Appendix G

Threatened and Endangered Species

G.1 U.S. Fish and Wildlife Service

Survey Methodology
Survey Findings
Determination of Effects

G.2 Georgia Department of Natural Resources

Survey Methodology
Survey Findings

Note: During the public comment process conducted for the Draft Environmental Impact Statement (EIS), a commenter pointed out that the habitat description for the hairy rattleweed was inaccurate. The Draft EIS states that the hairy rattleweed occurs in shallow pools in Piedmont granite outcrops when, in fact, the plant's native habitat is sandy soils in open pine flatwoods, intensively managed slash pine plantations, and along road and power line rights-of-way. The habitat description in Section 3.8 of the Final EIS has been updated; however, the historical records of consultation provided in this appendix cannot be changed.

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Appendix G
Threatened and Endangered Species

Appendix G.1
U.S. Fish and Wildlife Service

Survey Methodology

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ecology and environment, inc.
Global Environmental Specialists
1974 Commonwealth Lane
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December 17, 2010

Mr. Robert Brooks
United States Fish and Wildlife Service
Coastal Ecological Services Field Office
4980 Wildlife Drive NE
Townsend, Georgia 31331

Re: Proposed Use of Habitat-Based Flatwoods Salamander and Striped Newt Survey Methodology for the Environmental Impact Statement for the Modernization and Expansion of Townsend Bombing Range, Georgia

Dear Mr. Brooks:

As a follow-up to the informal consultation meeting conducted between personnel from the United States Fish and Wildlife Service (USFWS), Coastal Ecological Services Field Office, Naval Facilities Engineering Command Southeast (NAVFAC SE), Marine Corps Air Station Beaufort (MCAS Beaufort), and Ecology and Environment, Inc. (E & E) on November 30, 2010, and a subsequent teleconference between you and E & E representatives on December 13, 2010, we request the USFWS review and provide concurrence with the following proposed survey methodology for the federally threatened flatwoods salamander (*Ambystoma cingulatum*) and the striped newt (*Notophthalmus perstriatus*), a candidate species for federal listing, that would be used if surveys for these species are necessary. Such surveys would be conducted to determine impact to these species and would be utilized for Section 7 consultation, as necessary, to complete the Environmental Impact Statement for the Modernization and Expansion of Townsend Bombing Range, Georgia (referred to herein as the TBR EIS).

During the meeting on November 30, 2010, your agency expressed concern with the ability to conduct dip net surveys, if warranted, in the winter of 2011 due to a lack of rainfall in the geographic area of the Proposed Action, which includes Long and McIntosh Counties, Georgia. Therefore, on behalf of NAVFAC SE, E & E has conducted research on established survey methodologies for flatwoods salamanders. The findings of this research are summarized below. The striped newt utilizes similar habitat and has a similar life history as the flatwoods salamander. Therefore one survey methodology is proposed for the assessment of both species.

Currently, there is no set protocol for determining presence or absence of flatwoods salamanders in a particular breeding pond. The general study consensus is that a survey with drift net fences surrounding a breeding pond for two consecutive "normal" weather years will indicate an affirmative result on the determination of the pond as a breeding pond. For dip net surveys, multiple years of breeding pond surveys are required to definitively determine the presence or absence of flatwoods salamanders.[1] The drought conditions present in the project area during the recent past and the timeframe for completing the TBR EIS would make these survey methodologies infeasible for this project.

[1] USFWS, 2005a. *Biological Opinion for the Relocation of Panama City-Bay County International Airport (West Bay Site Alternative)*, Dated October 3, 2005, Prepared by USFWS, 1601 Balboa Avenue Panama City, Florida.

Habitat-based survey methods have been applied in the past for projects potentially impacting flatwoods salamanders.[1, 2] Two biological opinions issued by the USFWS Panama City, Florida office are provided as Attachments A and B for your review. Both of these studies utilized habitat-based surveys.

Habitat-based surveys examine existing habitats to determine if they are likely to be utilized as flatwoods salamander breeding ponds. These surveys typically examine ephemeral or depressional wetlands that are geographically isolated from larger water bodies. To determine if these areas serve as potential breeding ponds, a thorough assessment of the pond, ectone, and adjacent upland is conducted. Positive indicators are absence of deep water, a treeless ecotone, and adjacency to open pine savannas or pine flatwoods. Areas that maintain appropriate habitat within the pond, adjacent upland, and treeless ecotone are then assumed to be potentially utilized as a flatwoods salamander breeding pond.[2]

The proposed acquisition areas (Areas 1 and 3) are primarily composed of planted pine stands and deep forested wetlands. As such, your agency has indicated that little habitat for the flatwoods salamander or striped newt is expected to be found within the proposed target areas. In the winter of 2011, E & E will conduct wetland delineations and upland habitat classifications for the proposed target areas. Following this preliminary field effort, a detailed wetland delineation and habitat assessment report, identifying potential flatwoods salamander habitat, will be provided to USFWS.

If any areas are identified as suitable habitat for flatwoods salamanders or striped newts during the winter 2011 surveys, E & E would propose additional targeted field surveys be conducted during April and May 2011 to determine if the habitat is a potential breeding pond. These surveys would be conducted by appropriately educated botanists and/or biologists familiar with southeastern flora. For these follow-up surveys, E & E would propose to use a variation (e.g., modified slightly to include plant species found in Georgia) of the "Potential Breeding Pond Description Data Sheet for Flatwoods Salamander (*Ambystoma cingulatum*) and Striped Newt (*Notophthalmus perstriatus*)" provided in Appendix II of the *Biological Opinion for U.S. Army Corps of Engineers Regional General Permit 86 (RGP-86)*.[2] The modified data sheet proposed for follow-up habitat based surveys is provided herein as Attachment C. A list of proposed follow-up survey locations and rationale for why the area requires follow-up surveys (e.g., based on the winter 2011 survey findings, results of recent infrared aerial photo-interpretation, and review of Natural Resources Conservation Service soils datum) would be provided to the USFWS prior to the commencement of any necessary follow-up field surveys. The results of any targeted follow-up surveys would also be provided to the USFWS in report format.

Please review the methodologies herein that would be used in the event that flatwoods salamander and striped newt surveys are necessary. We respectfully request that you provide concurrence, within 30 days of receipt of this letter, with the use of habitat-based follow-up surveys as opposed to conducting dip net surveys over multiple years to confirm the presence of flatwoods salamander and striped newt breeding ponds within proposed impact areas.

[2] USFWS 2005b. *Biological Opinion for U.S. Army Corps of Engineers Regional General Permit 86 (RGP-86)*, Dated March 3, 2005, Prepared by USFWS, 1601 Balboa Avenue Panama City, Florida.

Please feel free to contact me (bpowell@ene.com; 850-574-1400, ext. 3911) or Jonathan Oravetz (joravetz@ene.com; 850-574-1400, ext. 3928) if you have any questions regarding this submittal or require any additional information to process this request.

Sincerely,

ECOLOGY & ENVIRONMENT, INC.

Brenda A. Powell

Brenda A. Powell
Project Biologist

Attachments

cc: Jered Jackson, NAVFAC SE
John Conway, NAVFAC SE
Billy Drawdy, MCAS Beaufort
Alice Howard, MCAS Beaufort

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ATTACHMENT A

Relocation of Panama City-Bay County International Airport
(West Bay Site Alternative), Bay County, Florida
Biological Opinion, October 3, 2005

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Relocation of Panama City-Bay County International Airport (West Bay Site Alternative), Bay County, Florida

Biological Opinion
October 3, 2005

Prepared by:
U.S. Fish and Wildlife Service
1601 Balboa Avenue
Panama City, Florida

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IN REPLY REFER TO:

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Field Office
1601 Balboa Avenue
Panama City, FL 32405-3721

Tel: (850) 769-0552
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October 3, 2005

Ms. Virginia Lane
Federal Aviation Administration
5950 Hazeltine National Drive
Suite 400
Orlando, Florida 32822

Re: FWS Log No. 4-P-06-006
Biological Opinion
Relocation of the Panama City-Bay County International Airport
(West Bay Site Alternative)
Bay County, Florida

Dear Ms. Lane:

This document transmits the Fish and Wildlife Service's (Service) biological opinion (BO) for the Federal Aviation Administration (FAA) proposed action of relocating the Panama City-Bay County International Airport, Bay County, Florida, and its effects on listed species per section 7 of the Endangered Species Act of 1973, as amended (Act), (16 U.S.C. 1531 et seq.). Your August 29, 2005, request for formal consultation was received on August 30, 2005.

This biological opinion is based on information provided in the final biological assessment (BA) which was received on August 30, 2005. A complete administrative record of this consultation is on file in the Service's Panama City, Florida Field Office.

Consultation History

December 21, 2001 through present and continuing - Ongoing consultation has been continuing during preparation of the Panama City-Bay County International Airport Environmental Impact Statement. The US Fish and Wildlife Service (USFWS) provided scoping comments and responded to FAA's Notice of Intent to prepare an Environmental Assessment for the proposed relocation of the Panama City-Bay County International Airport in a letter dated December 21, 2001.

February 6, 2002	Meeting conducted with USFWS to discuss the potential listed species issues on the proposed West Bay Site, the proposed survey methodology, the proposed survey schedule and the results of the spring, summer and fall surveys.
April 23, 2003	A Notice of Intent to prepare the Environmental Impact Statement was published in the *Federal Register*.
November 26, 2004	Notice of Availability of Draft Environmental Impact Statement (EIS) issued in *Federal Register*.
January 27, 2005	The Service provided comments on the Draft EIS. Based on discussions with the Service, it was determined that a biological assessment would be required.
May 23, 2005	The FAA transmitted a draft biological assessment which focused primarily on the flatwoods salamander and eastern indigo snake.
June 20, 2005	The Service provided comments on draft BA. It was determined that additional information was needed for bald eagle, American alligator, Gulf moccasinshell mussel, oval pigtoe mussel, Gulf sturgeon, red cockaded woodpecker, and piping plover.
June 28, 2005	Teleconference with FAA and the Service to discuss draft BA comments.
July 13, 2005	The National Marine Fisheries Service (NMFS) determined that there are no EFH recommendations for conservation measures.
July 21, 2005	Teleconference with FAA, USFWS, and US Army Corps of Engineers to discuss approach for addressing the Service's comments and revisions to the BA. The Service confirmed in an e-mail dated July 29, 2005, the limits of the Action Area as discussed below, the West Bay Sector Plan property as the cumulative impact study area boundary, and the species to be addressed in the revised BA.
July 27, 2005	The FAA submitted a draft habitat suitability analysis for flatwoods salamander to the Service for review and comment.
August 2, 2005	The Service provided comments regarding the draft suitability analysis for flatwoods salamander.
August 5, 2005	The FAA submitted the revised draft BA to the Service.
August 30, 2005	The FAA submitted the final BA to the Service.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

The project purpose is to relocate the Panama City-Bay County International Airport (PFN) to meet speculated future aviation needs as identified in the *Draft Environmental Impact Statement (DEIS) for the Proposed Relocation of the Panama City-Bay County International Airport*. The proposed project would relocate aviation facilities of the PFN and its operations to the West Bay Site, in Bay County (**Figure 1**). The project would consist of an airfield and terminal facilities, and include a primary air carrier runway 8,400 feet in length by 150 feet in width and a general aviation crosswind runway 5,000 feet in length by 100 feet wide. This system would be supported by the necessary ancillary facilities including taxiways, terminal area facilities, general aviation facilities, air traffic control and emergency facilities, lighting, and navigation facilities. The project would initially develop 1,378 acres of the 4,037-acre site. The project site is currently rural timberland used for the paper and wood products industry. Approximately 1,929 acres of the entire site are jurisdictional wetlands. The proposed project also includes three (3) additional parcels that would be used as mitigation for the impacts to the West Bay Site. These parcels are also presently rural timberlands and cover an area of 9,718 acres.

Conservation Measures

The Panama City Bay County Airport and Industrial District (Airport Sponsor) has developed a strategy for minimizing the impacts of the relocated airport. The measures will potentially contribute to the protection and recovery of the species under review.

1. Three mitigation parcels will be put under a conservation easement in perpetuity for mitigation of wetland, stream and wildlife impacts on the West Bay Site. These parcels cover an area of 9,718 acres of upland and wetland mosaic. The parcels will be enhanced by management including a more natural hydrologic and fire regime. This management includes thinning the density of timber, planting native species, returning to a more natural, frequent fire regime, exotic species control, hydrologic restoration and long-term conservation management. Hipes et al. (2000) and Palis (1997) recommend growing season fires to restore and maintain the mesic flatwoods habitat that the salamanders require. Within these 9,718 acres, potential salamander breeding ponds have been identified (*Appendix A*). Most of the ponds are presently in poor condition, with habitat quality scores of low to moderate, but should improve as the land recovers from years of intensive silviculture management. A mitigation synopsis has been developed for the parcels by the Airport Sponsor and is included in *Appendix B*.

2. Information concerning potential flatwoods salamander breeding ponds would be shared by the Airport Sponsor with the appropriate agencies that manage and survey salamander populations on public lands as well as the agencies that manage the lands themselves (FWS, FWC and Florida Department of Environmental Protection [FDEP]).

Action Area

For purposes of the Endangered Species Act, the action area is defined as all areas affected directly or indirectly by a federal action, including interdependent and interrelated actions and proposed Conservation Measures. Although each potentially affected species will define a separate action area, the most inclusive geographic area is referenced for simplicity.

The Action Area for this analysis includes all the area within the boundaries of the Proposed Action, which includes the 4,000-acre West Bay Site, 37-acre access road, and the 9,718-acre proposed mitigation parcels. See ***Figure 1***.

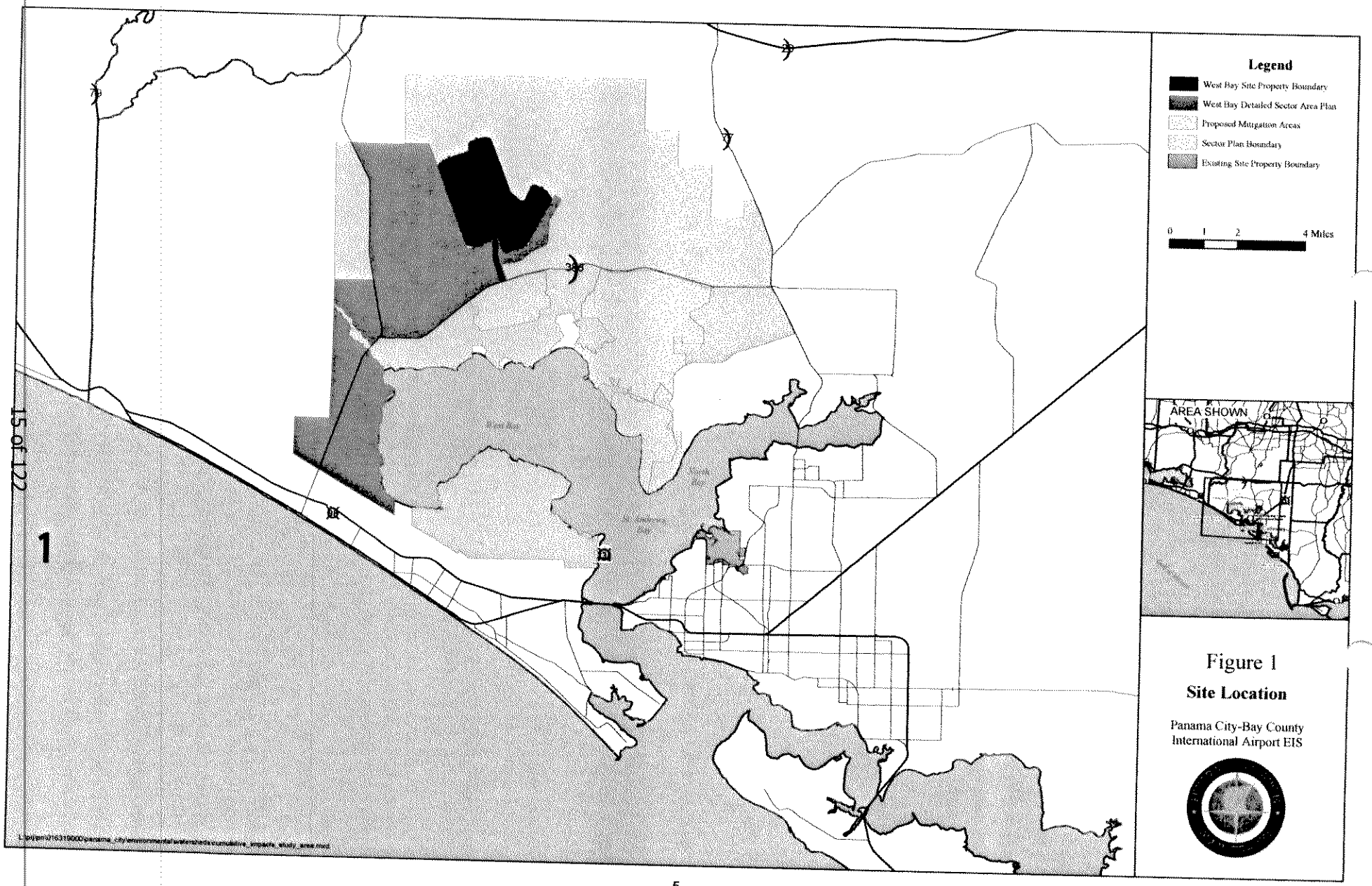


Figure 1

Site Location

Panama City-Bay County
International Airport EIS

15 of 122

1

Determination of effects

Based upon the low likelihood of direct or indirect impacts on these species as a result of the project, the Service concurs with the following determinations of effects. More detail regarding these species and potential effects of the project is found in the BA.

- **American alligator** (*Alligator mississippiensis*) - No Effect
  Confirmed on-site. American alligators are listed due to the similarity of appearance with the American crocodile. The project is not located within the range of the crocodile.

- **Eastern indigo snakes** (Drymarchon corais couperi) - No Effect
  No Eastern indigo snakes were observed during the field surveys of the West Bay Site or the mitigation parcels, and limited gopher tortoise habitat exists in the Action Area. Occurrences of this species are rare in northwest Florida.

- **Gulf moccasinshell mussel** (*Medionidas penicillatus*) - No Effect
  No Gulf moccansinshell mussels were observed during the field surveys of the West Bay Site and habitat does not exist for this species on the West Bay Site. Habitat could potentially occur downstream but the Action Area is outside the known range of this species.

- **Gulf sturgeon** (*Acipenser oxyrinchus desotoi*) - No Effect
  The designated critical habitat is located outside of the Action Area of the proposed project, and sturgeon are considered to be a transient species in West Bay. Additionally the proposed action would not directly or indirectly impact the West Bay estuary or the coastal rivers.

- **Oval pigtoe mussel** (*Pluerbema pyriforme*) - No Effect
  No oval pigtoe mussels were observed during the field surveys of the West Bay site and no habitat occurs on the West Bay site. Habitat could potentially occur downstream but the Action Area is outside the known range.

- **Piping plover** (*Charadrius melodus*) - No Effect
  The piping plover occurs on the non-breeding grounds from July 15-May 15. The habitats used by non-breeding piping plovers include beaches, mud flats, sand flats, algal flats, and washover passes. No suitable habitat occurs on the proposed airport site, therefore this project would not affect piping plover or any designated critical habitat. Mud and sand flats do occur along the proposed West Bay conservation area during periods of medium to low tide. There has been an incidental report of a piping plover using the area known as Marifarms which occurs within the proposed mitigation area. Protection of habitat adjacent to West Bay within the designated conservation area will have a beneficial impact to the species should they appear.

- **Red-cockaded woodpecker** (*Picoides borealis*) - No Effect
  Florida Natural Areas Inventory data contains a historical occurrence record located directly to the north of the mitigation parcels. No red-cockaded woodpeckers or cavity trees were seen during wildlife surveys in the Action Area. Almost all upland habitats have been converted to

silviculture and it has been determined that habitats were not suitable for the occurrence of the species.

- **Bald eagle** (*Haliaeetus leucocephalus*) - No Effect
The Florida Fish and Wildlife Conservation Commission (FWC) Eagle Nest data base indicates there is an eagle nest (BA 007) located on Burnt Mill Creek. The data indicated the nest was active as late as 2003. Recent discussions with FWC indicate that the nest was also active in the 2004 and 2005 nesting seasons.

No bald eagles or eagle nests were observed during the field surveys of the West Bay Site. Bald eagles were observed foraging in the salt marsh habitat of the proposed mitigation parcels by FAA consultants, and the Airport Sponsor's consultant has observed bald eagles flying over the mitigation parcels. No bald eagle nests have been identified on the mitigation parcels.

The documented nest is located between two of the proposed mitigation parcels. The mitigation parcels are located outside the standard primary and secondary nest protection zones (1,500 feet) as defined in the *Habitat Management Guidelines for the Bald Eagle in the Southeast Region*. The nest is located approximately 2.5 miles from the West Bay Site, and FAA has determined in discussions with other experts that the flights to and from the airport will not create a significant disturbance to nesting activities.

- **Flatwoods salamander** (*Ambystoma cingulatum*) - Likely to Adversely Affect
Intensive surveys for flatwoods salamanders were not feasible given the size of the action area and the extreme drought that occurred during most of the study period. Potential habitats have been assessed for their quality for both the West Bay Site and the proposed mitigation parcels. Interviews and discussions have resulted in the conclusion that the likelihood of a flatwoods salamander population occurring on the West Bay site is low-to-moderate. No flatwoods salamanders have been collected on site. Since multiple years of breeding pond surveys are required to definitively determine the absence of flatwoods salamanders, and because of the recently re-confirmed presence of flatwoods salamander larvae at nearby Pine Log State Forest, the possibility remains that the ponds on-site could potentially be used by flatwoods salamander. The pond site within Pine Log State Forest is approximately 2 miles from the West Bay Site. The Service concurs with this determination, which is the focus of the remaining analysis in this biological opinion.

FLATWOODS SALAMANDER

STATUS OF THE SPECIES/CRITICAL HABITAT

This section summarizes the biology and ecology of the flatwoods salamander. The Service uses this information to assess whether a Federal action is likely to jeopardize the continued existence of this species. The Environmental Baseline section summarizes information on status and trends of the species specifically within the action area. These summaries provide the foundation for the Service's assessment of the effects of the proposed action, as presented in the Effects of Action section, and to make the Conservation Recommendations listed at the end of this opinion.

The flatwoods salamander (*Ambystoma cingulatum*) is listed as a threatened species under the authority of the Endangered Species Act of 1973, as amended (Act). The flatwoods salamander was designated as threatened in the *Federal Register*, April 1, 1999 (64 FR 15691), and became effective on May 3, 1999. No critical habitat has been designated for this species. Recovery planning is underway, but no recovery plan has been adopted.

Species description

The flatwoods salamander is a slender, small-headed mole salamander that is seldom greater than 5 inches in length. Adult dorsal color ranges from black to chocolate-black with highly variable, fine, light gray lines forming a net-like or cross-banded pattern across the back. Undersurface is plain gray to black with a few creamy or pearl gray blotches or spots. Flatwoods salamander larvae are long and slender, broad-headed and bushy-gilled, with white bellies and striped sides (Ashton, 1992; Palis, 1995). Flatwoods salamanders are known to occur in isolated populations across the lower southeastern Coastal Plain, with the majority of the remaining known populations located in Florida.

Life history

Adult and sub-adult flatwoods salamanders live in underground burrows. Adult flatwoods salamanders move above ground to their wetland breeding sites during rainy weather, in association with cold fronts, from October to December (Palis, 1997). Typical breeding sites are isolated pond cypress *(Taxodium ascendens)*, blackgum (*Nyssa sylvatica* var. *biflora*), or slash pine (*Pinus elliottii*) dominated depressions which dry completely on a cyclic basis. They are generally shallow and relatively small, and have a marsh-like appearance with sedges often growing throughout, and wiregrass (*Aristida* sp.), panic grasses (*Panicum* spp.), and other herbaceous species concentrated in the shallow water edges. After breeding, adult flatwoods salamanders leave the pond.

Optimum adult habitat for the flatwoods salamander is an open, mesic (moderate moisture) woodland of longleaf/slash pine (*Pinus palustris/P. elliottii*) flatwoods maintained by frequent fires, with a dominant ground cover of wiregrass (*Aristida spp.*). The ground cover supports a rich herbivorous invertebrate community that serves as a food source for the species (64 FR 15692).

In a study by Ashton (1992), flatwoods salamanders were found greater than 1,859 yards from their breeding pond. However, based on more recent data (Semlitsch, 1998) and additional peer review, the final listing rule recommends a 1,476-feet "buffer" around breeding ponds to protect the majority of a flatwoods salamander population from the adverse effect of certain specified, silvicultural practices. This buffer extends 1,476 feet out from the wetland edge.

Since they may disperse long distances from their breeding ponds to upland sites, desiccation can be a limiting factor. Thus, it is important that areas connecting their wetland and terrestrial habitats are conserved in order to provide cover and appropriate moisture regimes during their migration. High quality habitat for the flatwoods salamander includes a number of isolated wetland breeding sites within a fire maintained landscape of longleaf pine/slash pine flatwoods

having an abundant herbaceous ground cover (Sekerak, 1994). In Florida, Palis (1997) found that 70 percent of the active breeding sites were surrounded by second-growth longleaf or slash pine flatwoods with nearly undisturbed wiregrass ground cover.

Population dynamics

A flatwoods salamander population has been defined as those salamanders using breeding sites within 2 miles of each other, barring an impassable barrier such as a perennial stream (Palis, 1997). Since temporary ponds are not likely permanent fixtures of the landscape due to succession, there would be inevitable extinctions of local populations (Semlitsch, 1998). By maintaining a mosaic of ponds with varying hydrologies, and by providing terrestrial habitats for adult life stages and colonization corridors, some prevention of local population extinction can be achieved. A mosaic of ponds would ensure that appropriate breeding conditions would be achieved under different climate regimes. Colonization corridors would allow movement of salamanders to new breeding sites or previously occupied ones (Semlitsch, 1998).

Fire is needed to maintain the natural pine flatwoods community. The disruption of the natural fire cycle has led to an increase of slash pine on areas previously dominated by longleaf pine, increases in hardwood understory and canopy, and subsequent decreases in herbaceous ground cover (64 FR 15701). Isolated ponds that are surrounded with pine plantations and are protected from fire may become unsuitable breeding sites for the flatwoods salamander. This is a result of canopy closure and the reduction in herbaceous vegetation necessary for egg deposition and larval development (Palis, 1993).

Status and distribution

Historical records for the flatwoods salamanders in its range are limited. Longleaf pine/slash pine flatwoods historically occurred in a broad band across the lower southeastern Coastal Plain. The flatwoods salamander likely occurred in appropriate habitat throughout this area (64 FR 15691). Range-wide surveys in Alabama, Florida, Georgia, and South Carolina have been ongoing since 1990 in an effort to locate new populations. Most surveys were searches for the presence of larvae in the grassy edges of ponds.

The combined data from the surveys completed since 1990 indicate that 59 populations of flatwoods salamanders are known from across the historical range. Most of these occur in Florida (47 populations or 80 percent). Eight populations have been found in Georgia, four in South Carolina, and none have been found in Alabama. Some of these populations are inferred from the capture of a single individual. Slightly more than half the known populations for the flatwoods salamander occur on public land (40 of 59, or 68 percent).

ENVIRONMENTAL BASELINE

Status of the species within the action area

Historical data on flatwoods salamanders in the action area is limited. Most of the area is privately owned and has been intensively managed for silviculture for many years. Little

remains of the natural terrestrial landscape. Almost all uplands and most wetlands were converted to pine plantations with site preparation that included clear cutting, roller chopping, herbicide application, and bedding. In addition, pine flatwoods are not considered wetlands under State of Florida best management practices for silviculture; therefore, this habitat type receives no special consideration when converted and managed for industrial forestry.

There is one documented occurrence of flatwoods salamanders in nearby Washington County in Pine Log State Forest and one recent record in Walton County. The Walton County record is for one individual at one location in Point Washington State Forest. The documented occurrence within the State Forest is approximately 2 miles from the Action Area.

West Bay Site

Listed species surveys were conducted by FAA in November 2001 and February 2003 on the initial 8,000-acre study area, which includes the West Bay Site. During the February 2003 surveys, twenty-two potential breeding ponds were sampled for flatwoods salamander larvae (***Table 1***). Pond locations are illustrated on ***Figure 2***. Only 10 sites are located within the West Bay Site and only 4 sites (D, F, I and W) are located within the initial development phase of the proposed action. Subsequent to the listed species surveys, the Service and John Palis observed an additional pond just south of Pond W. Although this pond was not sampled by the Service or John Palis, it was noted that the habitat appeared to be potentially suitable for flatwoods salamander breeding. During both the November 2001 and February 2003 listed species surveys conducted by FAA, conditions were not suitable (little to no water) within this potential breeding pond to sample. Thus, this pond was not included in the habitat suitability analysis.

Sampling conditions were considered good for most pond sites; however, the survey was conducted towards the end of a severe drought in the area. A total of six hours of dip netting was completed as part of the survey of the twenty-two potential breeding ponds. No flatwoods salamander larvae were found during the surveys; however, larvae of the mole salamander (*Ambystoma talpoideum*) were collected. Additionally, adults were searched for opportunistically during the fall and winter wildlife surveys (November 2001 and February 2003).

The potential habitats on the West Bay Site are not known to support flatwoods salamanders. The potential breeding ponds that are on the site are located in pine plantations presently managed for silviculture. The decline of flatwoods salamander populations in association with silviculture activities has been well documented. The suppression of a routine fire regime results in a dense forested condition that excludes the herbaceous ground cover which is the primary habitat for sub-adult and adult flatwoods salamanders. In addition, silviculture activities include intensive site preparation. Therefore, the lands are not optimally suited for supporting flatwoods salamanders. However, there are recorded occurrences of flatwoods salamander in similar areas where the upland and wetland habitats have been impacted by silviculture.

The surveyed ponds were evaluated after-the-fact utilizing field notes and the habitat suitability method that was developed by HDR, Inc., USFWS, FWC, and FDOT to evaluate potential habitats surrounding the widening of US Highway 98 project. The method uses a scoring system

to evaluate the quality of potential salamander breeding ponds. Scores are developed (1 to 3) for the quality of the pond, the graminaceous ecotone (grassy area surrounding the pond), and the upland around the pond. Scores are only given for the upland if the pond and ecotone scores add up to 3. The total score rates the ponds for their quality and the potential to be used by salamanders as: None, Low, Low-Moderate, Moderate, Moderate-High, and High.

Using the field descriptions completed during the February 2003 listed species surveys, scores were assigned to the potential breeding ponds on the West Bay Site. It was assumed that the upland score correlated to the standard score for pine plantation unless the field notes indicated that conditions were different.

Of the pond sites located within the Action Area, six sites received a score of low, one site a score of low-moderate and three sites a score of moderate. The pond observed by the Service, which is located near Pond W in an area of hydric pine flatwoods, was noted as being dry during field sampling conducted by FAA during fall 2001 and winter 2003 listed surveys. This pond was not included in the analysis, but appeared to be of moderate-high condition according to the Service biologist and contained sufficient water to support breeding activity at the time of the survey by the Service.

Table 1 West Bay Site Flatwoods Salamander Potential Breeding Pond Evaluations [1]

Pond Label	Pond	Ecotone	Upland	Total score (Quality)	Description/Field Notes
A	2	1	1	4 (Low-Mod)	Cypress pond with water depths up to one foot, featuring no aquatic vegetation
B	1	1		Low	Myrtle-leafed holly wetland that had no standing water.
C	1	1		Low	A historic cypress pond that had been logged and burned. The water depth in the pond was up to two feet deep. Vegetation in the pond included: broom sedge, dog fennel, and St. John's wort. Minimal cypress regeneration had occurred and the area had been replanted with slash pine.
*D	1	0		Low	A mixed hardwood and cypress swamp with titi. Described as not suitable flatwoods salamander habitat.
*F	3	1	0	4 (Low-Mod)	Cypress pond surrounded by intensively bedded pine plantation. The pond was described as excellent larval habitat, but the surrounding habitat has been highly disturbed.
G	2	2	0	4 (Low-Mod)	No cypress, sedge dominated ground cover under a slash pine overstory.
H	1	1		Low	Titi dominated shrub swamp with a few scattered cypress. No submerged or emergent aquatic vegetation present within the pond.
*I	1	1		Low	A small titi swamp with a few cypress and sweet bays. The pond was surrounded by newly clearcut pine plantation. There was no wire grass present at the site.
*J	1	1		Low	This cypress dome had recently been clearcut and all of the cypress had been removed.
*K	1	1		Low	This cypress dome had also recently been clearcut and all of the cypress had been removed.
*L	1	1		Low	A deep pond surrounded by mesic to xeric clearcut pine.
M	1	1		Low	A cypress and pine bog that had no water.
N	1	1		Low	A bay, slash pine and cypress drained swamp. A one meter deep ditch drains the swamp. The swamp was dry.
O	1	0		Low	A dense titi thicket with scattered cypress. Little water present.
*P	2	2	1	5 (Mod)	Cypress swamp with St. John's wort fringe. The pond was deep.
*Q	2	2	1	5 (Mod)	A slash pine and cypress swamp with less than 18 inches of water.
*R	1	1		Low	A myrtle-leafed holly wetland that was dry.
S	1	1		Low	A former cypress pond that had been logged. The pond is now titi dominated.
T	1	1		Low	A titi wetland that had very little water.
U	2	2	1	5 (Mod)	A cypress, slash pine, and titi wetland with wiregrass in the littoral zone. Described as good flatwoods salamander habitat.
V	1	1		Low	A cypress, titi, and slash pine seep with one foot of water. No wiregrass was present.
*W	2	2	1.5	5.5 (Mod)	A cypress and black gum swamp described as the best flatwoods salamander habitat that had been observed. There was also titi and myrtle-leafed holly. Mole salamander larvae and eggs were collected in this pond.

Source: Kimley-Horn and Associates, Inc. 2005

[1]Evaluation based on field data collected during listed species surveys conducted in February 2003.

*Pond sites located within Action Area.

Figure 2

Location of Flatwood Salamander Ponds

West Bay Site

Panama City-Bay County International Airport EIS

Proposed Mitigation Parcels

Through field reviews, the Airport Sponsor evaluated 120 wetlands on the mitigation parcels for their likelihood of being suitable flatwoods salamander breeding ponds. The wetland locations are illustrated on ***Figure 3***. These wetlands were also evaluated using the HDR method. Results indicate that there were 50 ponds considered Low, 27 considered Low- Moderate, 6 Moderate, and 37 with no potential. The scores and pond descriptions are attached as *Appendix A*.

The Florida Fish and Wildlife Conservation Commission (FWC) surveys potential habitats on public lands for the presence of flatwoods salamanders. An evaluation of salamander populations indicates that small localized populations are present throughout northwest Florida with one known breeding pond within approximately 2 miles of the project site. Airport Sponsor discussions with FWC biologists as described in the biological assessment indicate that the habitats on the West Bay Site are not optimal to support populations of flatwoods salamanders. These discussions indicate that habitats on the site have been extensively altered for silviculture. FWC comments are based on generalized observations of the Action Area through windshield surveys and local knowledge of the area. Specific sampling of the Action Area has not been conducted by the FWC biologists.

There is no set protocol at this time for providing reasonable assurance that salamanders do not occur at a particular location. However, the consensus among herpetologists is that a reasonable effort would consist of drift fence surveys surrounding a potential breeding pond to be conducted in two consecutive "normal" weather years. There has not been an opportunity to adequately survey for the presence or absence of flatwoods salamanders in any of the potentially suitable habitats. However, based on the remote sensing analysis, site inspections, and the proximity to known locations, the Federal Aviation Administration presumes presence of flatwoods salamanders at four potential locations that were scored as moderate quality. This appears to be a reasonable approach given the size of the project area and the limited timeframe to conduct surveys. Positive results from any future surveys would require re-initiation of section 7 consultation if there is a potential to affect suitable habitat not addressed in the incidental take section of this opinion.

