICATORS HYDRIC SOILS AND/OR WETLAND HYDROLOGY; AS WELL AS MEETING THE "D" TEST, 62-340.300(2)(d), WHICH IS BASED ON THE PRESENCE OF FIELD INDICATORS OF HYDRIC SOIL AND WETLAND HYDROLOGY.

THIS AREA IS A FEDERAL WETLAND BASED ON THE PRESENCE OF HYDROPHYTIC VEGETATION, HYDRIC SOIL, AND WETLAND HYDROLOGY, BASED ON DEFINITIONS IN THE "CORPS OF ENGINEERS WETLANDS DELINEATION MANUAL (ENVIRONMENTAL LABORATORY, 1987).

FLORIDA CLASSIFICATION: WETLAND (FLUCFCS CODE 620)
USFWS CLASSIFICATION: PALUSTRINE FORESTED WETLAND, NEEDLE-LEAVED EVERGREEN (PFO4).

DATA POINT 15C-1-2
10 FEET UPLAND (NORTH) OF STAKE "WET 15-C-4"
FORMER NAS CECIL FIELD, JACKSONVILLE, FLORIDA – IR SITE 15
WETLAND DELINEATION DATA FORM, PAGE 1

Project/Site:	NAS CECIL FIELD – IR SITE 15	Date:	10/01/03
Applicant:	SOUTHERN DIVISION NAVFAC	County:	DUVAL
Investigator:	J. PEYTON DOUB, PWS	State:	FLORIDA

Do Normal Circumstances exist on the site?:	[redacted]	No	Community ID:	CLEARCUT PINE PLANT. (FLUCFCS CODE 441)
Is the site significantly disturbed (Atypical Situation)?:	Yes	[redacted]	Transect ID:	C-1
Is the area a potential Problem Area?: (If needed, explain on reverse)	Yes	[redacted]	Plot ID:	2

VEGETATION

Dominant Plant Species	Stratum (%)	Indicator (FL/FWS)	Other Plant Species	Stratum (%)	Indicator
ACER RUBRUM	S (5)	FACW/FAC	PINUS ELLIOTTII	H (<1)	UPL/FACW
MYRICA CERIFERA	S (5)	FAC/FAC	MYRICA CERIFERA	H (5)	FAC/FAC
QUERCUS NIGRA	S (5)	FACW/FAC			
RUBUS SP.	H (25)	FAC/VAR			
ILEX GLABRA	H (25)	UPL/FACW			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). FLORIDA: 100 (BASED ON SUBCANOPY) FWS: 80 (ALL STRATA)

Remarks: MEETS FLORIDA AND EPA/COE DEFINITIONS OF HYDROPHYTIC VEGETATION. IT IS NOTED, HOWEVER, THAT NO OBL SPECIES ARE PRESENT AND ALL OF THE DOMINANT SPECIES COMMONLY OCCUR IN MESIC UPLANDS AS WELL AS WETLANDS.

HYDROLOGY

Recorded Data (Described in Remarks):
- ____ Stream, Lake, or Tide Gauge
- ____ Aerial Photographs
- ____ Other
- X No Recorded Data Available

Field Observations:

Depth of Surface Water:	NONE	(in.)
Depth to Free Water in Pit:	20	(in.)
Depth to Saturated Soil:	15	(in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ____ Inundated
- ____ Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- X Local Soil Survey Data
- X FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: NOT WETLAND HYDROLOGY. NONE OF THE HYDROLOGICAL INDICATORS FROM 62-340.500 F.A.C. WERE OBSERVED. EVIDENCE OF WETLAND HYDROLOGY PER FEDERAL CRITERIA IS VERY WEAK.

DATA POINT 15C-1-2
10 FEET UPLAND (NORTH) OF STAKE "WET 15-C-4"
FORMER NAS CECIL FIELD, JACKSONVILLE, FLORIDA – IR SITE 15
WETLAND DELINEATION DATA FORM, PAGE 2

SOIL

Map Unit Name (Series and Phase):	OLUSTEE FINE SAND	Drainage Class:	POORLY DRAINED
Taxonomy (subgroup):	ULTISOLS – ULTIC HAPLAQUODS	Field Observations Confirmed Mapped Type?	Yes **No**

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-3	A1	2.5Y 4/1	NONE	N/A	FINE SAND
3-8	A2 OR B2h	2.5Y 3/2	NONE	N/A	FINE SAND
8-18+	A2 OR B2h	2.5Y 3/1	NONE	N/A	FINE SAND

Hydric Soil Indicators:

___	Histosol	___	Concretions
___	Histic Epipedon	___	High Organic Content in Surface Layer in Sandy Soil
___	Sulfidic Odor	___	Organic Streaking in Sandy Soils
___	Aquic Moisture Regime	X	Listed on Local Hydric Soils List
___	Reducing Conditions	X	Listed on National Hydric Soils List
___	Gleyed or Low-Chroma Colors	___	Other (Explain in Remarks)

Remarks: NO FLORIDA OR FEDERAL FIELD INDICATORS OF HYDRIC SOIL.

WETLAND DETERMINATION (FLORIDA)

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	Yes	**No**
Wetland Hydrology Present?	Yes	**No**			
Hydric Soils Present?	Yes	**No**			

Remarks: THIS AREA DOES NOT MEET ANY OF THE CRITERIA FOR A FLORIDA WETLAND IN 62-340.300(2) F.A.C. AND ONLY MEETS ONE OF THE THREE FEDERAL CRITERIA.

FLORIDA CLASSIFICATION: FLUCFCS CODE 441 (PINE PLANTATION)
USFWS CLASSIFICATION: UPLAND (U).

DATA POINT 15D-1-1
10 FEET WETLAND (EAST) OF STAKE "WET 15-D-3"
FORMER NAS CECIL FIELD, JACKSONVILLE, FLORIDA – IR SITE 15
WETLAND DELINEATION DATA FORM, PAGE 1

Project/Site:	NAS CECIL FIELD – IR SITE 15	Date:	10/01/03
Applicant:	SOUTHERN DIVISION NAVFAC	County:	DUVAL
Investigator:	J. PEYTON DOUB, PWS	State:	FLORIDA
Do Normal Circumstances exist on the site?:	[redacted] No	Community ID:	CYPRESS (FLUCFCS CODE 621)
Is the site significantly disturbed (Atypical Situation)?:	Yes [redacted]	Transect ID:	D-1
Is the area a potential Problem Area?: (If needed, explain on reverse)	Yes [redacted]	Plot ID:	1

VEGETATION

Dominant Plant Species	Stratum (%)	Indicator (FL/FWS)	Other Plant Species	Stratum (%)	Indicator
PINUS ELLIOTTII	C (10)	UPL/FACW			
PINUS ELLIOTTII	S (5)	UPL/FACW			
ILEX GLABRA	H (5)	UPL/FACW			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). FLORIDA: 0 (BASED ON SUBCANOPY) FWS: 100 (ALL STRATA)

Remarks: HYDROPHYTIC VEGETATION. ALTHOUGH PINUS ELLIOTTII AND ILEX GLABRA ARE NOT FACW OR OBL PER FLORIDA REGULATION, REASONABLE SCIENTIFIC JUDGEMENT SUGGESTS THAT THE SPARSENESS OF THE VEGETATION AT THIS POINT IS DUE TO PERIOD SURFACE INUNDATION. THE VEGETATION CLEARLY MEETS THE EPA/COE DEFINITION FOR HYDROPHYTIC VEGETATION. THE PREDOMINANT CANOPY AND SUBCANOPY PINE OVER MOST OF THIS COMMUNITY IS POND CYPRESS (TAXODIUM ASCENDENS).

HYDROLOGY

Recorded Data (Described in Remarks):
- ____ Stream, Lake, or Tide Gauge
- ____ Aerial Photographs
- ____ Other
- X No Recorded Data Available

Field Observations:

Depth of Surface Water:	NONE	(in.)
Depth to Free Water in Pit:	7	(in.)
Depth to Saturated Soil:	SURFACE	(in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ____ Inundated
- X Saturated in Upper 12 inches
- X Water Marks (1-2" ABOVE SURFACE)
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ____ Oxidized Root Channels in Upper 12 inches
- X Water-Stained Leaves
- X Local Soil Survey Data
- X FAC-Neutral Test
- X Other (Explain in Remarks)

Remarks: WETLAND HYDROLOGY. IN ADDITION TO THE ITEMS CHECKED ABOVE, SLIGHT EVIDENCE OF A DRIED ALGAL MAT WAS OBSERVED. THE FOLLOWING HYDROLOGICAL INDICATORS FROM 62-340.500 F.A.C. WERE OBSERVED: (1) ALGAL MATS, (8) HYDROLOGICAL DATA (DIRECT OBSERVATION OF SURFACE SATURATION DURING GROWING SEASON), AND (13) WATER MARKS.