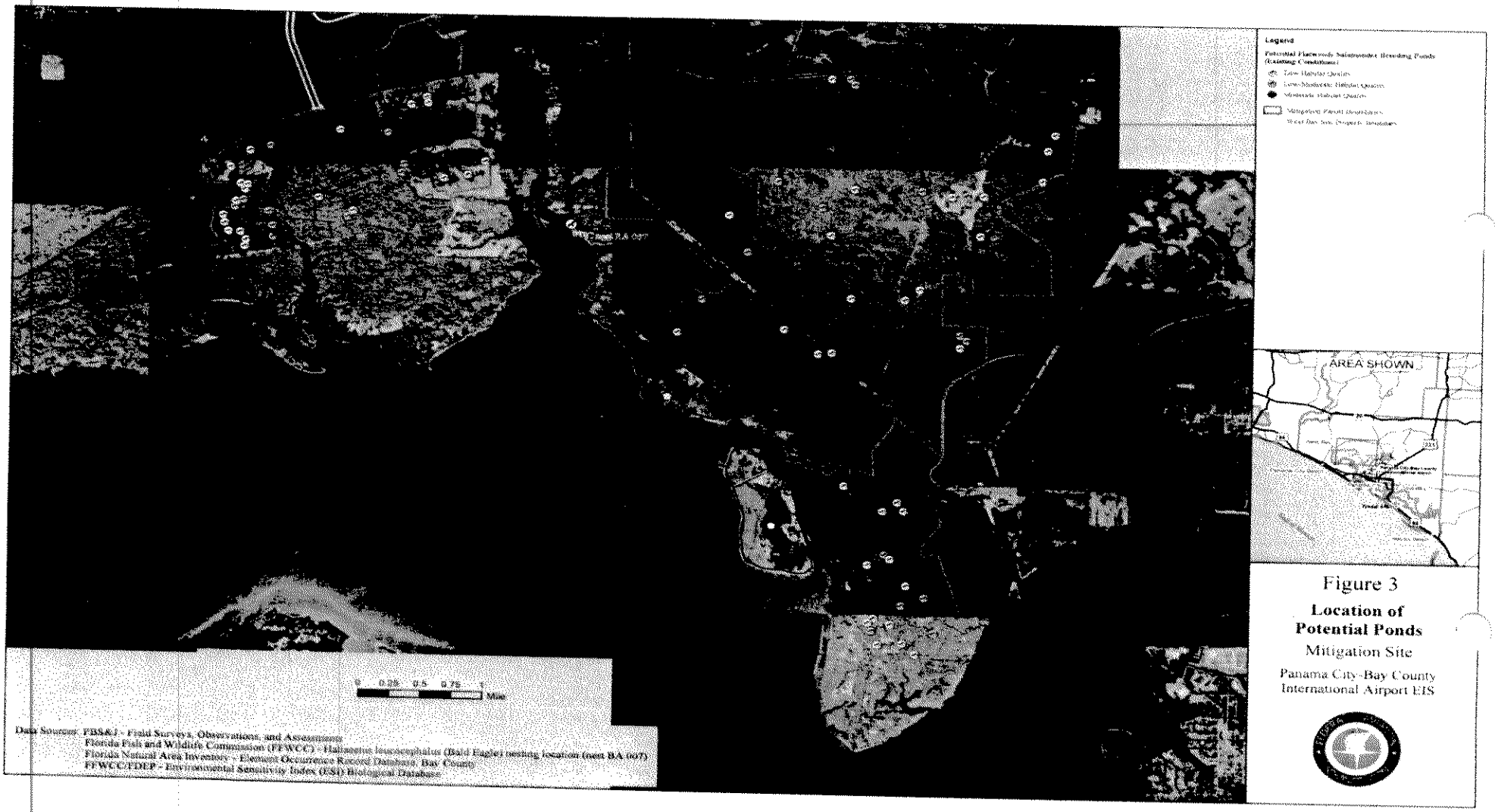


Figure 3

Location of Potential Ponds

Mitigation Site

Panama City-Bay County International Airport EIS

Factors affecting species environment within the action area

West Bay Sector Plan - Bay County officials recently conducted a special planning effort for an area totaling approximately 75,000 acres. This area is the boundary for the Cumulative Impacts Analysis Section of this opinion. The West Bay Sector Plan (Sector Plan) identifies potential development and conservation strategies for the area, and is dependent on relocation of the Panama City/Bay County International Airport. Although the Sector Plan may encourage and accelerate development, it could reduce adverse effects in comparison to existing land use regulations. There are no known flatwoods salamander records within the sector planning area. Potential habitat occurs in a proposed sector conservation area that coincides with the Breakfast Point mitigation bank and in the approximately 30,000 acres identified as the West Bay Preservation Area.

Public Lands - Pine Log State Forest is in proximity to the proposed airport location immediately adjacent to the sector planning area, but not located within the project area. The forest is actively managed in a manner that should improve salamander populations. There is one documented occurrence of flatwoods salamanders in the State Forest approximately 2 miles from the West Bay Site.

EFFECTS OF THE ACTION

The relocation of the Panama City-Bay County International Airport (PFN) is designed to meet projected future aviation needs within the Panama City-Bay County region. It has also been promoted by local officials as a key element in future economic growth for the area. The proposed project would relocate aviation facilities of the PFN and its operations to the West Bay Site. The project would consist of an airfield and terminal facilities, and include a primary air carrier runway 8,400 feet in length by 150 feet in width and a general aviation crosswind runway 5,000 feet in length by 100 feet wide. This system would be supported by the necessary ancillary facilities including taxiways, terminal area facilities, general aviation facilities, air traffic control and emergency facilities, lighting, and navigation facilities. The project would initially develop 1,378 acres of the 4,037-acre site. The project site is currently rural timberland used for the paper and wood products industry. Approximately 1,929 acres of the entire site are jurisdictional wetlands. The proposed project also includes three (3) parcels that would be used as mitigation for wetland impacts at the West Bay Site. These parcels are also presently rural timberlands and cover an area of 9,718 acres.

Direct effects

Effects of the project on salamander habitat are based on two important premises: 1) best available methods were used to identify potential habitat, and 2) presence of salamanders is presumed for these areas although none have been documented. The BA identifies specific direct effects of the project which include development of any potential flatwoods salamander habitats within the 4,037 acres of the West Bay relocation site. The BA identifies ten ponds (D, F, I, J, K, L, P, Q, R and W) that would be lost during the development of the airport parcel. Seven of these ponds were rated as low or low to moderate quality as potential flatwoods salamander habitat. The remaining three ponds were rated as moderate quality. These three

ponds and their associated upland buffer are approximately 475.5 acres in size. If the depressional wetland noted by the Service, but not sampled by FAA due to poor sampling conditions, is included, the four ponds and the associated buffer are a total of 584.3 acres in size.

Potential benefits may be gained on the mitigation parcels where 50 ponds considered Low, 27 considered Low – Moderate, and 6 considered Moderate quality will be enhanced by the more natural management of fire and hydrology. The management of the mitigation parcels may return these lands to a natural flatwoods condition after years of intensive silviculture. Although beneficial effects are encouraged and acknowledged, they are not considered as an offset to direct effects.

Indirect effects

Flatwoods salamanders are thought to be sensitive to soil and groundcover disturbing activities, especially when that disturbance creates an impediment to movement from upland habitat to the ephemeral wetlands they use for breeding and larval development. For this project, however, all of the potential breeding areas on site will be eliminated; therefore movement to and from, and among, wetlands is a moot point. Soil disturbance can also result in potential sedimentation and erosion affecting nearby wetlands habitat. Again, all potential wetland habitat on site eventually will be eliminated. In addition, because most of the perimeter of the project site will be maintained with minimal soil disturbance as "cleared areas" with little construction, the potential for sedimentation and erosion off-site is limited.

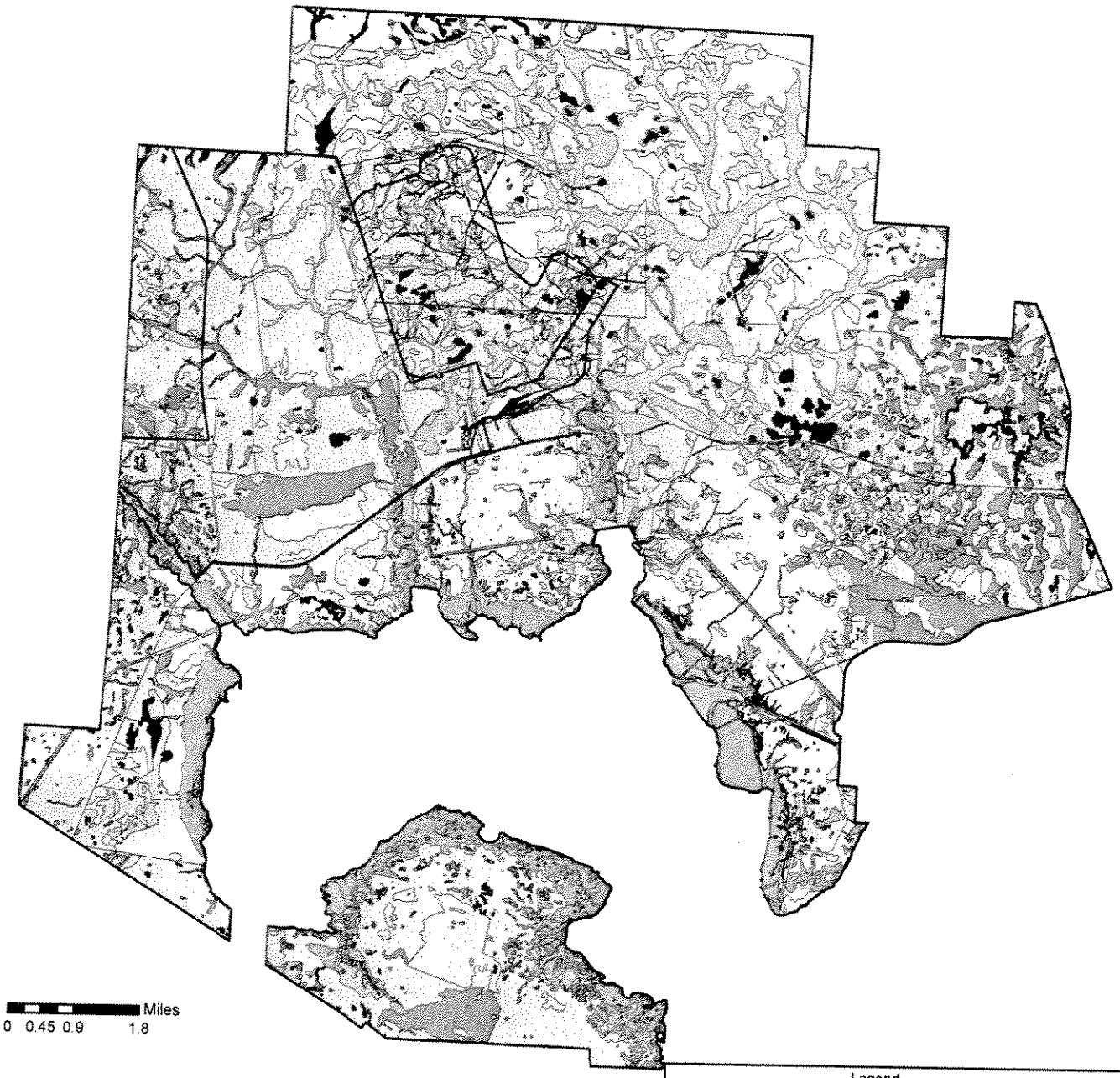
The Florida Department of Environmental Protection identified potential indirect effects to the regional water table which, if realized, could alter the hydrology of surrounding wetlands. This effect is still uncertain and according to the Airport Sponsor, it would be difficult to detect due to the intense monitoring scheme that would be required.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Private development would likely be accelerated outside of the project area. A state/local planning process for potential future development in the region has resulted in the development of the West Bay Area Sector Plan. This boundary is being used to evaluate the cumulative effects of the proposed action. Future Federal actions that are unrelated to the proposed project are not considered in this opinion because they require separate consultation pursuant to section 7 of the Endangered Species Act.

Analysis of Potential Flatwoods Salamander Habitat

The habitats of the Sector Plan area were calculated using GIS analysis. The current land use coverage from the Northwest Water Management District was employed to describe the wetland vegetative cover types within the Sector Plan area (***Figure 4***). Additional habitat information was included for the West Bay Site and the mitigation parcels. These habitats are assumed to be present on the ground currently. *Figure 4* can be compared to Bay County's future land use graphic and the Sector Plan (***Figures 5 and 6***).



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Notes:
1. Land Use Data from the Northwest Florida Water Management District (NWFWMD) and on-site surveys.
2. Future land use is defined in the Bay County Comprehensive Plan.

Figure 4

Bay County Land Cover

Panama City-Bay County International Airport EIS

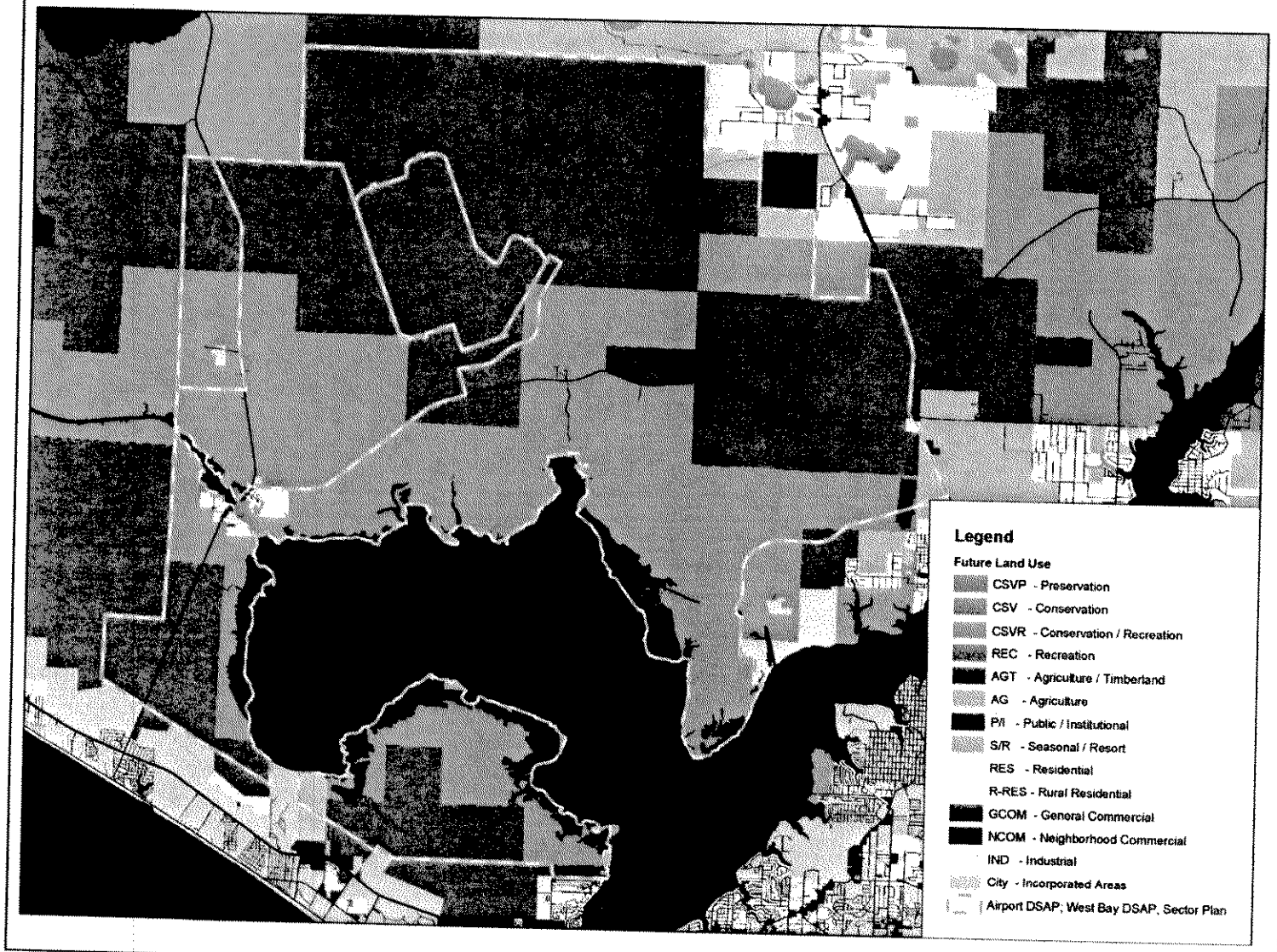

Figure 5

Future Land Use

Panama City-Bay County
International Airport EIS

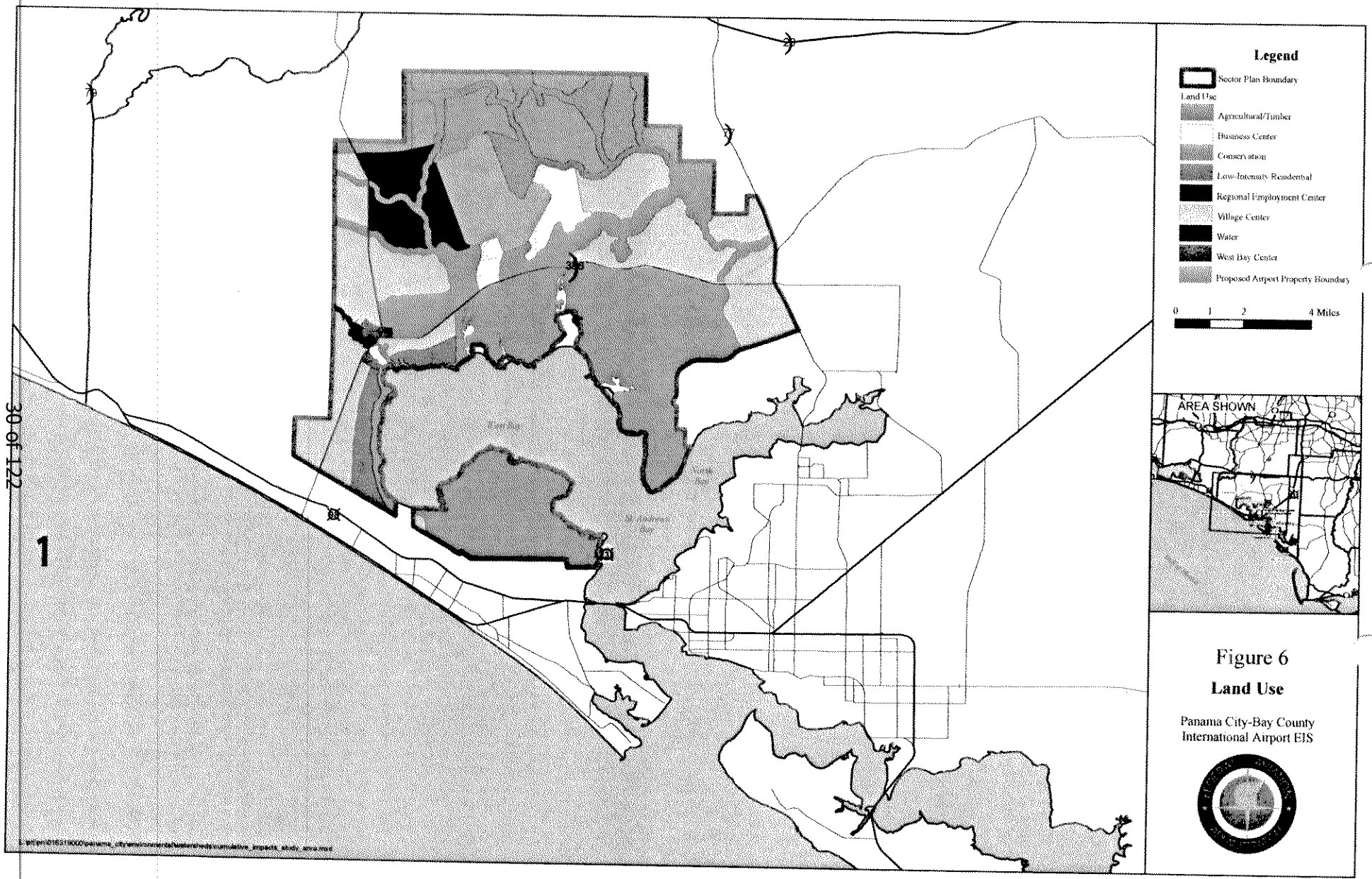

Figure 6

Land Use

Panama City-Bay County
International Airport EIS

The Sector Plan area land uses described as wetlands are summarized in ***Table 2***. The potential use of the wetland types by flatwoods salamanders is noted as the FS Potential Association.

These FS Potential Association classifications are different than the breeding pond quality descriptions. Within the Sector Plan area, 33,396 acres are described as wetlands. This summation suggests that there are 1,048 acres that have a "good" potential to support flatwoods salamander reproduction. This analysis over estimates the potential habitat because of the difficulty in estimating appropriate microhabitats for the salamander based on regional geographic analysis (although it is the only way to assess these habitats on such a large regional scale).

Table 2 Wetland Habitats within the Sector Planning Area

FLUCFCS CODE	DESCRIPTION	ACREAGE	FS POTENTIAL ASSOCIATION
6001	Wet Planted Pine	13,409.92	Medium
6100	Wetland Hardwood Forests	3.03	Medium
6130	Gum Swamps	55.05	Medium
6140	Titi Swamps	7,355.53	Poor
6150	Streams and Lake Swamps (Bottomland)	29.84	Poor
6200	Wetland Coniferous Forests	497.75	Medium
6210	Cypress	864.07	Good
6250	Hydric Pine Flatwoods	175.84	Good
6300	Wetland Mixed Forests	6,107.52	Poor
6310	Wetland Scrub	4.91	Poor
6400	Vegetated Non-Forested Wetlands	60.14	Medium
6410	Freshwater Marshes	345.70	Poor
6420	Saltwater Marshes	3,987.99	None
6430	Wet Prairies	2.82	Good
6440	Emergent Aquatic Vegetation	4.22	Poor
6470	Herbaceous Depression	6.01	Good
6480	Hillside Seep	3.66	Poor
6510	Tidal Flats	306.23	None
6520	Shorelines	3.13	None
6900	Shrub wetland	173.07	Medium
	Total Wetlands in Sector Plan Area	33,396.43	

In order to evaluate potential cumulative effects in the study area, two scenarios of future development were utilized. The acreages of wetlands and the predicted future land use of the study area are summarized in ***Table 3***. The predicted land use is based on the existing Future Land Use Map (FLUM) from the Bay County Comprehensive Plan (Updated 5/4/2005) for 2010. The existing FLUM is used because any development projects within the study area which are less than 1,000 acres are not required to adhere to the principles of the Sector Plan. These calculations give insight into which wetland types would be conserved (potentially restored), left in agricultural and silviculture activities, and potentially destroyed by development.

Table 3 Wetland Habitats Based on Bay County Future Land Use Map			
FLUCFCS CODE	**DESCRIPTION**	**ACREAGE**	**FS POTENTIAL ASSOCIATION**
Agriculture			
6001	Wet Planted Pine	81.77	Medium
6140	Titi Swamps	81.16	Poor
6200	Wetland Coniferous Forests	1.57	Medium
6210	Cypress	9.17	Good
6300	Wetland Mixed Forests	111.45	Poor
6310	Wetland Shrub	7.94	Medium
6410	Freshwater Marshes	1.23	Poor
6420	Saltwater Marshes	7.02	None
6510	Tidal Flats	3.90	None
	Total Wetlands	305.21	
Silviculture			
6001	Wet Planted Pine	6,019.39	Medium
6100	Wetland Hardwood Forests	0.15	Medium
6140	Titi Swamps	4,386.58	Poor
6141	Titi-Bay-Pine Swamp	441.06	Poor
6200	Wetland Coniferous Forests	409.17	Medium
6210	Cypress	611.54	Good
6300	Wetland Mixed Forests	2,801.97	Poor
6310	Wetland Shrub	23.29	Medium
6400	Vegetated Non-Forested Wetlands	13.65	Medium
6410	Freshwater Marshes	72.33	Poor
6420	Saltwater Marshes	88.49	None
6510	Tidal Flats	2.10	None
6560	Shorelines	0.53	None
	Total Wetlands	14,870.25	
City			
6200	Wetland Coniferous Forests	0.11	Medium
6300	Wetland Mixed Forests	0.03	Poor
6310	Wetland Shrub	0.69	Medium
6410	Freshwater Marshes	1.02	Poor
6510	Tidal Flats	0.01	None
	Total Wetlands	1.86	
Conservation			
6001	Wet Planted Pine	7,252.37	Medium
6100	Wetland Hardwood Forests	2.54	Medium
6130	Gum Swamps	39.89	
6140	Titi Swamps	1586.61	Poor
6141	Titi-Bay-Pine Swamp	60.33	Poor
6150	Streams and Lake Swamps (Bottomland)	29.86	Poor
6200	Wetland Coniferous Forests	86.11	Medium
6210	Cypress	175.16	Good
6250	Hydric Pine Flatwoods	129.14	Good
6300	Wetland Mixed Forests	3,113.77	Poor
6310	Wetland Shrub	103.48	Poor
6400	Vegetated Non-Forested Wetlands	46.54	Medium
6410	Freshwater Marshes	267.97	Poor
6420	Saltwater Marshes	1,756.12	None
6430	Wet Prairies	2.82	Good
6440	Emergent Aquatic Vegetation	7.05	Poor
6470	Herbaceous Depression	3.58	Medium
6510	Tidal Flats	41.23	None
6520	Shorelines	2.82	None
	Total Wetlands	14,707.39	

Preservation			
6001	Wet Planted Pine	0.23	Medium
6140	Titi Swamps	34.0	Poor
6141	Titi-Bay-Pine Swamp	0.05	Poor
6300	Wetland Mixed Forests	0.11	Poor
6420	Saltwater Marshes	33.71	None
6520	Shorelines	0.50	None
	Total Wetlands	68.60	
General Commercial			
6001	Wet Planted Pine	0.02	Medium
	Total Wetlands	0.02	
Industrial			
6001	Wet Planted Pine	0.13	Medium
6300	Wetland Mixed Forests	0.87	Poor
6410	Freshwater Marshes	0.18	Poor
	Total Wetlands	1.18	
Public Institutional			
6001	Wet Planted Pine	4.97	Medium
6210	Cypress	8.41	Good
6300	Wetland Mixed Forests	7.31	Poor
	Total Wetlands	20.69	
Residential			
6001	Wet Planted Pine	52.14	Medium
	Total Wetlands	52.14	

Source: Kimley-Horn and Associates, Inc. 2005, based on Bay County Future Land Use Geographic Information System (GIS) data.

Future land use data indicates that of the approximately 33,000 acres of wetlands in the study area, 14,775 acres of wetlands would be on conservation lands, which actually allow up to two residential density units per acre depending on the special treatment zone in which they occur. The largest portion, 14,870 acres, would still be managed intensively for silviculture under the FLUM. The potential impacts to wetlands within general commercial, industrial, public institutional and residential land uses (including "conservation") are difficult to predict. However, the majority of those wetland types described as good are projected to be in "conservation" or remain in silviculture according to the existing FLUM. All wetlands in Table 3 would be subject to either state or federal regulatory requirements or both.

The second scenario for evaluating potential future cumulative impacts uses the Sector Plan overlay. The acreages of wetlands and the predicted Sector Plan land use are summarized in ***Table 4.*** These calculations give insight into which wetland types would be conserved (potentially restored), left in agricultural and silviculture activities, and potentially destroyed by development.

Table 4 Wetland Habitats Based on Sector Plan Land Use			
FLUCFCS CODE	**DESCRIPTION**	**ACREAGE**	**FS POTENTIAL ASSOCIATION**
Agriculture/Timber			
6001	Wet Planted Pine	1,121.88	Medium
6140	Titi Swamps	1,278.25	Poor
6141	Titi-Bay-Pine Swamp	38.01	Poor
6200	Wetland Coniferous Forests	99.91	Medium
6210	Cypress	147.30	Good
6300	Wetland Mixed Forests	64.13	Poor
6310	Wetland Shrub	16.98	Medium
6410	Freshwater Marshes	1.08	Poor
6560	Shorelines	0.53	None
	Total Wetlands	2,768.07	
Airport			
6001	Wet Planted Pine	953.01	Medium
6140	Titi Swamps	556.18	Poor
6141	Titi-Bay-Pine Swamp	216.51	Poor
6210	Cypress	59.24	Good
6250	Hydric Pine Flatwoods	46.43	Good
6300	Wetland Mixed Forests	42.17	Poor
6310	Wetland Shrub	1.41	Poor
6410	Freshwater Marshes	2.23	Poor
6470	Herbaceous Depression	2.44	Good
6480	Hillside Seep	2.63	Poor
	Total Wetlands	1,882.25	
Business Center			
6001	Wet Planted Pine	444.61	Medium
6140	Titi Swamps	243.07	Poor
6141	Titi-Bay-Pine Swamp	199.75	Poor
6210	Cypress	36.39	Good
6300	Wetland Mixed Forests	13.78	Poor
6310	Wetland Shrub	1.22	Poor
6400	Vegetated Non-Forested Wetlands	8.93	Poor
6410	Freshwater Marshes	0.60	Poor
6470	Herbaceous Depression	2.92	Good
	Total Wetlands	951.27	
Conservation			
6001	Wet Planted Pine	8,533.02	Medium
6100	Wetland Hardwood Forests	2.54	Medium
6130	Gum Swamps	55.1	Medium
6140	Titi Swamps	3,756.50	Poor
6141	Titi-Bay-Pine Swamp	249.74	Poor
6150	Streams and Lake Swamps (Bottomland)	29.86	None
6200	Wetland Coniferous Forests	229.57	Medium
6210	Cypress	111.687	Good
6250	Hydric Pine Flatwoods	129.55	Good
6300	Wetland Mixed Forests	3,652.28	Poor
6310	Wetland Shrub	0.44	Poor
6400	Vegetated Non-Forested Wetlands	38.29	Poor
6410	Freshwater Marshes	240.70	Poor
6420	Saltwater Marshes	3,598.82	None
6430	Wet Prairies	2.82	Good
6440	Emergent Aquatic Vegetation	4.23	Poor
6470	Herbaceous Depression	0.66	Good
6510	Tidal Flats	292.50	None
6520	Shorelines	3.13	None
6900	Shrub wetland	88.55	Medium

	Total Wetlands	21,058.24	
Low Intensity Residential			
6001	Wet Planted Pine	718.45	Medium
6200	Wetland Coniferous Forests	4.88	Medium
6210	Cypress	73.02	Good
6300	Wetland Mixed Forests	10.08	Poor
6410	Freshwater Marshes	8.31	Poor
6420	Saltwater Marshes	215.81	None
6900	Shrub wetland	0.423	Medium
	Total Wetlands	1,030.97	
Regional Employment Center			
6001	Wet Planted Pine	197.98	Medium
6140	Titi Swamps	232.935	Poor
6141	Titi-Bay-Pine Swamp	14.69	Poor
6200	Wetland Coniferous Forests	3.34	Medium
6210	Cypress	15.71	Good
6300	Wetland Mixed Forests	106.10	Poor
6310	Wetland Shrub	1.85	Poor
6480	Hillside Seep	1.03	None
6900	Shrub wetland	0.412	Medium
	Total Wetlands	574.05	
Roads			
6001	Wet Planted Pine	90.22	Medium
6140	Titi Swamps	8.93	Poor
6200	Wetland Coniferous Forests	7.24	Medium
6210	Cypress	2.57	Good
6300	Wetland Mixed Forests	28.09	Poor
6420	Saltwater Marshes	1.00	None
6900	Shrub wetland	0.34	Medium
	Total Wetlands	138.39	
Village Center			
6001	Wet Planted Pine	1,444.03	Medium
6100	Wetland Hardwood Forests	0.49	Medium
6140	Titi Swamps	567.67	Poor
6200	Wetland Coniferous Forests	152.76	Medium
6210	Cypress	419.60	Good
6300	Wetland Mixed Forests	2,176.65	Poor
6400	Vegetated Non-Forested Wetlands	12.98	Poor
6410	Freshwater Marshes	94.61	Poor
6420	Saltwater Marshes	30.41	None
6900	Shrub wetland	58.39	Medium
	Total Wetlands	4,957.59	
Water			
6300	Wetland Mixed Forests	29.70	Poor
6420	Saltwater Marshes	36.74	None
6510	Tidal Flats	1.18	None
	Total Wetlands	67.62	
West Bay Center			
6001	Wet Planted Pine	2.70	Medium
6300	Wetland Mixed Forests	23.10	Poor
6410	Freshwater Marshes	1.05	Poor
6420	Saltwater Marshes	0.43	None
6900	Shrub wetland	8.92	Medium
	Total Wetlands	36.20	

Source: Kimley-Horn and Associates, Inc. 2005, based on Bay County Sector Plan (GIS) data.

Within the region, large-scale mitigation parcels are proposed for up to 25,066 acres. These would be comprised of the mitigation parcels for the proposed action (9,718 acres),

West Bay to East Walton Regional General Permit conservation units (10,700 acres), and Breakfast Point Mitigation Bank (4,648 acres). These lands would be managed with a much more natural fire regime, thinned timber, and potential restoration of the historic hydrology. This would benefit approximately 25,066 acres of natural habitat, much of which is within the 74,706 acres of the Sector Plan.

The Sector Plan land use data indicates that of the approximately 33,000 acres of wetlands in the study area, approximately 21,000 acres of wetlands would be on conservation lands, which, unlike the existing FLUM, are not allowed any residential density units. The second largest portion of wetlands, 2,768 acres, would still be managed intensively for agriculture/silviculture. The potential impacts to wetlands within the other land use categories are difficult to predict, but it should be helpful that approximately 64 percent of the wetlands will be in conservation if the plan is carried forward. However, these lands include only 243 of the 6048 acres that are considered potential breeding habitats in the sector planning area. Therefore, approximately 75% of the total potential habitat could be subject to future 404 actions outside of this project. The proposed action includes the loss of four potential flatwoods salamander ponds totaling 13.1 acres. This acreage represents approximately 1% of the available 1,048 acres of potential breeding wetlands within the sector planning area.

CONCLUSION

After reviewing the current status of the flatwoods salamander, the environmental baseline for the Panama City-Bay County International Airport (PFN) action area, the effects of the proposed activities, proposed protective, avoidance, and minimization measures, and the cumulative effects, it is the Service's biological opinion that the project, as proposed, is not likely to jeopardize the continued existence of the flatwoods salamander. Within the project area, eleven wetlands were identified as potential suitable habitat for the flatwoods salamander. No documented breeding habitat for flatwoods salamander will be affected. As conditions of issuing the permit for the project, mitigation lands totaling 9,718 acres will be established to compensate for loss of wetland values. Of the eleven wetlands, only four were considered moderate quality. The combined acreage of the four wetlands and their associated upland buffer totals 584.3 acres. Loss of 584.30 acres of potential habitat will not appreciably reduce the survival and recovery of the flatwoods salamander. No documented breeding pond habitat will be affected. No critical habitat has been designated for the flatwoods salamander; therefore, none would be affected.

There are approximately 160 known flatwoods salamander ponds in Florida with a conservative estimate of 34,720 acres of pond and buffer habitat in the State (average 5-acre pond size plus 1,476-ft. buffer). Therefore, the amount of take could be viewed as 1.68% of the known habitat in the State of Florida. This proportion would be even lower if an analysis of potential habitat, similar to the BA, were done for the entire state.

INCIDENTAL TAKE STATEMENT

Section 9 of the Endangered Species Act and Federal regulation pursuant to Section 4(d) of the Act prohibit the take of endangered or threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to

include major habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to noticeably disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, carrying out an otherwise lawful activity. Under the terms of Section 7(b)(4) and Section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited under the Act provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The measures described below are non-discretionary, and must be implemented by the Airport Sponsor for the exemption in Section 7(o)(2) to apply. The FAA has a continuing duty to regulate the activity covered by this incidental take statement. If the FAA (1) fails to assume and assure implementation of the terms and conditions, or (2) fail to require the Airport Sponsor to adhere to the terms and conditions of the Incidental Take Statement through enforceable terms, the protective coverage of Section 7(o)(2) may lapse. To monitor the impact of incidental take, the FAA must report the progress of the project and its impacts on the species to the Service as specified in the incidental take statement [50 CFR §402.14(I)(3)].

AMOUNT OR EXTENT OF TAKE

The Service has determined that incidental take of individual flatwoods salamanders is difficult to detect for the following reasons: (1) adult flatwoods salamanders are difficult to locate and observe. (2) Individuals killed during construction would likely be buried under dirt and debris, and/or, (3) losses may be masked by natural fluctuations in numbers of individuals. Although mortality of individuals is difficult to document, the level of take of this species was determined as follows: An estimated 584.3 acres of potential breeding pond and buffer habitat is presumed to be taken by development activities.

EFFECT OF THE TAKE

In the accompanying biological opinion, the Service determined that the level of anticipated take is not likely to result in jeopardy to the species. The amount of take is for **presumed occupied** habitat and is small when compared to potential habitat that will remain in the mitigation parcels, which will eventually be restored to more suitable habitat and managed in perpetuity. No critical habitat has been designated for the flatwoods salamander; therefore, none will be affected.

REASONABLE AND PRUDENT MEASURES

The Service believes that the following reasonable and prudent measure (RPM) is necessary and appropriate to minimize take of flatwoods salamanders in the action area.

- The mitigation plan will be implemented as defined in the project description.

TERMS AND CONDITIONS

In order to be exempt from the prohibitions of section 9 of the Endangered Species Act, the FAA and applicant must comply with the following terms and conditions, which implement the reasonable and prudent measures described above and outline the reporting/monitoring requirements. These terms and conditions are non-discretionary.

1. The FAA will ensure that the mitigation plan as proposed will be implemented in its entirety and in perpetuity.[1]

2. The FAA will monitor the progress of the action. The monitoring must be sufficient to determine if the amount or extent of take is approached or exceeded, and the reporting must assure that the Service will know when that happens.

CONSERVATION RECOMMENDATIONS FOR FLATWOODS SALAMANDERS

Section 7(a)(1) of the Endangered Species Act (Act) directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. We request that the following conservation recommendations be implemented.

1. Develop in cooperation with USFWS a long-term conservation strategy for flatwoods salamanders on lands within the cumulative effects study area.
2. The FAA should continue to monitor and report to the Service and other agencies cumulative effects that result from accelerated development in the study area.
3. The FAA should encourage and financially support continued flatwoods salamander surveys in the area.
4. The FAA should monitor the implementation of the mitigation plan, including the financial assurances to continue management in perpetuity.

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

[1]The FAA will ensure that the mitigation measures included in the FEIS for the proposed project are implemented through the issuance of its Record of Decision (ROD). The mitigation measures will become an official part of the ROD thus requiring the Airport Sponsor to comply with Federal grant assurances in order to receive and to continue to receive federal funding for the proposed project. Implementation of mitigation measures included in the FEIS and ROD is a legally binding requirement in order to receive federal funds. Violation of federal grant assurances can result in the FAA withholding federal funds or reimbursement by the Airport Sponsor of federal funds received.

REINITIATION NOTICE

This concludes formal consultation on the action outlined in this biological opinion. As provided in 50 CFR 402.16, re-initiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending re-initiation.

If you have any questions about this opinion or consultation, please contact staff biologist Hildreth Cooper of our Panama City Field Office at (850) 769-0552, extension 221.

Sincerely yours,

Gail A. Carmody
Project Leader

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Appendix A- Flatwoods Salamander Pond Habitat Evaluation – Proposed Mitigation Parcels

Pond	Code	Pond	Eco	UP	total	Quality	Description/Field Notes
1A-FSBP1	621	1	0.5			low	Pond has open cypress canopy but dense shrub and subcanopy of Lyonia lucida, Ilex myrtifolia, Nyssa biflora, and titi. Ecotone present over about 50% of perimeter, low diversity, no ecotone (all titi) elsewhere. Logging slash pushed into pond.
1A-FSBP2	621	1	1.5			low	Small 621 dome. Dense shrubs in pond, no groundcover. Decent ecotone with Rhynchospora (wiry), Panicum, Andropogon, other sedges, Xyris, Hypericum, red root, young cypress recruits, good cover and diversity. Uplands, young planted pine and andropogon, with a little bit of wiregrass (not much). Sarracenia flava in ecotone. Good cypress recruitment.
1A-S2	630	1	1			low	This is a 614 on map but has cypress, sweetbay, etc. mixed with titi. Potential FSBP but would require restoration. Perimeter is bermed. Need to regrade and burn. Hand clear titi.
1A-S5	621	1	1.5			low	Pond lacks groundcover. Has logging debris covering ground. More open than FSBP4. Salamander obs. in pond - unknown spp.
1A-S8	621	1	1			low	Ecotone shrubby with titi and Lyonia lucida. A few narrow with ok ecotone. Pond has large cypress and open density, but no groundcover. Dense shrub and subcanopy of titi. Bedding or rutting into pond. Hog rooting in ecotone.
1B-FSBP1	630	1	1			low	Formerly flowing?, not now. No special action required.
1C-FSBP1	630	1	1	0	2	low	Burn uplands, allow pond to mature. Pond made up of Cyrilla, Nyssa, Ilex myrtifolia, some slash pine. Titi fringe around pond.
1D-FSBP1	630	1	1.5			low	Ecotone: corkwood, Carex, Lyonia lucida, Cliftonia Pond: >70% crown closure; no tufted or grass species; groundcover is 100% leaf litter/shrubs. No standing water, but shows signs of periodic innundation: watermarks, hummucking, buttressed trunks. Upland: 441/600, no wiregrass, cliftonia subcanopy Is more 630 than 621. Some cypress, but <15%
1D-FSBP2	621	1	1.5			low	Pond has no herbaceous groundcover; leaf litter and hummocked shrubs. Cypress present but patchy. Mostly Cliftonia.Ecotone: Andropogon, hypericum, carex. Upland: 441/600 with cyrilla understory, no wiregrass.
1D-FSBP3	630	1	1.5			low	Pond: very overgrown in shrub layer (I. coriacea, Clethra, Lyonia lucida, Magnolia virginiana), needs a fire. Some cypress towards center but sparse. Ecotone: Area of Andropogon, Rhynchospora, Hypericum; no wiregrass Upland: Planted pine, no wiregrass Overall very poor FSBP, no water.
1E-FSBP1	621	1	0.5			low	Open but no graminaceous cover. Not sure why. Is mixture of 630/621. Cypress healthy here. Lots of Nyssa biflora also. No graminaceous groundcover in ecotone or upland.
1E-FSBP2	640	1	0.5			low	Part 640 (Lyonia lucida, cyrilla) and part 630 (Nyssa biflora, Acer rubrum, button bush). No graminaceous cover, not FSBP habitat. Ecotone is thick and woody.
1E-FSBP3	630	1.5	0.5			low	Change FLUCFCS to 630. Nyssa biflora and Cypress and Magnolia virginiana. Open pond is ephemeral, but lacks graminaceous cover. No Aristida around, but has carex, rhyncospora, mystery ludwigia in some areas, ecotone and upland same as FSBP2 and FSBP1. Pots and turpentine scars found.
1E-FSBP4	613	1	1.5			low	West half is gum swamp, east half is cypress. Pond is ephemeral but lacks graminaceous cover. Ecotone has patches where Andropogon and Rhynchospora spp. Provide some "bunch grasses" habitat but no Aristida. Upland is 441/600.
1E-FSBP5	621	1	0.5			low	Similar to FSBP6 except less peat and lots of Lyonia lucida within pond. Numerous cypress dead. Some recruitment. Fire evidence around.
1E-FSBP6	621	1	0.5			low	Similar to FSBP7 except most cypress are dead and no groundcover. Ecotone overgrown. Lots of slash in wetland. Excessive peat, at least 7". Turpentine evidence.
1G-FSBP1	630	1.5	1			low	Upland: clearcut with small population of wiregrass in southeast corner only. Ecotone: clearcut with small population of wiregrass/pitcher plants in southeast corner only. Pond: 630 with overstory of Magnolia virginiana, Cypress, tupelo, Pop ash. Some standing water despite the drought. Pickerelweed and Panicum rigidulum growing in water. Overstory moderately thick. Has some open areas. No wiregrass.

1G-FSBP3	640	1	1			low	Depressional area where planted pines have died due to wetness. Now comprised of Andropogon virgnianus, mystery Ludwigia, and Panicum scab. Pond: no water, some wiregrass <10%, Ilex myrtifolia, Panicum scab., redroot Ecotone: 441/600 with thick understory of Myrica cerifera, Ilex glabra, Magnolia virginiana, Ilex corrieacea, Upland is clearcut
1I-FSBP3		0.5	0.5			low	441/600 with Cyrilla understory. No potential for FS. Signature on aerial is anomaly.
1I-FSBP4	630	1	1			low	No wiregrass, No cypress. Upland is 441/600. Ecotone is Carex and corkwood. System is very thick and has greater than 70% crown closure with Carex groundcover.
1I-FSBP5	621	1	1			low	Pond 621. Large mature cypress but understory thick with cyrilla and carex clumps. Dry at time of inspection. Ecotone is Cyrilla and Andropogon virginicus. Numerous cypress recruits. Uplands are 441/600 with 12' high slash pine and Cyrilla understory.
2D-FSBP1	621	1	0.5			low	Dense subcanopy of shrubs; dark and no to little ecotone, mostly titi; upland on side toward road sucks, titi jungle; 441 and 441/600 upland witout wiregrass. Possible old firebreak evident along portions of pond edge. Logging slash piled up along margin in places, with dense vine/shrub cover over debris. Needs fire, hand or mechanical thinning of ecotone and remove slash pile and firebreak if large enough, not around entire pond.
2F-FSBP1	621	1.5	1			low	Pond: Nice little cypress pond but not salamander habitat. No herbaceous graminaceous component in pond or ecotone. Made up of Taxodium ascendens, Cyrilla, Lyonia lucida, Itea virginiana Ecotone: Cyrilla, Ilex coriacea, Aronia, Andropogon virginicus, Pinus elliottii Upland: Serenoa repens, bracken, Lyonia lucida, Cyrilla and slash pine
2F-FSBP2	630	1.5	1			low	Same as FSBP3 Except pond is 630 instead of 621. Potential champion Ilex myrtifolia at S2
2F-FSBP4	621	1	1			low	Pond has thick woody cover. No graminaceous component. Is a mixture of 630/621.
2G-FSBP1	621	1.5	1			low	Pond made up of several cypress, Ilex myrtifolia and Cyrilla; canopy closure may be about 70% and some sedges are present Ecotone is overgrown with titi; no water in system but 8" waterline. Uplands cleared to the west side of pond down to ecotone.
2G-HQW2	630	1	1			low	Mixed wetland with Cyrilla, cypress, Ilex myrtifolia and Nyssa biflora. Some sedges and open canopy in some areas. Clethra dominant ground cover. Some Cyrilla large with DBH of 10-12". System dry at this time. Parrot pitcher plants northwest of point within HQW2. Some limited wiregrass on northwestern ecotone, otherwise ecotone is overgrown with Cyrilla.
2G-S1	630	1	0.5			low	Small cypress, Ilex myrtifolia and Nyssa depression. Very shrubby inside with 90-100% canopy closure. Ecotone almost non-exsitent since dominated by titi and Clethra. Needs hand clearing and possible burn.
2K-FSBP1	630	0.5	0.5			low	Pond is Titi/Bay swamp. Very little graminaceous habitat. No uplands. Part of Jackson Titi.
2L-FSBP1	630	1	1			low	Mixed forested wetland with Taxodium ascendens, Magnolia virginiana as canopy and Cyrilla, Acer rubrum, Myrica cerifera as subcanopy. Interior is fairly shruby with no herbaceous ground cover. Ecotone is all titi. Several stumps from old slash pine are present. Stumps at least 30" in diameter
2L-FSBP3	630	1	1			low	Some cypress and bay with lots of Cyrilla and Lyonia lucida. Pond interior is extremely shrubby and dense with no groundcover; ecotone is overgrown with shrubs.
2L-FSBP5	613	1	1.5			low	FSBP 5, 4, and 6 part of same system. FSBP 6 may serve as some ecotone for other two ponds. FSBP 5 is mostly shrubby and made up of Nyssa, Cyrilla, Lyonia lucida, and Myrica cerifera. Some large Magnolia virginiana in system. Little to no groundcover in pond.
2N-FSBP3	621	1	1			low	Shrubby; similar to FSBP2 except more overgrown w/ Cyrilla; more ecotone except some clumps of wiregrass
2O-FSBP1	614	0.5	0.5			low	Is not salamander habitat, is all Cyrilla racemiflora/Cliftonia monophylla
2Q-FSBP1	630	1	1			low	Pond large 630; pop ash, gum, bay; no herbaceous due to shading; Ecotone thick Cliftonia, no wiregrass

2Q-FSBP3	630	0.5	0.5			low	Not suitable; cypress but also a lot of Cliftonia; also has some Nyssa biflora, however has no grass species and is not open enough; it is ephemeral; Ecotone: no grass species all Cliftonia monophylla, Cyrilla; dense upland not present, is surrounded by wetland and powerline which does have some wiregrass but no canopy
2T-FSBP2	630	0.5	0			low	Cypress and maple dominate, pickerelweed and lizardtail groundcover, not much herb grasses, does appear ephemeral; Ecotone is wax myrtle and yaupon, very thick, unsuitable for FS, upland same as ecotone
2W-FSBP1	630	1	1.5			low	Cypress, Nyssa biflora, Magnolia virginiana; canopy is 90% closure; ecotone along powerline is decent but opposite side is very shrubby, adjacent uplands have been clear cut; apparent use of herbicide on pond within powerline easement Ecotone along powerline has Panicum scab., xyris, corkwood
2W-S1	630	1	1			low	Cypress, sweet bay, Nyssa 630 system part of much larger historic system; cypress recruitment, but titi encroachment; lots of logging slash and damage from logging opperations; saw broad winged hawk
3C-FSBP2	641	1	1.5			low	Pond: Nice little open water pond lined with pickerelweed, may have water year round. Ecotone: wide marsh area comprised of pickerelweed, mystery ludwigia, Rhynchospora spp., Juncus effusus, Pluchea. Good diversity. Upland: 441/600 so gets low score, no wiregrass. Site may be too wet for Flatwoods salamanders.
3C-FSBP4	441/600	1	1			low	Same as FSBP6. Obligate species include mystery ludwigia, mermaid weed, Juncus. No wiregrass or cypress. Florida box turtle noted.
3C-FSBP5	626	1	1			low	Nice wet pine savanna despite silviculture. Very thick herbaceous cover throughout. No real pond area, some pockets of standing water with minnows, so probably not ephemeral. Planted pine has died off in center due to being too wet. Good diversity in groundcover, no wiregrass.
3C-FSBP6	441/600	1	1			low	441/600 pines have been thinned due to wetness (mortality). Is savanna like beneath with good groundcover. Too wet for wiregrass. Mostly obligate species. Should be changed from 641 to 441/600.
3E-FSBP6	613	1	1.5			low	Very similar to FSBP4. Larger Nyssa area but more shaded canopy. Also a few large pines in "Pond". Pond was bedded through at some point as was ecotone. Ecotone similar to FSBP4. Possibly narrower. Same species. Possibly some Spartina patens in some of ecotone.
3E-FSBP7	641	1	1.5			low	Probably wet year round, not ephemeral. Also likely connects to road ditch and has fish. Well flooded now to at least 1-2 feet deep. Vegetation in pond and ecotone is Carex spp., corkwood, mystery ludwigia, Pluchea. Also has fish. This is a nice flatwoods pond, but probably not ephmeral, so not a FSBP. Pond margin has Nyssa and planted pine.
3F-FSBP6	641	1	1			low	Logging ruts with standing water. Poor ecotone. Pond species include Rhynchospora, Centella, wiry Rhynchospora, Scattered Nyssa, Panicum virgatum and Juncus.
3F-FSBP7	641	1	1			low	Marsh area dominated by Rhynchospora, Spartina. Logging slash and ruts within pond. No canopy. Presently standing water in pond. Little or no ecotone. Pond goes right to uplands.
3G-FSBP11	641	1	1			low	Pond has no standing water comprised of mystery ludwigia, Nyssa biflora, Juncus effusus, corkwood; Ecotone is the same, no real ecotone. Goes from pond to 441/600. Upland is 441/600 with Nyssa biflora in understory.
3G-FSBP7	641	0.5	0.5			low	Pond is full of Cladium, Juncus, Spartina patens with Nyssa biflora around perimeter. Standing water so not ephemeral.
3G-FSBP8	641	0.5	1			low	Pond is 90% Juncus effusus. Does have some Nyssa biflora. Ecotone has a few clumps of wiregrass under Nyssa biflora. Upland: Pinus elliottii with serenoa repens. Lots of vitus. Very little herbaceous cover. No wiregrass noted.
3G-FSBP9	621	1	1.5			low	Cypress dominated wetland, however many cypress are dead or dying. Not sure why. Seems to have plenty of water. Pond is cypress with sawgrass groundcover. Ecotone is Nyssa biflora, Myrica cerifera, royal fern, some patches of wiregrass and other grasses/sedges. Upland is 441/600 with Ilex vomitoria and glabra. Sparse groundcover.

1A-FSBP3	621	2	1.5	1	4.5	low-moderate	Open canopy, dense groundcover with Rhynchospora, redrood, Xyris, mystery ludwigia, Andropogon, Cliftonia, and corkwood.
1A-FSBP4	621	2	1.5	1	4.5	low-moderate	Interior has rutting and ditching, but doesn't leave pond. Carex, Hypericum, and cypress recruits.
1B-FSBP2	640	2	1	1	4	low-moderate	Shrub bog with titi; ditched and possibly rutted. Could fill. Good groundcover patches, very open.
1B-S1	640	2	1	1	4	low-moderate	Good groundcover and open canopy 640 with 621 fringe and small seedlings within pond. 2 water moccasins and fish present. Potential new Low water crossing and or 441w restoration could affect this site. No vegetation planting needed because cypress recruits. Fire and possible hydrological restoration close to road ditch. And default low water crossing of highwater. Unclear if road ditch is draining site; road bisecting larger wetland.
1D-FSBP4	614	1	2	1	4	low-moderate	Pond actually 614 with wide open ecotone: Hypericum, Lacnanthes, Andropogon, and some sporabolus.
1E-FSBP10	641	2	1.5	1	4.5	low-moderate	Similar to FSBP12 with more mystery ludwigia and Nyssa, Some Myrica cerifera. Ecotone is shrubbier.
1E-FSBP7	621	2	1	1	4	low-moderate	Cypress and tupelo system with open understory and strong sedge groundcover. Many cypress and older slash pine are dead, unsure why. Turpentine and cypress logging evidence noted. Find out why trees are dying.
1G-FSBP2	621	2	1.5	1	4.5	low-moderate	Is a combination of 640/621. Cypress trees present but lots of open areas as well with mystery Ludwigia, corkwood, Pan. Scab., Sagittaria graminea. Pond groundcover thick with Ludwigia. Also some Nyssa, no standing water at time. Ecotone is shrubby with Vaccinium myrsinites, Clethra alnifolia, some limited pockets of Panicum virgatum, Scleria, Wiry Rhyncospora but probably only 30% cover due to Clethra and Nyssa. Some areas open with Panicum ridgidulum and Andropogon virginiana, Wiry Rhyncospora. Upland: 441/600 with Cyrilla understory. Viry little wiregrass.
1I-FSBP1	621	1.5	1.5	1	4	low-moderate	Similar to FSBP2 but his site has more cypress. May have potential?
1I-FSBP2	630	1.5	1.5	1	4	low-moderate	Pond has standing water with some large open areas. Groundcover is mystery ludwigia. 1/3 of area has thick canopy closure of Magnolia virginiana, Nyssa biflora, Ilex spp., but some potential for FS in open areas. Corkwood and mystery ludwigia dominant. Ecotone is Andropogon virginicus, Cliftonia, young pine. Some area of Andropogon virginicus may provide suitable habitat. Selective cut 441/600 to improve "upland" although is 441/600.
1I-FSBP6	630	1.5	1.5	1	4	low-moderate	Upland is 441/600 with young trees, very open. Has decent groundcover but no wiregrass. Ecotone is Rhynchospora, mystery ludgwigia, Carex. Pond is Nyssa biflora, Cyrilla, Magnolia virgniana. Less than 50% crown closure but no herbaceous groundcover.
2D-FSBP2	621	1.5	1.5	1	4	low-moderate	Cypress canopy with somewhat large trees, appropriate crown closure of cypress, but dense midstory/subcanopy of Ilex myrtifolia, black gum, titi, and others. No groundcover in pond. Looks like it's been cleared (gyrotrac?) in past along ecotone, with some good ecotone and groundcover, other areas with logging slash pushed into ecotone, preventing shrub dominance, but no groundcover either. These 2 combined = about 50% of pond margin. The other 50% is somewhat dense titi and Ilex coriacea with no real ecotone. Surrounding upland is 441 with bracken, gallberry, and saw palmetto. Area is relatively high quality (HQW) 621 but low-mod FSBP. Use buffer when thinning around site. Let fire burn in. Hand clear ecotone where shrubs have invaded or invade in future, until fire controls. Some cypress recruits also. Note: shrubs (large) and subcanopy trees seem to be growing on old cypress stumps from past logging. Note: Hog rooting in ecotone observed.
2D-FSBP3	621	1.5	1.5	1.5	4.5	low-moderate	Very similar to FSBP2 in all regards except canopy more open and more light, some scattered groundcover in places within pond. Ecotone and upland similar to FSBP2, except upland has a good bit of wiregrass. Looks like it was cleared over about 75% and logging slash in even layer on ground (not piled up above grade). Also some fire scars on cypress stumps in FSBP3, not seen in 2. This HQ 621 buffer when thinning and do not push slash into pond/ecotone. Same prescription as FSBP2.

2E-HQW2	613	1.5	1.5	1	4	low-moderate	Vegetation similar to HQW1, but canopy closure greater with limited groundcover, some large ruts in ecotone and no wiregrass. Plant adjacent uplands in longleaf.
2F-FSBP3	621	1.5	1.5	1	4	low-moderate	Nice cypress dome but very little graminaceous cover; Pond: open with Taxodium ascendens, Ilex myrtifolia. Is ephemeral Ecotone: Andropogon virginicus, Hypericum chapmanii, Xyris, Rhynchospora spp. And a few patches of Aristida Upland: 441/600 with Cliftonia, no wiregrass.
2J-FSBP1	630	2	1	1	4	low-moderate	Pond is cypress, sweetbay, black gum and Cliftonia; some areas open with many sedges; Ecotone and surrounding upland is very overgrown with Cliftonia. System historically was part of Jackson Titi.
2J-FSBP2	630	1.5	1.5	1	4	low-moderate	Pond mainly cypress, sweetbay, and Cliftonia; some open areas dominated by sedges, but other areas overgrown with shrubs; Plenty of cypress recruitment; Ecotone is somewhat shrubby, but has sedges present; pond was historically part of a much larger system.
2N-FSBP1	621	1.5	2	1	4.5	low-moderate	Cypress pond, mostly shrubby with high crown cover inside with some open areas with sedges; ecotone covers about 75% of pond, also Xyris and Lachnanthes in ecotone; burn adjacent uplands and ecotone
2N-FSBP2	621	1	2	1	4	low-moderate	Similar to FSBP1 except interior has no open areas with little herbaceous cover; burn adjacent ecotone and upland
2O-FSBP2	641	1.5	2	1	4.5	low-moderate	Remove berm; Not much of a pond except in road, which is open and dominated by Xyris spp., Cladium jamaicense and Juncus repens/megacephalus; surrounding ecotone is excellent to the east, including wiregrass, Xyris, Lachnanthes, Pan. scab., Sarracenia flava/psittacina, Rhynchospora spp.; ecotone to the west is more shrubby with some Andropogon; a berm separates the pond from good ecotone.
2U-FSBP1	610	1.5	1.5	1	4	low-moderate	Uplands have been clearcut, with a return of groundcover vegetation, especially Andropogon, some titi encroaching ecotone, but mostly herbaceous with slash present, ecotone made up of Pan. scab, Andropogon and Hypericum; pond is somewhat shrubby and mostly Nyssa, I. myrtifolia, and some larger Magnolia virginiana, Cyrilla also present; canopy closure moslty 80-90%, but one open area supports Pan. scab. and Rhynchospora
3E-FSBP4	613	1.5	1.5	1	4	low-moderate	Similar to FSBP5 but pond has some wax myrtle and yaupon shrubs and small trees; Groundcover in pond and ecotone also seems more "weedy", and also contains lots of Rubus. Pond groundcover has rhynchospora, other sedges, Panicum virgatum. Ecotone narrower but has Panicum virgatum, mystery ludwigia, Rhynchospora, carex, Juncus effusus, Rubus and some maples and pines. Pond possibly a little smaller than FSBP5. Ecotone bedded and planted with poor survival. Standing water in beds. Pond is dry now. A few tallow in ecotone.
3F-FSBP8	641	1.5	1.5	1	4	low-moderate	Logging ruts present. Pond dominated by Rhynchospora and mystery Ludwigia and juncus. Some Nyssa present, including one with 12" DBH. Standing water in ruts. Some herbaceous ecotone present, but not very distinguishable from pond.
3G-FSBP3	630	1.5	1.5	1	4	low-moderate	System is mix of cypress and tupelo with Myrica cerifera understory. Sawgrass ground cover, some tufted grass in ecotone. Ecotone actually holds water while pond is mostly dry. System may be too large for FWS. There are also several dead trees in system.
3G-FSBP4	641	1.5	1.5	1	4	low-moderate	Marsh dominated by Spartina patens, Panicum virgatum, Carex spp. With Nyssa shrubs and Juncus. In other areas, corkwood also present. Standing water in ponds may indicate that system isn't ephemeral and wouldn't be appropriate for FWS. Burning adjacent ecotone would enhance system.
3G-FSBP5	630	1.5	1.5	1	4	low-moderate	System is cypress and tupelo depression, lots of cypress on north ecotone. South ecotone is non-existant. Some sabal palms in pond. Canopy is about 70% closed, and some sawgrass groundcover. Trees are mature. Good high quality system.

3G-FSBP6	613	1.5	1.5	1	4	low-moderate	Pond is low to moderate quality. Overstory of Black gum. High herbaceous vegetation including Juncus, Pluchea, mystery Ludwigia, Panicum virgaturm. No standing water. Ecotone. Good diverse herbaceous. Mesic to hydric. Similar species to pond, but topo higher. More vitus and juncus. 441/600 Diverse herbaceous but no wiregrass. Panicum virgatum, Rhynchospora spp. (3), Andropogon virginicus, Centella Upland. 441, saw palmetto, vitus, bracken fern, wax myrtle. Not much herbaceous cover.
1E-FSBP11	641	2	2	1	5	moderate	Same as FSBP11 but larger with some Pinus elliottii in pond and more Panicum virgatum. Some Acer rubrum as well.
1E-FSBP12	641	2	2	1	5	moderate	Open pond with some Aristida, Panicum virgatum, Panicum scabriuluscum, rhyncospora spp., mystery ludwigia, Pluchea, Juncus marginalis, several small Nyssa, Andropogon virginana. Wiregrass in ecotone and several bays surrounding pond.
1E-FSBP8	641	2	2	1	5	moderate	Similar to FSBP10 but less herbaceous diversity. Some cypress growing, more ludwigia, system is in transition from 641 to 630.
2E-HQW1	613	2.5	1.5	1	5	moderate	Excellent system. Canopy less than 30% closure made up of Nyssa biflora and Ilex myrtifolia. Lots of sedges in groundcover. Pond dry now. Ecotone is patchy, but good in some areas with Lachnanthes, Rhynchospora, Panicum virgatum, and even Aristida. Uplands have been clearcut, but have some wiregrass. Plant longleaf in uplands.
3E-FSBP5	613	2	2	1	5	moderate	Open water area with good groundcover surrounding a small Nyssa depression/pond, about 60' x 40' or maybe a little larger. Pond is ephemerally wet, dry now. Groundcover in pond is rhynchospora and carex. Large herbaceous ecotone around pond with rhynchospora, carex, Panicum scab., Panicum virgatum, etc. Some wax myrtle shrubs and small trees in marshy area, some pines as well. Surrounding ecotone bedded and planted with poor survival. Standing water in beds. Gums in pond are small and dense. Would need thinning. Upland score could be higher. Groundcover dominated at least 50% by Carex spp.
3F-FSBP1	641	2	2	1	5	moderate	Marshy pond with good diversity. Carex, rhynchosporas, Panicum virgatum, Andropogon, Panicum scab., Aristida stricta, mystery Ludwigia, Centella. Little overstory. Some Pinus elliottii, some Ilex vomitoria, Myrica cerifera, Baccharis. Hard to distinguish pond edge from ecotone.
2G-FSBP2	412	0	0	0	0	none	Not a wetland; turkey oak with longleaf recruitment. Most longleaf only a few years old. Cladonia, saw palmetto, and Aristida in ground cover. Sand live oak present as well. Prescribe thinning of oaks, especially sand live oak prior to fire.
2L-FSBP2	640	0	0	0	0	none	Pond not very depressional but dominated by various sedges, Hypericum, mystery Ludwigia, corkwood and has some small Nyssa and Cyrilla; Several small slash pines present and area was originally planted through but had high mortality due to wetness. Difficult to distinguish between ecotone and pond.
2L-FSBP4	625	0	0	0	0	none	Not pond but natural stand of slash pine about 12" dbh; understory is Nyssa and Cyrilla, Some Hypericum. Groundcover is largely Aristida with Andropogon, Lachnocaulon and Xyris. System needs to burn. DO NOT CUT!!
2L-FSBP6	640	0	0	0	0	none	Probably actually serves as ecotone for FSBP4 and 5 (see above). Pond is Hypericum, Nyssa, Cyrilla, Cliftonia, and corkwood with scattered pines. Groundcover is mostly Rhynchospora, Sagittaria, mystery Ludwigia, Xyris, and Andropogon. Most shrubs less than 8' tall.
2Q-FSBP2	441	0	0	0	0	none	Is an upland
2T-FSBP1	640	0	0	0	0	none	Sawgrass transitions into shrub marsh at data point, nice system but not suitable for salamanders. Has small Acer rubrum, Myrica cerifera in subcanopy; groundcover is Sagittaria latifolia, Juncus marginalis, Dichromea, Pluchea odorata, Rhynchospora
3B-FSBP1	641	0	0	0	0	none	is large juncus marsh with Sagittaria latifolia. No cypress, black gum, Ilex myrtifolia or wiregrass. Nice marsh but not FSBP habitat.

3B-FSBP2	441/600	0	0	0	0	none	Small sawgrass marsh within 441/600 opening. Needs fire and thinning in adjacent pine. Ilex vomitoria taking over.
3B-FSBP3	641	0	0	0	0	none	Pond has minnows, so probably not ephemeral. No overstory. Juncus effusus, Sagittaria lat., Spartina patens. Ecotone is Ilex vomitoria, Panicum scab, Centella, with planted pine up to pond edge. Upland is 441/600 with Myrica cerifera. Same as ecotone.
3B-FSBP4	641	0	0	0	0	none	No pond present. Is merely an open area along old logging trail. Has low areas with standing water and Sagittaria latifolia, Sagittaria graminea, corkwood. Note: logging deck in middle of point needs to be removed.
3B-FSBP5	641	0	0	0	0	none	Pond has no cypress, blackgum or Ilex myrtifolia. Has Sagittaria graminea in most wet portions. No wiregrass. Also no overstory. Ecotone is Rhynchospora spp., corkwood, and Pan. scab. Is savanna like. Uplands area 441 and 441/600. 441 areas have Ilex glabra, Serenoa repens and panicum. No wiregrass.
3B-FSBP6	441/600	0	0	0	0	none	Understory of Juncus. More like 441/600. Needs fire. Ilex and Myrica in opening surrounded by Pinus elliottii.
3B-FSBP7	641	0	0	0	0	none	Sawgrass marsh. Not suitable habitat.
3B-FSBP8	641	0	0	0	0	none	Pond - Juncus, Spartina patens thick. Ecotone - Myrica cerifera and Ilex vomitoria, Acer rubrum (no open water) but there is standing water in road adjacent to pond.
3C-FSBP1	641	0	0	0	0	none	Roadside ditch may drain. Need to change border of 641. Logging deck on west side gives illusion of being part of 641. Pond: No real "pond" present, is all 641 with no open water areas. Thick herbaceous cover of Juncus effusus, mystery ludwigia, Scleria spp., Rhynchospora spp., Carex spp., Panicum virgatum, Panicum scab., Very diverse but no wiregrass. No canopy of cypress or blackgum. Ecotone: much the same as pond but less wet. Upland 441/600, spotty patches of sedges and grasses.
3C-FSBP3	441/600	0	0	0	0	none	No pond, but wet savanna which bleeds out into planted pine. Good herbaceous cover: Panicum virgatum, Pluchea, Juncus, mystery Ludwigia, Rhynchospora ssp. Keep out heavy equipment.
3D-FSBP1	641	0	0	0	0	none	sawgrass marsh, no habitat
3D-FSBP2	641	0	0	0	0	none	sawgrass marsh
3D-FSBP3	641	0	0	0	0	none	sawgrass marsh
3D-FSBP4	641	0	0	0	0	none	sawgrass marsh
3D-FSBP5	641	0	0	0	0	none	sawgrass marsh
3E-FSBP1	641	0	0	0	0	none	Mainly Juncus effusus, mystery ludwigia, corkwood, Panicum virgatum. Very wet. Few small Nyssa trees, few Myrica cerifera shrubs/small trees. Partially bedded and planted, pines died. Few small pine recruits. Not sure really a pond or FSBP. Shrubs not bad now, very open. Small elevated island in middle with Nyssa large and small. More marsh-like and more dominated by juncus than previous two sites.
3E-FSBP2	641	0	0	0	0	none	Wet opening in 441/600, bedded through, with Pan. Scab. and corkwood primarily, rhynchospora, with some Andropogon, mystery Ludwigia, and a little Juncus effusus. No real pond, no cypress, a few pines within with poor growth. A little bit of titi and wax myrtle. Not really a FSBP or potential. Area is 641 maybe 643 which could trend towards a 640 shrub perhaps. When surrounding area converted to 626, would blend with that. Needs fire in the future to control pine invasion and shrubs. Shrubs not bad now. Pan. Scab. is by far the dominant species. Standing water in bedding furrows. Depression is irregularly shaped and has scattered pines.
3E-FSBP3	641	0	0	0	0	none	Wet opening in 441/600 with mystery Ludwigia, Juncus effusus, Panicum virgatum, Panicum scab., and mix of Nyssa and Myrica cerifera as small trees. Area bedded and planted but only a few pines survived. Few pine and maple recruits also. Very little canopy cover. Not sure if really a pond or FSBP candidate. Very dense groundcover. No standing water now, unlike FSBP2. Burn to control shrub and pine invasion in future. Once converted to 625/626 would blend with that. Could qualify as 643 now perhaps?
3F-FSBP2	641	0	0	0	0	none	Very similar to FSBP4. Juncus, Spartina, Cladium. Standing water. North side of

							pond dominated by Cladium and Panicum virgatum, south by Juncus. 1 Tallow found.
3F-FSBP3	641	0	0	0	0	none	Similar to FSBP2 and FSBP4. Juncus dominated with standing water. Nyssa along edges. Some bunch grasses within ecotone. Vitus around edges. Pond not suitable for Flatwoods salamanders.
3F-FSBP4	641	0	0	0	0	none	Pond dominated by juncus and Cladium, some sagittaria, standing water present. No tufted grasses Also some Spartina patens. Not suitable for Flatwoods salamanders.
3F-FSBP5	641	0	0	0	0	none	Very similar to FSBP4. Saw grass on edge, juncus in middle. Not suitable for FWS. Year round water.
3F-FSBP9	641	0	0	0	0	none	Sawgrass marsh with permanent water. Not suitable for FWS. Some Nyssa around edges. Reconnect with marsh in 3G with pipes under road, or hard bottomed LWC.
3G-FSBP1	625	0	0	0	0	none	Area is actually a small natural stand of Slash pine, some large with 15" DBH and 70-80' tall. Some Nyssa mixed in, with Myrica cerifera as well. Juncus, Panicum scab. and Aristida in groundcover. In both FSBP1 and 2 possible bear signs present including scat and torn up logs with ants inside.
3G-FSBP10	8	0	0	0	0	none	No pond. Is a loading deck. Needs removal.
3G-FSBP12	8	0	0	0	0	none	Is not a pond but loading deck. Needs removal.
3G-FSBP2	641	0	0	0	0	none	Not suitable for FSBP since deep year round water and wetland approaching upper size limit. Very nice system though. Marsh dominated by carex with small nyssa, some juncus and Myrica cerifera, mystery Ludwigia. Some tallow is present and should be controlled before spreading.
3H-FSBP1	641	0	0	0	0	none	Sawgrass marsh
3H-FSBP2	641	0	0	0	0	none	Juncus/sawgrass marsh.
3H-FSBP3	641	0	0	0	0	none	Rhynchospora spp., mystery Ludwigia, mermaid weed, Juncus effusus.
3H-FSBP4	641	0	0	0	0	none	Juncus/Spartina/mystery ludwigia. Ditches and/or skidder trail draining the system to the east.

Source: PBS&J, 2005

APPENDIX B

Mitigation Synopsis: Panama City – Bay County International Airport Relocation (Draft March, 2005)

An approximately 10,000 acre mitigation area is proposed as compensation for wetland impacts at the proposed airport relocation site based on the potential 50-year full build-out scenario. The mitigation area is divided into three main parcels: Parcel 1 includes 1,734 acres directly south of CR 388 between Crooked Creek and Burnt Mill Creek and extending southward to the Gulf Power Company power line easement. Parcel 2 includes 6,388 acres directly south of CR 388 to the east of Burnt Mill Creek and extending southward to West Bay and the power plant discharge canal. CR 2300 forms the eastern boundary of the southern portion of Parcel 2. Parcel 3 includes 1,735 acres south of the power plant discharge canal, extending southward to West Bay Point. West Bay also forms the western boundary of Parcel 3. Each parcel has been further divided into management units based on existing landscape features (mainly unpaved forest roads). There are a total of 42 management units in the mitigation area, averaging 200-300 acres in size each.

Habitat types present in the mitigation area are dominated by planted pine wetlands and uplands. Other habitat types include titi wetlands, mixed forested wetlands, cypress wetlands, pine flatwoods, freshwater marsh/shrub wetlands, tidal marsh, and small streams. The main goal of the mitigation plan is to convert planted pine areas back to wet pine flatwoods, wet pine savanna, mesic flatwoods, and sandhill habitats that historically occurred in the area, via restoration and enhancement. Restoration, enhancement and preservation of the other habitat types listed above will also take place. Based on habitat acreages, the planned mitigation activities, and the estimated before and after condition of the various habitat types, a detailed WRAP analysis has been conducted that shows a surplus of mitigation lift relative to functional loss from wetland impacts (including direct and indirect impacts) for each development phase and for full build-out at the airport relocation site through 50 years. All mitigation areas will be placed in Conservation Easements to ensure their long-term protection.

The mitigation plan consists of a series of interrelated plans that address the following major mitigation activities: planted pine thinning; prescribed fire; longleaf pine planting; hydrologic restoration; exotic species control; wildlife management; dump site removal; monitoring; and long-term management.

Thinning

The planted pine thinning plan depicts planted pine stand ages, a thinning schedule, and prescribed thinning densities based on target ecological community types and whether or not longleaf pine will be planted in an area. Planted pine stands in the mitigation areas were planted between 1973 and 1999 (ranging in stand age from 6-32 years old in 2005). Final thinning to a prescribed basal area (BA) will initially take place for all stands that are 25 years old or older. Younger stands will enter mitigation and be thinned to the prescribed basal area as they reach 25 years old. Future wet pine savanna areas will primarily be thinned to a basal area of 20-30 square feet/acre. A few management units or portions of management units will be thinned to 10-20 square feet/acre for comparison/adaptive management purposes. Future pine flatwoods and

sandhill areas that will be planted with longleaf pine will also be thinned to a BA of 20-30. Future wet pine flatwoods that will not be planted with longleaf pine, mainly near West Bay in future coastal slash pine flatwoods, will be thinned to a BA of 40-50. All planted sand pine uplands (future longleaf pine sandhills) will be clear-cut. Natural stands of mixed longleaf and slash pine, and natural stands of coastal slash pine flatwoods will not be thinned under the initial thinning plan. Wetlands dominated by cypress and/or hardwoods will not be harvested or thinned. Also, incidental harvest of individual cypress, hardwood, and cabbage palm trees greater than 6 inches DBH growing in planted pine stands will be minimized during pine thinning operations. Standing dead trees and snags will also be retained whenever possible. The thinning plan includes voluntary 35-foot special management zones (SMZs) around cypress domes, gum ponds, flatwoods marshes, and small depressional mixed forested wetland areas; and 50-foot special management zones (SMZs) adjacent to tidal creeks, tidal marsh, and West Bay to provide additional protection to these areas during thinning operations. Standard SMZs along streams and creeks will also be observed, according to state forestry Best Management Practices (BMPs). Excessive rutting should be avoided by managing thinning operations in wetland areas outside the wet season and around periods when on-site soil moisture conditions are inappropriate. This will include onsite reconnaissance and direction of forestry crews and equipment by supervising foresters and mitigation ecologists. If excessive rutting does unexpectedly occur, thinning operations will be halted and relocated to drier areas until conditions improve, and excessively rutted areas will be rehabilitated.