DATA POINT 15D-1-1
10 FEET WETLAND (EAST) OF STAKE "WET 15-D-3"
FORMER NAS CECIL FIELD, JACKSONVILLE, FLORIDA – IR SITE 15
WETLAND DELINEATION DATA FORM, PAGE 2

SOIL

Map Unit Name (Series and Phase):	RIDGELAND FINE SAND	Drainage Class:	POORLY DRAINED
Taxonomy (subgroup):	ULTISOLS – TYPIC HAPLAQUODS	Field Observations Confirmed Mapped Type?	Yes [redacted]

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-2	A1	2.5Y 2.5/1	NONE	N/A	MUCKY FINE SAND
2-18+	A2 OR B2h	2.5Y 3/1	2.5Y 3/1 STREAKS	INDISTINCT	MUCKY FINE SAND

Hydric Soil Indicators:

___	Histosol	___	Concretions
___	Histic Epipedon	___	High Organic Content in Surface Layer in Sandy Soil
___	Sulfidic Odor	___	Organic Streaking in Sandy Soils
___	Aquic Moisture Regime	X	Listed on Local Hydric Soils List
___	Reducing Conditions	X	Listed on National Hydric Soils List
___	Gleyed or Low-Chroma Colors	___	Other (Explain in Remarks)

Remarks: HYDRIC SOIL. FDEP HYDRIC SOIL FIELD INDICATOR S7 "DARK SURFACE".

WETLAND DETERMINATION (FLORIDA)

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	Yes	[redacted]	Is this Sampling Point Within a Wetland?	[redacted]	No
Wetland Hydrology Present?	[redacted]	No			
Hydric Soils Present?	[redacted]	No			

Remarks: THIS AREA IS A FLORIDA WETLAND BASED ON THE "D" TEST, 62-340.300(2)(d), WHICH IS BASED ON THE PRESENCE OF A HYDRIC SOIL AND A HYDROLOGIC INDICATOR.

THIS AREA IS A FEDERAL WETLAND BASED ON THE PRESENCE OF HYDROPHYTIC VEGETATION, HYDRIC SOIL, AND WETLAND HYDROLOGY, BASED ON DEFINITIONS IN THE "CORPS OF ENGINEERS WETLANDS DELINEATION MANUAL (ENVIRONMENTAL LABORATORY, 1987).

FLORIDA CLASSIFICATION: WETLAND (FLUCFCS CODE 621)
USFWS CLASSIFICATION: PALUSTRINE FORESTED WETLAND, NEEDLE-LEAVED EVERGREEN (PFO4).

DATA POINT 15D-1-2
AT STAKE "WET 15-D-3"
FORMER NAS CECIL FIELD, JACKSONVILLE, FLORIDA – IR SITE 15
WETLAND DELINEATION DATA FORM, PAGE 1

Project/Site:	NAS CECIL FIELD – IR SITE 15	Date:	10/01/03
Applicant:	SOUTHERN DIVISION NAVFAC	County:	DUVAL
Investigator:	J. PEYTON DOUB, PWS	State:	FLORIDA

Do Normal Circumstances exist on the site?:	[redacted]	No	Community ID:	ECOTONE (FLUCFCS CODES 621-441)
Is the site significantly disturbed (Atypical Situation)?:	Yes	[redacted]	Transect ID:	D-1
Is the area a potential Problem Area?: (If needed, explain on reverse)	Yes	[redacted]	Plot ID:	2

VEGETATION

Dominant Plant Species	Stratum (%)	Indicator (FL/FWS)	Other Plant Species	Stratum (%)	Indicator
PINUS ELLIOTTII	C (20)	UPL/FACW	VIBURNUM OBOVATUM (?)	H (<1)	FACW/FACW
PINUS ELLIOTTII	S (5)	UPL/FACW	LICHENS	B (3)	NI
FORESTIERA ACUMINATA (?)	S (5)	FACW/OBL			
ILEX GLABRA	H (5)	UPL/FACW			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). FLORIDA: 50 (BASED ON SUBCANOPY) FWS: 100 (ALL STRATA)

Remarks: ON TRANSITION FROM AN AREA THAT MEETS FLORIDA DEFINITION OF HYDROPHYIC VEGETATION AND AN AREA THAT DOES NOT. SUBCANOPY USED AS "APPROPRIATE VEGETATIVE STRATUM" BECAUSE CANOPY IS PLANTED PINE. VEGETATON ON BOTH SIDES OF THIS POINT MEETS THE FEDERAL CRITERIA FOR HYDROPHYTIC VEGETATION.

HYDROLOGY

Recorded Data (Described in Remarks):
- ____ Stream, Lake, or Tide Gauge
- ____ Aerial Photographs
- ____ Other
- X No Recorded Data Available

Field Observations:

Depth of Surface Water:	NONE	(in.)
Depth to Free Water in Pit:	10	(in.)
Depth to Saturated Soil:	SURFACE	(in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ____ Inundated
- X Saturated in Upper 12 inches
- X Water Marks (1-2" ABOVE SURFACE)
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ____ Oxidized Root Channels in Upper 12 inches
- X Water-Stained Leaves
- X Local Soil Survey Data
- X FAC-Neutral Test
- X Other (Explain in Remarks)

Remarks: POINT LIES ON A TRANSITION FROM WETLAND HYDROLOGY TO NON-WETLAND (UPLAND) HYDROLOGY. ALGAL MATS, WATERMARKS, AND WATER-STAINED LEAVES PERSIST ONLY DOWNGRADIENT OF THIS POINT.

DATA POINT 15D-1-2
AT STAKE "WET 15-D-3"
FORMER NAS CECIL FIELD, JACKSONVILLE, FLORIDA – IR SITE 15
WETLAND DELINEATION DATA FORM, PAGE 2

SOIL

Map Unit Name (Series and Phase):	RIDGELAND FINE SAND	Drainage Class:	POORLY DRAINED
Taxonomy (subgroup):	ULTISOLS – TYPIC HAPLAQUODS	Field Observations Confirmed Mapped Type?	Yes [redacted]

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-2	A1	2.5Y 2.5/1	NONE	N/A	MUCKY FINE SAND
2-18+	A2 OR B2h	2.5Y 7/1	2.5Y 4/1 STREAKS	50:50 POLYCHROMATIC MATRIX	MUCKY FINE SAND

Hydric Soil Indicators:

___	Histosol	___	Concretions
___	Histic Epipedon	___	High Organic Content in Surface Layer in Sandy Soil
___	Sulfidic Odor	___	Organic Streaking in Sandy Soils
___	Aquic Moisture Regime	X	Listed on Local Hydric Soils List
___	Reducing Conditions	X	Listed on National Hydric Soils List
___	Gleyed or Low-Chroma Colors	___	Other (Explain in Remarks)

Remarks: POINT ON TRANSITION FROM HYDRIC TO NON-HYDRIC SOILS.

WETLAND DETERMINATION (FLORIDA)

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	Yes	[redacted]	Is this Sampling Point Within a Wetland?	[redacted]	No
Wetland Hydrology Present?	[redacted]	No			
Hydric Soils Present?	[redacted]	No			

Remarks: THIS AREA IS TRANSITIONAL FROM A FLORIDA WETLAND BASED ON THE "D" TEST, 62-340.300(2)(d) TO A NON-WETLAND.

THIS AREA IS A FEDERAL WETLAND BASED ON THE PRESENCE OF HYDROPHYTIC VEGETATION, HYDRIC SOIL, AND WETLAND HYDROLOGY, BASED ON DEFINITIONS IN THE "CORPS OF ENGINEERS WETLANDS DELINEATION MANUAL (ENVIRONMENTAL LABORATORY, 1987). HOWEVER, IT IS IN TRANSITION TO A NON WETLAND.

FLORIDA CLASSIFICATION: ECOTONE BETWEEN FLUCFCS CODES 621 AND 441
USFWS CLASSIFICATION: ECOTONE BETWEEN PALUSTRINE FORESTED WETLAND, NEEDLE-LEAVED EVERGREEN (PFO4) WETLAND AND UPLAND (U).