Prescribed Fire

The prescribed fire plan addresses the use of fire as a restoration and management tool, primarily in pine flatwoods, savanna, and sandhill habitats. Following the thinning of planted pine stands, the prescribed fire plan calls for up to three initial dormant season burns per management unit on a 1-2 year rotation, followed by the implementation of growing season burns on a 3-5 year rotation into perpetuity. The goals of the dormant season burns are to modify and promote fuel characteristics favorable for growing season fire prescriptions while protecting large mature pines and encouraging the expansion of herbaceous ground cover. In addition, the dormant season burns will be aimed at reducing the height and volume of mid-story fuels. The goals of the growing season burns will be to reduce and control woody shrub cover, to promote and maintain natural herbaceous groundcover, and to keep fuel loads low enough to safely burn during the growing season in subsequent years. The roughly 200-300 acre management units described above will comprise the major burn units. In some cases, additional fire lines may be needed to augment the management unit boundaries, but use of such lines will be minimized, especially in wetland areas. Initial early growing season burns may be possible on some management units, and will be used preferentially in place of initial dormant season burns when appropriate. Occasional dormant season burns will also be mixed into the growing season burn rotation. Some variation on the timing of growing season burns will also occur within management units (e.g., an early growing season burn one year followed by a mid or late growing season burn during the next burn rotation, or vice versa, for a particular unit). The mixing of occasional dormant season fires into a growing season fire regime, and the variation of timing on growing season burns will mimic a more natural fire regime and promote more natural plant communities and wildlife habitat. Some use of dormant season fires may also be needed to protect planted longleaf pines once they leave the grass stage and before they reach heights

where fire mortality is less of a concern. Occasional dormant season burns will also promote natural longleaf recruitment and regeneration in the more distant future. Fire will be allowed to burn into non-pine dominated habitats such as cypress domes, flatwoods marshes, salt marshes, etc., when conditions allow and when it would not result in a catastrophic situation.

Planting

The planting plan depicts longleaf pine planting densities based on target ecological community types, soils, and elevation. Longleaf planting will take place after thinning operations and at least one application of prescribed fire have occurred. Containerized longleaf seedlings will be used, and all areas will be hand planted in an irregular pattern (not in rows or on precise spacing intervals). Roughly 1,800 acres of future pine flatwoods that have been thinned will be hand planted at densities of 50 seedlings per acre. Roughly 625 acres of future pine flatwoods and sandhill areas that have been clear-cut will be planted at densities of 100 seedlings per acre. Future wet savannas will have longleaf planted in scattered clusters on small slightly elevated "palmetto islands" identified using historic aerials. These "islands" will be hand planted with 1-5 longleaf seedlings depending on the size of the island. Roughly 2,300 of these "islands" will be planted in savanna areas spanning roughly 2,800 acres.

Hydrologic Restoration

The hydrologic restoration plan includes a number of related activities, including the installation or improvement of low water crossings and culverts, the re-routing of water from major interior ditches to historic flow ways, the restoration of former stream courses, removal of fill from historic floodplains, the reconnection of severed wetland systems, ditch back filling and plugging, and road removal. Each specific hydrologic restoration and road removal area will include survey work (profiles and cross-sections), engineering calculations and design, and the development of construction plans and specifications. Approximately 47 low water crossings are planned to restore more natural hydrologic conditions to streams and flowing wetlands (linear wetlands which typically have flowing surface waters). Overall, approximately 85,500 linear feet of stream and major ditch work is planned (roughly 56% directly related to stream and flowing wetland restoration). This linear estimate does not include enhancements resulting from road and roadside ditch removal, or the upstream and downstream effects of low water crossing installation and associated hydrologic improvements. Roughly 42,000 linear feet of road retirement and removal (upland to wetland restoration) is also planned. An additional 105,000 linear feet of stream and flowing wetland surface waters will be preserved and indirectly enhanced by surrounding mitigation activities and long-term ecosystem management including pine thinning, prescribed burning, installation of low water crossings, road removal, and cessation of timber management activities such as bedding, mechanical site preparation, row planting, and widespread fertilizer and herbicide applications. The extensive pine thinning planned for the site will also provide hydrologic enhancement to wetlands across the entire mitigation area, due to reduced evapotranspiration.

Exotic Control

Invasive exotic plant species of concern have been documented in roughly 30 sites across the mitigation areas. Most of these sites are locations with Chinese tallow. A few locations with cogon grass and camphor tree have also been documented. Chinese tallow is more widespread in Parcel 3, especially along the forest roads and ditches, including additional areas outside the 30 sites mentioned above. Elsewhere, tallow is mainly limited to individual plants found at a few dump sites throughout the mitigation area. Chinese tallow and camphor tree abundance will be reduced and controlled using Triclopyr herbicide (brand names such as Pathfinder and Garlon4 are examples). The trunks of larger seedlings, saplings, and trees will be slashed with a machete or saw and the herbicide applied directly to the slashed area. Herbicide will be directly applied to the foliage of smaller seedlings and saplings. All herbicide applications will be conducted in accordance with standard BMPs. Cogon grass has only been documented in a few limited sites, and these have already been treated by St. Joe Timberlands upon discovery. Cogon grass has also been reported growing along CR 388 on mowed roadsides, therefore, it is assumed that cogon grass has the potential to invade the mitigation areas in the future without regular preventive management. Cogon grass found in the mitigation areas will be treated with Glyphosate herbicide (brand names such as Roundup and Rodeo are examples). Coordination with County road maintenance officials will take place to discuss the proliferation and spread of cogon grass along CR 388. Japanese climbing fern has not been documented on the mitigation site, but one small occurrence (single stem that was removed) been located in one off-site location near the mitigation areas. Any climbing fern discovered on the mitigation site during regular reconnaissance and monitoring will be documented and treated immediately.

Wild (feral) pigs and pig sign (rooting disturbance) have been observed throughout the mitigation areas (all parcels). Rooting was particularly abundant in Parcel 1 in mid-2004. A professional shooting and trapping program will be employed to control hog populations, in coordination with all appropriate agencies and in accordance with pertinent regulations. Regular coordination with recreational hunters will also take place, to encourage hunters to take wild pigs whenever possible (within existing state hunting regulations) and to discourage activities that augment pig populations.

Wildlife Management

Wildlife management on the site will primarily consist of passive habitat enhancement and preservation achieved by thinning; prescribed fire; planting; retention of cypress, hardwoods, cabbage palms, and standing dead trees and snags; hydrologic restoration; road removal; exotic control; protection and enhancement of isolated wetlands and streams; etc. Wild hog management would additionally be considered a direct wildlife enhancement activity since hogs both prey upon and compete with native wildlife. Wildlife species expected to benefit from the mitigation activities described above include: gopher tortoise and various associated species including the Eastern indigo snake, Florida black bear, various wading birds, bald eagle, and flatwoods salamander.

Additional active management techniques that could be utilized would include installation of wood duck boxes in larger cypress, gum, and mixed forested wetland areas; installation of American kestrel and eastern bluebird nesting boxes in pine savanna areas; installation of osprey/bald eagle nesting platforms near the coast; and relocation of offsite gopher tortoises to restored/enhanced upland habitats. Finally, coordination will take place with Gulf Power Company to determine if vegetation plantings or other passive means can be used near the access roads/bridges that cross the power plant discharge canal to enhance wildlife crossings between Mitigation Parcels 2 and 3. See also long-term management, below, for additional future wildlife management opportunities.

Dump Site Removal

Approximately 40 small dump sites have been documented in the mitigation area, particularly along the forest roads and at forest road junctions. Dump materials consist mainly of "white goods" such as washers, dryers, refrigerators, as well as automobile scraps, old tires, construction debris, etc. These dump sites will be removed and properly disposed of at the onset of mitigation activities.

Monitoring

Baseline and post-mitigation implementation monitoring has been proposed. Qualitative baseline monitoring has already been conducted at roughly 200 randomly located field stations in planted pine areas. Another roughly 800 qualitative field stations associated with high quality wetlands, drainage structures, roads, ditches, streams, exotic species, listed species, dump sites, etc. have also been completed. Baseline and post-mitigation quantitative monitoring stations are proposed that would encompass roughly 10-20% of the random qualitative planted pine stations. Quantitative monitoring will entail the use of large fixed field plots (50m x 20m) or transects (100m) and repeated quantitative measures of: (1) canopy and subcanopy tree density, basal area, species composition, and individual tree size (diameter at breast height); (2) woody shrub percent cover, height, and species composition; and (3) groundcover percent cover, species composition, and species richness/diversity. Groundcover parameters will be assessed in a minimum of 10 1-m2 replicate quadrats within each larger field plot/transect. Repeated photo-points will also be recorded at each quantitative station. Peizometers or staff gauges will also be placed at strategic locations to record water table and surface water levels before and after mitigation implementation. Baseline quantitative vegetation monitoring will take place during fall (September-Nov) prior to the onset of mitigation activities across most of the site. Following mitigation implementation, quantitative monitoring is proposed annually for the first 5 years. After this period, monitoring will be staggered every 5 years. In addition to ground-based monitoring, vertical aerial photography will be acquired and photo-interpreted 5 years after the onset of mitigation (in fall), and every 10 years afterward, for comparison with pre-mitigation photography acquired in September 2003 and photo-interpreted to determine ecological community types (using FLUCFCS).

Long-term management

Long-term management of the site will include regular reconnaissance and site security. Site security will include maintenance of locked access gates, signage, and possible use of fencing in some areas, if needed. Conservation Easements will also provide for long-term legal protection of the mitigation area. The major long-term resource management activity will be continued use of prescribed fire, in perpetuity. This will include burning on a 3-5 year rotation, dominated by growing season burns, but allowing for a mix of timing on growing season burns and occasional dormant season burns. As longleaf pine plantings mature over time, some additional selective thinning of slash pine may also be performed periodically, on roughly a 10-year rotation within any particular management unit. Any thinning under long-term management would use passive or low impact methods and not result in severe rutting. Supplemental plantings of longleaf or cypress/mixed hardwoods to augment natural recruitment may also occur in selected areas as needed. Continued monitoring and reconnaissance on the site will also be performed to detect any exotic species problems that may arise over time. It is expected that periodic localized treatment of exotics such as Chinese tallow, cogon grass, and Japanese climbing fern will be performed under long-term management of the site. Sustained management of wild hogs will also continue. Maintenance of hydrologic structures such as low water crossings will take place periodically, as will forest road management activities (including additional potential road retirement and removal sites). Passive and active wildlife enhancement will continue under long-term management. In addition, opportunities will likely exist for enhancement/restoration of wild turkey and quail populations on the site once habitat restoration and enhancement activities are in effect. In the longer term, the mitigation area could also potentially contribute to restoration and management of red-cockaded woodpecker, in coordination with other existing and planned natural resource management areas in the region. Finally, management of passive recreation activities, such as hiking, will be incorporated into long-term management of the mitigation areas.

ATTACHMENT B

U.S. Army Corps of Engineers Regional General Permit 86
West Bay to East Walton Counties, Florida
Revised Biological Opinion, March 3, 2005

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March 3, 2005

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Attn: Don Hambrick

Re: FWS Log No. 4-P-04-054
Revised Biological Opinion
Regional General Permit 86 (RGP-86)
West Bay to East Walton Counties, Florida

Dear Colonel Carpenter:

Enclosed is the Fish and Wildlife Service's (Service) revised biological opinion (BO) for the U.S. Army Corps of Engineers (Corps) Regional General Permit 86 (RGP-86). This opinion is provided in accordance with section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq*.).

The original BO for this project was transmitted to the Corps on May 19, 2004. RGP-86 was issued by the Corps on June 30, 2004. Since that time, we have received new information regarding actions that may affect listed species in a manner not considered in the original opinion. Specifically, a newly proposed construction project would impact the listed plant telephus spurge *(Euphorbia telephioides)*, and a new location for the plant has been documented within the RGP boundary. The original BO determined that RGP-86 may affect, but was not likely to adversely affect telephus spurge based on the stipulation that all impacts to known plant locations would be avoided. The new information reveals a more realistic scenario in that permit authorizations under RGP-86 will likely result in adverse effects to telephus spurge. The Service has determined in the revised biological opinion analysis that the permit would not jeopardize the continued existence of this species.

The analysis of impacts to flatwoods salamanders remains the same as the original BO with one minor modification to the salamander "checklist" as noted. There are no other changes to the Terms and Conditions to minimize the potential for incidental take of the flatwoods salamander. Implementation of these Terms and Conditions are non-discretionary in order to be exempt from

the prohibitions of Section 9 of the Act. According to the Act, Terms and Conditions are not applicable to plants; therefore, actions that avoid and minimize take are listed only in the Conservation Measures section of the BO for the telephus spurge.

The Service continues to concur with the previous determination in the Biological Assessment (BA) of "not likely to adversely affect" for red-cockaded woodpecker, bald eagle, manatee, Gulf sturgeon (including its critical habitat), eastern indigo snake, and Godfrey's butterwort. This concurrence is based upon implementation of the avoidance and minimization measures identified in the final BA and supplemental information provided on December 22, 2003. We have included the avoidance and minimization measures in the Conservation Measures section of the BO. If these protective, avoidance, and minimization measures as identified in your plan or the Terms and Conditions cannot be implemented, re-initiation of consultation may be required. Additional information on re-initiation is provided in the Re-initiation Notice of the biological opinion.

We have also provided Conservation Recommendations for each species that are actions that could be taken by the Corps to further the recovery of federally listed species and to help conserve other species that occur within the RGP area. While they are voluntary actions, we feel that many of the recommendations we have provided will help the Corps meet their responsibilities under Section 7(a)(1) of the Act and will also serve to improve future consultations under the RGP-86.

The following findings and recommendations constitute the report of the Department of the Interior. This concludes formal consultation. If you have any questions about this opinion or consultation, please contact staff biologist Hildreth Cooper of our Panama City Field Office at (850) 769-0552, extension 221.

Sincerely yours,

Gail A. Carmody
Project Leader

Enclosure:
Revised Biological Opinion

cc:
St. Joe Company, Jacksonville, FL (Dave Tillis)
USFWS, Atlanta, GA (ARD-ES)
USFWS, ES, Jackson, MS (Linda LaClaire)
USFWS, Habitat Conservation/section 7, Atlanta, GA (e-mail copy to Joe Johnston)
NMFS, Protected Species, St. Petersburg, FL
NMFS, Habitat Conservation, Panama City, FL (Mark Thompson)
NWFWMD, Havana, FL (Ron Bartel)
FWC, Office of Environmental Services, Tallahassee, FL (Rick McCann)
FWC, Non-game Program, Tallahassee, FL (Thomas Eason)
COE, Jacksonville, FL (Osvaldo Collazo))
USEPA, Atlanta, GA (Haynes Johnson)
FDEP, Pensacola, FL (Dick Fancher)

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U.S. Army Corps of Engineers
Regional General Permit 86
West Bay to East Walton Counties, Florida

Revised Biological Opinion
March 3, 2005

Prepared by:
U.S. Fish and Wildlife Service
1601 Balboa Avenue
Panama City, Florida

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INTRODUCTION

This document transmits the Fish and Wildlife Service's (Service) revised biological opinion (BO) for the U.S. Army Corps of Engineers (Corps) issuance of Regional General Permit (RGP-86). RGP-86 authorizes certain dredge and fill activities in non-navigable waters of the U.S. which are located in three large watersheds, including the Lake Powell watershed and various drainage basins of the Choctawhatchee Bay and West Bay watersheds within southeastern Walton County and southwestern Bay County, Florida. This opinion is in accordance with Section 7 of the Endangered Species Act of 1973, as amended (Act), (16 U.S.C. 1531 *et seq*.).

This biological opinion is based on information provided in the December 22, 2003, Biological Assessment (BA) and draft permit advertised on August 29, 2003. A complete administrative record of this consultation is on file in the Service's Panama City, Florida Field Office.

CONSULTATION HISTORY

May 1999	An interagency group met to review cumulative impacts to wetlands in the project area. The focus was primarily on specific projects being proposed by the St. Joe Company in the vicinity of Panama City Beach.
May 1999 through October 2001	The interagency group continued to meet with varying representatives of agencies, applicants, and consultants involved in development projects in the area. The group addressed ways to improve coordination and review of specific projects and approaches to evaluating cumulative impacts. On April 20, 2001, the group met at Disney Wilderness Preserve to learn more about the mitigation approach used by the Orlando Airport Authority and others.
October 2001	The Service presented a potential landscape approach of addressing build-out of the area and assessing impact and conservation needs to the group. The study area at that time was the southwestern quadrant of West Bay.
Winter 2002	The interagency group further explored regulatory mechanisms for assessing cumulative impacts and implementing a comprehensive conservation plan for the watersheds of southern West Bay, Lake Powell, and southeastern Choctawhatchee Bay.

Winter 2002 to present	The interagency teams continue to meet regularly to develop the "West Bay to East Walton Regional General Permit" (RGP-86) and the State equivalent regulatory mechanism, an "Ecosystem Management Agreement."
July 16, 2003	The interagency team discussed the consultation requirements. The consultant requested that the Service identify the species that should be addressed in the project analysis. The Service noted that this is the purpose of the BA, which should be prepared in conjunction with the Federal action agency, the Corps of Engineers. Species lists for the counties would be provided by the Service.
August 1, 2003	The Service provided a species list only for Walton County since a current list for Bay County was provided in 2001 before the project area was expanded.
August 22, 2003	All parties teleconferenced to discuss the BA.
August 26, 2003	The consultant provided a draft species list and proposed determinations of effects.
August 29, 2003	The Corps issues a public notice for RGP-86.
September 24, 2003	The Service participated in a Corps public workshop to discuss RGP-86.
September 29 – October 3, 2003	The St. Joe Company enlisted consulting herpetologist, John Palis, to evaluate potential flatwoods salamander habitat within the project area.
October 23, 2003	The Service provided written concurrence of the species lists used in the BA.
October 30, 2003	A draft BA was transmitted by the consultant to the Corps and to the Service.
November 13-14, 2003	The interagency team provided verbal comments on the BA.

December 4 and 9, 2003	The Service assisted the consultant and John Palis with field evaluations of potential flatwoods salamander habitat.
December 11, 2003	Another draft BA was transmitted to the Service.
December 16-17, 2003	The interagency team met to discuss the BA and other items related to RGP-86.
December 22, 2003	The consultant transmitted the final BA to the Service.
December 23, 2003	In a letter to the Service, the Corps concurs with the findings of the BA and requests initiation of formal consultation.
December 24, 2003	The Service transmitted an electronic copy of the draft BO to the Corps with copies as requested to WilsonMiller and the St. Joe Company.
January 12, 2004	The Service participated in a public workshop regarding DEP's Ecosystem Management Agreement.
January 27, 2004	WilsonMiller provided comments on the draft BO to the Service and to the Corps.
January 30, 2004	A revised draft of the BO was transmitted to the Corps.
February 5, 2004	At the request of the agencies, WilsonMiller provided a "salamander checklist" as an addition to the BA.
February 25, 2004	The Service and Corps met to discuss suggested revisions to the BO.
March 18, 2004	The Service faxed a memorandum to the Corps and WilsonMiller regarding telephus spurge conservation.
April 21, 2004	WilsonMiller conducted a survey for telephus spurge north of Highway 98.

April 30, 2004	WilsonMiller provided details of the telephus spurge survey and a memorandum describing revised Conservation Measures.
May 6, 2004	The Corps concurred with the Service that the additional information was sufficient to proceed with the final biological opinion.
May 19, 2004	The final BO was delivered to the Corps.
May 27, 2004	The Service and other agencies received preliminary materials describing the North Glades Development project.
June 9, 2004	The first RGP pre-application meeting and site visit to a newly documented telephus spurge location. The Service advised the North Glades applicant that more information would be needed regarding telephus spurge locations, impacts, and conservation.
June 18, 2004	The Service received a copy of a draft dredge and fill permit application for "North Glades Development." The packet included an evaluation of telephus spurge for the project.
June 30, 2004	RGP-86 was issued by the Corps.
July 28, 2004	An interagency meeting was convened to discuss pending projects for authorization under RGP-86, including North Glades and potential re-initiation for telephus spurge effects. The applicant was advised that additional information would be needed.
July 28, 2004	The Service received an e-mail from the Corps requesting re-initiation for the North Glades project.
August 3, 2004	The Service transmitted a draft list of additional information to the North Glades consultant and to the Corps.
August 10, 2004	The Service advised the North Glades consultant that the list of additional information should be considered final.

August 11, 2004	The Service and the consultant conducted a teleconference to discuss the technical details of the analysis.
September 9, 2004	The Service attended an interagency pre-application meeting for the Waterfall project within the RGP boundary. The meeting illustrated the need to modify the flatwoods salamander checklist for clarification. (Appendix 1)
October 18, 2004	The Service sent a reminder to the North Glades applicant that the consultation information has not been received.
October 29, 2004	The Service received via e-mail from the consultant the information necessary to proceed with consultation.
November 3, 2004	The Service proposed to the interagency group a modification to the flatwoods salamander checklist as suggested at the September 9, 2004, meeting regarding the Waterfall project.
December 2, 2004	The Service attended an interagency "RGP Team" meeting and clarified the consultation process. There was also discussion about the availability of "negative" survey data for the telephus spurge.
December 23, 2004	The Service again requested the "negative" survey data from the St. Joe Company.
December 29, 2004	The Service requested from the St. Joe Company additional telephus spurge survey information related to plants documented south of the Breakfast Point Mitigation Bank.
January 5, 2005	The consultant for the St. Joe Company responded with three documents that clarified survey information for the telephus spurge.
February 25, 2005	The Corps concurred with the draft BO which was delivered on February 11, 2005.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

Regional General Permit #86 (RGP-86) was cooperatively developed by several State and Federal agencies to address the cumulative effects of existing and anticipated development pressures within a fast growing region of the Florida panhandle. A public notice for the permit was published on August 29, 2003. The area addressed by the permit is approximately 47,480 acres in southwest Bay County and southeast Walton County (Figure 1, page 8). Approximately 90 percent of the property is presently in silviculture (forestry) management and is owned by the St. Joe Company. However, as recent trends near the coastline indicate, forestry is giving way to more lucrative residential and commercial development. In addition, just outside the RGP area is the location for a proposed new regional airport, which is undergoing separate review by the Federal Aviation Administration (FAA).

Wetland regulatory agencies have been inundated with permit applications in the area, particularly along U.S. Highway 98 and in the vicinity of Lake Powell. These agencies, along with other Federal and State natural resource agencies, have recognized the need to develop an ecosystem approach to reviewing these permits and assessing the adequacy of mitigation sequencing. RGP-86 provides a mechanism for addressing the cumulative effects of many potential dredge and fill permits by influencing the extent and intensity of development across the landscape. It is accompanied by a State regulatory mechanism, which is known as an Ecosystem Management Agreement (EMA) and is administered by the Florida Department of Environmental Protection (FDEP).

RGP-86 does not directly control development in the area, but it provides an incentive for landowners to participate in the watershed plan that was developed by the agencies. Landowners may continue to submit applications for routine individual permits; however, it is recognized that agency review will require more time and may not be favorable unless ecosystem benefits similar to the principles of RGP-86 can be achieved. The basic principles of RGP-86 are that a maximum 20 percent of a watershed's low quality wetlands can be impacted; these wetland impacts must be fully compensated within the larger watershed; less than one percent of high quality wetlands will be impacted and fully compensated; the Lake Powell watershed wetland functions will not be diminished by any amount; large areas of wetlands and uplands (Conservation Units) will be set aside from future development; and compensatory mitigation will be consolidated in two large mitigation banks.

One recently proposed construction project within the RGP boundary is the cause for Section 7 re-initiation. This project, known as North Glades, will be constructed within the only previously known location of a federally listed plant, telephus spurge (*Euphorbia telephioides)* within the RGP boundary. The permit applicant has indicated that impacts to some of the plants cannot be avoided. In addition, a new location for the plant has been recently discovered nearby on other property owned by the applicant. This information will be discussed in more detail in the telephus spurge section of the BO.

Conservation Measures

The interagency working group developed the following Conservation Measures that will be incorporated within RGP-86. These measures will further the recovery of the species under review.

1. A maximum of 20 percent of low quality wetlands on a project site or within a watershed sub-basin can be impacted. Impacts will be compensated in a mitigation bank, on site, or within identified Conservation Units. The interagency team defined low quality wetlands as those planted for pine silviculture and ditches.

2. Impacts to high quality wetlands (wetlands not in silviculture) will be limited to necessary, minimized road crossings. Total fill of high quality wetlands in the entire 47,480-acre project area cannot exceed 125 acres.

3. Avoidance of impacts to wetlands could assist in the recovery of the flatwoods salamander, indigo snake, bald eagle, and Godfrey's butterwort, if these areas are managed appropriately.

4. Restoration and management of two mitigation banks will secure for conservation two large, strategically placed parcels totaling approximately 7,700 acres. These banks are currently used for industrial forestry, and without RGP-86 could be partially converted to development sites in the future. The mitigation banks could assist in the recovery of the flatwoods salamander, red-cockaded woodpecker, indigo snake, bald eagle, Godfrey's butterwort, telephus spurge, Gulf sturgeon, and manatee.

5. Approximately 10,665 acres of uplands and wetlands (27 percent of the project area) will be designated as Conservation Units (CU's). These areas will be removed from development potential and industrial forestry practices. They will eventually be restored in amounts relative to parcel sizes of future development projects. The interagency working group developed specific prescriptions for wildlife management that focus on listed species. The CU's include significant amounts of uplands, which do not normally receive direct attention in wetland regulatory programs. The CU's could eventually assist in the recovery of the flatwoods salamander, red-cockaded woodpecker, indigo snake, bald eagle, Godfrey's butterwort, telephus spurge, Gulf sturgeon, and manatee.

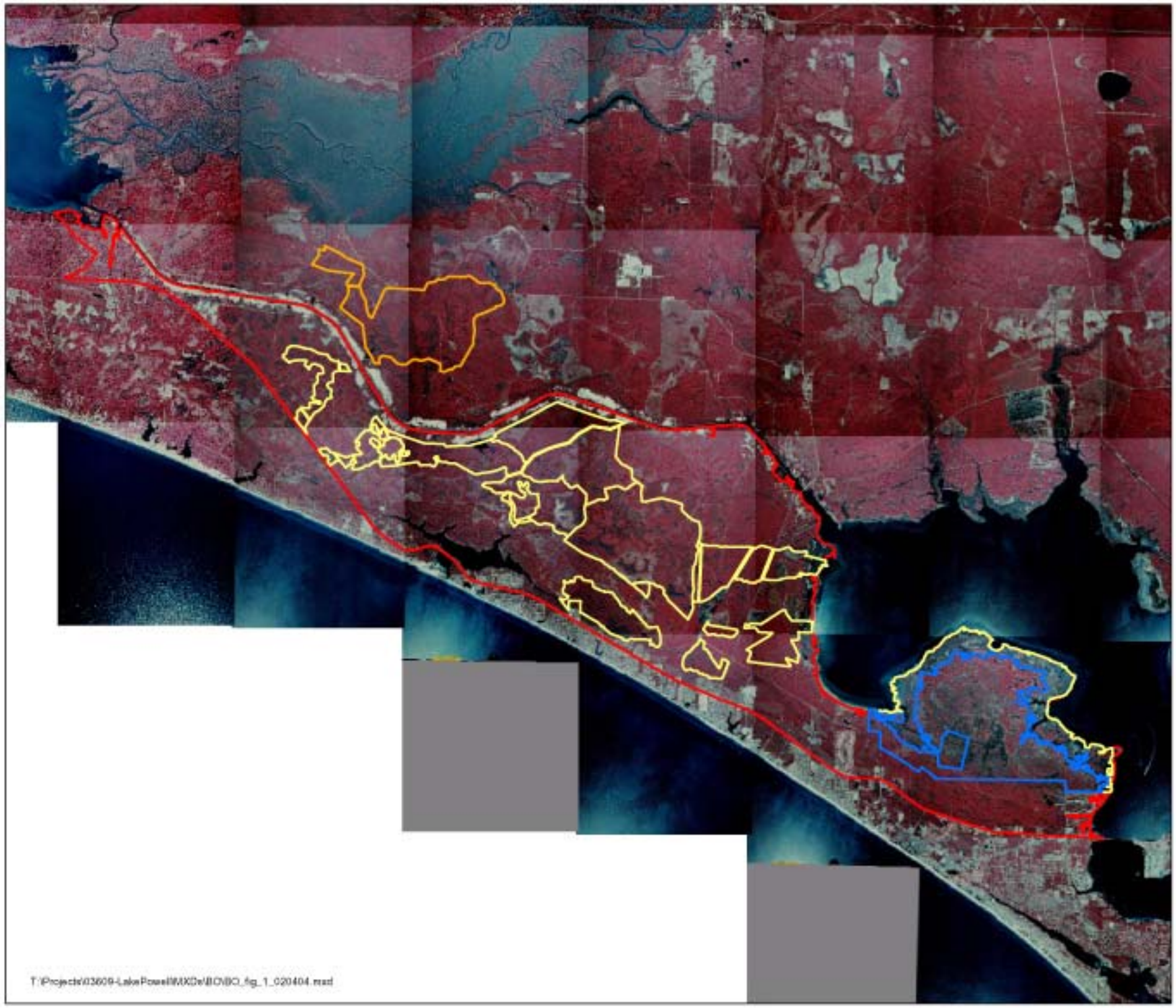

Figure 1

RGP Boundary Biological Opinion

West Bay to East Walton RGP

Legend

- Conservation Units
- Project Area (Including Tidal Soils)
- Devil's Swamp Mitigation Bank
- Breakfast Point Mitigation Bank

Disclaimer:
This exhibit was prepared utilizing GIS data provided by various sources that may include but not limited to federal, state, district and local agencies. Data provided by other sources are not warranted by WilsonMiller for accuracy or for any particular use that may require accurate information. This map is for informational purposes only and should not be substituted for a wetland jurisdictional determination, true title search, property appraisal, survey, or for zoning verification.

Map Date:
02/04/04

N

0 0.5 1 2 3 4 Miles

WilsonMiller
New Directions in Planning, Design & Engineering

6. In general, low quality wetlands provide somewhat of a buffer to high quality wetlands in the project area. For specific projects, buffers to high quality wetlands will be comprised of uplands and/or low quality wetlands, and will be on average not less than 50 feet with a minimum of 30 feet in some locations. The buffers will remain in a natural condition with no application of fertilizers and herbicides. Providing buffers where they are not currently required could assist in the recovery of the flatwoods salamander, red-cockaded woodpecker, indigo snake, bald eagle, Godfrey's butterwort, telephus spurge, Gulf sturgeon, and manatee.

7. A sub-basin watershed approach to wetlands avoidance is a priority over the larger watershed approach. Protection of sub-basins should provide better protection of water quality and quantity functions. This could assist in the recovery of species such as Gulf sturgeon and manatees, which may occur in receiving water bodies.

8. Environmental Resource Permitting (ERP) stormwater attenuation standards will be applied to all development projects. This is a higher standard than currently exists in the Northwest District of the Florida Department of Environmental Protection (FDEP). The increased protection could assist in the recovery of species such as Gulf sturgeon and manatees, which may occur in receiving water bodies.

9. Corps jurisdictional determinations (JD) will be applied to all development projects. The Corps JD is generally more encompassing than the FDEP method.

10. No fill in wetlands will be allowed for septic tanks or drainfields.

11. *Habitat Management Guidelines for the Bald Eagles in the Southeast Region* (USFWS, 1987) will be applied to all development sites, mitigation banks, and CU's.

12. Road construction at WaterSound North, a proposed project under RGP-86, will include wildlife crossings as identified in the project plans dated January 30, 2004.

13. The North Glades applicant has conducted additional surveys for telephus spurge within the RGP-86 Conservation Units (CU) in Bay County, Florida, and within the Breakfast Point mitigation bank (BPMB) (Appendix I). As a result, one new population of telephus spurge containing over 200 plants was located in the Breakfast Point mitigation area and adjacent lands to the south that have no conservation designation. The portion of the population within the BPMB will be managed and monitored in conjunction with the existing management requirements within the RGP-86 permit. [US. Fish and Wildlife Service (USFWS) recovery plan tasks 1.33, 3.1, 3.2, 3.3].

14. The North Glades applicant has agreed to place 2.33 acres (containing approximately 6,825 plants) of 6.43 acres (containing approximately 17,250 plants) of the telephus spurge population of the North Glades development parcel into a conservation easement to protect and manage into perpetuity. The applicant has provided a monitoring plan for the North Glades conservation easement area to assess success of restoration activities (Appendix II). [USFWS recovery plan tasks 3.1, 3.2, 3.3].

15. The North Glades applicant has agreed to transfer 500 plants of telephus spurge to an as yet undetermined location within the BPMB. These plants would otherwise be destroyed by the proposed development plan. The applicant will set up 5 monitoring plots with 100 plants transplanted within each plot. Each plot will be quantitatively monitored for 5 years to assess their overall survival and viability (ERC, 2004). [USFWS recovery plan task 5.0].

16. All proposed project sites within the RGP will be surveyed for presence or absence of telephus spurge according to the survey protocol (Appendix III).

Action area

For purposes of the Endangered Species Act, action area is defined as all areas affected directly or indirectly by a Federal action, including interdependent and interrelated actions and proposed Conservation Measures. Although each potentially affected species will define a separate action area, the most inclusive geographic area is referenced for simplicity.

The action area for this analysis is generally described as the proposed boundary of the RGP, including the mitigation banks. Receiving waters under consideration for aquatic or water-dependent species are West Bay, Lake Powell, the intracoastal waterway, and extreme southeast Choctawhatchee Bay. Adjacent wetlands and uplands were considered where development or conservation actions could potentially affect non-aquatic species.

Determination of effects

Based on the proposed protective, avoidance, and minimization measures and the analysis provided in the BA, the Service concurs with the following determinations of effects. More detail regarding these species and potential effects of the project is found in the BA.

-Piping plover (*Charadrius melodus*) – No Effect

- Only one historical record occurs near the project. The site is not within listed critical habitat for the species. There are no direct effects to the site, and indirect effects would be difficult to measure.

-Sea turtles – No Effect

- Beachfront habitat is located near the project site at Lake Powell inlet, but not within the RGP boundary. Almost all beachfront that is not presently developed at Lake Powell is within Camp Helen State Recreation Area. Based on the project description and location, the Service concurs with the determination that no effects to sea turtles will occur as a result of the proposed action.

-Wood storks (*Mycteria americana*) – No Effect
- No documented occurrences in vicinity.

-American alligator (*Alligator mississippiensis*) – No Effect
- Alligators were listed due to similarity of appearance with crocodiles; however, the project is not located within the range of the crocodile.

-Eastern indigo snake (Drymarchon corais couperi) - No Effect
- No documented occurrences in the vicinity.

-Plants (federally listed) – Six federally listed plant species were considered in the BA. These were selected from the Service's lists of plants that have the potential to occur in Bay and Walton counties. Additional plant surveys were conducted, although they were limited considering the size of the project area and the timeframe for RGP development. No federally listed plant species were observed within the project area during the initial surveys that were conducted as part of this project; however, subsequent surveys verified and expanded known locations of one plant, telephus spurge, in the project area.

1. Cooley's meadow rue (*Thalictrum cooleyi*) – No Effect
   - Only one known population of Cooley's meadow rue occurs in Florida, and it appears that suitable soils may not be present in the project area. This species does not tolerate disturbance, and most impacts of the permit would be in areas that are highly disturbed.

2. Crystal Lake nailwort (*Paronychia chartacea* ssp. *minima)* – No Effect
   - There are no recorded observations of this species within the project area; there is no suitable habitat (sandhill upland lakes and karst ponds); and the known species range is well northeast of the project area.

3. Florida skullcap (*Scutellaria floridana*) – No Effect
   - There are no recorded observations of this species within the project area. The only known record in Bay County occurs approximately 17 miles from the project, and all other records in its range are in counties even farther to the east. This species does not tolerate disturbance, and most impacts of the permit would be in areas that are highly disturbed.

4. White birds-in-a-nest (*Macbridea alba*) – No Effect
   - Within the project area, potentially suitable habitat for white birds-in-a-nest may be present in cleared or recently planted areas, in roadside ditches, or along the edges of pine plantations. However, this species has not been observed in the project area, and the nearest observations are in eastern Bay County in the vicinity of Sandy Creek and East Bay, approximately 17 miles from the project site.

5. Godfrey's butterwort (*Pinguicula ionantha*) – May Affect, Not Likely to Adversely Affect
    - There are no recorded observations of this species within the project area, but there are records in the vicinity to the southeast of the project. Suitable habitat may be present in small pockets within pine plantations that could be affected by the developments within the project area. The species could also be found in herbaceous ecotones of the more high quality wetlands that will be protected. Beneficial effects of the project include the following: protection of high quality wetlands and high quality ecotone habitat that may be adjacent to them; establishment of buffers around preserved wetlands; and protection of uplands and wetlands within conservation units and two mitigation banks. Without RGP-86, most of the suitable habitat would continue to be negatively affected by intense silviculture.

6. Telephus spurge (*Euphorbia telephioides*) - Likely to Adversely Affect
    - The Service concurs with the determination for this species.

-Manatees (*Trichechus manatus latirostris*) – May Affect, Not Likely to Adversely Affect

- There are few documented records of occurrence in the action area. The species is considered transitory in this area.

- Project could indirectly affect seagrass through hydrologic alterations and increased sediment, nutrient, and chemical loading. However, effects are expected to be of a scale that will not measurably alter the system's ecological balance due to the expanse of the receiving waterbody. Conservation Measures address water quality issues to the extent currently practicable by adopting ERP stormwater criteria.

- Note that the manatee key also leads to a May Affect, Not Likely to Adversely Affect determination, even though the project is not located in Section 10 waters. This determination is based on the fact that the potential indirect effects related to water quality are insignificant in consideration of the large geographic area covered by RGP-86, including extensive shoreline areas.

-Gulf sturgeon (*Acipenser oxyrinchus desotoi*) – May Affect, Not Likely to Adversely Affect

- The project could indirectly affect Gulf sturgeon habitat due to increased stormwater associated with development. The Service received concurrence from National Marine Fisheries Service (NMFS) that we should be the lead agency in this case because potential impacts are related to water quality (Bolton, August 2003). NMFS would be the lead agency only if there were proposed direct impacts to sturgeon habitat. There are few documented records of species occurrences in West Bay, where the species is transitory. Critical habitat is located near the action area in Choctawhatchee Bay; however, only a small portion of the Choctawhatchee Bay watershed occurs in the action area. Indirect

effects are expected to be of a scale that will not measurably alter the system's ecological balance due to the expanse of the receiving waterbody and the Conservation Measures provided that address water quality issues to the extent currently practicable. These measures are described in the BA. Furthermore, the influence of these hydrologic alterations and increased sediment, nutrient, and chemical loadings would be minor in comparison to large influence of nutrient and sediment inputs currently stemming from the Choctawhatchee River. However, if measurable impacts on any of the primary constituent elements essential for the conservation of the Gulf sturgeon are documented, re-initiation of consultation with the Service should occur. The primary constituent elements are those habitat components that support feeding, resting, sheltering, reproduction, migration, and physical features necessary for maintaining the natural processes that support these habitat components. Relevant to this project, any impacts that alter the abundance of prey items, disrupt aggregation areas, decrease water quality, or increase sediment quality would potentially affect the Gulf sturgeon. The added stormwater provisions of RGP-86 minimize adverse effects.

-Red-cockaded woodpeckers (*Picoides boralis*) – May Affect, Not Likely to Adversely Affect

- The action area has been surveyed on numerous occasions. No active cavities were recorded, including an evaluation of two historical cavity trees within the action area. Almost all upland habitats have been converted to silviculture, and most remaining unplanted wetlands are cypress/bayhead communities with dense shrub and mid-story layers. Wildlife surveys for projects will be conducted as they come into the planning stages. If active cavities are found, the landowner will notify the Corps, which will re-initiate consultation with the Service. Additional information on re-initiation is provided in the Re-initiation Notice of this BO.

-Bald eagles (Haliaeetus leicocephalus) – May Affect, Not Likely to Adversely Affect

- One documented bald eagle nest is located in the action area. The nest is located within the proposed Breakfast Point mitigation bank. The management plan for the bank incorporates the *Habitat Management Guidelines for the Bald Eagles in the Southeast Region* (USFWS, 1987). Other areas have been surveyed, but will be surveyed again when each proposed large project goes into the planning stages. If new nests are found, the *Habitat Management Guidelines for Bald Eagles* will be incorporated into the project. If the guidelines cannot be implemented, initiation of consultation for the bald eagle may be required.

-Flatwoods salamander (*Ambystoma cingulatum*) – Likely to Adversely Affect

- The Service concurs with the determination for this species.

Based on the information provided in the project BA and supplemental information, and with the implementation of the protective, avoidance, and minimization measures, we concur that

RGP-86 would likely adversely affect telephus spurge and flatwoods salamanders. These two species will be addressed further in the biological opinion.

FLATWOODS SALAMANDER

STATUS OF THE SPECIES/CRITICAL HABITAT

This section summarizes the biology and ecology of the flatwoods salamander. The Service uses this information to assess whether a Federal action is likely to jeopardize the continued existence of this species. The Environmental Baseline section summarizes information on status and trends of the species specifically within the action area. These summaries provide the foundation for the Service's assessment of the effects of the proposed action, as presented in the Effects of Action section, and to make the Conservation Recommendations listed at the end of this opinion.

The flatwoods salamander (*Ambystoma cingulatum*) is listed as a threatened species under the authority of the Endangered Species Act of 1973, as amended (Act). The flatwoods salamander was designated as threatened in the Federal Register, April 1, 1999 (64 FR 15691), and became effective on May 3, 1999. No critical habitat has been designated for this species. Recovery planning is underway, but no recovery plan has been adopted.

Species description

The flatwoods salamander is a slender, small-headed mole salamander that is seldom greater than 5 inches in length. Adult dorsal color ranges from black to chocolate-black with highly variable, fine, light gray lines forming a net-like or cross-banded pattern across the back. Undersurface is plain gray to black with a few creamy or pearl gray blotches or spots. Flatwoods salamander larvae are long and slender, broad-headed and bushy-gilled, with white bellies and striped sides (Ashton, 1992; Palis, 1995). Flatwoods salamanders are known to occur in isolated populations across the lower southeastern Coastal Plain, with the majority of the remaining known populations located in Florida.

Life history

Adult and sub-adult flatwoods salamanders live in underground burrows. Adult flatwoods salamanders move above ground to their wetland breeding sites during rainy weather, in association with cold fronts, from October to December (Palis, 1997). Typical breeding sites are isolated pond cypress *(Taxodium ascendens*), blackgum (*Nyssa sylvatica* var. *biflora*), or slash pine (*Pinus elliottii*) dominated depressions which dry completely on a cyclic basis. They are generally shallow and relatively small, and have a marsh-like appearance with sedges often growing throughout, and wiregrass (*Aristida* sp.), panic grasses (*Panicum* spp.), and other herbaceous species concentrated in the shallow water edges. After breeding, adult flatwoods salamanders leave the pond.

Optimum adult habitat for the flatwoods salamander is an open, mesic (moderate moisture) woodland of longleaf/slash pine (*Pinus palustris*/*P. elliottii*) flatwoods maintained by frequent fires, with a dominant ground cover of wiregrass (*Aristida spp.*). The ground cover supports a rich herbivorous invertebrate community that serves as a food source for the species (64 FR 15692).

In a study by Ashton (1992), flatwoods salamanders were found greater than 1,859 yards from their breeding pond. However, based on more recent data (Semlitsch, 1998) and additional peer review, the final listing rule recommends a 1,476-feet "buffer" around breeding ponds to protect the majority of a flatwoods salamander population from the adverse effect of certain specified, silvicultural practices. This buffer extends 1,476 feet out from the wetland edge.

Since they may disperse long distances from their breeding ponds to upland sites, desiccation can be a limiting factor. Thus, it is important that areas connecting their wetland and terrestrial habitats are conserved in order to provide cover and appropriate moisture regimes during their migration. High quality habitat for the flatwoods salamander includes a number of isolated wetland breeding sites within a fire maintained landscape of longleaf pine/slash pine flatwoods having an abundant herbaceous ground cover (Sekerak, 1994). In Florida, Palis (1997) found that 70 percent of the active breeding sites were surrounded by second-growth longleaf or slash pine flatwoods with nearly undisturbed wiregrass ground cover.

Population dynamics

A flatwoods salamander population has been defined as those salamanders using breeding sites within 2 miles of each other, barring an impassable barrier such as a perennial stream (Palis, 1997). Since temporary ponds are not likely permanent fixtures of the landscape due to succession, there would be inevitable extinctions of local populations (Semlitsch, 1998). By maintaining a mosaic of ponds with varying hydrologies, and by providing terrestrial habitats for adult life stages and colonization corridors, some prevention of local population extinction can be achieved. A mosaic of ponds would ensure that appropriate breeding conditions would be achieved under different climate regimes. Colonization corridors would allow movement of salamanders to new breeding sites or previously occupied ones (Semlitsch, 1998).

Fire is needed to maintain the natural pine flatwoods community. The disruption of the natural fire cycle has led to an increase of slash pine on areas previously dominated by longleaf pine, increases in hardwood understory and canopy, and subsequent decreases in herbaceous ground cover (64 FR 15701). Isolated ponds that are surrounded with pine plantations and are protected from fire may become unsuitable breeding sites for the flatwoods salamander. This is a result of canopy closure and the reduction in herbaceous vegetation necessary for egg deposition and larval development (Palis, 1993).

Status and distribution

Historical records for the flatwoods salamanders in its range are limited. Longleaf pine/slash pine flatwoods historically occurred in a broad band across the lower southeastern Coastal Plain. The flatwoods salamander likely occurred in appropriate habitat throughout this area (64 FR

15691). Range-wide surveys in Alabama, Florida, Georgia, and South Carolina have been ongoing since 1990 in an effort to locate new populations. Most surveys were searches for the presence of larvae in the grassy edges of ponds.

The combined data from the surveys completed since 1990 indicate that 59 populations of flatwoods salamanders are known from across the historical range. Most of these occur in Florida (47 populations or 80 percent). Eight populations have been found in Georgia, four in South Carolina, and none have been found in Alabama. Some of these populations are inferred from the capture of a single individual. Slightly more than half the known populations for the flatwoods salamander occur on public land (40 of 59, or 68 percent).

ENVIRONMENTAL BASELINE

Status of the species within the action area

Historical data on flatwoods salamanders in the action area is limited. Most of the area is privately owned and has been intensively managed for silviculture for many years. Little remains of the natural terrestrial landscape. Almost all uplands and most wetlands were converted to pine plantations with site preparation that included clearcutting, roller chopping, herbicide application, and bedding. In addition, pine flatwoods are not considered wetlands under State of Florida best management practices for silviculture; therefore, this habitat type receives no special consideration when converted and managed for industrial forestry.

There are no documented occurrences of flatwoods salamanders in Bay County and only one recent record in Walton County. The Walton County record is for one individual at one location in Point Washington State Forest, which is adjacent to the RGP-86 boundary but separated to a great extent by a four-lane highway. One large parcel of the State Forest bisects the RGP area at the western end, and other parcels are adjacent to the RGP boundary north of the highway in that vicinity. The known record for the flatwoods salamander at the State Forest is located south of the four-lane highway. Further field investigations were recommended for the RGP area due to the proximity to the known location and the absence of surveys across this vast expanse of private lands in the project area. There is also one other known occurrence approximately seven miles north of the project area in Pine Log State Forest in Washington County.

The St. Joe Company (St. Joe) owns the majority of lands in the action area. St. Joe has received assistance from the Service in recent years in an effort to develop a habitat suitability model for flatwoods salamanders. Such a model would provide useful information for salamander management and recovery, particularly in the Florida panhandle where St. Joe has much of its lands. Unusually dry conditions in recent years delayed progress on the model, but a fair amount of background data collection was conducted in the project area. The area also has been visited on several occasions by one of the foremost flatwoods salamander experts, John Palis. Mr. Palis was first contracted by St. Joe to visit the project area on March 8, 2000. This cursory visit identified potential habitat and that “flatwoods salamanders may occur at this site” (Palis, 2000). Subsequent field inspections were conducted by John Palis in the action area related to the habitat model and to Camp Creek Golf Course Phase II.

Mr. Palis was again contracted to evaluate potential flatwoods salamander habitat specifically in the RGP area. Details of his survey methods are described in the biological assessment. Approximately 300 potential sites were initially selected using aerial photography and GIS data. These sites were throughout the RGP area, not just on St. Joe Company lands (Figure 2, page 18). Upon further review of high resolution photography, historical photography, and soils maps, Palis selected 83 of the 300 sites "that merited a field visit to determine their potential as flatwoods salamander habitat" (WilsonMiller, 2003) (Figure 3, page 19). A team including Palis, the applicant, and consultants for the applicant inspected these sites, and any others that were noted in the field. Each site that was deemed to have at least a "small potential" for suitable habitat was re-visited by Palis. The final analysis concluded that only nine wetlands appeared to be suitable habitat (Figure 4, page 20).

There is no set protocol at this time for providing reasonable assurance that salamanders do not occur at a particular location. However, the consensus among herpetologists is that a reasonable effort would consist of drift fence surveys surrounding a potential breeding pond to be conducted in two consecutive "normal" weather years. There has not been an opportunity to adequately survey for the presence or absence of flatwoods salamanders in any of the potentially suitable habitats due to a recent drought. However, based on the remote sensing analysis, site inspections, and the proximity to at least two known locations, the Corps and the St. Joe Company have agreed to presume presence of flatwoods salamanders at the nine potential locations. This appears to be a reasonable approach given the size of the project area and the limited time frame to conduct surveys. Positive results from any future surveys would require re-initiation of Section 7 consultation if there is a potential to affect suitable habitat not addressed in the incidental take section of this opinion.

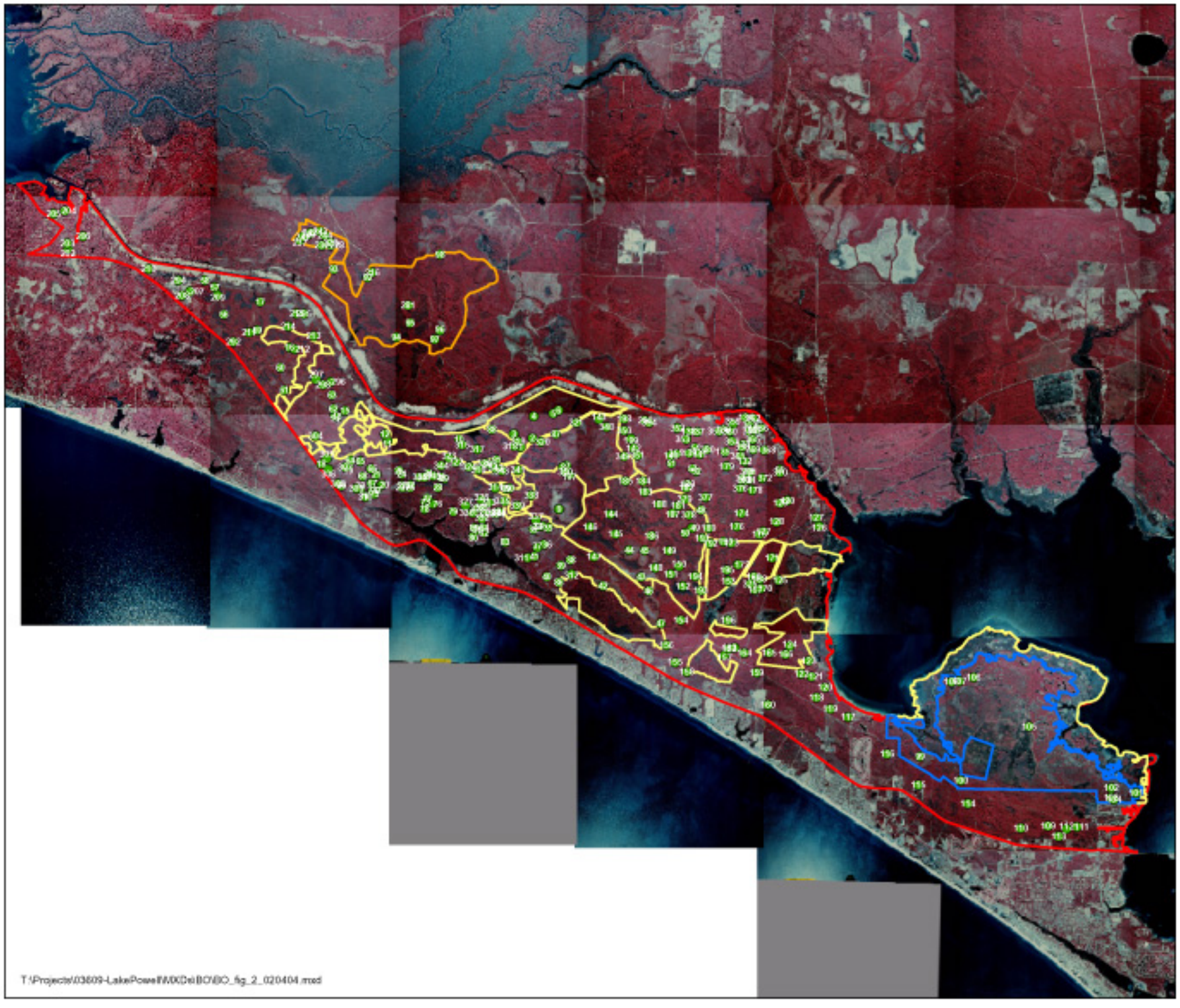

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Figure 2

300+ Sites Selected for Analysis Biological Opinion

West Bay to East Walton RGP

Legend

- Conservation Units
- RGP Area (Including Tidal Soils)
- Devil's Swamp Mitigation Bank
- Breakfast Point Mitigation Bank
- Ponds Reviewed Prior to Field Surveys for Potential Flatwoods Salamander Habitat
- **203** Pond Identification Number

Disclaimer:
This exhibit was prepared utilizing GIS data provided by various sources that may include but not limited to federal, state, district and local agencies. Data provided by other sources are not warranted by WilsonMiller for accuracy or for any particular use that may require accurate information. This map is for informational purposes only and should not be substituted for a wetland jurisdictional determination, true title search, property appraisal, survey, or for zoning verification.

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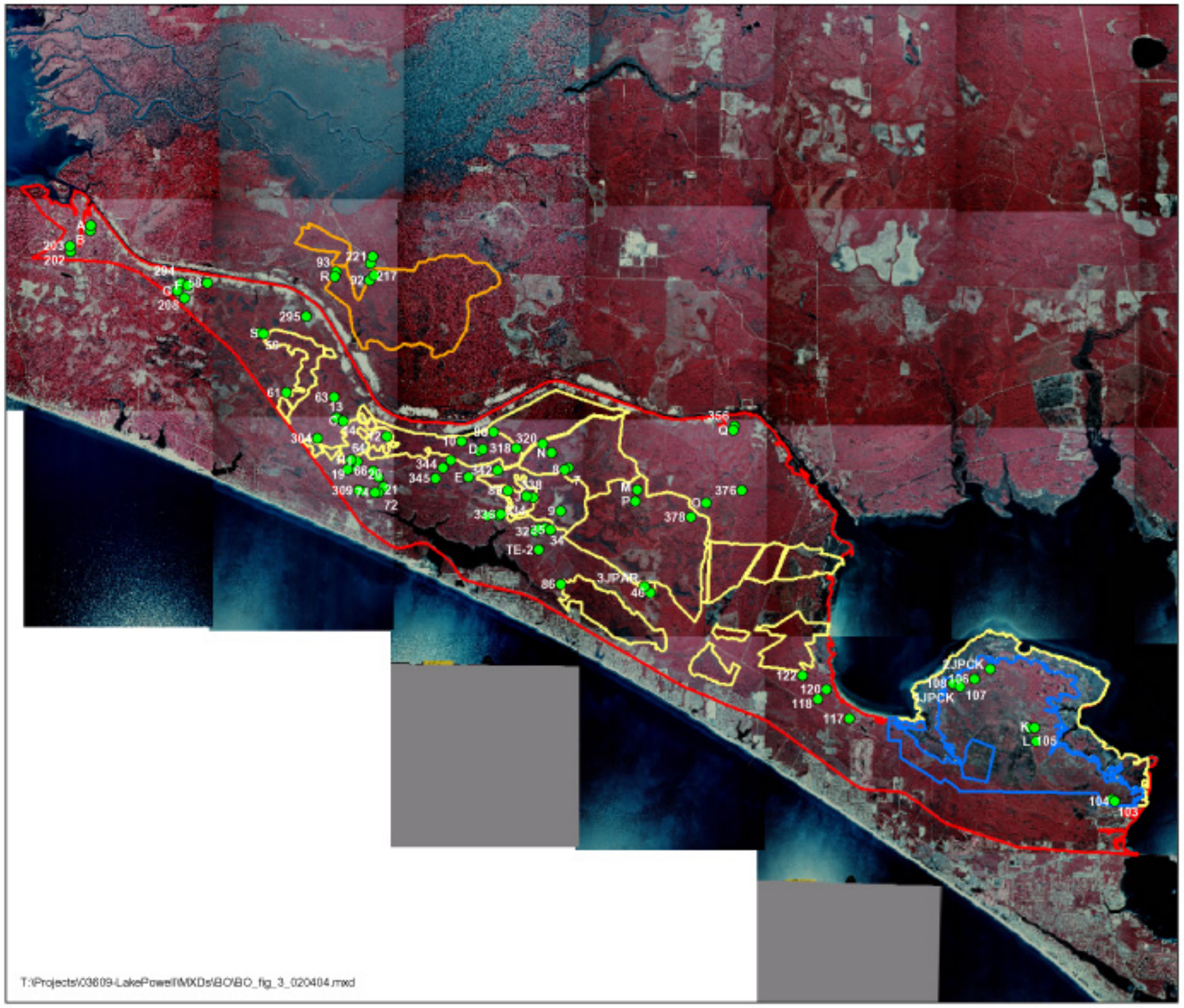

Figure 3

83 Sites Selected from 300+

West Bay to East Walton RGP

Legend

- Conservation Units
- RGP Area (Including Tidal Soils)
- Devil's Swamp Mitigation Bank
- Breakfast Point Mitigation Bank

- Ponds Surveyed for Potential Flatwoods Salamander Habitat

203 Pond Identification

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Map Date:
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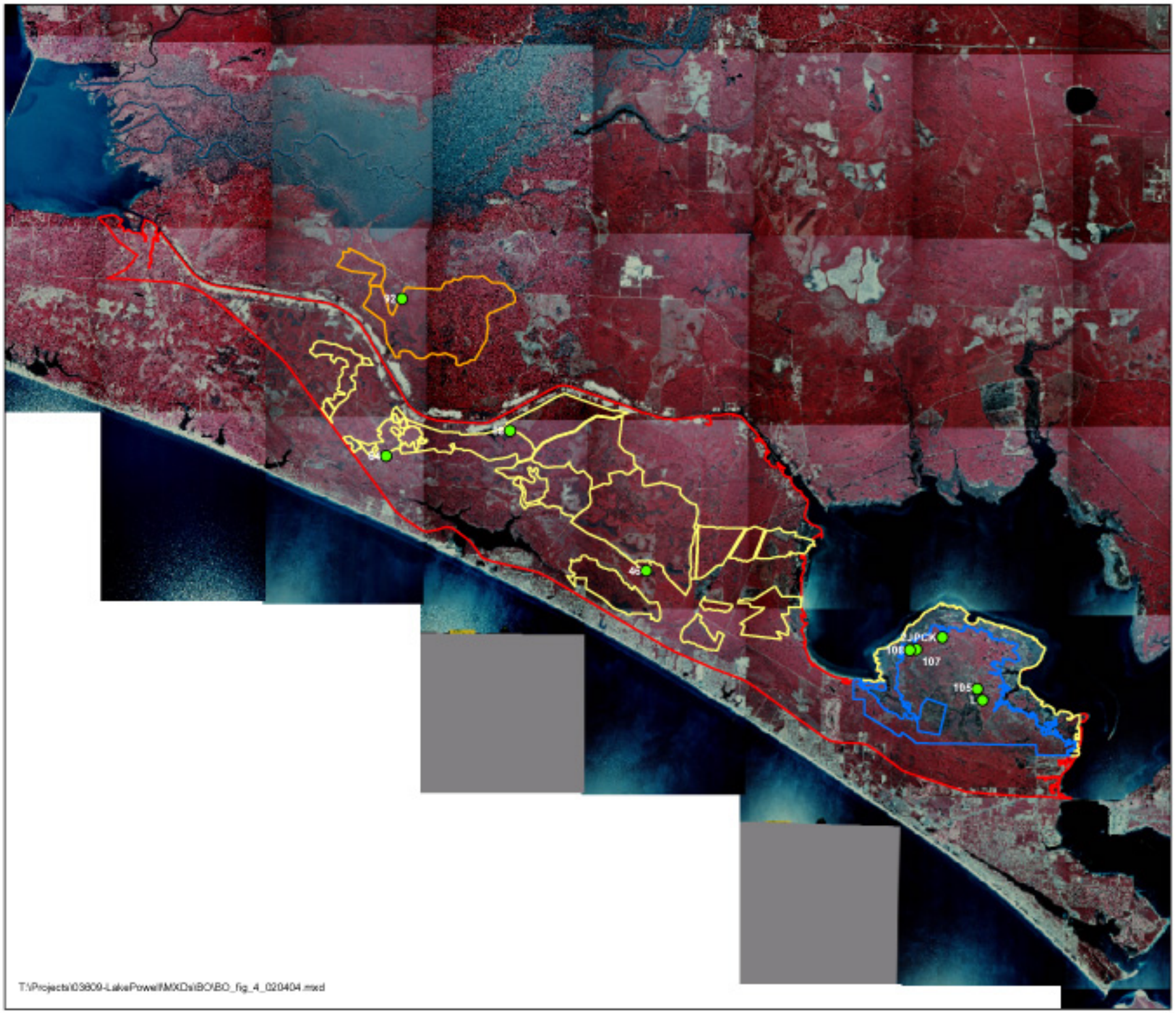

Figure 4

Nine Potential Salamander Locations

West Bay to East Walton RGP

Legend

- Conservation Units
- GP Area (Including Tidal Soils)
- Devils Swamp
- Breakfast Point

Ponds Considered Potential Habitat Based on Field Survey Results

46 Pond Identification

Disclaimer:
This exhibit was prepared utilizing GIS data provided by various sources that may include but not limited to federal, state, district and local agencies. Data provided by other sources are not warranted by WilsonMiller for accuracy or for any particular use that may require accurate information. This map is for informational purposes only and should not be substituted for a wetland jurisdictional determination, true title search, property appraisal, survey, or for zoning verification.

Map Date:
02/04/04

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Factors affecting species environment within the action area

West Bay Sector Plan - Bay County officials recently conducted a special planning effort for a portion of the RGP and additional adjacent areas totaling approximately 75,000 acres. The "West Bay Sector Plan" identifies potential development and conservation strategies for the area, and is predicated on re-location of the Panama City/Bay County International Airport. Although the Sector Plan may encourage and accelerate development, it could reduce adverse effects in comparison to existing land use regulations. There are no known flatwoods salamander records within the sector planning area. Potential habitat occurs in a proposed sector conservation area that coincides with the Breakfast Point mitigation bank. It is likely that other habitat could be found in the approximately 30,000 acres identified as the West Bay Preservation Area.

Camp Creek Golf Course, Medallist, and Highway 98 - These three projects are within the RGP boundary. Each project required Corps permits and formal consultations for flatwoods salamanders. Similar to the approach agreed upon for the RGP, each project area was presumed to have salamanders based on the presence of suitable habitat and the proximity to known locations. The amount of presumed take from these three projects totals 606 acres of buffer habitat. There was no direct take of breeding pond habitat.

Public Lands - Point Washington State Forest occurs within the RGP boundary. There is one known location of a flatwoods salamander breeding pond in the forest, but it is a considerable distance from any potential development that could occur in the RGP. The forest is actively managed in a manner that should improve salamander populations. Pine Log State Forest is in proximity to the RGP boundary, but not located within the project area. As with Point Washington, there is one documented occurrence of flatwoods salamanders, and the forest is managed to improve habitat for the species. The Northwest Florida Water Management District (WMD) also owns large parcels adjacent to the project area. There are no known occurrences of flatwoods salamanders on WMD land, but there is good potential that active management will improve habitat. The RGP conservation units blend with the State forest and WMD lands to provide an opportunity for habitat improvement and connectivity across a large area of Bay and Walton counties.

EFFECTS OF THE ACTION

RGP-86 is designed to manage the cumulative effects of numerous potential Section 404 dredge and fill permits. The RGP guides development to specific areas allowing no more than 20 percent of low quality silviculture wetlands to be impacted within each sub-watershed in the RGP area. More than 99 percent of high quality, unplanted wetlands will remain. Two mitigation banks of 7,700 acres will compensate for the loss of wetland functional values to both low and high quality wetlands. Conservation units of 13,200 acres will be removed from development potential as a condition of the permit, but will be encumbered by conservation easements concurrently as future development projects receive permit authorization. The conservation units and mitigation banks establish large, contiguous blocks of manageable lands, wildlife corridors, and provide for reduction of potential stormwater and hydrological impacts. Effects of the project on salamander habitat are based on two important premises: 1) best available methods were used to identify potential habitat, and 2) presence of salamanders is presumed for these areas although none have been documented.

Direct effects

The BA identifies specific direct effects of the project to include development projects within two potential habitats identified as Ponds 64 and 46. Pond 64 is the only potential breeding habitat that is not located within a conservation unit or one of the two mitigation banks. Pond 46 was added to a conservation unit following its discovery and evaluation; however, some of the surrounding buffer habitat of Pond 46 falls outside the conservation unit and is therefore subject to future development plans. All other identified suitable habitat, including buffers, is located either within a conservation unit or a mitigation bank. Direct effects could occur in other locations if suitable habitat is discovered at a later time; however, this situation would constitute new information that would trigger re-initiation of consultation.

The BA describes the method by which John Palis and the consultants quantified the amount of suitable habitat that could be affected at Ponds 64 and 46. This is based on a draft project design for a residential/golf course development adjacent to Pond 64 and presumed future development within suitable buffer habitat of Pond 46 that is outside the conservation unit. The BA indicates that approximately 57 acres of fair to fairly good buffer habitat will be affected at Pond 64. Approximately 53.6 acres of potential buffer habitat will be affected at Pond 46.

Management of the conservation units and the mitigation banks should ultimately benefit flatwoods salamander habitat. The conservation units will be managed according to *Principles for Forest and Wildlife Management for Conservation Units Within the Regional General Permit Area* that is part of RGP-86. The banks will be managed according to their mitigation banking instruments. The ultimate goal in both conservation units and banks is to restore the habitat to historical natural condition.

Indirect effects

Flatwoods salamanders are thought to be sensitive to soil and groundcover disturbing activities, especially when that disturbance creates an impediment to movement from upland habitat to the ephemeral wetlands they use for breeding and larval development. Soil disturbance can also result in potential sedimentation and erosion affecting nearby wetlands habitat. However, construction that could occur within proximity to suitable habitat is limited by the boundaries of the conservation units and mitigation banks and by the proposed buffers. In addition, a proposed road near Pond 64 has been re-designed to include underpasses for reptiles, amphibians, and small mammals. This would maintain a connection between the pond and an area to the north that will be placed in a conservation easement within the development and which connects to a large conservation unit.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed project are not considered in this opinion because they require separate consultation pursuant to section 7 of the Endangered Species Act.

RGP-86 was specifically designed through 3 years of interagency coordination to address cumulative effects that could be expected from increased development pressure in the area. The Service has evaluated numerous development projects in the area in recent years, and has conducted formal consultation for flatwoods salamanders for three of these projects. The general permit provides a more coordinated ecosystem approach for implementation of the current dredge and fill program in the area. The cooperation of the largest landowner in the area has been instrumental in the process. Additional evaluation of flatwoods salamander habitat will occur on a project-by-project basis using the procedures described in Appendix IV.

CONCLUSION

After reviewing the current status of the flatwoods salamander, the environmental baseline for the RGP-86 action area, the effects of the proposed activities, proposed protective, avoidance, and minimization measures, and the cumulative effects, it is the Service's biological opinion that the project, as proposed, is not likely to jeopardize the continued existence of the flatwoods salamander. Within the RGP project area, nine wetlands were identified as potential suitable habitat for the flatwoods salamander. No known breeding habitat for flatwoods salamander will be affected. As conditions of issuing the permit for the project, mitigation banks totaling 7,692 acres will be established to compensate for loss of wetland values and conservation units totaling 13,200 acres will be removed from development potential. Seven of the nine potential flatwoods salamander ponds are located completely within a conservation unit or mitigation bank. Of the two ponds not included, only one is completely outside a conservation unit or mitigation bank. The combined acreage of affected buffer habitat in both ponds totals 110.6 acres. This acreage, which has been established as the amount of take for the affected potentially occupied habitat, is

very small when compared to the amount of suitable upland and wetland habitat (18,357 acres) that will be restored and managed in perpetuity within the conservation units and mitigation banks. Loss of 110.6 acres of potential suitable habitat will not appreciably reduce the survival and recovery of the flatwoods salamander. No potential breeding pond habitat will be affected. Less than 2.4 percent of the buffer habitat surrounding these ponds will be taken. The RGP project area will allow for protection and expansion of populations if any are eventually located at the site. The existing and future land uses without the RGP (silviculture and haphazard development) would be more of a threat to recovery of the species than issuance of the permit. No critical habitat has been designated for the flatwoods salamander; therefore, none would be affected.

There are approximately 160 ponds in Florida with a conservative estimate of 376,000 acres of pond and buffer habitat in the State (average 5-acre pond size plus 1,476-ft. buffer). Therefore, the amount of take could be viewed as 0.0003 of the amount of known habitat in the State of Florida. As a reminder, it should be pointed out that all effects are for habitat that is **presumed** to support flatwoods salamanders, and that a majority of the buffer habitat around the two affected ponds will remain and be improved.

INCIDENTAL TAKE STATEMENT

Section 9 of the Endangered Species Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered or threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include major habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to noticeably disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, carrying out an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited under the Act provided that such taking is in compliance with the Terms and Conditions of this incidental take statement.

The measures described below are non-discretionary, and must be implemented by the Corps of Engineers for the exemption in section 7(o)(2) to apply. The Corps has a continuing duty to regulate the activity covered by this incidental take statement. If the Corps (1) fails to assume and assure implementation of the Terms and Conditions, or (2) fails to require applicants to adhere to the Terms and Conditions of the incidental take statement through enforceable terms, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the Corps must report the progress of the project and its impacts on the species to the Service as specified in the incidental take statement [50 CFR §402.14(I)(3)].

Amount or extent of take

The Service has determined that incidental take of individual flatwoods salamanders is difficult to detect for the following reasons: (1) adult flatwoods salamanders are difficult to locate and observe. Individuals killed during construction would likely be buried under dirt and debris, and/or, (2) losses may be masked by natural fluctuations in numbers of individuals. Although mortality of individuals is difficult to document, the level of take of this species was determined as follows: An estimated 110.6 acres of potential buffer habitat is presumed to be taken by development activities allowed under RGP-86.

Effect of the take

In the accompanying biological opinion, the Service determined that the level of anticipated take is not likely to result in jeopardy to the species. The amount of take is for **presumed occupied** habitat and is small when compared to potential habitat that will remain in conservation units and mitigation banks, both of which will eventually be restored to more suitable habitat and managed in perpetuity. The amount of take is also for buffer habitat only; no take is given for potential breeding ponds themselves. No critical habitat has been designated for the flatwoods salamander; therefore none will be affected.

Reasonable and prudent measures

The Service believes the following reasonable and prudent measures (RPMs) are necessary and appropriate to minimize take of flatwoods salamanders.

1. All applicants for development projects will receive information about flatwoods salamander habitat.

2. Future development proposals will include a verification that the ponds on the site have been evaluated for their suitability as flatwoods salamander breeding ponds, as described in the Terms and Conditions.

3. Future owners of the conservation units will receive information about the flatwoods salamander Conservation Measures of RGP-86.

Terms and conditions

In order to be exempt from the prohibitions of section 9 of the Endangered Species Act, the Corps and applicants for RGP-86 must comply with the following Terms and Conditions, which implement the reasonable and prudent measures, described above. These Terms and Conditions are non-discretionary.

1. The Conservation Measures as described in the BA and in the proposed action section of this BO will be implemented.

2. The 5-year review and renewal process will provide an evaluation of salamander effects and conservation.

3. As part of the pre-application process for RGP-86, project sites will be assessed using the *Flatwoods Salamander Pre-Application Evaluation* (Appendix IV). This requirement is addressed in Special Condition 19.a (8) of the permit.

4. As Special Condition 13.d of RGP-86, sale or transfer of conservation units requires that a copy of RGP-86 and this biological opinion be provided to the new owner.

CONSERVATION RECOMMENDATIONS FOR FLATWOODS SALAMANDERS

Section 7(a)(1) of the Endangered Species Act (Act) directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. The following conservation recommendations will be implemented if possible:

1. The Corps recognizes that a joint effort is underway to develop a predictive model to determine habitat suitability for flatwoods salamander. The research to develop the model has been ongoing for 2 years and requires another year for completion. To the extent it is available for use, the Corps and the St. Joe Company should apply the model to the project area.

2. The Corps and the St. Joe Company should participate in conservation planning for telephus spurge in the RGP action area.

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

TELEPHUS SPURGE

STATUS OF THE SPECIES/CRITICAL HABITAT

This section summarizes the biology and ecology of telephus spurge. The Service uses this information to assess whether a Federal action is likely to jeopardize the continued existence of the species. The Environmental Baseline summarizes information on status and trends of the species specifically within the action area. These summaries provide a foundation for the Service's assessment of the effects of the proposed action, as presented in the Effects of Action section, and to make the Conservation Recommendations listed at the end of this opinion.

Telephus spurge was listed as a threatened species under the authority of the Endangered Species Act of 1973, as amended (Act). The telephus spurge was designated as threatened in the Federal Register, May 8, 1992 (57 FR 19813-19819) and became effective on June 8, 1992. No critical habitat has been designated for this species. This species is endemic to Bay, Franklin, and Gulf counties, Florida. It is threatened by habitat degradation due to conversion of habitat to pine plantations with accompanying mechanical destruction and eventual shading, as well as real estate development within its habitat. Use of herbicides within powerline right-of-ways may also adversely affect telephus spurge. A recovery plan was approved on June 22, 1994 (USFWS 1994).