DATA POINT 15D-1-3
10 FEET UPLAND (WEST) OF STAKE "WET 15-D-3"
FORMER NAS CECIL FIELD, JACKSONVILLE, FLORIDA – IR SITE 15
WETLAND DELINEATION DATA FORM, PAGE 1

Project/Site:	NAS CECIL FIELD – IR SITE 15	Date:	10/01/03
Applicant:	SOUTHERN DIVISION NAVFAC	County:	DUVAL
Investigator:	J. PEYTON DOUB, PWS	State:	FLORIDA

Do Normal Circumstances exist on the site?:	Yes	No	Community ID:	PINE PLANTATION (FLUCFCS CODE 441)
Is the site significantly disturbed (Atypical Situation)?:	Yes	No	Transect ID:	D-1
Is the area a potential Problem Area?: (If needed, explain on reverse)	Yes	No	Plot ID:	3

VEGETATION

Dominant Plant Species	Stratum (%)	Indicator (FL/FWS)	Other Plant Species	Stratum (%)	Indicator
PINUS ELLIOTTII	C (25)	UPL/FACW			
MYRICA CERIFERA	S (5)	FAC/FAC			
ILEX VOMITORIA	S (5)	FAC/FAC			
ILEX GLABRA	H (20)	UPL/FACW			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). FLORIDA: 0 (BASED ON SUBCANOPY) FWS: 100 (ALL STRATA)

Remarks: DOES NOT MEET FLORIDA DEFINITION OF HYDROPHYTIC VEGETATION. DOES MEET EPA/COE DEFINITION FOR HYDROPHYTIC VEGETATION. SUBCANOPY USED AS "APPROPRIATE VEGETATIVE STRATUM" BECAUSE CANOPY IS PLANTED PINE.

HYDROLOGY

Recorded Data (Described in Remarks):
- ____ Stream, Lake, or Tide Gauge
- ____ Aerial Photographs
- ____ Other
- X No Recorded Data Available

Field Observations:

Depth of Surface Water:	NONE	(in.)
Depth to Free Water in Pit:	14	(in.)
Depth to Saturated Soil:	11	(in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ____ Inundated
- X Saturated in Upper 12 inches
- X Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- X Local Soil Survey Data
- X FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: NOT WETLAND HYDROLOGY. NONE OF THE HYDROLOGICAL INDICATORS FROM 62-340-500 F.A.C. WERE OBSERVED. EVIDENCE OF WETLAND HYDROLOGY PER FEDERAL CRITERIA IS VERY WEAK.

DATA POINT 15D-1-3
10 FEET UPLAND (WEST) OF STAKE "WET 15-D-3"
FORMER NAS CECIL FIELD, JACKSONVILLE, FLORIDA – IR SITE 15
WETLAND DELINEATION DATA FORM, PAGE 2

SOIL

Map Unit Name (Series and Phase):	RIDGELAND FINE SAND	Drainage Class:	POORLY DRAINED
Taxonomy (subgroup):	ULTISOLS – TYPIC HAPLAQUODS	Field Observations Confirmed Mapped Type?	Yes [redacted]

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-2	A1	2.5Y 2.5/1	NONE	N/A	MUCKY FINE SAND
2-18+	A2 OR B2h	2.5Y 6/1	2.5Y 4/1	50:50	MUCKY FINE SAND
				POLYCHROMATIC	
				MATRIX	

Hydric Soil Indicators:

___	Histosol	___	Concretions
___	Histic Epipedon	___	High Organic Content in Surface Layer in Sandy Soil
___	Sulfidic Odor	___	Organic Streaking in Sandy Soils
___	Aquic Moisture Regime	X	Listed on Local Hydric Soils List
___	Reducing Conditions	X	Listed on National Hydric Soils List
___	Gleyed or Low-Chroma Colors	___	Other (Explain in Remarks)

Remarks: POINT ON TRANSITION FROM HYDRIC TO NON-HYDRIC SOILS. DARK SURFACE HORIZON LESS PRONOUNCED THAN IN THE WETLANDS.

WETLAND DETERMINATION (FLORIDA)

	(Circle)			(Circle)
Hydrophytic Vegetation Present?	Yes	[redacted]	Is this Sampling Point Within a Wetland?	Yes [redacted]
Wetland Hydrology Present?	Yes	[redacted]		
Hydric Soils Present?	Yes	[redacted]		

Remarks: THIS AREA DOES NOT MEET ANY OF THE CRITERIA FOR A FLORIDA WETLAND IN 62-340.300(2) F.A.C. ALTHOUGH THE AREA DISPLAYS MARGINAL EVIDENCE OF EACH OF THE THREE FEDERAL WETLAND PARAMETERS (ENVIRONMENTAL LABORATORY, 1987), REASONABLE SCIENTIFIC JUDGEMENT SUGGESTS THAT THE AREA FUNCTIONS MORE LIKE AN UPLAND THAN A WETLAND.

FLORIDA CLASSIFICATION: FLUCFCS CODE 441 (PINE PLANTATION)
USFWS CLASSIFICATION: UPLAND (U).

DATA POINT 15D-1-4
20 FEET UPLAND (WEST) OF STAKE "WET 15-D-3"
FORMER NAS CECIL FIELD, JACKSONVILLE, FLORIDA – IR SITE 15
WETLAND DELINEATION DATA FORM, PAGE 1

Project/Site:	NAS CECIL FIELD – IR SITE 15	Date:	10/01/03
Applicant:	SOUTHERN DIVISION NAVFAC	County:	DUVAL
Investigator:	J. PEYTON DOUB, PWS	State:	FLORIDA
Do Normal Circumstances exist on the site?:	[redacted] No	Community ID:	PINE PLANTATION (FLUCFCS CODE 441)
Is the site significantly disturbed (Atypical Situation)?:	Yes [redacted]	Transect ID:	D-1
Is the area a potential Problem Area?: (If needed, explain on reverse)	Yes [redacted]	Plot ID:	4

VEGETATION

Dominant Plant Species	Stratum (%)	Indicator (FL/FWS)	Other Plant Species	Stratum (%)	Indicator
PINUS ELLIOTTII	C (40)	UPL/FACW			
MYRICA CERIFERA	S (10)	FAC/FAC			
SERENOA REPENS	S (5)	UPL/UPL			
ILEX VOMITORIA	S (5)	FAC/FAC			
ILEX GLABRA	H (20)	UPL/FACW			
SERENOA REPENS	H (5)	UPL/UPL			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). FLORIDA: 0 (BASED ON SUBCANOPY) FWS: 67 (ALL STRATA)

Remarks: DOES NOT MEET FLORIDA DEFINITION OF HYDROPHYTIC VEGETATION. DOES MEET EPA/COE DEFINITION FOR HYDROPHYTIC VEGETATION. SUBCANOPY USED AS "APPROPRIATE VEGETATIVE STRATUM" BECAUSE CANOPY IS PLANTED PINE.

HYDROLOGY

Recorded Data (Described in Remarks):
- ____ Stream, Lake, or Tide Gauge
- ____ Aerial Photographs
- ____ Other
- X No Recorded Data Available

Field Observations:

Depth of Surface Water:	NONE	(in.)
Depth to Free Water in Pit:	18	(in.)
Depth to Saturated Soil:	12	(in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ____ Inundated
- ____ Saturated in Upper 12 inches
- ____ Water Marks (1-2" ABOVE SURFACE)
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- X Local Soil Survey Data
- X FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: NOT WETLAND HYDROLOGY. NONE OF THE HYDROLOGICAL INDICATORS FROM 62-340-500 F.A.C. WERE OBSERVED. EVIDENCE OF WETLAND HYDROLOGY PER FEDERAL CRITERIA IS VERY WEAK.

DATA POINT 15D-1-4
20 FEET UPLAND (WEST) OF STAKE "WET 15-D-3"
FORMER NAS CECIL FIELD, JACKSONVILLE, FLORIDA – IR SITE 15
WETLAND DELINEATION DATA FORM, PAGE 2

SOIL

Map Unit Name (Series and Phase):	RIDGELAND FINE SAND	Drainage Class:	POORLY DRAINED
Taxonomy (subgroup):	ULTISOLS – TYPIC HAPLAQUODS	Field Observations Confirmed Mapped Type?	Yes [redacted]

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-2	A1	2.5Y 2.5/1	NONE	N/A	MUCKY FINE SAND
2-18+	A2 OR B2h	2.5Y 3/1	2.5Y 5/2	50:50	MUCKY FINE SAND
				POLYCHROMATIC	
				MATRIX	

Hydric Soil Indicators:

___	Histosol	___	Concretions
___	Histic Epipedon	___	High Organic Content in Surface Layer in Sandy Soil
___	Sulfidic Odor	___	Organic Streaking in Sandy Soils
___	Aquic Moisture Regime	X	Listed on Local Hydric Soils List
___	Reducing Conditions	X	Listed on National Hydric Soils List
___	Gleyed or Low-Chroma Colors	___	Other (Explain in Remarks)

Remarks: POINT ON TRANSITION FROM HYDRIC TO NON-HYDRIC SOILS. DARK SURFACE HORIZON LESS PRONOUNCED THAN IN THE WETLANDS.