Species description

Telephus spurge is a perennial herb with a stout storage root and numerous, erect stems to 1 foot tall. Stems and leaves are smooth and fleshy with milky sap. The leaves are alternate, 1-2 inches long, without leaf stalks, obovate to oblanceolate, usually over 1 cm wide at the widest part, with maroon midribs and margins. The species flowers from April through July with flowers that are reddish-green cyanthia (cup-like structures). It produces one female flower and several male flowers on short stalks, surrounded by 4-5 minute, petal-like glands. The fruit is a 3-lobed capsule. Naturally occurring telephus spurge is found in a variety of habitat types including pine savannas and wet prairies to sandhills, scrubby and mesic flatwoods, and coastal scrub on low sand ridges within 4 miles of the Gulf of Mexico (Chafin 2000, WilsonMiller 2004). Biologists from Florida Natural Areas Inventory (FNAI) and WilsonMiller have documented populations of telephus spurge persisting under powerlines, pine plantations, and remnant pine flatwoods and coastal scrub (WilsonMiller 2004). Botanists at Historic Bok Sanctuary have had minimal success with greenhouse propagation by transplanting individual plants (Cheryl Peterson, personal communication, September 21, 2004).

Status and distribution

When the USFWS listed telephus spurge, there were 22 known locations of this species. Since listing, the number of known extant telephus spurge locations increased from 22 to approximately 42 known locations due to additional survey work (Moranz, et.al., 2001; ERC 2004). However, several locations may now be extirpated.

There are currently 41 occurrences of telephus spurge documented in the Florida Natural Areas Inventory database (Sept 2004). Thirty sites (FNAI 1, 3, 4, 6, 10-19, 23-25, 27-34, 36-39, 41) are concentrated in a 28 square mile area east and south of the town of Port St. Joe in Gulf County; however, FNAI 1, 10, and 17 are believed to be extirpated. Outside the main concentration area, three sites (FNAI 7, 8, and 9) are found 40 miles west in Bay County. FNAI 9 is believed extirpated also. Two sites (FNAI 26, 35) were documented 20 miles east in Franklin County but are both now believed extirpated due to development. Six sites (FNAI 2, 5, 20, 21, 22, 40) were scattered to the east of the main concentration, but FNAI 2 is now believed to be extirpated. Twelve occurrences (FNAI 3, 18, 24, 25, 28, 29, 30, 31, 32, 33, 36, and 41) within the main area of concentration are protected on the St. Joseph State Buffer Preserve

(SJBP). The SJBP sites range mostly from 3-30 in plant numbers with a few ranging from 30-100 and one with numbers in the 1000's. The remaining sites are on private lands with most having from 0-50 plants, a few having 50-300 plants, and 4 sites having plant numbers in the 1000's. Plant numbers from most sites in the 2001 survey have been reduced compared to 1988 survey data. This is attributed mostly to conversion to pine plantations or development as well as the exclusion of fire. No plants were found at seven sites during recent surveys, but it is difficult to say whether the plants are actually extirpated or were simply not visible due to the absence of recent fire or other disturbance.

Appropriate management is occurring on the SJBP and has created a positive stimulus for telephus spurge. Cursory surveys from a recent site visit (August 2004) by USFWS biologists as well as discussions with staff from SJBP lead us to believe that the SJBP houses the largest and best managed populations of telephus spurge to date.

The telephus spurge occurrence records in the proposed North Glades project area are documented as FNAI 7 and 8. Originally located in 1988, surveyors documented approximately 200 plants at each site. Upon more specific surveys, the applicant's contractors located approximately 17,250 plants within a 6.43 acre area. Based on individual plant count data, this is the second largest population documented to date and is located in the western most extent of the species range since FNAI 9 is believed extirpated.

The North Glades applicant has conducted additional surveys within the RGP-86 Conservation Units in Bay County, Florida, and within the BPMB. As a result, one new population of telephus spurge containing over 200 plants was located in the BPMB and on adjacent lands that have no conservation designation. These 200 plants within BPMP will be managed and monitored in conjunction with the existing management requirements of the RGP-86 permit. We refer to this site as FNAI 42, the designation it will be given once data is entered.

The Service's recovery plan for telephus spurge states a goal of 15 populations of telephus spurge that are distributed throughout the species' historical range and that are adequately managed and protected before the species can be delisted (USFWS 1994). To apply this criterion, we would have to determine how many populations exist. The number of occurrences is greater than the number of populations because more than one occurrence may be part of the same population. We estimate that St. Joe Buffer Preserve's 12 locations equate to 3 populations. Bay County sites located on Panama City Beach (FNAI 7 and 8) are one population, and FNAI 42 will be a separate population (once there is a complete build out within the RGP-86 permitted area). Due to the extensive area covered by the RGP-86 permit and associated mitigation bank areas, not all suitable habitat has been surveyed throughout the RGP-86 area nor the mitigation bank areas, but the potential for locating additional telephus spurge sites seems fairly high.

ENVIRONMENTAL BASELINE

Under Section 7(a)(2) of the Act, when considering the effects of the action on federally listed species, we are required to take into consideration the environmental baseline. The

environmental baseline includes past and ongoing natural factors and past and present impacts from all Federal, State, or private actions and other activities in the action area (50 CFR 402.02), including Federal actions in the area that have already undergone Section 7 consultation and the impacts from State and private actions that are contemporaneous with the consultation in progress.

Status of the Species Within the Action Area

This revision of the original BO focuses specifically on the North Glades development. The original BO identified several federally listed species known or presumed to occur within the project boundary. At the time it was determined that plant surveys within the RGP-86 project area were limited considering the size of the project area. A conservation measure incorporated into the permit stipulated that all impacts to telephus spurge would be avoided and that consultation would be re-initiated if impacts could be avoided. Since completion of the original BO, additional surveys for telephus spurge have occurred within the RGP-86 permit boundaries. This resulted in the location of one additional site of telephus spurge referred to above as FNAI 42. Also during that time, a landowner proposed the North Glades development project that would impact telephus spurge at FNAI 7 and 8. Upon realization that the North Glades development would adversely impact the telephus spurge, the Corps re-initiated consultation with the Service and will continue to do so should additional sites containing telephus spurge be located and impacted by future development plans within the RGP-86 permit area.

The proposed North Glades project area consists of 66.96 acres. Of this, 6.43 acres contains approximately 17,250 telephus spurge plants. The applicant estimates that 4.10 acres and approximately 10,425 plants will be adversely impacted by the proposed development. The remaining 2.33 acres with approximately 6,825 plants will be managed and conserved through a perpetual conservation easement. It is unlikely that if the population were left without management in its current location that it would persist over time due to habitat loss and degradation. There are no other Federal actions ongoing or proposed for the action area at the present time.

Factors Affecting Species Environment Within the Action Area

This analysis describes factors affecting the environment of the species in the action area. The baseline includes State, local, Tribal, and private actions within the action area already affecting the species or that will occur contemporaneously with the proposed action and would affect the environment of the telephus spurge. Unrelated Federal actions affecting the telephus spurge that have completed formal or informal consultation are also part of the environmental baseline, as are Federal and other actions within the action area that benefit the telephus spurge.

RGP-86 was cooperatively developed by several State and Federal agencies to address the cumulative effects of existing and anticipated development pressures within a fast growing region of the Florida panhandle. The area addressed by the permit is approximately 47,480 acres in southwest Bay County and southeast Walton County. Approximately 90 percent of the property is presently in silviculture (forestry) management and is owned by the St. Joe Company.

Current forestry practices are now giving way to more lucrative residential and commercial developments for which the RGP-86 permit was intended.

Several development projects have occurred or are proposed in the vicinity of telephus spurge sites FNAI 7 and 8. These include Hombre Golf Club, Wingate Motel, Bay Medical Center, Sonny's Bar-B-Q, Beckrich Office Complex, "Alf Coleman," Highlands West, and Home Depot. One of these sites, Wingate Motel, is known to have telephus spurge that will likely be impacted by the proposed project. Another project, Home Depot, was recently completed prior to telephus spurge being documented on the periphery. It is likely that plants were destroyed by the construction of businesses and access roads associated with Home Depot.

Within the RGP area, approximately 10,665 acres of uplands and wetlands will be designated as Conservation Units. These areas will be removed from development potential and industrial forestry practices. They will eventually be restored in accordance with specific prescriptions for wildlife management that focus on listed species. Restoration and management of two wetland mitigation banks will secure for conservation two large, strategically placed parcels totaling approximately 7,700 acres. The previous land use of the banks is industrial forestry. It was intended for these mitigation banks to assist in the recovery of several federally listed species, including telephus spurge. The majority of the BPMB is of the soil types suitable to telephus spurge.

Telephus spurge sites FNAI 7 and 8 occur in an area proposed for a development project that would be permitted under RGP-86. FNAI site 42 is located in the BPMB and adjacent lands to the south of the bank boundary. Surveys for telephus spurge were conducted in 15 different locations within the Conservation Unit areas of the RGP (ERC, 2004). No additional populations have been located but due to the amount of habitat covered under the RGP-86 permit and the availability of suitable habitat, we believe that additional telephus spurge locations may exist. The Corps will continue to re-initiate consultation if the species is located prior to development. Active management within the mitigation banks and the Conservation Unit areas will improve the habitat for telephus spurge.

EFFECTS OF THE ACTION

Direct Effects

An estimated count of 10,425 plants of telephus spurge will be lost due to the proposed project, with a corresponding loss of habitat (4.10 acres). However, viability of the remaining North Glades telephus spurge population (6,825 plants over 2.33 acres) in the action area will be maintained and managed.

Indirect Effects

The applicant owns the remaining portion of the population and has agreed to place it into a conservation easement and manage it, so the population is not subject to direct impacts from future development projects. However, given the location of the population and the proposed development, this population will be isolated from any other natural habitat thereby reducing the

chance for natural expansion or rescue effect should this population be inadvertently disturbed. This site will be managed in as natural a state as possible given that the location will become completely surrounded by urban development (highways, restaurants, commercial stores, etc.).

Private activities in the action area that may adversely impact the species indirectly include human trampling, increased exotic species invasion and competition, increased edge effect (i.e., increased sunlight, increased temperature), contaminant impacts from parking lot and highway runoff, as well as the proposed management attempts such as mowing and exotic species control.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local, or private actions that are reasonably certain to occur in the action area considered in this Opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require a separate consultation pursuant to section 7 of the Act.

Specifically for the North Glades project, the 6,825 plants located on the remaining 2.33 acres within the conservation easement area could potentially be impacted by future development plans. The applicant has agreed to protect and manage appropriately this remaining 2.33 acres of the telephus spurge habitat and population into perpetuity, therefore no other State, tribal, local, or private actions are reasonably certain to occur at this particular site that would affect the telephus spurge.

Future actions within the RGP boundary will include industrial, commercial, and private residential development, which in turn could lead to further fragmentation, fire suppression and/or direct impacts to unknown, yet existing, populations of telephus spurge. Additional evaluation of telephus spurge habitat will occur on a project-by project basis using the procedures described in Appendix III.

CONCLUSION

Transplanting endangered or threatened plant species from project impact areas, while minimizing impacts to individuals, is generally not recommended. The intent of the Act is to protect the ecosystems upon which these federally listed species depend. Thus, protecting habitat is considered to be a key factor for ensuring conservation of listed species. In this case, even if the entire plant population on North Glades was protected from direct impacts, the long-term plans for the surrounding area will eventually see this population further fragmented and eventually isolated from all natural corridors. This project will involve transplanting of telephus spurge individuals to a protected site that has yet to be identified, and will also include the long-term commitment of active management and monitoring of the parent population within the North Glades conservation easement. At a minimum, we will learn whether transplanting telephus spurge is a viable option to be used for future unavoidable impacts to the species. At

most, we will create a new population that resides in a more natural setting conducive for long-term protection, management and viability.

The USFWS has set a goal of 15 populations of telephus spurge that are distributed throughout the species' historical range and that are adequately managed and protected before the species can be delisted (USFWS 1994). Currently three centrally located populations are protected in the St. Joe Buffer Preserve. The total number of locations of this plant is not considered a limiting factor toward recovery of the species; rather, it is the protection of populations that is limiting the species' recovery. The Conservation Measures provided by the applicant will increase the number of protected populations from three to five or possibly, six. This includes the three on the SJBP, the North Glades population (FNAI 7 and 8), the BPMB population (FNAI 42) and possibly an additional population depending on placement and the results from the translocation efforts. The location of the transplanted plants will determine whether they will be considered a new population.

After reviewing the current status of telephus spurge, the environmental baseline for the action area, the effects of the proposed development, the cumulative effects, and the proposed conservation measures, it is our biological opinion that the proposed development is not likely to jeopardize the continued existence of telephus spurge. No critical habitat has been designated for this species; therefore none will be affected.

CONSERVATION RECOMMENDATIONS FOR TELEPHUS SPURGE

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretional agency activities to minimize or avoid the adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. We request that the following conservation recommendations be implemented.

1. Place the translocation study area more than 3 kilometers from other known populations if connected by natural habitat or about 1 kilometer if permanently unsuitable habitat is in between the populations. If the translocation is deemed successful, the transplanted population would count as an additional protected population and will aid in reaching the recovery goal of 15 protected populations.

2. Develop in cooperation with USFWS a long-term conservation strategy for telephus spurge on St. Joe Company lands in Bay and Gulf counties.

In order for us to be kept informed about actions that minimize or avoid adverse effects or that benefit listed species or their habitats, we request notification of the implementation of any conservation recommendations.

REINITIATION NOTICE

This concludes formal consultation on the action outlined in this biological opinion. As provided in 50 CFR 402.16, re-initiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending re-initiation.

HC/hc/kh/c:BO kathy'sfinal.doc

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Appendix I - Memo Dated April 30, 2004 from WilsonMiller, Inc.

TO:	Hildreth Cooper, USFWS Gail Carmody, USFWS Don Hambrick, USACE
FROM:	Ann Redmond and Trina Mitchell
CC:	Dave Tillis, Thomas Estes, St. Joe Company
SUBJECT:	*Euphorbia telephioides* (Telephus Spurge) Populations in the Action and Project Area
DATE:	April 30, 2004

On March 18, Hildreth Cooper informed WilsonMiller that the Service is concerned about the presence of telephus spurge populations in the Action and Project Areas. Patty Kelly, U.S. Fish and Wildlife Service (USFWS), had raised some questions about the impacts of the RGP on the species. Following the Biological Assessment of January 2004, a more detailed discussion of the telephus spurge has occurred. The content is related below.

The Telephus spurge was first listed in 1992 (USFWS 1994). Based on vouchered specimens, this plant is an endemic species that occurs in Bay, Gulf, and Franklin Counties, Florida (Institute for Systematic Botany 2002). The plant occurs from Panama City Beach east to the Ochlockonee River (USFWS 1994). It has been recorded in 41 locations, nearly half of which are on public land (Map 1).

All known occurrences of Telephus spurge are on sites within 4 miles of the Gulf of Mexico (USFWS 1994). Numerous populations are protected on St. Joseph Bay State Buffer Preserve and adjacent tracts of land (SJBBP); many occurrences are on private timberlands and utility right-of-ways (Chafin 2000, FNAI 2003, Hilsenbeck 2004, Willson 2004). Ed and Lisa Keppner have searched for the telephus spurge in Bay County and have found none (Keppner 2004). Hilsenbeck (2004) believes that the spurge's listing as a G1/S1 plant should be downgraded based on the abundance of the species in the SJBBP area.

Populations in Action Area

Two populations of Telephus spurge (*Euphorbia telephioides*) have been documented outside the Action Area, but near the Project Area, and one has been documented within the Project Area (FNAI 2003, 2004; Chafin 2004; Kindell 2004; WilsonMiller 2004)(Map 2). FNAI (2003) element occurrence (EO) data indicate that during the 2001 survey, no plants were observed in population EUPHTELE*0009 outside the Project Area (Table 1). The other two populations were re-confirmed in 2001 (Table 1), including the one within the Project Area.

WilsonMiller, Inc., resurveyed for the population within the Project Area (EUPHTELE*0007) on April 21, 2004, and found numerous individuals along US 98 within an area approximately 0.5 mile long (Map 3). Individuals were observed within the "beauty strip," a narrow strip (about 20 feet wide) of longleaf pine-false rosemary-saw palmetto habitat located on the north side of US 98, between the highway and the slash pine plantation.

Table 1. Recorded Locations of Telephus Spurge in Bay County, Florida

Location	Last Observation	EO Data	EO Data	FNAI Map Label
Project Area	2004-04-21	2004-04-21. In a ~0.5-mile-long, 20-ft-wide strip along the north side of U.S.98. 2001-08-01. Now only on north side of road (PNDKIN02FLUS). 1988-08-08: 1.9 MI W OF JCT US98 AND US98 BYP; BOTH SIDES OF ROAD.	2004-04-21. More than 600 plants observed by WilsonMiller ecologists in the "beauty strip" of longleaf pine, wiregrass, false rosemary, saw palmetto, and Sporobolus floridana. 2003-09-26: no plants seen in survey of north side of road - habitat intact; narrow strip of flatwoods between US98 to south and titi/baygall to north; mostly shrubby (Ilex glabra, I. coriacea) with a few patches of wiregrass (PNDJOH01FLUS); 2001-08-01: 100+ plants seen. Etiolating in dense duff, about 10% of them in fruit or flower. Most plants are small, with only a few leaves. (PNDKIN02FLUS). 1988-08-08:200+, FLOWERING, FRUITING IN LEAF; NICE POPULATION.	EUPHTELE*0007
Outside Project Area, South side of US Highway 98	2001-08-01	2001-08-01: Directions given in this field in 1988 do not match where EO is mapped in GIS database. 1988-08-08: 0.7 MI E OF 30D ON ALT 30, S SIDE OF ROAD.	2001-08-01: Approximately 30 plants seen only within road right-of way, at edge of the flatwoods. All plants were small, and about 10 of them had fruits and flowers, (PNDKIN02FLUS) 1988-08-08: 200, FLOWERING AND FRUITING.	EUPHTELE*0008
Outside Project Area, south of US Highway 98 on CR30H	1988-08-23	1988-08-23: 0.2 MI S OF US 98 BYP ON CR 30H, E SIDE.	2001-08-01: no plants seen, possibly due to very dense vegetation. (PNDKIN02FLUS). 1988-08-23: 200+ COMMON IN OPEN AREAS, IN LEAF, FRUIT, FLOWER	EUPHTELE*0009

Source: WilsonMiller 2004; FNAI 2003, 2004.

Additional populations of Telephus spurge may be located within the Project Area west of the area indicated on Map 2, in cleared or recently planted areas, along roads, or along the edges of pine plantations.

Species Habitat Requirements

This species occurs in dry habitats along the Gulf coast on both sides of the Apalachicola River (USFWS 1994). This species occurs in longleaf pine savannas, scrubby and mesic flatwoods,

and coastal scrub on low sand ridges near the Gulf of Mexico (Chafin 2000). The habitats for the population reconfirmed by WilsonMiller and for those recorded in the FNAI 2003 data are under power lines, in natural pinelands, and in remnant longleaf pine-saw palmetto-rosemary/wiregrass flatwoods. Hilsenbeck (2004) has observed the Telephus spurge in a wider variety of habitats in the SJBBP area than have been previously noted, from seasonally wet prairies to sandhills. In the wet prairies it co-occurred with *Rhynchospora oligantha* and a variety of sedges.

Habitat Conditions within the Project Area

Suitable habitat for Telephus spurge within the Project Area is almost entirely in planted pine and thus is typically in poor to very poor condition. However, the habitat in which the EUPHTELE*0007 population occurs is remnant longleaf pine-saw palmetto-rosemary/wiregrass flatwoods in a long, narrow strip along the north side of U.S. 98 (Map 2). This area is poor to good quality, lower quality resulting primarily from fire suppression.

Soils for the easternmost two populations are mapped as Leon Sand surrounded by Pottsburg Sand. Soils in the western population are mapped as Pamlico-Dorovan and Pottsburg Sand, although it occurs next to Leon Sand and it is unlikely that the spurge would occur in the wet Pamlico-Dorovan soils. These same types of soils complexes occur in the Breakfast Point Peninsula Conservation Unit and the Breakfast Point Mitigation Bank (Map 4; NRCS 1984).

Silviculture-associated activities that have been detrimental to this species include bedding, dense shading, and fire suppression (USFWS 1994). Coastal real estate and road development in the vicinity of Panama City Beach are known to have destroyed Telephus spurge habitat (USFWS 1994). Suitable habitat may already be protected where it occurs under power lines; however, herbicide use in these areas is a concern. Cooper (2004b) indicated that USFWS staff thought the EUPHTELE*0009 population may have been destroyed by the recent Pier Park development, but this site is 2.9 miles east of the Pier Park site and has not yet been cleared or developed.

Effects of the Proposed Action

A “may affect, not likely to adversely affect” determination was made for Telephus spurge in the Biological Assessment.

Where suitable habitat occurs under planted pine, it probably has been substantially degraded; where habitat occurs in the “beauty strip” and in power line and road right-of-ways, it likely has been somewhat protected and maintained. Power line right-of-ways and, to a lesser extent, road right-of-ways will continue to be somewhat protected and maintained as suitable habitat under the Proposed Action. One of the two populations verified in 2001 occurred in road right-of way; the other two populations (one verified and one not verified in 2001) occurred in longleaf-palmetto flatwoods.

Direct and indirect beneficial effects associated with the Proposed Action on potentially suitable habitat within the Project Area include the immediate preservation and eventual restoration of uplands within the conservation units and immediate protection and beginning restoration within the Devil’s Swamp and Breakfast Point Mitigation Banks.

Potentially suitable habitat may be negatively affected by eventual construction of roads, residential communities, and other developments. Negative effects would likely include loss of potential habitat within the Project Area, outside the conservation units.

General Conservation Measures of RGP 86

The Applicant will implement methods recommended by USFWS (1994) in suitable habitat in the conservation units and in the mitigation banks. Suitable habitats include sandhills, scrubby and mesic flatwoods, and powerline right-of-ways through these habitats.

- Reduction of canopy without compacting, mixing, and/or rutting soils or destroying ground cover;
- Burning appropriately, primarily during the growing season (generally April through September) and depending on habitat. For instance, natural fire regime in sandhills is more frequent than in scrub (2 to 5 years in sandhills; catastrophic fire every 20 to 80 years in scrub [FNAI and FDNR 1990]);
- Substituting mowing for use of herbicides;
- Preventing vehicles from driving through easily damaged scrub habitats.

Specific Conservation Measures for Telephus Spurge

Further discussion with Hildreth Cooper of the USFWS about the Telephus spurge population resulted in the drafting of this memorandum, which is intended to provide draft language for a conservation measure to be added to the biological opinion. Proposed language for this conservation measure follows:

> If the Applicant proposes a project that would impact the telephus spurge population indicated on Map 3 (WilsonMiller Observations of Telephus Spurge), impacts to this population should be avoided. If the proposed project cannot avoid impacts to this telephus spurge population, then re-initiation of consultation may be required. Consultation will take into consideration potential transplanting of individuals that would be impacted by a proposed project. Those individuals may be transplanted to appropriate areas of the Breakfast Point Mitigation Bank.
>
> To support this process, the specific location of this population (WilsonMiller Observations) is provided on Map 3 and on Figure 5 of the Biological Opinion (attached), and will also be recorded in the St. Joe Company's internal real estate database no later than May 1, 2004.

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Appendix II.

RGP-86 Flatwoods Salamander Pre-Application Evaluation

Endangered Species Act formal consultation was conducted between the U.S. Fish and Wildlife Service and the Corps of Engineers as part of the development of RGP-86. Consultation was based on presumed presence of salamanders due to the proximity of two known locations and the observance of suitable habitat in the action area. Best available methods were used to determine potential impacts to flatwoods salamanders that could be expected from implementation of the permit. However, it is reasonable to expect that with a project area covering more than 47,000 acres (about 1/3 of which is potentially developable) undetected habitat could be present. In order to avoid and minimize potential take of salamanders in these situations, the following habitat evaluation was developed. This evaluation must be completed by all applicants and performed by a qualified ecologist/biologist.

Step 1: Preliminary Project Site Review

1. Applicants and consultants shall obtain and review an informational brochure developed by the Florida Fish and Wildlife Conservation Commission. The brochure is available from Florida Fish and Wildlife Conservation Commission, Bureau of Wildlife Diversity Conservation, 620 South Meridian Street, Tallahassee, Florida 32399-1600.

2. Applicants and/or their consultants shall compare aerial photographs of their project site to Figures 2, 3 and 4 of the Biological Opinion. Note all data points located within the project site and within 450 meters (1,476 feet) of the project site or limits of construction.

3. If any data points of Figure 4 are located within the project site or within 450 meters of the project site or limits of construction, **re-initiation of consultation is required. Continue with Step 2.**

4. Other data points of Figures 2 and 3 that are within the project site action area (including 450 meters) do not need further evaluation. Previous work conducted as part of the biological opinion addressed these sites. **Continue with Step 2.**

Step 2: Procedures for Reviewing Other Data to Determine Whether Additional Field Surveys Should be Conducted (based on Palis 2003)

There is a potential that suitable habitat may have been overlooked during the analysis for the biological opinion. Therefore, specific project sites must be reviewed using the procedures outlined below to determine whether they need to be field surveyed.

1. Review project site using high-resolution recent infrared aerials (scale of 1 inch = 400 feet), NRCS soils data for Bay and Walton counties, and historical aerials of your project area that are of as high a resolution as is obtainable. Note any ponds[1] not depicted on Figures 2 or 3 with similarity of appearance to those of Figure 4 in the biological opinion.

2. Features to look for on the infrared aerials are as follows:

- Absence of a dense titi cover completely surrounding ponds. Absence is a positive indicator. Dense titi appears relatively dark red and smooth
- A graminaceous, treeless ecotone along part of the pond edges. Presence is a positive indicator. Wet, herbaceous edges appear as smooth grayish blue, greenish grayish blue, or as a light band along the edge.
- Absence of deep water. Absence of deep water is a positive indicator. Deep water appears dark blue or almost black.

[1] "Ponds" are not traditional open waterbodies, but are ephemeral wetlands that are ponded for a portion of the year.

3. On historical aerials, look for open savannahs or pine flatwoods around ponds. These are positive indicators and appear as smooth, light-colored areas with scattered-to-no-trees.

4. On soil maps, where ponds occur, look for hydric or mesic soils around pond; hydric or mesic soils are positive indicators of flatwoods salamander use.

5. The presence of all of the above positive indicators means that the pond(s) should be field surveyed.

- If yes, then you must conduct field surveys to determine whether the pond(s) is a potential flatwoods salamander pond. **Continue with Step 3.**
- If no here and no to Step 1. 3., then **you are finished with the flatwoods salamander evaluation - Go to Step 5** (Flatwoods Salamander Findings).
- If no here and yes to Step 1. 3., then **re-initiation of consultation is required.**

Step 3: Field Assessment of Potential Flatwoods Salamander (*Ambystoma cingulatum*) Ponds

The Description Data Sheet (next page) may be completed at the same time as other fieldwork, such as wetland delineation. The field data sheet that must be completed at the time of the field survey follows. Photographs must also be taken of the ecotone and pond, particularly noting the location of the most graminaceous portion of ecotone and wetland groundcover.

Potential Flatwoods Salamander *(Ambystoma cingulatum)* Pond Description Data Sheet

Instructions: Circle the number of the most appropriate descriptor in each category. If no description option applies, circle "other" and describe. In some categories, such as ECOTONE VEGETATION DESCRIPTION, SPECIES COMPOSITION, and SURROUNDING UPLANDS, circle the number for all appropriate descriptors.

Pond# _____ Date _____ Observer(s) _____

ECOTONE VEGETATION DESCRIPTION
(If more than one descriptor applies, circle and estimate percentage of pond perimeter. ***Also circle appropriate grass and shrub species***)

1) undisturbed graminaceous (*Aristida stricta, Calamovilfa curtissii*)[1], few to no shrubs (*Clethra, Cliftonia, Cyrilla, Hypericum, Ilex myrtifolia, Lyonia*) _____ %
2) disturbed graminaceous (*Aristida stricta, Calamovilfa curtissii*; bedded/rutted), few to no shrubs (*Clethra, Cliftonia, Cyrilla, Hypericum, Ilex myrtifolia, Lyonia*) _____ %
3) undisturbed graminaceous (*Aristida stricta, Calamovilfa curtissii*) under thick *Clethra, Cliftonia, Cyrilla, Hypericum, Ilex myrtifolia, Lyonia*) _____ %
4) weedy graminaceous (*Andropogon, Panicum verrucosum*, and/or *weedy Rhynchospora*), few to no shrubs (*Clethra, Cliftonia, Cyrilla, Hypericum, Ilex myrtifolia, Lyonia*) _____ %
5) disturbed graminaceous (*Aristida stricta, Calamovilfa curtissii*; bedded/rutted), under thick *Clethra, Cliftonia, Cyrilla, Hypericum, Ilex myrtifolia, Lyonia* _____ %
8) weedy graminaceous (*Andropogon, Panicum verrucosum*, weedy *Rhynchospora*) under thick *Clethra, Cliftonia, Cyrilla, Hypericum, Ilex myrtifolia, Lyonia* _____ %
9) thick shrubs (*Clethra, Cliftonia, Cyrilla, Hypericum, Ilex myrtifolia, Lyonia*) over little to no graminaceous (*Aristida stricta, Calamovilfa curtissii, Andropogon, Panicum verrucosum*, weedy *Rhynchospora*) _____ %
10) no ecotone _____ %
11) other:_____ _____ %

GRAMINACEOUS ECOTONE EXTENT DESCRIPTION

1) > 75 % of pond perimeter
2) 51-75% of pond perimeter
3) 26-50 % of pond perimeter
4) <25% of pond perimeter

GRAMINACEOUS ECOTONE WIDTH DESCRIPTION

1) > 0 m wide
2) 6-10 m wide
3) 3-5 m wide
4) 1-2m wide

POND GRAMINACEOUS GROUNDCOVER SPECIES COMPOSITION
(place asterisk adjacent to visually dominant species)

1 "Undisturbed graminaceous" and "disturbed graminaceous" mean that the appropriate ground cover species are present (*Aristida stricta, Calamovilfa curtissii,* wiry *Rhynchospora* spp., and *Sporobolus*). However, "disturbed graminaceous" indicates that the soil has been disturbed by human activities such as chopping, bedding, ATV or skidder tracks. "Weedy graminaceous" means that not only are the appropriate ground cover species absent, but that the soil has been disturbed.

1) *Aristida affinis*
2) *Carex*
3) *Dichanthelium (Panicum) erectifolium*
4) *Eriocaulon compressum*
5) *Panicum rigidulum*
6) *Rhynchospora inundata/corniculata*
7) *Rhynchospora* _____
8) *Sphagnum*
9) *Xyris*
10) other: _____

POND GRAMINACEOUS VEGETATION COVERAGE

1) extensive throughout basin, marsh-like
2) over most of basin (> 75 %)
3) scattered and local in basin (approx 25-74%)
4) limited to basin edge
5) sparse
6) none

POND CANOPY SPECIES COMPOSITION
(place asterisk adjacent to visually dominant species)

1) *Taxodium ascendens*
2) *Nyssa biflora*
3) *Pinus elliottii*
4) *Ilex myrtifolia*
5) other: _____

POND CANOPY COVERAGE

1) <25% 2) 26-50% 3) 51-75% 4) >75%

POND SUBSTRATE

1) relatively firm mud/sand with little to no leaf/needle litter
2) relatively firm mud/sand with abundant leaf/needle litter
3) soft and peaty (thick leaf/needle litter)

APPROXIMATE WATER DEPTH (_____ m)

If site dry, estimate using high water stains on trees: ____ m

WATER COLOR

1) clear to light stain 2) moderate stain (ice tea) 3) dark stain (coffee) 4) no water

SURROUNDING UPLANDS
(circle every applicable number and indicate relative percentage of area around pond)

1) undisturbed graminaceous (*Aristida stricta, Sporobolus*) dominated, few to no shrubs _____ %
2) disturbed graminaceous (*Aristida stricta, Sporobolus*) dominated, few to no shrubs _____ %
3) approximately 50/50 undisturbed graminaceous (*Aristida stricta, Sporobolus*)/shrubs _____ %
4) approximately 50/50 disturbed graminaceous (*Aristida stricta, Sporobolus*)/shrubs _____ %
5) disturbed with sparse vegetation (i.e., principally pine straw) _____ %
6) shrub dominated (shrubs knee high or less), sparse graminaceous (*Aristida stricta, Sporobolus*) _____ %

7) shrub dominated (shrubs between knee and head high), sparse graminaceous (*Aristida stricta, Sporobolus*) ____ %
8) shrub dominated (shrubs head high or more), sparse graminaceous (*Aristida stricta, Sporobolus*) ____ %
9) weedy graminaceous (e.g., *Andropogon*), few to no shrubs ____ %
10) shrub dominated (shrubs knee high or less), sparse weedy graminaceous (*Andropogon*, etc.) ____ %
11) shrub dominated (shrubs knee to head high), sparse weedy graminaceous (*Andropogon*, etc.) ____ %
12) shrub dominated (shrubs head high or more), sparse weedy graminaceous (*Andropogon*, etc.) ____ %
13) other _____ ____ %

UPLANDS SPECIES PRESENT
(circle number and place asterisk by visually dominant species)

1) *Andropogon*
2) *Aristida stricta*
3) *Conradina canescens*
4) *Cyrilla racemiflora*
5) *Ilex glabra*
6) *Kalmia hirsuta*
7) *Licania michauxii*
8) *Lyonia lucida*
9) *Myrica cerifera*
10) *Pteridium aquilinum*
11) *Quercus minima/pumila*
12) *Serenoa repens*
13) *Vaccinium darrowi/myrsinites*
14) _____

General Notes: _____

SKETCH WETLAND/UPLAND (North ↑)
(delineate locations of vegetational differences in ecotone and in wetland and uplands)
(**photograph** the ecotone and pond noting the location of the most graminaceous portion of ecotone and wetland ground cover, note photo points)

Step 4: Expert Review of Field Results

When Steps 2 and 3 have been completed, the completed field data sheets and photographs should be sent to a recognized flatwoods salamander expert. In addition, the current and historical aerials, soil data, and a map of the project site should also be forwarded to the expert. The expert will review all the information to determine whether the pond might be a potential flatwoods salamander pond.

The field data sheet used in Step 3 has been organized so that the descriptors under each category of interest are ordered from best to worst conditions for flatwoods salamanders. For example, under the category Ecotone Vegetation Description, the first descriptor [1) undisturbed graminaceous… few to no shrubs…] describes the best conditions for flatwoods salamanders and the last two descriptors [9) thick shrubs… and 10) no ecotone] describe the worst conditions.

The expert will evaluate the descriptors selected for each category of interest to determine whether the pond might be a potential flatwoods salamander breeding pond. If mostly low number descriptors were selected on the field data sheet, then the pond is more likely to be considered a potential breeding pond; conversely, if primarily high number descriptors were selected on the field data sheet, then the pond is less likely to be considered a potential breeding pond. However, no formula presently exists that encompasses all the possibilities that might eliminate or elect a pond for further consideration as a potential breeding pond.

If the expert cannot determine whether or not the pond should be considered a potential flatwoods salamander breeding pond, s/he may request additional information from the ecologist/biologist who visited the pond and/or the project applicant. If the request for additional information is not fulfilled within a reasonable time period or the response is not sufficiently helpful, the expert may also elect to visit the pond himself at the expense of the project applicant.

The expert will provide a written determination as to whether the surveyed pond(s) is likely to be a potential flatwoods salamander breeding pond.

Review Time Frames:

- Provide field data sheets to expert;
- Expert reviews field data sheets within 10 working days of receipt, and
    - Requests additional information, or
    - Provides[2] written determination;
- Project applicant or their consultant provides additional information to expert;
- Expert provides written determination to project applicant within 5 working days of receipt of sufficient additional information;
- Project applicant provides the expert's written determination and background documentation (prepared map of ponds, aerials, soil data, field data sheets, and photographs) to the agencies as part of the pre-application Item #8.

2 "Provides" implies postmarked, emailed or faxed.

Step 5: Flatwoods Salamander Findings

	Yes	No
1. The project site contains or is within 450 meters (1,476 feet) of one or more of the data points indicated in Figure 4 of the biological opinion. **If yes, re-initiation of consultation is required.**	____	____
2. The project site contains or is within 450 meters of potential habitat not evaluated in the biological opinion.	____	____
3. Field evaluations and expert review were necessary for additional habitat.	____	____
4. Expert review indicates that suitable habitat is located within the project action area. Name of flatwoods salamander expert _____. **If yes, re-initiation of consultation is required.**	____	____
5. Appropriate documentation is included to support these findings.	____	____

Signature _____ Date _____

Ecologist/Biologist who Performed the Evaluation

Appendix III

RGP-86 Telephus Spurge Pre-Application Evaluation

Endangered Species Act formal consultation was conducted between the U.S. Fish and Wildlife Service (Service) and the Corps of Engineers as part of the development of the RGP-86. Consultation was based on the presence of telephus spurge (*Euphorbia telephioides)* at three locations in Gulf and Bay counties and the observance of suitable habitat throughout the action area. Best available methods were used to determine potential impacts to telephus spurge that could be expected from implementation of the permit. However, it is reasonable to expect that with a project area covering more than 47,000 acres (about 1/3 of which is potentially developable) undetected habitat could be present. To avoid and minimize potential take of telephus spurge in these situations, the following survey protocol was developed. This evaluation must be completed by all applicants and performed by a qualified plant ecologist/field botanist.

Step 1: Preliminary Project Site Review

Applicants and/or their consultants shall contact the Service for the latest information on the telephus spurge. The proposed project site shall be reviewed to determine if any known occurrences of the telephus spurge are present in the vicinity.

Step 2: Procedures for Reviewing Other Data to Determine Whether Additional Field Surveys Should be Conducted:

The telephus spurge occurs in a variety of soil types and plant communities ranging from sandhill to mesic flatwoods to pine savannahs. Suitable soil types are primarily the drier Leon sand and Pottsburg sand, although the plant is sometimes found in mesic soils, particularly within the ecotone surrounding sandy soils. Most of the known locations have been impacted by silviculture. Telephus spurge has been found in pine plantations with bedding present. Specific project sites must be reviewed using the procedures outlined below to determine the presence or absence of the telephus spurge.

1. Review the project site using NRCS soils data for Bay and Walton Counties, high-resolution infrared and/or true color aerials (scale of 1 inch=400 feet), and historic aerials of your project area.

2. Look for the following positive indicators:

- Suitable soils. Suitable soil types include Leon sand, Pottsburg sand, and Hurricane sand.

- Open canopy. Features to look for on the infrared aerials include the absence of a dense, closed canopy cover. Absence is a positive indicator. Dense canopy cover like titi appears dark red and smooth. The absence of a dense canopy shows up lighter often with patchy red areas throughout.

3. The presence of one or more positive indicators means that the site is potential telephus spurge habitat.

- If yes, then you must conduct field surveys to determine whether telephus spurge is present. **Continue to step 3.**
- If no, then **you are finished with the telephus spurge evaluation. Go to step 4.**

Step 3: Field Assessment of Potential Telephus Spurge (*Euphorbia telephioides*) Habitat

Before beginning any field work, develop a search pattern recognition of *Euphorbia telephioides* by examining photographs or herbarium species or by visiting field locations. See www.plantatlas.usf.edu for a photo reference collection.

Select potential survey polygons based on presence of Leon sand or Pottsburg sand. After reviewing aerial photography and conducting preliminary site inspections, add those areas that have a relatively open canopy and

remnant native groundcover. Be sure to include roadsides, open trails, utility easements, burned areas, and wetland ecotones. Eliminate areas that are densely vegetated with shrubs and trees or are obviously wet most of the year.

Selected polygons should be field surveyed for presence or absence of telephus spurge using a qualitative transect method. The surveys should be supervised by a qualified botanist. Straight line transects at 20-foot intervals should be laid out to cover the entire polygon. Alternate on each side of the transect with 10-foot square quadrants. (Figure 1) The quadrant boundaries can be estimated and visually scanned for telephus spurge. Areas with extremely dense vegetation can be overlooked.

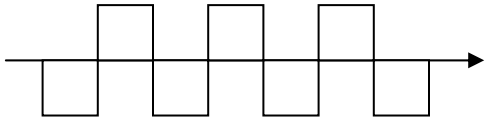

Fig. 1

Surveys can be conducted anytime from April through September. The plant generally dies back at the end of the growing season and does not re-grow to a noticeable height until several weeks after the last frost. Ideal survey months are July through September.

Step 4: Telephus Spurge Findings

	Yes	**No**
1. Positive indicators were detected in Step 2.	___	___
2. Field surveys detected presence of telephus spurge. **If yes, re-initiation of consultation is required.**	___	___
3. Appropriate documentation is included to support these findings. Negative and positive survey data are provided to USFWS in a GIS format.	___	___

Signature _____ Date_____

Ecologist/Botanist who performed the evaluation

ATTACHMENT C

Potential Breeding Pond Description Data Sheet for Flatwoods Salamander *(Ambystoma cingulatum)* or Striped Newt *(Notophthalmus perstriatus)*

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Potential Breeding Pond Description Data Sheet for Flatwoods Salamander *(Ambystoma cingulatum)* or Striped Newt *(Notophthalmus perstriatus)*

Instructions: ***Circle the number of the most appropriate descriptor in each category. If no description option applies, circle "other" and then describe. In some categories, such as ECOTONE VEGETATION, DESCRIPTION, SPECIES COMPOSITION, and SURROUNDING UPLANDS, more than one descriptor may apply; circle all appropriate numbers.***

Pond# _____ Date _____ Observer(s) _____

ECOTONE VEGETATION DESCRIPTION

If more than one descriptor applies, circle and estimate percentage of pond perimeter. Also write appropriate grass and shrub species.

1) Undisturbed graminaceous, few to no shrubs _____%
2) Disturbed graminaceous (bedded/rutted), few to no shrubs _____%
3) Undisturbed graminaceous under thick shrubs _____%
4) Weedy graminaceous (*Andropogon, Panicum*, and/or *weedy Rhynchospora*), few to no shrubs _____%
5) Disturbed graminaceous (bedded/rutted), under thick shrubs _____%
6) Weedy graminaceous (*Andropogon*, *Panicum*, weedy *Rhynchospora*) under thick shrubs _____%
7) Thick shrubs over little to no graminaceous _____%
8) No ecotone _____%
9) Other _____%

Describe:_____

_____

GRAMINACEOUS ECOTONE EXTENT DESCRIPTION

1) > 75 % of pond perimeter
2) 51-75% of pond perimeter
3) 26-50 % of pond perimeter
4) <25% of pond perimeter

GRAMINACEOUS ECOTONE WIDTH DESCRIPTION

1) > 0 m wide
2) 6-10 m wide
3) 3-5 m wide
4) 1-2m wide

POND GRAMINACEOUS GROUNDCOVER SPECIES COMPOSITION

Place asterisk adjacent to visually dominant species.

1) *Aristida*
2) *Carex*
3) *Panicum*
4) *Eriocaulon*
5) *Rh ynchospora*
6) *Sphagnum*
7) *Xyris*
8) Other: _____

POND GRAMINACEOUS VEGETATION COVERAGE

1) Extensive throughout basin, marsh-like
2) Over most of basin (> 75 %)
3) Scattered and local in basin (approx 25-74%)
4) Limited to basin edge
5) Sparse
6) None

POND CANOPY SPECIES COMPOSITION

Place asterisk adjacent to visually dominant species.

1) *Taxodium ascendens*
2) *Nyssa biflora*
3) *Pinus* _____
4) *Ilex* _____
5) Other: _____

POND CANOPY COVERAGE

1) <25% 2) 26-50% 3) 51-75% 4) >75%

POND SUBSTRATE

1) Relatively firm mud/sand with little to no leaf/needle litter
2) Relatively firm mud/sand with abundant leaf/needle litter
3) Soft and peaty (thick leaf/needle litter)

APPROXIMATE WATER DEPTH (_____ m)

If site dry, estimate using high water stains on trees (in meters).

WATER COLOR

1) Clear to light stain
2) Moderate stain (iced tea)
3) Dark stain (coffee)
4) No water

SURROUNDING UPLANDS

Circle every applicable number and indicate relative percentage of area around pond.

1) Undisturbed graminaceous dominated, few to no shrubs _____%
2) Disturbed graminaceous dominated, few to no shrubs _____%
3) Approximately 50/50 undisturbed graminaceous /shrubs _____%
4) Approximately 50/50 disturbed graminaceous /shrubs _____%
5) Disturbed with sparse vegetation (i.e., principally pine straw) _____%
6) Shrub dominated (shrubs knee high or less), sparse graminaceous _____%
7) Shrub dominated (shrubs between knee and head high), sparse graminaceous _____%
8) Shrub dominated (shrubs head high or more), sparse graminaceous _____%
9) Weedy graminaceous (e.g., Andropogon), few to no shrubs % _____%
10) Shrub dominated (shrubs knee high or less), sparse weedy graminaceous _____%
11) Shrub dominated (shrubs knee to head high), sparse weedy graminaceous _____%
12) Shrub dominated (shrubs head high or more), sparse weedy graminaceous _____%
13) Other _____%

Describe:_____

UPLANDS SPECIES PRESENT

Circle number and place asterisk by visually dominant species.

1) *Andropogon*
2) *Aristida stricta*
3) *Rhus copallinum*
4) *Quercus* _____
5) *Ilex glabra*
6) *Vaccinium darrowi/myrsinites*
7) *Baccharis halimifolia*
8) *Myrica cerifera*
9) *Pteridium aquilinum*
10) *Vitis*
11) *Serenoa repens*
12) *Pinus* _____
13) Other: _____

General Notes:

SKETCH WETLAND/UPLAND

1. ***Delineate locations of vegetational differences in ecotone and in wetland and uplands.***
2. ***Photograph the ecotone and pond, noting the location of the most graminaceous portion of ecotone and wetland groundcover; note photo points.***

United States Department of the Interior

Fish and Wildlife Service
105 West Park Drive, Suite D
Athens, Georgia 30606
Phone: (706) 613-9493
Fax: (706) 613-6059

West Georgia Sub-Office
Post Office Box 52560
Fort Benning, Georgia 31995-2560
Phone: (706) 544-6428
Fax: (706) 544-6419

Coastal Sub-Office
4980 Wildlife Drive
Townsend, Georgia 31331
Phone: (912) 832-8739
Fax: (912) 832-8744

February 3, 2011

Ms. Brenda A. Powell
Ecology & Environment, Inc.
1974 Commonwealth Lane
Tallahassee, Florida 32303

Re: USFWS File Number 2011-TA-0227

Dear Ms. Powell:

Thank you for your December 17, 2010, letter and attachments regarding your proposed use of habitat based flatwoods salamander and striped newt survey methodology for the Environmental Impact Statement for the proposed Modernization and Expansion of Townsend Bombing Range, Georgia. These surveys will be conducted for preparation of a draft Environmental Impact Statement for the proposed expansion of the range in McIntosh and Long Counties, Georgia. We have reviewed the information you provided and submit the following comments under provisions of the Endangered Species Act of 1973 (Act) as amended (16 U.S.C. 1531 et seq.).

According to the information you provided, the proposed acquisition areas will be assessed to determine if they have appropriate habitat for the frosted flatwoods salamander, a federally listed species, or the striped newt, a candidate species. Since the proposed acquisition areas consist mainly of planted pine stands and the area has been through a drought year, these habitat surveys will be used to determine the presence or absence of the salamander and newt, as opposed to conducting dip net surveys over several years. A more detailed description of the proposed habitat surveys are included with your letter and attachments, along with a modified habitat data sheet. We have reviewed this information and therefore agree with your proposed method of habitat surveys for the frosted flatwoods salamander and the striped newt.

We appreciate the opportunity to comment during the planning stages of your project. If you have any questions, please write or call staff biologist, Robert Brooks, of our Coastal Georgia Sub Office at 912-832-8739, extension 107.

Sincerely,

Sandra S. Tucker
Field Supervisor

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UNITED STATES MARINE CORPS
MARINE CORPS AIR STATION
BEAUFORT, SOUTH CAROLINA 29904-5001

IN REPLY REFER TO
5090
NREAO/058
28 FEB 2011

Mr. Robert Brooks
United States Fish and Wildlife Service
Coastal Ecological Services Field Office
4980 Wildlife Drive NE
Townsend, Georgia 31331

Re: Proposed Survey Methodology for Federally-Listed and Candidate Species for the *Environmental Impact Statement for the Modernization and Expansion of Townsend Bombing Range, Georgia*

Dear Mr. Brooks:

During the informal consultation meeting conducted among personnel from the United States Fish and Wildlife Service (USFWS), Coastal Ecological Services Field Office; Marine Corps Air Station Beaufort (MCAS Beaufort); Naval Facilities Engineering Command Southeast (NAVFAC SE); and Ecology and Environment, Inc. (E & E) on November 30, 2010, we discussed a preliminary list of federally protected species potentially affected by the modernization and expansion of Townsend Bombing Range (TBR), Georgia.

The preliminary list of 11 federally protected species discussed during the meeting was developed based on E & E's review of the USFWS species lists for Long and McIntosh Counties, Georgia, and was originally provided in tabular format in the *Desktop Analysis of Biological and Environmental Variables for the Environmental Impact Statement* (EIS) *for the Modernization and Expansion of Townsend Bombing Range, Georgia,* dated November 2010 (2010 Desktop Analysis). The table from the 2010 Desktop Analysis is provided on the next page, but reflects minor revisions including an updated federal status for the Altamaha spinymussel (*Elliptio spinosa*) as proposed endangered. Additionally, at your request, the federally delisted bald eagle (*Haliaeetus leucocephalus*) is included in the table because of its protection under the federal Bald and Golden Eagle Act of 1940.

On December 17, 2010, E & E provided a detailed methodology proposing the use of habitat-based survey methodologies for the flatwoods salamander (*Ambystoma cingulatum*) and striped newt (*Notophthalmus perstriatus*) as opposed to using dip net

or drift net surveys. The USFWS provided concurrence with the proposed habitat-based survey methodologies for these two species via letter on February 3, 2011.

In continuation with the preparation of the EIS, E & E has received and reviewed the results of the Georgia Department of Natural Resources (GaDNR's) Coastal Resource Mapping Project completed in 2010 which delineates vegetative habitats found in Long and McIntosh Counties, Georgia. In addition, E & E and NAVFAC SE performed a site reconnaissance on February 9 through 11, 2011, to preliminarily ground-truth aerial signatures identified in the 2010 Desktop Analysis and cross-check the habitats identified in the GaDNR Coastal Resource Mapping Project.

Federally Protected Species Potentially Occurring in Long and McIntosh Counties, Georgia

Scientific Name	Common Name	Federal Listing	State Listing
AMPHIBIANS			
Drymarchon corais couperi	Eastern Indigo Snake	T	T
Ambystoma cingulatum	Frosted Flatwoods Salamander	T	T
Gopherus polyphemus	Gopher Tortoise	C	T
Notophthalmus perstriatus	Striped Newt	C	R
BIRDS			
Vermivora bachmanii	Bachman's Warbler	E	.
Dendroica kirtlandii	Kirtland's Warbler	E	.
Haliaeetus leucocephalus	Bald Eagle	*	T
Mycteria americana	Wood Stork	E	E
MOLLUSKS			
Elliptio spinosa	Altamaha Spinymussel	PE	E
PLANTS			
Baptista arachnifera	Hairy Rattleweed	E	E

C - Candidate Species; E - Endangered; PE- Proposed Endangered; T – Threatened; * Protected under Bald and Golden Eagle Protection Act of 1940

Lastly, E & E has reviewed literature regarding life histories, biology, and habitat utilization of the 10 remaining species identified in the table on the next page. Based upon the preliminary habitats identified during the site reconnaissance and E & E's literature review, they have determined that the federally-listed threatened eastern indigo snake (*Drymarchon corais couperi*); the gopher tortoise (*Gopherus polyphemus*), a candidate species for federal listing; and the federally-listed endangered wood stork (*Mycteria Americana*) have the potential to occur within the

proposed impact areas and therefore may require field surveys to determine the presence of these species. Proposed survey methodologies for these species are described in Section 1.0.

Upon review of the same sources listed above, E & E also has determined that suitable habitat for the federally-listed endangered Bachman's warbler (*Vermivora bachmanii*); the federally-listed endangered Kirtland's warbler (*Dendroica kirtlandii*); the bald eagle; the potentially endangered Altamaha spinymussel; and the federally-listed endangered hairy rattle weed (*Baptista arachnifera*) are unlikely to occur within the proposed impact areas. Based upon the lack of suitable habitat for these species, no further field assessments for these species are proposed. Further rationale for this determination is described in Section 2.0. A list of references used to make these determinations is provided in Attachment A.

At this time, we request the USFWS review and provide concurrence with the following proposed survey methodologies for the eastern indigo snake, gopher tortoise, and wood stork. Such surveys would be conducted to determine impact to these species and would be utilized for Section 7 consultation, as necessary, to complete the EIS for the Modernization and Expansion of TBR, Georgia. We also are requesting concurrence with the rationale for not conducting field surveys for the Bachman's warbler, Kirkland's warbler, bald eagle, Altamaha spinymussel, short-nose sturgeon, Atlantic sturgeon, and hairy rattle weed.

1.0 Proposed Survey Methodology for Eastern Indigo Snake, Gopher Tortoise, and Wood Stork

We propose to conduct a more thorough site review of proposed target areas for the eastern indigo snake, gopher tortoise, and wood stork to determine if sufficient habitat exists within the proposed target area to support the above-referenced species. If it is found that sufficient habitat exists to support said species, then follow-up field assessments will be made to confirm the presence or absence of these species.

Eastern Indigo Snake

Habitat Requirements

Eastern indigo snakes use a variety of habitats that include pine flatwoods, scrubby flatwoods, high pine, dry prairie, hardwood hammocks, edges of freshwater wetlands, agricultural land, coastal dunes, and disturbed areas. Eastern indigo

snakes are often associated with gopher tortoise burrows, where they seek shelter from thermal stress and lay eggs. In areas lacking tortoise burrows, decayed stumps and logs are important habitat features for cover. Indigo snakes eat a variety of small mammals and herpetofauna, including eastern diamondback rattlesnakes and gopher tortoise hatchlings. In Georgia, the eastern indigo snake is most often associated with sand ridge habitats which often occur along major coastal plain streams (Speake, Diemer, and McGlincy 1981).

The Georgia Ecological Services Field Office of the USFWS maintains a GIS database of Threatened and Endangered Species Ranges in Georgia. This database indicates that the entirety of Acquisition Areas 1 and 3 is a "Possible Range" for indigo snakes. The database also indicates that "known occurrences" of eastern indigo snakes have been documented within Acquisition Areas 1 and 3. Based upon known occurrence data, an occurrence of indigo snake was documented within the proposed 400-acre Airfield Target Area.

Preliminary Site Review

We will review high-resolution aerial imagery and Natural Resource Conservation Service (NRCS) soil data to identify potential suitable habitat for the eastern indigo snake. Suitable habitat features are: sand ridges, scrubby pine flatwoods, and open upland environments adjacent to freshwater wetlands. Positive indicators for these habitats will be the presence of gopher tortoise burrows. Soil survey data that indicate sandy soils within or adjacent to suitable habitat will also be considered a positive indicator.

The NRCS soil data contain soil drainage characteristics. For areas within the proposed impact areas, drainage characteristics are classified as: moderately well drained, somewhat poorly drained, poorly drained, and very poorly drained. Since indigo snakes utilize sandy environments with supporting wetland environments, we assume that areas with poorly drained or very poorly drained soils will not provide the necessary upland habitat to support indigo snakes. For survey purposes, those areas identified within impact areas with moderately well drained or somewhat poorly drained soils will be examined to determine if significant habitat exist to support indigo snake populations.

Areas of suitable habitat as defined above will be mapped using GIS and will be cross-referenced to known occurrences of eastern indigo snakes from the USFWS Georgia Ecological Services Field Office GIS database of Threatened and Endangered Species Ranges in Georgia. Distances from each area

of suitable habitat to the nearest known occurrences of eastern indigo snake will be documented.

Field Assessment
We will conduct follow-up surveys in areas of suitable habitat to determine if the habitat is likely to support eastern indigo snakes. These surveys will assess the potential habitat and include a survey for the presence of gopher tortoise burrows. A detailed habitat description of survey areas, as well as photographs of suitable habitat, will be completed. Upon completion of the field assessment, a summary report of survey findings will be provided to USFWS staff.

Gopher Tortoise

Habitat Requirements
Gopher tortoises are common in most types of upland communities with open canopies. They are commonly found in habitats such as sandhill, pine flatwoods, scrub, scrubby flatwoods, dry prairies, xeric hammock, pine-mixed hardwoods, and coastal dunes. Gopher tortoises construct burrows in sandy soils. The gopher tortoise resides in these burrows which protect them from other species and extreme heat. These burrows also provide similar protection for over 350 other commensal species. Key species known to occupy gopher tortoise burrows include the eastern indigo snake, eastern diamondback rattlesnake, and gopher frogs (Florida Freshwater Fish and Wildlife Conservation Commission [FWC] 2010a and 2010b).

Preliminary Site Review
We will review high-resolution aerial imagery and NRCS soil data to identify potential suitable habitat for the gopher tortoise. Suitable habitat features are: sand ridges, scrubby pine flatwoods, dry prairies, xeric hammocks, and open upland environments with sandy soils. Positive indicators for these habitats will be the presence of sandy soils as indicated from soil survey data.

The NRCS soil data contain soil drainage characteristics. For areas within the proposed impact areas, drainage characteristics are classified as: moderately well drained, somewhat poorly drained, poorly drained, and very poorly drained. Since gopher tortoises utilize sandy environments with low groundwater elevations, we assume that areas with poorly drained or very poorly drained soils will not support gopher tortoises. For survey purposes, those areas identified within impact areas with moderately well drained or somewhat poorly drained soils will be examined to determine if

significant habitat exist to support gopher tortoise populations.

Field Assessment

We will conduct follow-up surveys in areas of suitable habitat to determine if the habitat is currently utilized by gopher tortoises. Canopy and herbaceous cover percentage will be documented for upland habitats identified in the preliminary site review to determine if adequate vegetation exists to support gopher tortoises. Acceptable habitat features will be defined as a canopy cover of less than 60%, with an herbaceous cover of at least 30% (FWC 2009). If acceptable canopy and herbaceous cover percentage exist, pedestrian transects within suitable habitat will be conducted to identify gopher tortoise burrows. Existing burrows will be classified as active or abandoned and marked by Global Positioning System (GPS). A detailed habitat description of survey areas, as well as photographs of existing burrows, will be completed. Upon completion of the field assessment, a summary report of survey findings will be provided to USFWS staff.

Wood Stork

Habitat Requirements

The wood stork is a colonial bird that nests in large rookeries often constructed in cypress (*Taxodium distichum*), black gum (*Nyssa sylvatica var. biflora*) and southern willow (*Salix carolina*). Wood storks utilize the same nesting colonies from year to year as long as they remain undisturbed (USFWS 1986). They feed in flocks on small fish, crustaceans, amphibians, reptiles, and arthropods found within freshwater marshes, flooded roadside and agricultural ditches, and depressions in cypress heads, swamp sloughs, tidal creeks and pools, and estuaries. The wood stork is known to travel long distances (up to 80 miles) in search of feeding areas. Past research on Georgia wood stork colonies has found that foraging occurs within a 12-mile radius 80% of the time (USFWS 1986).

The USFWS Georgia Ecological Services Field Office GIS database of Threatened and Endangered Species Ranges in Georgia indicates a known wood stork rookery located 9 miles northwest of proposed Acquisition Area 3. During the meeting with the USFWS on November 30, 2010, and a subsequent meeting with GaDNR on December 1, 2010, both agencies confirmed that no wood stork rookeries occur within proposed Acquisition Areas 1 or 3. However, due to the project's proximity to the known rookery and the ability of wood storks to travel long distances for foraging, wetland habitats within the proposed

impact areas may be utilized as foraging habitat for wood storks.

Preliminary Site Review

During the preliminary site reconnaissance conducted on February 9 and 10, 2011, we confirmed that potential foraging habitat exists within the proposed impact areas. These habitats include swamp sloughs, forested depressions, and roadside and agricultural ditches. No individual sightings of wood storks were observed during the sight reconnaissance.

Proposed Survey Methods

Based upon preliminary site review findings noted above, we determined that appropriate foraging habitat exists within the proposed impact areas and wood storks may utilize these wetland habitats for foraging. While conducting field assessments for other protected species or wetland delineations for the project, we will document any observed sightings of this species and report these sightings in the EIS. No follow-up field surveys are proposed for this species as potential impacts to wetland habitats, and thus wood stork foraging habitat, will be quantified and further examined in the EIS.

2.0 Rationale for Determination of Other Species Not Requiring Field Surveys

Our rationale for determining that field surveys will not be required for Bachman's warbler, Kirtland's warbler, Altamaha spinymussel, and the hairy rattle weed is provided below.

Kirtland's Warbler

The Kirkland's warbler has one of the most restricted breeding ranges of any North American bird. It breeds in the open jack pine (*Pinus banksiana*) plains of central Michigan. The bird over-winters in the Bahamas with spring departures occurring in late April and early May and fall migrations between August and October (USFWS 1999). The primary migration route follows a narrow band through South Carolina, North Carolina, Virginia, West Virginia, and Ohio before reaching nesting grounds in Michigan (USFWS 1999). When warblers make their spring migration, the first quarter of the route is over water (Mayfield 1988). Some research has shown migration occurs without any stops or with limited stopovers (Mayfield 1988; USFWS 1999). These studies concluded that observations of warblers outside of the main migration route were likely strays, as a disproportionate number of documented

observations occurred in Ohio and Michigan, the last quarter of the migratory route.

The Kirtland's warbler is potentially only present in the state of Georgia for a limited time during its migratory period. Because the primary migration route for Kirkland's warbler lies north and northeast of Georgia, and since research indicates they may migrate without stopovers and that warblers within the state of Georgia are likely stray birds, no field assessments for this species are proposed.

Bald Eagle

During the November 30 and December 1, 2010, meetings with the USFWS and GaDNR, respectively, both agencies confirmed that no known bald eagle nests occur within the proposed project area. The proposed acquisition area is currently managed for silviculture operations and is composed primarily of dense planted pine stands, recently cleared pine stands, and forested wetlands. Bald eagles require tall, mature trees for nesting purposes. Due to clearing activities associated with active management of timber, trees are harvested well before they reach maturity. No suitable nesting habitat within the proposed impact areas exist for bald eagles, and therefore no detailed field assessments for this species are proposed. Visual observations of bald eagles or nests observed during other field activities will be provided to the USFWS and documented in the EIS.

Bachman's Warbler

A confirmed documentation of the Bachman's warbler has not been reported in the United States since 1962 (USWFS 2005), and therefore no field assessments for this species are proposed.

Altamaha Spinymussel

The Altamaha spinymussel utilizes the Altamaha River. As discussed during the November 30, 2010, meeting, Acquisition Area 2, which is adjacent to the river, has been removed from the project scope. Therefore, no direct or secondary impacts to the Altamaha River are anticipated, and no field assessments for this species are proposed.

Hairy Rattle Weed

The hairy rattle weed inhabits shallow pools on Piedmont granite outcrops in full sunlight. It is known to occur in

Brantley and Wayne Counties, Georgia, and the USFWS stated in the November 30, 2010, meeting that the required habitat for this species likely would not be found within the proposed acquisition areas. Therefore, no field assessments for this species are proposed.

We respectfully request that the USFWS review the survey methodologies provided herein and provide concurrence within 30 days of receipt of this letter. Please contact Jered Jackson at 904-542-6308 or e-mail jered.jackson@navy.mil with any questions or concerns regarding this submittal or if you require any additional information to process this request.

Sincerely,

WILLIAM A. DRAWDY
Natural Resources and
Environmental Affairs Officer

cc: John Conway, NAVFAC SE
Jered Jackson, NAVFAC SE
Brenda Powell, Ecology and Environment, Inc.
Jonathan Oravetz, Ecology and Environment, Inc.

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Coastal Sub-Office
4980 Wildlife Drive
Townsend, Georgia 31331
Phone: (912) 832-8739
Fax: (912) 832-8744

April 1, 2011

Mr. W. A. Drawdy
U. S. Marine Corps
Marine Corps Air Station
Beaufort, South Carolina 29904-5001

Re: FWS Log # 2011-0042

Dear Mr. Drawdy:

Thank you for your February 28, 2011, letter regarding survey methodologies for Federally listed and candidate species for the draft Environmental Impact Statement for the proposed Modernization and Expansion of Townsend Bombing Range, Georgia. We have reviewed the information you provided and submit the following comments under provisions of the Endangered Species Act of 1973 (Act) as amended (16 U.S.C. 1531 et seq.).

According to the information you provided, the federally threatened eastern indigo snake, the federally threatened frosted flatwoods salamander, the federally endangered wood stork, and the state listed gopher tortoise have the potential to occur within the proposed impact areas. You listed the gopher tortoise as a candidate species, however it is state listed now, but in the future could become a candidate species. You determined field surveys would not be required for the Kirtland's Warbler, Bald Eagle, Bachman's warbler, Altamaha spinymussel, and hairy rattleweed since habitat was lacking in the proposed acquisition impact areas. We have reviewed this information and agree with your species list and proposed method of surveys for the eastern indigo snake, wood stork, and gopher tortoise. The survey methodology for the striped newt and frosted flatwoods salamander was concurred on in a previous letter (FWS Log # 2011-TA-0227).

We appreciate the opportunity to comment during the planning stages of your project. If you have any questions, please write or call staff biologist, Robert Brooks, of our Coastal Georgia Sub Office at 912-832-8739, extension 107.

Sincerely,

Strant Colwell

Sandra S. Tucker
Field Supervisor for

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Appendix G
Threatened and Endangered Species

Appendix G.1
U.S. Fish and Wildlife Service

Survey Findings

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UNITED STATES MARINE CORPS
MARINE CORPS AIR STATION
BEAUFORT SOUTH CAROLINA 29904-5001

IN REPLY REFER TO
5090
NREAO/104
2 MAY 2011

Mr. Robert Brooks
United States Fish and Wildlife Service
Coastal Ecological Services Field Office
4980 Wildlife Drive NE
Townsend, Georgia 31331

Re: Survey Results for Eastern Indigo Snake, Gopher Tortoise, Flatwoods Salamander, Striped Newt, and Wood Stork for the *Environmental Impact Statement for the Modernization and Expansion of Townsend Bombing Range, Georgia*

Dear Mr. Brooks:

For the purpose of preparing an *Environmental Impact Statement (EIS) for the Modernization and Expansion of Townsend Bombing Range, Georgia*, Ecology and Environment, Inc. (E & E) conducted biological surveys for selected federally protected species potentially affected by the Proposed Action. This letter summarizes the findings of surveys conducted between 28 March and 6 April 2011 for federally protected species, including the eastern indigo snake, flatwoods salamander, and wood stork; the striped newt, a candidate species for federal listing; and the state-listed gopher tortoise.

The surveys were conducted using methodologies detailed in letters from Ms. Brenda Powell of E & E to the United States Fish and Wildlife Service (USFWS) dated 17 December 2010, and from Mr. William Drawdy of the United States Marine Corps (USMC) dated 28 February 2011. The survey methodologies were subsequently approved by the USFWS on 3 February and 1 April 2011, respectively. These letters of correspondence are provided in Attachment A.

Prior to conducting onsite field surveys, a desktop analysis of habitats found in each of the eight Target Areas was conducted to identify potential habitat for each species. The location of each Target Area is illustrated in Attachment B, on Figure 1-1. During the desktop analysis, the following data sets were reviewed:

- National Wetlands Inventory (NWI; USFWS 2010);

- Natural Resources Conservation Service (NRCS) soil surveys for Long and McIntosh Counties (NRCS 2002 and NRCS 2007, respectively);
- United States Department of Agriculture (USDA) National Agricultural Inventory Project (NAIP) 2010 True Color Aerial Imagery;
- USDA NAIP 2009 Infrared Aerial Imagery; and
- Ecological Community data from the Georgia Department of Natural Resources (GaDNR)'s Coastal Resource Mapping Project completed in 2010.

Areas identified as potential species habitat were downloaded onto sub-meter accurate Geographic Positioning System (GPS) units for subsequent in-field verification. The in-field findings for the species identified as requiring surveys are summarized below.

Eastern Indigo Snake (*Drymarchon corais couperi*)

Suitable habitat for the eastern indigo snake was defined as sand ridges, scrubby pine flatwoods, and open upland environments adjacent to freshwater wetlands (Drawdy 2011, Tucker 2011b). A positive indicator for these habitats is the presence of gopher tortoise burrows.

Field surveys identified two areas considered suitable habitat for the eastern indigo snake. The first area consists of a 1.8-acre open canopy upland habitat located within Target Area 3 (see Attachment B, Figure 1-2). This upland area was adjacent to recently harvested emergent wetlands to the east. The NRCS classified soils within this area as Bladen Fine Sandy Loam, defined as hydric, poorly drained soils. Field surveys determined that this small upland area had coarse sandy soils supporting loblolly pine (*Pinus taeda*), saw palmetto (*Serenoa repens*), gallberry (*Ilex glabra*), broom sedge (*Andropogon* sp.), and shiny blueberry (*Vaccinium myrsinites*) (see Attachment C, Photo 1). The area was surveyed using pedestrian transects for the presence of gopher tortoise burrows; however, no burrows or eastern indigo snakes were observed in the field.

The second area with suitable eastern indigo snake habitat was identified within Target Area 6 (see Attachment B, Figure 1-3). The USFWS Georgia Ecological Services Field Offices maintains a GIS database of threatened and endangered species ranges in Georgia. This database indicates that a known occurrence of indigo snake was documented within the vicinity

of Target Area 6. Field surveys located a 12.8-acre sandy upland area of planted immature loblolly pines on the east side of an existing access road and adjacent to mature forested wetland areas (see Attachment B, Figure 1-3). The NRCS classified soils within this area as Mascotte Fine Sand, defined as partially hydric, poorly drained soils. Vegetation in this area included loblolly pine, saw palmetto, gallberry, broom sedge, winged sumac (*Rhus copallinum*), and shiny blueberry (see Attachment C, Photo 2). The area was surveyed using pedestrian transects for the presence of gopher tortoise burrows; however, no burrows or eastern indigo snakes were observed in the field.

The remainder of the Target Areas consisted of densely planted stands of loblolly pine with low species diversity. The majority of these areas contain poorly drained soils that do not meet suitable habitat requirements for the eastern indigo snake.

Gopher Tortoise (*Gopherus polyphemus*)

Suitable habitat for gopher tortoise was defined as sand ridges, scrubby pine flatwoods, dry prairies, xeric hammocks, and open upland environments with sandy soils (Drawdy 2011, Tucker 2011b). Acceptable habitat features were defined as a canopy cover of less than 60%, with an herbaceous cover of at least 30% (Drawdy 2011, Tucker 2011b). The presence of sandy soils as indicated from soil survey data was a positive indicator for these habitats. Those areas, with soil drainage patterns defined by the NRCS as moderately well-drained or somewhat poorly drained soils, were identified as potential gopher tortoise habitat during the desktop analysis and were loaded into the GPS units.

Potential gopher tortoise habitat that was identified during the desktop analysis was surveyed to determine if suitable habitat exists. Onsite field surveys located two areas that would be considered suitable gopher tortoise habitat. These are the same areas identified above as suitable eastern indigo snake habitat located within Target Areas 3 and 6 (see Attachment B, Figures 1-2 and 1-3). Both areas were surveyed using pedestrian transects for the presence of gopher tortoise burrows; however, no burrows were observed.

Additional areas that were identified as potential gopher tortoise habitat during the desktop analysis consisted of densely planted stands of loblolly pine with canopy cover greater than 60% and herbaceous cover less than 30%. Photographs of representative planted pine habitats are

provided in Attachment C (Photos 3 through 6). These areas did not meet the definition of suitable gopher tortoise habitat.

Numerous active gopher tortoise burrows were observed along New Road near the intersection of GC&P Road (see Attachment C, Photo 7). This area consists of an open sandy xeric environment that has been replanted with longleaf pine. Multiple gopher tortoise burrows were located within 200 feet of the road. This area was not extensively surveyed for gopher tortoise burrows as it occurs outside the defined Target Areas (see Attachment B, Figure 1-4).

Flatwoods Salamander (*Ambystoma cingulatum*) and Striped Newt (*Notophthalmus perstriatus*)

Suitable habitat for flatwoods salamander was defined as isolated ephemeral or depressional wetlands or ephemeral ponds with the absence of deep water, a treeless ecotone, and adjacency to open pine savannas or pine flatwoods (Powell 2010, Tucker 2011a). Suitable habitats for the striped newt are similar, but are most often associated with adjacency to sand or scrub upland environments (Powell 2010, Tucker 2011a).

To identify potential breeding ponds and suitable habitat for flatwoods salamander and striped newt, pedestrian transects where conducted at 50-to-100-foot intervals throughout all areas classified as wetland habitats by the NWI maps (USFWS 2010).

Isolated ephemeral ponds were located within Target Areas 1, 3, 6, 7, and 8 (see Attachment C, Photos 8 through 12). No salamanders were observed under leaf debris in any of these ponds. The ponds located within Target Area 6 (see Attachment C, Photo 11) and Target Area 7 (see Attachment C, Photo 10) supported some amphibian species, including tadpoles and frogs. However, none of the ponds in any of the Target Areas met suitable habitat requirements as they did not have treeless ecotones and were not supported by appropriate upland habitats including open pine savannahs, pine flatwoods, and sand scrub upland environments.

Wood Stork (*Mycteria Americana*)

The USFWS Georgia Ecological Services Field Offices GIS database of Threatened and Endangered Species Ranges in Georgia indicates a known wood stork rookery 9 miles northwest of proposed Acquisition Area 1 (illustrated on Figure 1-1 in Attachment B). No additional wood stork rookeries are known to occur in the study area. Past research on Georgia wood stork

colonies found that foraging occurs 80% of the time within a 12-mile radius (USFWS 1986). Target Areas 1, 2, 3, 4, 6, and 7 are within 12 miles of the rookery located northwest of Acquisition Area 1. Due to the project's proximity to the known rookery outside of the Acquisition Area, and the ability of wood storks to travel long distances for foraging, all wetland habitats within these Target Areas are presumed to be utilized as foraging habitat for wood storks.

No wood storks were observed foraging in onsite wetlands during the survey timeframe of 28 March through 6 April 2011. However, surveys were conducted early in the spring migration period and it is likely that wood storks had not reached coastal Georgia during the survey period. As stated in the 28 February 2011 survey methodology letter sent to your agency (see Attachment A), no follow-up field surveys are proposed for this species. They are presumed to utilize the wetlands located within Target Areas 1, 2, 3, 4, 6, and 7 for foraging, so impacts to wetland habitats, and thus wood stork foraging habitat, will be quantified and examined further in the EIS.

Other Observed Wildlife and Plants

During field surveys, observations of non-threatened and endangered species were recorded in field notes and were GPS located. A summary of non-protected species observed during the field surveys is provided in Table 1-1.