WETLAND DETERMINATION (FLORIDA)

	(Circle)			(Circle)
Hydrophytic Vegetation Present?	Yes	[redacted]	Is this Sampling Point Within a Wetland?	Yes [redacted]
Wetland Hydrology Present?	Yes	[redacted]		
Hydric Soils Present?	Yes	[redacted]		

Remarks: THIS AREA DOES NOT MEET ANY OF THE CRITERIA FOR A FLORIDA WETLAND IN 62-340.300(2) F.A.C. ALTHOUGH THE AREA DISPLAYS MARGINAL EVIDENCE OF EACH OF THE THREE FEDERAL WETLAND PARAMETERS (ENVIRONMENTAL LABORATORY, 1987), REASONABLE SCIENTIFIC JUDGEMENT SUGGESTS THAT THE AREA FUNCTIONS MORE LIKE AN UPLAND THAN A WETLAND.

FLORIDA CLASSIFICATION: FLUCFCS CODE 441 (PINE PLANTATION)
USFWS CLASSIFICATION: UPLAND (U).

DATA POINT 15D-2-1
10 FEET WETLAND (SOUTH) OF STAKE "WET 15-D-27"
FORMER NAS CECIL FIELD, JACKSONVILLE, FLORIDA – IR SITE 15
WETLAND DELINEATION DATA FORM, PAGE 1

Project/Site:	NAS CECIL FIELD – IR SITE 15	Date:	10/01/03
Applicant:	SOUTHERN DIVISION NAVFAC	County:	DUVAL
Investigator:	J. PEYTON DOUB, PWS	State:	FLORIDA
Do Normal Circumstances exist on the site?:	[redacted] No	Community ID:	WET PINE FLATWOODS (FLUCFCS CODE 620)
Is the site significantly disturbed (Atypical Situation)?:	Yes [redacted]	Transect ID:	D-2
Is the area a potential Problem Area?: (If needed, explain on reverse)	Yes [redacted]	Plot ID:	1

VEGETATION

Dominant Plant Species	Stratum (%)	Indicator (FL/FWS)	Other Plant Species	Stratum (%)	Indicator
PINUS ELLIOTTII	C (30)	UPL/FACW	ACER RUBRUM	C (2)	FACW/FAC
TAXODIUM ASCENDENS	C (15)	OBL/OBL	TAXODIUM ASCENDENS	S (3)	OBL/OBL
DIOSPYROS VIRGINIANA	S (5)	FAC/FAC	QUERCUS NIGRA	S (2)	FACW/FAC
			PINUS ELLIOTTII	S (<1)	UPL/FACW
			MYRICA CERIFERA	S (<1)	FAC/FAC
			FORESTIERA ACUMINATA (?)	H (1)	FACW/OBL
			MYRICA CERIFERA	H (<1)	FAC/FAC

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). FLORIDA: 100 (BASED ON CANOPY) FWS: 100 (ALL STRATA)

Remarks: ALTHOUGH CANOPY DOMINATED BY PLANTED PINE, THE PARTIAL DOMINANCE BY UNPLANTED POND CYPRESS (TAXODIUM ASCENDENS, OBL) IS USED TO SUPPORT PRESENCE OF HYDROPHYTIC VEGETATION ACCORDING TO THE FLORIDA DEFINITION. ALSO MEETS EPA/COE DEFINITION FOR HYDROPHYTIC VEGETATION.

HYDROLOGY

Recorded Data (Described in Remarks):
- ____ Stream, Lake, or Tide Gauge
- ____ Aerial Photographs
- ____ Other
- X No Recorded Data Available

Field Observations:

Depth of Surface Water:	NONE	(in.)
Depth to Free Water in Pit:	5	(in.)
Depth to Saturated Soil:	SURFACE	(in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ____ Inundated
- X Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ____ Oxidized Root Channels in Upper 12 inches
- X Water-Stained Leaves
- X Local Soil Survey Data
- X FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: WETLAND HYDROLOGY. IN ADDITION TO THE INDICATORS CHECKED ABOVE, POND CYPRESS TRUNKS DISPLAYED NOTICEABLE BUTTRESSING (A MORPHOLOGICAL PLANT ADAPTATION TO SATURATED CONDITIONS) AND SOIL SURFACE DISPLAYED DISTINCT VEGETATIVE HUMMOCKS. THE FOLLOWING HYDROLOGICAL INDICATORS FROM 62-340.500 F.A.C. WERE OBSERVED: (8) HYDROLOGICAL DATA (DIRECT OBSERVATION OF SURFACE SATURATION DURING GROWING SEASON), (9) MORPHOLOGICAL PLANT ADAPTATIONS, AND (12) VEGETATED TUSSOCKS OR HUMMOCKS.

DATA POINT 15D-2-1
10 FEET WETLAND (SOUTH) OF STAKE "WET 15-D-27"
FORMER NAS CECIL FIELD, JACKSONVILLE, FLORIDA – IR SITE 15
WETLAND DELINEATION DATA FORM, PAGE 2

SOIL

Map Unit Name (Series and Phase):	RIDGELAND FINE SAND	Drainage Class:	POORLY DRAINED
Taxonomy (subgroup):	ULTISOLS – TYPIC HAPLAQUODS	Field Observations Confirmed Mapped Type?	Yes [redacted]

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-2	A1	1G 2.5/N	NONE	N/A	MUCKY FINE SAND
2-18+	A2 OR B2h	2.5Y 3/1	2.5Y 6/1 STREAKS	INDISTINCT MOTTLES	MUCKY FINE SAND

Hydric Soil Indicators:

___	Histosol	___	Concretions
___	Histic Epipedon	___	High Organic Content in Surface Layer in Sandy Soil
___	Sulfidic Odor	___	Organic Streaking in Sandy Soils
___	Aquic Moisture Regime	X	Listed on Local Hydric Soils List
___	Reducing Conditions	X	Listed on National Hydric Soils List
___	Gleyed or Low-Chroma Colors	___	Other (Explain in Remarks)

Remarks: HYDRIC SOIL. FDEP HYDRIC SOIL FIELD INDICATOR S7 "DARK SURFACE".

WETLAND DETERMINATION (FLORIDA)

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	[redacted]	No	Is this Sampling Point Within a Wetland?	[redacted]	No
Wetland Hydrology Present?	[redacted]	No			
Hydric Soils Present?	[redacted]	No			

Remarks: THIS AREA IS A FLORIDA WETLAND BASED ON THE "D" TEST, 62-340.300(2)(d), WHICH IS BASED ON THE PRESENCE OF A HYDRIC SOIL AND A HYDROLOGIC INDICATOR. ALSO QUALIFIES ON BASIS OF "A" TEST, 63-340.300(2)(a), WHICH IS BASED ON >50% DOMINANCE BY OBL SPECIES IN APPROPRIATE STRATUM, IF PLANTED PINE IS DISCOUNTED AND CANOPY CONSIDERED TO INCLUDE ONLY THE POND CYPRESS,

THIS AREA IS A FEDERAL WETLAND BASED ON THE PRESENCE OF HYDROPHYTIC VEGETATION, HYDRIC SOIL, AND WETLAND HYDROLOGY, BASED ON DEFINITIONS IN THE "CORPS OF ENGINEERS WETLANDS DELINEATION MANUAL (ENVIRONMENTAL LABORATORY, 1987).

FLORIDA CLASSIFICATION: WETLAND (FLUCFCS CODE 624)
USFWS CLASSIFICATION: PALUSTRINE FORESTED WETLAND, NEEDLE-LEAVED EVERGREEN (PFO4).

DATA POINT 15D-2-2
AT STAKE "WET 15-D-27"
FORMER NAS CECIL FIELD, JACKSONVILLE, FLORIDA – IR SITE 15
WETLAND DELINEATION DATA FORM, PAGE 1

Project/Site:	NAS CECIL FIELD – IR SITE 15	Date:	10/01/03
Applicant:	SOUTHERN DIVISION NAVFAC	County:	DUVAL
Investigator:	J. PEYTON DOUB, PWS	State:	FLORIDA

Do Normal Circumstances exist on the site?:	[redacted]	No	Community ID:	ECOTONE (FLUCFCS CODES 620-441)
Is the site significantly disturbed (Atypical Situation)?:	Yes	[redacted]	Transect ID:	D-2
Is the area a potential Problem Area?: (If needed, explain on reverse)	Yes	[redacted]	Plot ID:	2

VEGETATION

Dominant Plant Species	Stratum (%)	Indicator (FL/FWS)	Other Plant Species	Stratum (%)	Indicator
PINUS ELLIOTTII	C (30)	UPL/FACW	TAXODIUM ASCENDENS	C (5)	OBL/OBL
DIOSPYROS VIRGINIANA	S (10)	FAC/FAC	ACER RUBRUM	C (5)	FACW/FAC
ILEX GLABRA	H (5)	UPL/FACW	MYRICA CERIFERA	S (2)	FAC/FAC
PINUS ELLIOTTII	H (5)	UPL/FACW	ILEX VOMITORIA	S (2)	FAC/FAC
ILEX VOMITORIA	H (5)	FAC/FAC	SERENOA REPENS	S (2)	UPL/UPL
			ACER RUBRUM	S (2)	FACW/FAC
			MYRICA CERIFERA	H (1)	FAC/FAC

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). FLORIDA: 50 (BASED ON SUBCANOPY) FWS: 100 (ALL STRATA)

Remarks: ON TRANSITION FROM AN AREA THAT MEETS FLORIDA DEFINITION OF HYDROPHYIC VEGETATION AND AN AREA THAT DOES NOT. SUBCANOPY USED AS "APPROPRIATE VEGETATIVE STRATUM" BECAUSE CANOPY IS PLANTED PINE. VEGETATON ON BOTH SIDES OF THIS POINT MEETS THE FEDERAL CRITERIA FOR HYDROPHYTIC VEGETATION.

HYDROLOGY

Recorded Data (Described in Remarks):
- ____ Stream, Lake, or Tide Gauge
- ____ Aerial Photographs
- ____ Other
- X No Recorded Data Available

Field Observations:

Depth of Surface Water:	NONE	(in.)
Depth to Free Water in Pit:	12	(in.)
Depth to Saturated Soil:	6	(in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ____ Inundated
- X Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- X Local Soil Survey Data
- X FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: THIS POINT LIES ON A TRANSITION FROM WETLAND HYDROLOGY TO NON-WETLAND (UPLAND) HYDROLOGY. WATER-STAINED LEAVES, VEGETATED HUMMOCKS, AND MORPHOLOGICAL PLANT ADAPTATIONS OCCUR ONLY DOWN-GRADIENT OF THIS POINT.

DATA POINT 15D-2-2
AT STAKE "WET 15-D-27"
FORMER NAS CECIL FIELD, JACKSONVILLE, FLORIDA – IR SITE 15
WETLAND DELINEATION DATA FORM, PAGE 2

SOIL

Map Unit Name (Series and Phase):	RIDGELAND FINE SAND	Drainage Class:	POORLY DRAINED
Taxonomy (subgroup):	ULTISOLS – TYPIC HAPLAQUODS	Field Observations Confirmed Mapped Type?	Yes [redacted]

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-2	A1	2.5Y 2.5/1	NONE	N/A	MUCKY FINE SAND
2-18+	A2 OR B2h	2.5Y 2.5/1	2.5Y 6/1 STREAKS	5%, INDISTINCT	MUCKY FINE SAND

Hydric Soil Indicators:

___	Histosol	___	Concretions
___	Histic Epipedon	___	High Organic Content in Surface Layer in Sandy Soil
___	Sulfidic Odor	___	Organic Streaking in Sandy Soils
___	Aquic Moisture Regime	X	Listed on Local Hydric Soils List
___	Reducing Conditions	X	Listed on National Hydric Soils List
___	Gleyed or Low-Chroma Colors	___	Other (Explain in Remarks)

Remarks: POINT ON TRANSITION FROM HYDRIC TO NON-HYDRIC SOILS.

WETLAND DETERMINATION (FLORIDA)

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	[redacted]	No	Is this Sampling Point Within a Wetland?	[redacted]	No
Wetland Hydrology Present?	[redacted]	No			
Hydric Soils Present?	[redacted]	No			

Remarks: THIS AREA IS TRANSITIONAL FROM A FLORIDA WETLAND TO A NON-WETLAND.

THIS AREA IS A FEDERAL WETLAND BASED ON THE PRESENCE OF HYDROPHYTIC VEGETATION, HYDRIC SOIL, AND WETLAND HYDROLOGY, BASED ON DEFINITIONS IN THE "CORPS OF ENGINEERS WETLANDS DELINEATION MANUAL (ENVIRONMENTAL LABORATORY, 1987). HOWEVER, IT IS IN TRANSITION TO A NON WETLAND.

FLORIDA CLASSIFICATION: ECOTONE BETWEEN FLUCFCS CODES 624 AND 441
USFWS CLASSIFICATION: ECOTONE BETWEEN PALUSTRINE FORESTED WETLAND, NEEDLE-LEAVED EVERGREEN (PFO4) WETLAND AND UPLAND (U).

DATA POINT 15D-2-3
10 FEET UPLAND (NORTH) OF STAKE "WET 15-D-27"
FORMER NAS CECIL FIELD, JACKSONVILLE, FLORIDA – IR SITE 15
WETLAND DELINEATION DATA FORM, PAGE 1

Project/Site:	NAS CECIL FIELD – IR SITE 15	Date:	10/01/03
Applicant:	SOUTHERN DIVISION NAVFAC	County:	DUVAL
Investigator:	J. PEYTON DOUB, PWS	State:	FLORIDA
Do Normal Circumstances exist on the site?:	Yes / No	Community ID:	PINE PLANTATION (FLUCFCS CODE 441)
Is the site significantly disturbed (Atypical Situation)?:	Yes / No	Transect ID:	D-2
Is the area a potential Problem Area?: (If needed, explain on reverse)	Yes / No	Plot ID:	3

VEGETATION

Dominant Plant Species	Stratum (%)	Indicator (FL/FWS)	Other Plant Species	Stratum (%)	Indicator
PINUS ELLIOTTII	C (40)	UPL/FACW	TAXODIUM ASCENDENS	C (<1)	OBL/OBL
ACER RUBRUM	S (5)	FACW/FAC			
SERENOA REPENS	S (5)	UPL/UPL			
TAXODIUM ASCENDENS	S (5)	OBL/OBL			
PINUS ELLIOTTII	S (5)	UPL/FACW			
MYRICA CERIFERA	H (5)	FAC/FAC			
ILEX GLABRA	H (5)	UPL/FACW			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). FLORIDA: 75 (BASED ON SUBCANOPY) FWS: 100 (ALL STRATA)

Remarks: DOES NOT MEET FLORIDA DEFINITION OF HYDROPHYTIC VEGETATION. DOES MEET EPA/COE DEFINITION FOR HYDROPHYTIC VEGETATION. SUBCANOPY USED AS "APPROPRIATE VEGETATIVE STRATUM" BECAUSE CANOPY IS PLANTED PINE. IN SUBCANOPY, THERE IS ONLY 25% COVER BY OBL VS. 50% COVER BY UPL, HENCE FAILS "A" TEST. THERE IS ONLY 75% COVER BY OBL+FACW VS. 25% COVER BY UPL, HENCE FAILS "B" TEST.

HYDROLOGY

Recorded Data (Described in Remarks):
- ____ Stream, Lake, or Tide Gauge
- ____ Aerial Photographs
- ____ Other
- X No Recorded Data Available

Field Observations:

Depth of Surface Water:	NONE	(in.)
Depth to Free Water in Pit:	16	(in.)
Depth to Saturated Soil:	9	(in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ____ Inundated
- ____ Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- X Local Soil Survey Data
- X FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: NOT WETLAND HYDROLOGY. NONE OF THE HYDROLOGICAL INDICATORS FROM 62-340.500 F.A.C. WERE OBSERVED. EVIDENCE OF WETLAND HYDROLOGY PER FEDERAL CRITERIA IS VERY WEAK.

DATA POINT 15D-2-3
10 FEET UPLAND (WEST) OF STAKE "WET 15-D-3"
FORMER NAS CECIL FIELD, JACKSONVILLE, FLORIDA – IR SITE 15
WETLAND DELINEATION DATA FORM, PAGE 2

SOIL

Map Unit Name (Series and Phase):	RIDGELAND FINE SAND	Drainage Class:	POORLY DRAINED
Taxonomy (subgroup):	ULTISOLS – TYPIC HAPLAQUODS	Field Observations Confirmed Mapped Type?	Yes [redacted]

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-2	A1	2.5Y 2.5/1	NONE	N/A	MUCKY FINE SAND
2-18+	A2 OR B2h	2.5Y 2.5/1	2.5Y 5/1 STREAKS	20:80	MUCKY FINE SAND
				POLYCHROMATIC	
				MATRIX	

Hydric Soil Indicators:

___	Histosol	___	Concretions
___	Histic Epipedon	___	High Organic Content in Surface Layer in Sandy Soil
___	Sulfidic Odor	___	Organic Streaking in Sandy Soils
___	Aquic Moisture Regime	X	Listed on Local Hydric Soils List
___	Reducing Conditions	X	Listed on National Hydric Soils List
___	Gleyed or Low-Chroma Colors	___	Other (Explain in Remarks)

Remarks: POINT ON TRANSITION FROM HYDRIC TO NON-HYDRIC SOILS. DARK SURFACE HORIZON LESS PRONOUNCED THAN IN THE WETLANDS.

WETLAND DETERMINATION (FLORIDA)

	(Circle)		(Circle)
Hydrophytic Vegetation Present?	Yes [redacted]	Is this Sampling Point Within a Wetland?	Yes [redacted]
Wetland Hydrology Present?	Yes [redacted]		
Hydric Soils Present?	Yes [redacted]		

Remarks: THIS AREA DOES NOT MEET ANY OF THE CRITERIA FOR A FLORIDA WETLAND IN 62-340.300(2) F.A.C. ALTHOUGH THE AREA DISPLAYS MARGINAL EVIDENCE OF EACH OF THE THREE FEDERAL WETLAND PARAMETERS (ENVIRONMENTAL LABORATORY, 1987), REASONABLE SCIENTIFIC JUDGEMENT SUGGESTS THAT THE AREA FUNCTIONS MORE LIKE AN UPLAND THAN A WETLAND.

FLORIDA CLASSIFICATION: FLUCFCS CODE 441 (PINE PLANTATION)
USFWS CLASSIFICATION: UPLAND (U).

DATA POINT 15E-1-1
CENTER OF DITCH AT STAKE "WET 15-E-11"
FORMER NAS CECIL FIELD, JACKSONVILLE, FLORIDA – IR SITE 15
WETLAND DELINEATION DATA FORM, PAGE 1

Project/Site:	NAS CECIL FIELD – IR SITE 15	Date:	10/01/03
Applicant:	SOUTHERN DIVISION NAVFAC	County:	DUVAL
Investigator:	J. PEYTON DOUB, PWS	State:	FLORIDA

Do Normal Circumstances exist on the site?:		No	Community ID:	DRAINAGE DITCH
Is the site significantly disturbed (Atypical Situation)?:	Yes		Transect ID:	E-1
Is the area a potential Problem Area?:	Yes		Plot ID:	1
(If needed, explain on reverse)				

VEGETATION

Dominant Plant Species	Stratum (%)	Indicator (FL/FWS)	Other Plant Species	Stratum (%)	Indicator
PINUS ELLIOTTII	C (15)	UPL/FACW	MAGNOLIA VIRGINIANA	S (1)	OBL/FACW
ACER RUBRUM	C (10)	FACW/FAC	MYRICA CERIFERA	S (<1)	FAC/FAC
ILEX GLABRA	S (5)	UPL/FACW	OSMUNDA REGALIS	H (<1)	OBL/OBL
			OSMUNDA CINNAMOMEA	H (<1)	FACW/FACW

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). FLORIDA: 50 (BASED ON CANOPY) FWS: 100 (ALL STRATA)

Remarks: ALTHOUGH CANOPY DOMINATED BY PLANTED PINE, THE PARTIAL DOMINANCE BY UNPLANTED RED MAPLE (ACER RUBRUM, FAC) AND THE PREVALENT UNDERSTORY AND HERBACEOUS VEGETATION IS USED TO SUPPORT PRESENCE OF HYDROPHYTIC VEGETATION ACCORDING TO THE FLORIDA DEFINITION. ALSO MEETS EPA/COE DEFINITION FOR HYDROPHYTIC VEGETATION. NOTE: THIS VEGETATION REPRESENTS A SHORT SEGMENT OF THE DITCH THAT SUPPORTS A VERY NARROW STRIP OF VEGETATION. MUCH OF THE DITCH IS UNVEGETATED.

HYDROLOGY

Recorded Data (Described in Remarks):
- ____ Stream, Lake, or Tide Gauge
- ____ Aerial Photographs
- ____ Other
- X No Recorded Data Available

Field Observations:

Depth of Surface Water:	0-4	(in.)
Depth to Free Water in Pit:	SURFACE	(in.)
Depth to Saturated Soil:	SURFACE	(in.)

Wetland Hydrology Indicators:

Primary Indicators:
- X Inundated
- X Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ____ Oxidized Root Channels in Upper 12 inches
- X Water-Stained Leaves
- X Local Soil Survey Data
- X FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: WETLAND HYDROLOGY. THE FOLLOWING HYDROLOGICAL INDICATOR FROM 62-340.500 F.A.C. WAS OBSERVED: (8) HYDROLOGICAL DATA (DIRECT OBSERVATION OF SURFACE INUNDATION DURING GROWING SEASON.

DATA POINT 15D-2-1
10 FEET WETLAND (SOUTH) OF STAKE "WET 15-D-27"
FORMER NAS CECIL FIELD, JACKSONVILLE, FLORIDA – IR SITE 15
WETLAND DELINEATION DATA FORM, PAGE 2

SOIL

Map Unit Name (Series and Phase):	RIDGELAND FINE SAND	Drainage Class:	POORLY DRAINED
Taxonomy (subgroup):	ULTISOLS – TYPIC HAPLAQUODS	Field Observations Confirmed Mapped Type?	Yes **No**

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-18+	A1	1G 2.5/N	NONE	N/A	MUCKY FINE SAND

Hydric Soil Indicators:

___	Histosol	___	Concretions
___	Histic Epipedon	___	High Organic Content in Surface Layer in Sandy Soil
___	Sulfidic Odor	___	Organic Streaking in Sandy Soils
___	Aquic Moisture Regime	X	Listed on Local Hydric Soils List
___	Reducing Conditions	X	Listed on National Hydric Soils List
___	Gleyed or Low-Chroma Colors	___	Other (Explain in Remarks)

Remarks: HYDRIC SOIL. FDEP HYDRIC SOIL FIELD INDICATOR S7 "DARK SURFACE".

WETLAND DETERMINATION (FLORIDA)

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	[redacted]	No	Is this Sampling Point Within a Wetland?	[redacted]	No
Wetland Hydrology Present?	[redacted]	No			
Hydric Soils Present?	[redacted]	No			

Remarks: THIS AREA IS A FLORIDA WETLAND BASED ON THE "D" TEST, 62-340.300(2)(d), WHICH IS BASED ON THE PRESENCE OF A HYDRIC SOIL AND A HYDROLOGIC INDICATOR. ALSO QUALIFIES ON BASIS OF "A" TEST, 63-340.300(2)(a), WHICH IS BASED ON >50% DOMINANCE BY OBL SPECIES IN APPROPRIATE STRATUM, IF PLANTED PINE IS DISCOUNTED AND CANOPY CONSIDERED TO INCLUDE ONLY THE RED MAPLE AND THE UNDERSTORY AND GROUNDCOVER VEGETATION.

THIS AREA IS A FEDERAL WETLAND BASED ON THE PRESENCE OF HYDROPHYTIC VEGETATION, HYDRIC SOIL, AND WETLAND HYDROLOGY, BASED ON DEFINITIONS IN THE "CORPS OF ENGINEERS WETLANDS DELINEATION MANUAL (ENVIRONMENTAL LABORATORY, 1987).

FLORIDA CLASSIFICATION: WETLAND (FLUCFCS CODE 630)
USFWS CLASSIFICATION: PALUSTRINE FORESTED WETLAND, BROAD-LEAVED DECIDUOUS (PFO1).

DATA POINT 15F-1-1
CENTER OF PIT, APPROX. 5 FEET FROM STAKE "WET 15-F-6"
FORMER NAS CECIL FIELD, JACKSONVILLE, FLORIDA – IR SITE 15
WETLAND DELINEATION DATA FORM, PAGE 1

Project/Site:	NAS CECIL FIELD – IR SITE 15	Date:	10/01/03
Applicant:	SOUTHERN DIVISION NAVFAC	County:	DUVAL
Investigator:	J. PEYTON DOUB, PWS	State:	FLORIDA

Do Normal Circumstances exist on the site?:	[redacted]	No	Community ID:	EXCAVATED PIT
Is the site significantly disturbed (Atypical Situation)?:	Yes	[redacted]	Transect ID:	F-1
Is the area a potential Problem Area?:	Yes	[redacted]	Plot ID:	1
(If needed, explain on reverse)				

VEGETATION

Dominant Plant Species	Stratum (%)	Indicator (FL/FWS)	Other Plant Species	Stratum (%)	Indicator
SALIX NIGRA	H (20)	OBL/OBL			
RHYNCHOSPORA SP.	H (5)	FACW/FACW			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). FLORIDA: 100; FWS: 100

Remarks: MOST OF THIS SMALL MAN-MADE EXCAVATED PIT BOTTOM IS SPARSELY AND IRREGULARLY VEGETATED. SIDE SLOPES OF EXCAVATED PIT SUPPORT OLD FIELD VEGETATION RESEMBLING THAT IN THE SURROUNDING UPLANDS.

HYDROLOGY

Recorded Data (Described in Remarks):
- ____ Stream, Lake, or Tide Gauge
- ____ Aerial Photographs
- ____ Other
- X No Recorded Data Available

Field Observations:

Depth of Surface Water:	0-4	(in.)
Depth to Free Water in Pit:	SURFACE	(in.)
Depth to Saturated Soil:	SURFACE	(in.)

Wetland Hydrology Indicators:

Primary Indicators:
- X Inundated
- X Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ____ Oxidized Root Channels in Upper 12 inches
- X Water-Stained Leaves
- X Local Soil Survey Data
- X FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: WETLAND HYDROLOGY. THE FOLLOWING HYDROLOGICAL INDICATOR FROM 62-340.500 F.A.C. WAS OBSERVED: (8) HYDROLOGICAL DATA (DIRECT OBSERVATION OF SURFACE INUNDATION DURING GROWING SEASON.

DATA POINT 15F-1-1
CENTER OF PIT, APPROX. 5 FEET FROM STAKE "WET 15-F-6"
FORMER NAS CECIL FIELD, JACKSONVILLE, FLORIDA – IR SITE 15
WETLAND DELINEATION DATA FORM, PAGE 2

SOIL

Map Unit Name (Series and Phase):	RIDGELAND FINE SAND	Drainage Class:	POORLY DRAINED
Taxonomy (subgroup):	ULTISOLS – TYPIC HAPLAQUODS	Field Observations Confirmed Mapped Type?	Yes [redacted]

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
N/A	N/A	N/A	N/A	N/A	N/A

Hydric Soil Indicators:

___	Histosol	___	Concretions
___	Histic Epipedon	___	High Organic Content in Surface Layer in Sandy Soil
___	Sulfidic Odor	___	Organic Streaking in Sandy Soils
X	Aquic Moisture Regime	X	Listed on Local Hydric Soils List
___	Reducing Conditions	X	Listed on National Hydric Soils List
___	Gleyed or Low-Chroma Colors	___	Other (Explain in Remarks)

Remarks: HYDRIC SOIL. SOILS THAT ARE FREQUENTLY PONDED FOR A LONG OR VERY LONG DURATION DURING THE GROWING SEASON MEET THE DEFINITION OF HYDRIC SOIL REGARDLESS OF THE PRESENCE OR ABSENCE OF SPECIFIC "FIELD INDICATORS".

WETLAND DETERMINATION (FLORIDA)

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	[redacted]	No	Is this Sampling Point Within a Wetland?	[redacted]	No
Wetland Hydrology Present?	[redacted]	No			
Hydric Soils Present?	[redacted]	No			

Remarks: THIS AREA IS A FLORIDA WETLAND BASED ON THE "D" TEST, 62-340.300(2)(d), WHICH IS BASED ON THE PRESENCE OF A HYDRIC SOIL AND A HYDROLOGIC INDICATOR.

THIS AREA IS A FEDERAL WETLAND BASED ON THE PRESENCE OF HYDROPHYTIC VEGETATION, HYDRIC SOIL, AND WETLAND HYDROLOGY, BASED ON DEFINITIONS IN THE "CORPS OF ENGINEERS WETLANDS DELINEATION MANUAL (ENVIRONMENTAL LABORATORY, 1987).

FLORIDA CLASSIFICATION: WETLAND (NO CORRESPONDING FLUCFCS CODE)
USFWS CLASSIFICATION: PALUSTRINE EMERGENT WETLAND (PEM).

APPENDIX B

WETLAND RAPID ASSESSMENT PROCEDURE (WRAP) SHEETS

WETLAND A

Wetland Rapid Assessment Procedure

(WRAP)

☑ Existing Conditions ☐ Proposed Conditions (Check one)

Application Number	Project Name	Date	Evaluator	Wetland Type
CECILFIELD	SITE 15, WETLAND A	10/1/03	PEYTON DOUB	PFO4

Land Use	FLUCCS Code	Wetland Acreage
CERCLA	620 Description: WETLAND CONIF. FOREST	

Wildlife Utilization (WU)	Wetland Canopy (O/S)	Wetland Ground Cover (GC)
2	2.5	2.5

Habitat Support / Buffer

Buffer type	(Score)	X (% of area)	=Sub Totals
FOREST	2.5	100	2.5
		TOTAL	2.5

Field Hydrology (HYD): 2

WQ Input & Treatment (WQ)*: 3

* The value of WQ is obtained by adding the TOTAL scores of Land use Category and Pretreatment category then dividing by 2

Land use Category (LU)

Land use Category	(Score)	X (% of area)	=Sub Totals
Natural	3	100	3
		(LU) TOTAL	3

Pretreatment Category (PT)

Pretreatment Category	(Score)	X (% of area)	=Sub Totals
Natural	3	100	3
		(PT) TOTAL	3

WRAP Score: 0.91

Field Notes:

Wildlife Utilization (WU)

Minimal human disturbance, contiguous to diversity of undeveloped upland habitats,

Wetland Canopy (O/S)

Well stratified, diverse, native vegetation; no undesirable exotic or invasive species

Wetland Ground Cover (GC)

Diverse groundcover with no exotic or invasive species

Habitat Support / Buffer

>300 Feet of undeveloped forested buffer, but planted pine

Field Hydrology (HYD)

Observed saturated conditions appear normal for the wetland, but wetland is contiguous to man-made ditch

WQ Input & Treatment (WQ)

Wetland in 100% natural setting, other than forest management

WETLAND B

Wetland Rapid Assessment Procedure

☑ Check one
☒ Existing Conditions ☐ Proposed Conditions (WRAP)

Application Number	Project Name	Date	Evaluator	Wetland Type
CECIL FIELD	SITE 15, WETLAND B	10/1/03	PEYTON DOUB	PFO4

Land Use	FLUCCS Code	Wetland Acreage
CERCLA	441 Description: PINE PLANTATION	<0.1 ACRE

Wildlife Utilization (WU)	Wetland Canopy (O/S)	Wetland Ground Cover (GC)
2	1.5	1.5

Habitat Support / Buffer

Buffer type	(Score)	X (% of area)	=Sub Totals
FOREST	2.5	100	2.5
		TOTAL	2.5

Field Hydrology (HYD): 0.5

WQ Input & Treatment (WQ)*: 3

* The value of WQ is obtained by adding the TOTAL scores of Land use Category and Pretreatment category then dividing by 2

Land use Category (LU)

Land use Category	(Score)	X (% of area)	=Sub Totals
Natural	3	100	3
		(LU) TOTAL	3

Pretreatment Category (PT)

Pretreatment Category	(Score)	X (% of area)	=Sub Totals
Natural	3	100	3
		(PT) TOTAL	3

WRAP Score: 0.61

Field Notes:

Wildlife Utilization (WU)
Undeveloped setting

Wetland Canopy (O/S)
Canopy is planted pine; many pines are dead or dying, apparently due to ponded water

Wetland Ground Cover (GC)
Ground cover of desirable regionally indigenous wetland plants but is influenced by planted pine and ponded water caused by an adjoining dirt roadbed.

Habitat Support / Buffer
>300 feet of undeveloped forest buffer, but is planted pine

Field Hydrology (HYD)
Hydrology appears to be completely attributed to ponded runoff caused by adjoining dirt roadbed

WQ Input & Treatment (WQ)
Wetland in 100% natural setting, other than forest management.

WETLAND C

Wetland Rapid Assessment Procedure

(WRAP)

☑ Check one: ☒ Existing Conditions ☐ Proposed Conditions

Application Number	Project Name	Date	Evaluator	Wetland Type
CECIL FIELD	SITE 15, WETLAND C	10/1/03	PEYTON DOUB	PFO4

Land Use	FLUCCS Code	Wetland Acreage
CERCLA	620 Description: WETLAND CONIF. FOREST	> 10 ACRES

Wildlife Utilization (WU)	Wetland Canopy (O/S)	Wetland Ground Cover (GC)
2	2.5	2.5

Habitat Support / Buffer

Buffer type	(Score)	X (% of area)	=Sub Totals
FOREST	2.5	100	2.5
		TOTAL	2.5

Field Hydrology (HYD): 2

WQ Input & Treatment (WQ)*: 3

* The value of WQ is obtained by adding the TOTAL scores of Land use Category and Pretreatment category then dividing by 2

Land use Category (LU)

Land use Category	(Score)	X (% of area)	=Sub Totals
Natural	3	100	3
		(LU) TOTAL	3

Pretreatment Category (PT)

Pretreatment Category	(Score)	X (% of area)	=Sub Totals
Natural	3	100	3
		(PT) TOTAL	3

WRAP Score: 0.81

Field Notes:

Wildlife Utilization (WU)

Minimal human disturbance, contiguous to diversity of undeveloped upland habitats.

Wetland Canopy (O/S)

Well stratified, diverse, native vegetation; no undesirable exotic or invasive species

Wetland Ground Cover (GC)

Diverse groundcover without exotic or invasive species

Habitat Support / Buffer

>300 feet of undeveloped forest buffer, but planted pine and ~50% of buffer is clearcut

Field Hydrology (HYD)

Observed saturated conditions appear normal for the wetland, but wetland is contiguous to a man-made drainage ditch.

WQ Input & Treatment (WQ)

Wetland in 100% natural setting, other than for forest management

WETLAND D

Wetland Rapid Assessment Procedure

☑ Existing Conditions ☐ Proposed Conditions (Check one) (WRAP)

Application Number	Project Name	Date	Evaluator	Wetland Type
CECIL FIELD	SITE 15, WETLAND D	10/1/03	PEYTON DOUB	PFO2

Land Use	FLUCCS Code	Wetland Acreage
CERCLA	621 Description: CYPRESS	

Wildlife Utilization (WU)	Wetland Canopy (O/S)	Wetland Ground Cover (GC)
2	1.5	1

Habitat Support / Buffer

Buffer type	(Score)	X (% of area)	=Sub Totals
FOREST	2.5	100	2.5
		TOTAL	2.5

Field Hydrology (HYD): 2

WQ Input & Treatment (WQ)*: 3

* The value of WQ is obtained by adding the TOTAL scores of Land use Category and Pretreatment category then dividing by 2

Land use Category (LU)

Land use Category	(Score)	X (% of area)	=Sub Totals
Natural	3	100	3
		(LU) TOTAL	3

Pretreatment Category (PT)

Pretreatment Category	(Score)	X (% of area)	=Sub Totals
Natural	3	100	3
		(PT) TOTAL	3

WRAP Score: 0.67

Field Notes:

Wildlife Utilization (WU)

Minimal human disturbance, contiguous to diversity of undeveloped upland habitats

Wetland Canopy (O/S)

Canopy substantially sparser compared to other Site 15 wetlands, planted pines are dead or dying (apparently due to inundation), little natural woody vegetation in much of the wetland.

Wetland Ground Cover (GC)

little or no groundcover over much of wetland, even in areas with little or no shade. Could be due to inundation regime or unknown soil factors.

Habitat Support / Buffer

>300 feet of undeveloped forest buffer, but planted pine.

Field Hydrology (HYD)

Observed hydrology appears to be natural for the wetland, but wetland may be influenced by nearby drainage ditch (Wetland E)

WQ Input & Treatment (WQ)

Wetland in 100% natural setting, other than for forest management

WETLAND E

Wetland Rapid Assessment Procedure

☑ Check one
☒ Existing Conditions ☐ Proposed Conditions (WRAP)

Application Number	Project Name	Date	Evaluator	Wetland Type
CECIL FIELD	SITE 15, WETLAND E	10/1/03	PEYTON DOUB	R4

Land Use	FLUCCS Code	Wetland Acreage
CERCLA	N/A Description: DRAINAGE DITCH	<0.1 ACRE

Wildlife Utilization (WU)	Wetland Canopy (O/S)	Wetland Ground Cover (GC)
2	1	2

Habitat Support / Buffer

Buffer type	(Score)	X (% of area)	=Sub Totals
FOREST	2.5	100	2.5
		TOTAL	2.5

Field Hydrology (HYD): 1

WQ Input & Treatment (WQ)*: 3

* The value of WQ is obtained by adding the TOTAL scores of Land use Category and Pretreatment category then dividing by 2

Land use Category (LU)

Land use Category	(Score)	X (% of area)	=Sub Totals
Natural	3	100	3
		(LU) TOTAL	3

Pretreatment Category (PT)

Pretreatment Category	(Score)	X (% of area)	=Sub Totals
Natural	3	100	3
		(PT) TOTAL	3

WRAP Score: 0.64

Field Notes:

Wildlife Utilization (WU)
Water feature available to wildlife in generally natural setting

Wetland Canopy (O/S)
Few canopy trees in ditch itself, most parts of ditch shaded by pines on adjoining uplands.

Wetland Ground Cover (GC)
Natural ground cover present except where ditch is inundated.

Habitat Support / Buffer
>300 feet of undeveloped forest buffer, but planted pine.

Field Hydrology (HYD)
Ditch is man-made but could possess hydrological characteristics of some natural intermittent streams

WQ Input & Treatment (WQ)
Wetland in natural setting, other than for forest management

WETLAND F

Wetland Rapid Assessment Procedure

☑ Check one
☒ Existing Conditions ☐ Proposed Conditions (WRAP)

Application Number	Project Name	Date	Evaluator	Wetland Type
CECIL FIELD	SITE 15, WETLAND F	10/1/03	PEYTON DEUB	PEMx

Land Use	FLUCCS Code	Wetland Acreage
CERCLA	641 Description: FRESHWATER MARSH	<0.1 ACRE

Wildlife Utilization (WU)	Wetland Canopy (O/S)	Wetland Ground Cover (GC)
2	1	1

Habitat Support / Buffer

Buffer type	(Score)	X (% of area)	=Sub Totals
FOREST	2.5	100	2.5
		TOTAL	2.5

Field Hydrology (HYD)	WQ Input & Treatment (WQ)*
1	3

* The value of WQ is obtained by adding the TOTAL scores of Land use Category and Pretreatment category then dividing by 2

Land use Category (LU)

Land use Category	(Score)	X (% of area)	=Sub Totals
Natural	3	100	3
		(LU) TOTAL	3

Pretreatment Category (PT)

Pretreatment Category	(Score)	X (% of area)	=Sub Totals
Natural	3	100	3
		(PT) TOTAL	3

WRAP Score
0.58

Field Notes:

Wildlife Utilization (WU)
Water feature available to wildlife in generally natural setting.

Wetland Canopy (O/S)
Few willow seedlings but no canopy

Wetland Ground Cover (GC)
Sparse groundcover, may be hindered by poor soil fertility of severely disturbed surface soils

Habitat Support / Buffer
>300 feet of undeveloped buffer consisting of mostly clearcut forest with natural regeneration

Field Hydrology (HYD)
Feature is man-made pit

WQ Input & Treatment (WQ)
Feature is in natural setting

APPENDIX C

PHOTOGRAPHS

Photo 1: Overview of Wetland A, showing pond cypress knees

Photo 2: Pitcher plants, a genus of insectivorous herbaceous plants common in southeastern wetlands, occur in frequent scattered patches in Wetland A.

Photo 3: Virginia chain fern and red maple saplings in Wetland A

Photo 4: Upland vegetation north of Wetland A

Photo 5: Shallow pools of standing water in Wetland A

Photo 6: Overview of Wetland B (narrow swale in center)

Photo 7: Dense patch of wetland herbs in canopy gap in Wetland B

Photo 8: Northern edge of Wetland C (boundary in midsection of photo)

Photo 9: Overview of clearcut in central part of Site 15

Photo 10: Overview of main part of Wetland D

Photo 11: Denser vegetation in southwestern quadrant of Wetland D

Photo 12: Sparse rows of planted slash pine in Wetland D

Photo 13: Overview of Wetland E (drainage ditch). Surface soil in the pictured ditch segment is saturated.

Photo 14: Overview of Wetland F (excavation pit).