Table 1-1
Non-Protected Wildlife and Plants Observed During Field Surveys

Common Name	Scientific Name
Swallow Tailed Kite	*Elanoides forficatus*
Turkey	*Meleagris gallopavo*
Northern Bobwhite Quail	*Colinus virginianus*
Night Heron	*Nycticorax nycticorax*
Barred Owl	*Strix varia*
American Kestrel	*Falco sparverius*
Osprey	*Pandion haliaetus*
Red-Shouldered Hawk	*Buteo lineatus*
Cerulean Warbler	*Dendroica cerulea*

Black Racer	*Coluber constrictor*
Black Rat Snake	*Elaphe obsoleta*
Southern Toad	*Anaxyrus terrestris*
Ornate Chorus Frog	*Pseudacris ornata*
Musk Turtle	*Sternotherus odoratus*
Coyote	*Canis latrans*
Feral Pig	*Sus scrofa*
Pitcher Plant	*Sarracenia* sp.

Findings Summary

Field surveys conducted for federally protected species identified two areas, one within Target Area 3 and one within Target Area 6, as suitable habitat for the eastern indigo snake and gopher tortoise (see Attachment B, Figures 1-2 and 1-3). Gopher tortoise burrows also were observed near the intersection of New Road and GC&P Road (see Attachment B, Figure 1-4). This area occurs within Acquisition Area 1 but outside of the eight Target Areas and, therefore, extensive surveys were not conducted in this area.

Approximately 511 acres of wetland habitats were surveyed for potential breeding ponds and suitable habitat for flatwoods salamanders and striped newt. No areas of suitable habitat or breeding ponds were observed within the Target Areas for flatwoods salamander and striped newt.

No wood storks were observed during the onsite surveys; however, due to the project's proximity to a known wood stork rookery outside of Acquisition Area 1 and the ability of wood storks to travel long distances for foraging, wetland habitats within proposed Target Areas 1, 2, 3, 4, 6, and 7 are presumed to be utilized as foraging habitat for wood storks.

We will apply these survey findings to biological evaluations during development of the Proposed Action's EIS. No additional or follow-up surveys for protected species are proposed at this time. Please contact Mr. Jered Jackson at 904-542-6308 or e-mail jered.jackson@navy.mil with any questions or concerns regarding these findings or if you would like additional information.

Sincerely,

WILLIAM A. DRAWDY
Natural Resources and
Environmental Affairs Officer

Attachments

cc: John Conway, NAVFAC SE
Jered Jackson, NAVFAC SE
Brenda Powell, E & E
Jonathan Oravetz, E & E

Attachment A

Proposed USFWS Survey Methodology and Concurrence Letters

ecology and environment, inc.
Global Environmental Specialists
1974 Commonwealth Lane
Tallahassee, Florida 32303
Tel: (850) 574-1400, Fax: (850) 574-1400

December 17, 2010

Mr. Robert Brooks
United States Fish and Wildlife Service
Coastal Ecological Services Field Office
4980 Wildlife Drive NE
Townsend, Georgia 31331

Re: Proposed Use of Habitat-Based Flatwoods Salamander and Striped Newt Survey Methodology for the Environmental Impact Statement for the Modernization and Expansion of Townsend Bombing Range, Georgia

Dear Mr. Brooks:

As a follow-up to the informal consultation meeting conducted between personnel from the United States Fish and Wildlife Service (USFWS), Coastal Ecological Services Field Office, Naval Facilities Engineering Command Southeast (NAVFAC SE), Marine Corps Air Station Beaufort (MCAS Beaufort), and Ecology and Environment, Inc. (E & E) on November 30, 2010, and a subsequent teleconference between you and E & E representatives on December 13, 2010, we request the USFWS review and provide concurrence with the following proposed survey methodology for the federally threatened flatwoods salamander (*Ambystoma cingulatum*) and the striped newt (*Notophthalmus perstriatus*), a candidate species for federal listing, that would be used if surveys for these species are necessary. Such surveys would be conducted to determine impact to these species and would be utilized for Section 7 consultation, as necessary, to complete the Environmental Impact Statement for the Modernization and Expansion of Townsend Bombing Range, Georgia (referred to herein as the TBR EIS).

During the meeting on November 30, 2010, your agency expressed concern with the ability to conduct dip net surveys, if warranted, in the winter of 2011 due to a lack of rainfall in the geographic area of the Proposed Action, which includes Long and McIntosh Counties, Georgia. Therefore, on behalf of NAVFAC SE, E & E has conducted research on established survey methodologies for flatwoods salamanders. The findings of this research are summarized below. The striped newt utilizes similar habitat and has a similar life history as the flatwoods salamander. Therefore one survey methodology is proposed for the assessment of both species.

Currently, there is no set protocol for determining presence or absence of flatwoods salamanders in a particular breeding pond. The general study consensus is that a survey with drift net fences surrounding a breeding pond for two consecutive "normal" weather years will indicate an affirmative result on the determination of the pond as a breeding pond. For dip net surveys, multiple years of breeding pond surveys are required to definitively determine the presence or absence of flatwoods salamanders.[1] The drought conditions present in the project area during the recent past and the timeframe for completing the TBR EIS would make these survey methodologies infeasible for this project.

[1] USFWS, 2005a. *Biological Opinion for the Relocation of Panama City-Bay County International Airport (West Bay Site Alternative)*, Dated October 3, 2005, Prepared by USFWS, 1601 Balboa Avenue Panama City, Florida.

Habitat-based survey methods have been applied in the past for projects potentially impacting flatwoods salamanders.[1, 2] Two biological opinions issued by the USFWS Panama City, Florida office are provided as Attachments A and B for your review. Both of these studies utilized habitat-based surveys.

Habitat-based surveys examine existing habitats to determine if they are likely to be utilized as flatwoods salamander breeding ponds. These surveys typically examine ephemeral or depressional wetlands that are geographically isolated from larger water bodies. To determine if these areas serve as potential breeding ponds, a thorough assessment of the pond, ectone, and adjacent upland is conducted. Positive indicators are absence of deep water, a treeless ecotone, and adjacency to open pine savannas or pine flatwoods. Areas that maintain appropriate habitat within the pond, adjacent upland, and treeless ecotone are then assumed to be potentially utilized as a flatwoods salamander breeding pond.[2]

The proposed acquisition areas (Areas 1 and 3) are primarily composed of planted pine stands and deep forested wetlands. As such, your agency has indicated that little habitat for the flatwoods salamander or striped newt is expected to be found within the proposed target areas. In the winter of 2011, E & E will conduct wetland delineations and upland habitat classifications for the proposed target areas. Following this preliminary field effort, a detailed wetland delineation and habitat assessment report, identifying potential flatwoods salamander habitat, will be provided to USFWS.

If any areas are identified as suitable habitat for flatwoods salamanders or striped newts during the winter 2011 surveys, E & E would propose additional targeted field surveys be conducted during April and May 2011 to determine if the habitat is a potential breeding pond. These surveys would be conducted by appropriately educated botanists and/or biologists familiar with southeastern flora. For these follow-up surveys, E & E would propose to use a variation (e.g., modified slightly to include plant species found in Georgia) of the "Potential Breeding Pond Description Data Sheet for Flatwoods Salamander (*Ambystoma cingulatum*) and Striped Newt (*Notophthalmus perstriatus*)" provided in Appendix II of the *Biological Opinion for U.S. Army Corps of Engineers Regional General Permit 86 (RGP-86)*.[2] The modified data sheet proposed for follow-up habitat based surveys is provided herein as Attachment C. A list of proposed follow-up survey locations and rationale for why the area requires follow-up surveys (e.g., based on the winter 2011 survey findings, results of recent infrared aerial photo-interpretation, and review of Natural Resources Conservation Service soils datum) would be provided to the USFWS prior to the commencement of any necessary follow-up field surveys. The results of any targeted follow-up surveys would also be provided to the USFWS in report format.

Please review the methodologies herein that would be used in the event that flatwoods salamander and striped newt surveys are necessary. We respectfully request that you provide concurrence, within 30 days of receipt of this letter, with the use of habitat-based follow-up surveys as opposed to conducting dip net surveys over multiple years to confirm the presence of flatwoods salamander and striped newt breeding ponds within proposed impact areas.

[2] USFWS 2005b. *Biological Opinion for U.S. Army Corps of Engineers Regional General Permit 86 (RGP-86)*, Dated March 3, 2005, Prepared by USFWS, 1601 Balboa Avenue Panama City, Florida.

Please feel free to contact me (bpowell@ene.com; 850-574-1400, ext. 3911) or Jonathan Oravetz (joravetz@ene.com; 850-574-1400, ext. 3928) if you have any questions regarding this submittal or require any additional information to process this request.

Sincerely,

ECOLOGY & ENVIRONMENT, INC.

Brenda A. Powell

Brenda A. Powell
Project Biologist

Attachments

cc: Jered Jackson, NAVFAC SE
John Conway, NAVFAC SE
Billy Drawdy, MCAS Beaufort
Alice Howard, MCAS Beaufort

United States Department of the Interior

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February 3, 2011

Ms. Brenda A. Powell
Ecology & Environment, Inc.
1974 Commonwealth Lane
Tallahassee, Florida 32303

Re: USFWS File Number 2011-TA-0227

Dear Ms. Powell:

Thank you for your December 17, 2010, letter and attachments regarding your proposed use of habitat based flatwoods salamander and striped newt survey methodology for the Environmental Impact Statement for the proposed Modernization and Expansion of Townsend Bombing Range, Georgia. These surveys will be conducted for preparation of a draft Environmental Impact Statement for the proposed expansion of the range in McIntosh and Long Counties, Georgia. We have reviewed the information you provided and submit the following comments under provisions of the Endangered Species Act of 1973 (Act) as amended (16 U.S.C. 1531 et seq.).

According to the information you provided, the proposed acquisition areas will be assessed to determine if they have appropriate habitat for the frosted flatwoods salamander, a federally listed species, or the striped newt, a candidate species. Since the proposed acquisition areas consist mainly of planted pine stands and the area has been through a drought year, these habitat surveys will be used to determine the presence or absence of the salamander and newt, as opposed to conducting dip net surveys over several years. A more detailed description of the proposed habitat surveys are included with your letter and attachments, along with a modified habitat data sheet. We have reviewed this information and therefore agree with your proposed method of habitat surveys for the frosted flatwoods salamander and the striped newt.

We appreciate the opportunity to comment during the planning stages of your project. If you have any questions, please write or call staff biologist, Robert Brooks, of our Coastal Georgia Sub Office at 912-832-8739, extension 107.

Sincerely,

Stan Colwell for

Sandra S. Tucker
Field Supervisor

UNITED STATES MARINE CORPS
MARINE CORPS AIR STATION
BEAUFORT, SOUTH CAROLINA 29904-5001

IN REPLY REFER TO
5090
NREAO/058
28 FEB 2011

Mr. Robert Brooks
United States Fish and Wildlife Service
Coastal Ecological Services Field Office
4980 Wildlife Drive NE
Townsend, Georgia 31331

Re: Proposed Survey Methodology for Federally-Listed and Candidate Species for the *Environmental Impact Statement for the Modernization and Expansion of Townsend Bombing Range, Georgia*

Dear Mr. Brooks:

During the informal consultation meeting conducted among personnel from the United States Fish and Wildlife Service (USFWS), Coastal Ecological Services Field Office; Marine Corps Air Station Beaufort (MCAS Beaufort); Naval Facilities Engineering Command Southeast (NAVFAC SE); and Ecology and Environment, Inc. (E & E) on November 30, 2010, we discussed a preliminary list of federally protected species potentially affected by the modernization and expansion of Townsend Bombing Range (TBR), Georgia.

The preliminary list of 11 federally protected species discussed during the meeting was developed based on E & E's review of the USFWS species lists for Long and McIntosh Counties, Georgia, and was originally provided in tabular format in the *Desktop Analysis of Biological and Environmental Variables for the Environmental Impact Statement* (EIS) *for the Modernization and Expansion of Townsend Bombing Range, Georgia,* dated November 2010 (2010 Desktop Analysis). The table from the 2010 Desktop Analysis is provided on the next page, but reflects minor revisions including an updated federal status for the Altamaha spinymussel (*Elliptio spinosa*) as proposed endangered. Additionally, at your request, the federally delisted bald eagle (*Haliaeetus leucocephalus*) is included in the table because of its protection under the federal Bald and Golden Eagle Act of 1940.

On December 17, 2010, E & E provided a detailed methodology proposing the use of habitat-based survey methodologies for the flatwoods salamander (*Ambystoma cingulatum*) and striped newt (*Notophthalmus perstriatus*) as opposed to using dip net

or drift net surveys. The USFWS provided concurrence with the proposed habitat-based survey methodologies for these two species via letter on February 3, 2011.

In continuation with the preparation of the EIS, E & E has received and reviewed the results of the Georgia Department of Natural Resources (GaDNR's) Coastal Resource Mapping Project completed in 2010 which delineates vegetative habitats found in Long and McIntosh Counties, Georgia. In addition, E & E and NAVFAC SE performed a site reconnaissance on February 9 through 11, 2011, to preliminarily ground-truth aerial signatures identified in the 2010 Desktop Analysis and cross-check the habitats identified in the GaDNR Coastal Resource Mapping Project.

Federally Protected Species Potentially Occurring in Long and McIntosh Counties, Georgia

Scientific Name	Common Name	Federal Listing	State Listing
AMPHIBIANS			
Drymarchon corais couperi	Eastern Indigo Snake	T	T
Ambystoma cingulatum	Frosted Flatwoods Salamander	T	T
Gopherus polyphemus	Gopher Tortoise	C	T
Notophthalmus perstriatus	Striped Newt	C	R
BIRDS			
Vermivora bachmanii	Bachman's Warbler	E	.
Dendroica kirtlandii	Kirtland's Warbler	E	.
Haliaeetus leucocephalus	Bald Eagle	*	T
Mycteria americana	Wood Stork	E	E
MOLLUSKS			
Elliptio spinosa	Altamaha Spinymussel	PE	E
PLANTS			
Baptista arachnifera	Hairy Rattleweed	E	E

C - Candidate Species; E - Endangered; PE- Proposed Endangered; T – Threatened; * Protected under Bald and Golden Eagle Protection Act of 1940

Lastly, E & E has reviewed literature regarding life histories, biology, and habitat utilization of the 10 remaining species identified in the table on the next page. Based upon the preliminary habitats identified during the site reconnaissance and E & E's literature review, they have determined that the federally-listed threatened eastern indigo snake (*Drymarchon corais couperi*); the gopher tortoise (*Gopherus polyphemus*), a candidate species for federal listing; and the federally-listed endangered wood stork (*Mycteria Americana*) have the potential to occur within the

proposed impact areas and therefore may require field surveys to determine the presence of these species. Proposed survey methodologies for these species are described in Section 1.0.

Upon review of the same sources listed above, E & E also has determined that suitable habitat for the federally-listed endangered Bachman's warbler (*Vermivora bachmanii*); the federally-listed endangered Kirtland's warbler (*Dendroica kirtlandii*); the bald eagle; the potentially endangered Altamaha spinymussel; and the federally-listed endangered hairy rattle weed (*Baptista arachnifera*) are unlikely to occur within the proposed impact areas. Based upon the lack of suitable habitat for these species, no further field assessments for these species are proposed. Further rationale for this determination is described in Section 2.0. A list of references used to make these determinations is provided in Attachment A.

At this time, we request the USFWS review and provide concurrence with the following proposed survey methodologies for the eastern indigo snake, gopher tortoise, and wood stork. Such surveys would be conducted to determine impact to these species and would be utilized for Section 7 consultation, as necessary, to complete the EIS for the Modernization and Expansion of TBR, Georgia. We also are requesting concurrence with the rationale for not conducting field surveys for the Bachman's warbler, Kirkland's warbler, bald eagle, Altamaha spinymussel, short-nose sturgeon, Atlantic sturgeon, and hairy rattle weed.

1.0 Proposed Survey Methodology for Eastern Indigo Snake, Gopher Tortoise, and Wood Stork

We propose to conduct a more thorough site review of proposed target areas for the eastern indigo snake, gopher tortoise, and wood stork to determine if sufficient habitat exists within the proposed target area to support the above-referenced species. If it is found that sufficient habitat exists to support said species, then follow-up field assessments will be made to confirm the presence or absence of these species.

Eastern Indigo Snake

Habitat Requirements

Eastern indigo snakes use a variety of habitats that include pine flatwoods, scrubby flatwoods, high pine, dry prairie, hardwood hammocks, edges of freshwater wetlands, agricultural land, coastal dunes, and disturbed areas. Eastern indigo

snakes are often associated with gopher tortoise burrows, where they seek shelter from thermal stress and lay eggs. In areas lacking tortoise burrows, decayed stumps and logs are important habitat features for cover. Indigo snakes eat a variety of small mammals and herpetofauna, including eastern diamondback rattlesnakes and gopher tortoise hatchlings. In Georgia, the eastern indigo snake is most often associated with sand ridge habitats which often occur along major coastal plain streams (Speake, Diemer, and McGlincy 1981).

The Georgia Ecological Services Field Office of the USFWS maintains a GIS database of Threatened and Endangered Species Ranges in Georgia. This database indicates that the entirety of Acquisition Areas 1 and 3 is a "Possible Range" for indigo snakes. The database also indicates that "known occurrences" of eastern indigo snakes have been documented within Acquisition Areas 1 and 3. Based upon known occurrence data, an occurrence of indigo snake was documented within the proposed 400-acre Airfield Target Area.

Preliminary Site Review

We will review high-resolution aerial imagery and Natural Resource Conservation Service (NRCS) soil data to identify potential suitable habitat for the eastern indigo snake. Suitable habitat features are: sand ridges, scrubby pine flatwoods, and open upland environments adjacent to freshwater wetlands. Positive indicators for these habitats will be the presence of gopher tortoise burrows. Soil survey data that indicate sandy soils within or adjacent to suitable habitat will also be considered a positive indicator.

The NRCS soil data contain soil drainage characteristics. For areas within the proposed impact areas, drainage characteristics are classified as: moderately well drained, somewhat poorly drained, poorly drained, and very poorly drained. Since indigo snakes utilize sandy environments with supporting wetland environments, we assume that areas with poorly drained or very poorly drained soils will not provide the necessary upland habitat to support indigo snakes. For survey purposes, those areas identified within impact areas with moderately well drained or somewhat poorly drained soils will be examined to determine if significant habitat exist to support indigo snake populations.

Areas of suitable habitat as defined above will be mapped using GIS and will be cross-referenced to known occurrences of eastern indigo snakes from the USFWS Georgia Ecological Services Field Office GIS database of Threatened and Endangered Species Ranges in Georgia. Distances from each area

of suitable habitat to the nearest known occurrences of eastern indigo snake will be documented.

Field Assessment
We will conduct follow-up surveys in areas of suitable habitat to determine if the habitat is likely to support eastern indigo snakes. These surveys will assess the potential habitat and include a survey for the presence of gopher tortoise burrows. A detailed habitat description of survey areas, as well as photographs of suitable habitat, will be completed. Upon completion of the field assessment, a summary report of survey findings will be provided to USFWS staff.

Gopher Tortoise

Habitat Requirements
Gopher tortoises are common in most types of upland communities with open canopies. They are commonly found in habitats such as sandhill, pine flatwoods, scrub, scrubby flatwoods, dry prairies, xeric hammock, pine-mixed hardwoods, and coastal dunes. Gopher tortoises construct burrows in sandy soils. The gopher tortoise resides in these burrows which protect them from other species and extreme heat. These burrows also provide similar protection for over 350 other commensal species. Key species known to occupy gopher tortoise burrows include the eastern indigo snake, eastern diamondback rattlesnake, and gopher frogs (Florida Freshwater Fish and Wildlife Conservation Commission [FWC] 2010a and 2010b).

Preliminary Site Review
We will review high-resolution aerial imagery and NRCS soil data to identify potential suitable habitat for the gopher tortoise. Suitable habitat features are: sand ridges, scrubby pine flatwoods, dry prairies, xeric hammocks, and open upland environments with sandy soils. Positive indicators for these habitats will be the presence of sandy soils as indicated from soil survey data.

The NRCS soil data contain soil drainage characteristics. For areas within the proposed impact areas, drainage characteristics are classified as: moderately well drained, somewhat poorly drained, poorly drained, and very poorly drained. Since gopher tortoises utilize sandy environments with low groundwater elevations, we assume that areas with poorly drained or very poorly drained soils will not support gopher tortoises. For survey purposes, those areas identified within impact areas with moderately well drained or somewhat poorly drained soils will be examined to determine if

significant habitat exist to support gopher tortoise populations.

Field Assessment

We will conduct follow-up surveys in areas of suitable habitat to determine if the habitat is currently utilized by gopher tortoises. Canopy and herbaceous cover percentage will be documented for upland habitats identified in the preliminary site review to determine if adequate vegetation exists to support gopher tortoises. Acceptable habitat features will be defined as a canopy cover of less than 60%, with an herbaceous cover of at least 30% (FWC 2009). If acceptable canopy and herbaceous cover percentage exist, pedestrian transects within suitable habitat will be conducted to identify gopher tortoise burrows. Existing burrows will be classified as active or abandoned and marked by Global Positioning System (GPS). A detailed habitat description of survey areas, as well as photographs of existing burrows, will be completed. Upon completion of the field assessment, a summary report of survey findings will be provided to USFWS staff.

Wood Stork

Habitat Requirements

The wood stork is a colonial bird that nests in large rookeries often constructed in cypress (*Taxodium distichum*), black gum (*Nyssa sylvatica var. biflora*) and southern willow (*Salix carolina*). Wood storks utilize the same nesting colonies from year to year as long as they remain undisturbed (USFWS 1986). They feed in flocks on small fish, crustaceans, amphibians, reptiles, and arthropods found within freshwater marshes, flooded roadside and agricultural ditches, and depressions in cypress heads, swamp sloughs, tidal creeks and pools, and estuaries. The wood stork is known to travel long distances (up to 80 miles) in search of feeding areas. Past research on Georgia wood stork colonies has found that foraging occurs within a 12-mile radius 80% of the time (USFWS 1986).

The USFWS Georgia Ecological Services Field Office GIS database of Threatened and Endangered Species Ranges in Georgia indicates a known wood stork rookery located 9 miles northwest of proposed Acquisition Area 3. During the meeting with the USFWS on November 30, 2010, and a subsequent meeting with GaDNR on December 1, 2010, both agencies confirmed that no wood stork rookeries occur within proposed Acquisition Areas 1 or 3. However, due to the project's proximity to the known rookery and the ability of wood storks to travel long distances for foraging, wetland habitats within the proposed

impact areas may be utilized as foraging habitat for wood storks.

Preliminary Site Review
During the preliminary site reconnaissance conducted on February 9 and 10, 2011, we confirmed that potential foraging habitat exists within the proposed impact areas. These habitats include swamp sloughs, forested depressions, and roadside and agricultural ditches. No individual sightings of wood storks were observed during the sight reconnaissance.

Proposed Survey Methods
Based upon preliminary site review findings noted above, we determined that appropriate foraging habitat exists within the proposed impact areas and wood storks may utilize these wetland habitats for foraging. While conducting field assessments for other protected species or wetland delineations for the project, we will document any observed sightings of this species and report these sightings in the EIS. No follow-up field surveys are proposed for this species as potential impacts to wetland habitats, and thus wood stork foraging habitat, will be quantified and further examined in the EIS.

2.0 Rationale for Determination of Other Species Not Requiring Field Surveys

Our rationale for determining that field surveys will not be required for Bachman's warbler, Kirtland's warbler, Altamaha spinymussel, and the hairy rattle weed is provided below.

Kirtland's Warbler

The Kirkland's warbler has one of the most restricted breeding ranges of any North American bird. It breeds in the open jack pine (*Pinus banksiana*) plains of central Michigan. The bird over-winters in the Bahamas with spring departures occurring in late April and early May and fall migrations between August and October (USFWS 1999). The primary migration route follows a narrow band through South Carolina, North Carolina, Virginia, West Virginia, and Ohio before reaching nesting grounds in Michigan (USFWS 1999). When warblers make their spring migration, the first quarter of the route is over water (Mayfield 1988). Some research has shown migration occurs without any stops or with limited stopovers (Mayfield 1988; USFWS 1999). These studies concluded that observations of warblers outside of the main migration route were likely strays, as a disproportionate number of documented

observations occurred in Ohio and Michigan, the last quarter of the migratory route.

The Kirtland's warbler is potentially only present in the state of Georgia for a limited time during its migratory period. Because the primary migration route for Kirkland's warbler lies north and northeast of Georgia, and since research indicates they may migrate without stopovers and that warblers within the state of Georgia are likely stray birds, no field assessments for this species are proposed.

Bald Eagle

During the November 30 and December 1, 2010, meetings with the USFWS and GaDNR, respectively, both agencies confirmed that no known bald eagle nests occur within the proposed project area. The proposed acquisition area is currently managed for silviculture operations and is composed primarily of dense planted pine stands, recently cleared pine stands, and forested wetlands. Bald eagles require tall, mature trees for nesting purposes. Due to clearing activities associated with active management of timber, trees are harvested well before they reach maturity. No suitable nesting habitat within the proposed impact areas exist for bald eagles, and therefore no detailed field assessments for this species are proposed. Visual observations of bald eagles or nests observed during other field activities will be provided to the USFWS and documented in the EIS.

Bachman's Warbler

A confirmed documentation of the Bachman's warbler has not been reported in the United States since 1962 (USWFS 2005), and therefore no field assessments for this species are proposed.

Altamaha Spinymussel

The Altamaha spinymussel utilizes the Altamaha River. As discussed during the November 30, 2010, meeting, Acquisition Area 2, which is adjacent to the river, has been removed from the project scope. Therefore, no direct or secondary impacts to the Altamaha River are anticipated, and no field assessments for this species are proposed.

Hairy Rattle Weed

The hairy rattle weed inhabits shallow pools on Piedmont granite outcrops in full sunlight. It is known to occur in

Brantley and Wayne Counties, Georgia, and the USFWS stated in the November 30, 2010, meeting that the required habitat for this species likely would not be found within the proposed acquisition areas. Therefore, no field assessments for this species are proposed.

We respectfully request that the USFWS review the survey methodologies provided herein and provide concurrence within 30 days of receipt of this letter. Please contact Jered Jackson at 904-542-6308 or e-mail jered.jackson@navy.mil with any questions or concerns regarding this submittal or if you require any additional information to process this request.

Sincerely,

WILLIAM A. DRAWDY
Natural Resources and
Environmental Affairs Officer

cc: John Conway, NAVFAC SE
Jered Jackson, NAVFAC SE
Brenda Powell, Ecology and Environment, Inc.
Jonathan Oravetz, Ecology and Environment, Inc.

United States Department of the Interior

Fish and Wildlife Service
105 West Park Drive, Suite D
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Phone: (706) 613-9493
Fax: (706) 613-6059

West Georgia Sub-Office
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Fort Benning, Georgia 31995-2560
Phone: (706) 544-6428
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Coastal Sub-Office
4980 Wildlife Drive
Townsend, Georgia 31331
Phone: (912) 832-8739
Fax: (912) 832-8744

April 1, 2011

Mr. W. A. Drawdy
U. S. Marine Corps
Marine Corps Air Station
Beaufort, South Carolina 29904-5001

Re: FWS Log # 2011-0042

Dear Mr. Drawdy:

Thank you for your February 28, 2011, letter regarding survey methodologies for Federally listed and candidate species for the draft Environmental Impact Statement for the proposed Modernization and Expansion of Townsend Bombing Range, Georgia. We have reviewed the information you provided and submit the following comments under provisions of the Endangered Species Act of 1973 (Act) as amended (16 U.S.C. 1531 et seq.).

According to the information you provided, the federally threatened eastern indigo snake, the federally threatened frosted flatwoods salamander, the federally endangered wood stork, and the state listed gopher tortoise have the potential to occur within the proposed impact areas. You listed the gopher tortoise as a candidate species, however it is state listed now, but in the future could become a candidate species. You determined field surveys would not be required for the Kirtland's Warbler, Bald Eagle, Bachman's warbler, Altamaha spinymussel, and hairy rattleweed since habitat was lacking in the proposed acquisition impact areas. We have reviewed this information and agree with your species list and proposed method of surveys for the eastern indigo snake, wood stork, and gopher tortoise. The survey methodology for the striped newt and frosted flatwoods salamander was concurred on in a previous letter (FWS Log # 2011-TA-0227).

We appreciate the opportunity to comment during the planning stages of your project. If you have any questions, please write or call staff biologist, Robert Brooks, of our Coastal Georgia Sub Office at 912-832-8739, extension 107.

Sincerely,

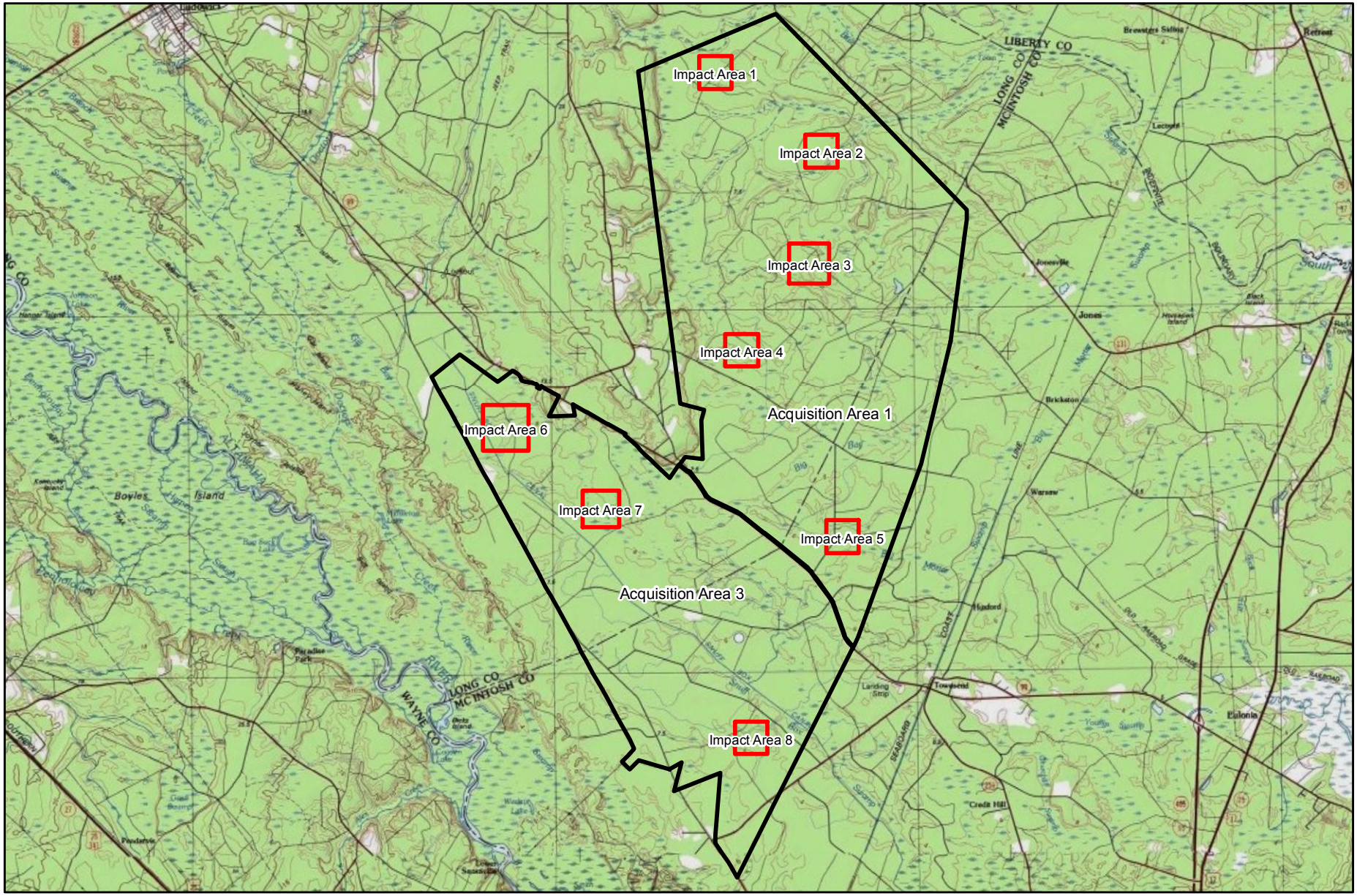
Strant Colwell

Sandra S. Tucker
Field Supervisor for

Attachment B

Figures

Path: W:\2846_Townsend\MXD\T&E_Summary_Spring2011\Fig1-1_Target_Impact_Areas.mxd



Target Impact Area

Acquisition Area

Source: USGS US Topo Maps online, 2011

Figure 1-1
Target Impact Areas
Townsend Bombing Range
Long County, Georgia

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Picture

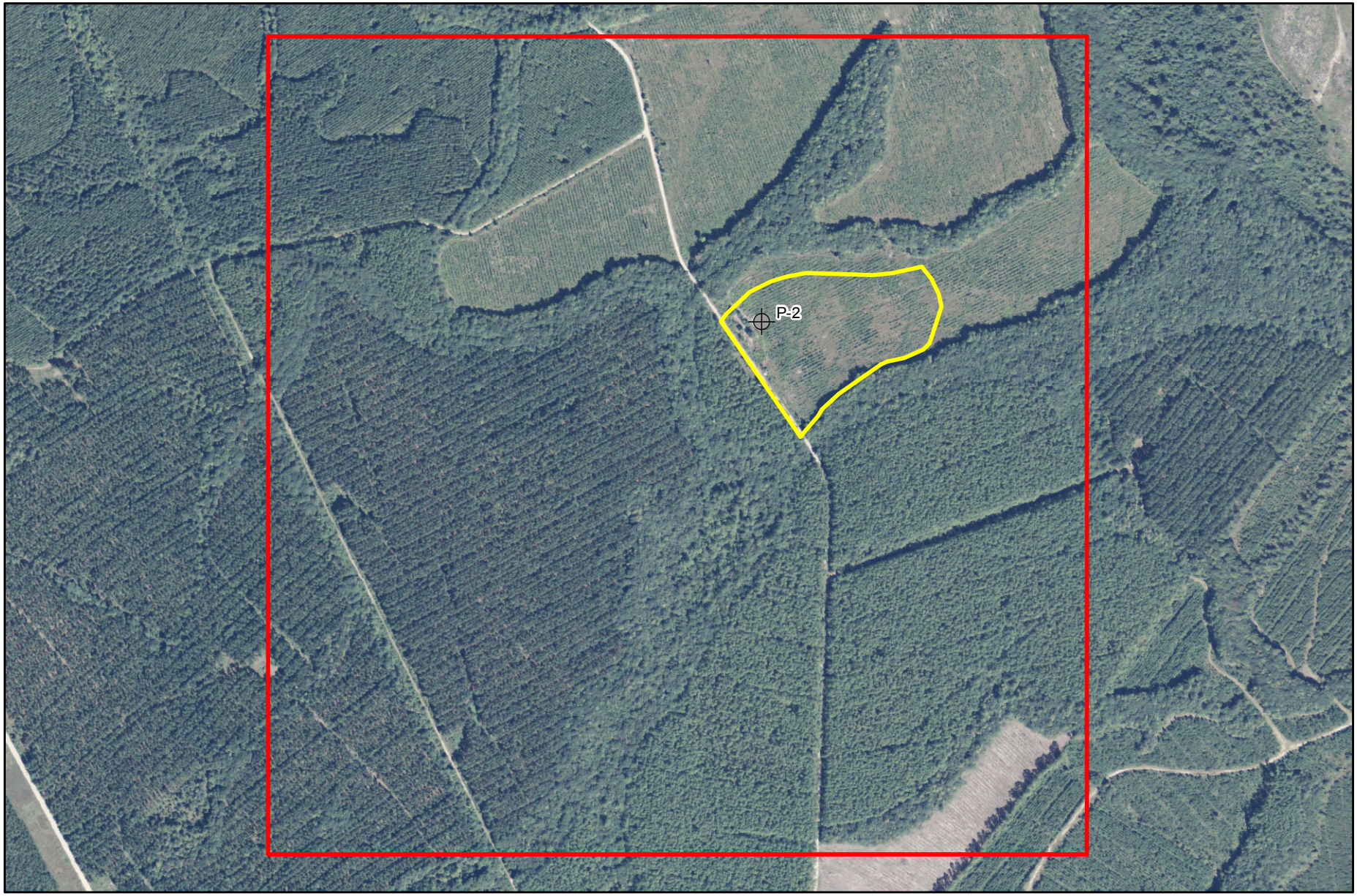
Suitable Habitat Eastern Indigo Snake/Gopher Tortoise

Target Impact Area

Source: USDA, 2010

Figure 1-2
Suitable Habitat Eastern Indigo Snake/Gopher Tortoise
Target Impact Area 3
Townsend Bombing Range
Long County, Georgia

Path: W:\2846_Townsend\MXD\T&E_Summary_Spring2011\Fig1-3_Impact_Area6_suitable_habitat.mxd



Picture

Suitable Habitat Eastern Indigo Snake/Gopher Tortoise

Target Impact Area

Source: USDA, 2010

Figure 1-3
Suitable Habitat Eastern Indigo Snake/Gopher Tortoise
Target Impact Area 6
Townsend Bombing Range
Long County, Georgia

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Picture

Source: USDA, 2010

Figure 1-4
Observed Gopher Tortoise Burrows and Habitat
Acquisition Area 1
Townsend Bombing Range
Long County, Georgia

Attachment C

Photographic Log

Photographic Log

Photo 1: 1.8-acre sandy upland area located within Target Impact Area 3, illustrating suitable habitat for eastern indigo snake and gopher tortoise.

Photo 2: 12.8-acre sandy upland area located within Target Impact Area 6, illustrating suitable habitat for eastern indigo snake and gopher tortoise.

Photo 3: Area identified in the desktop analysis as potential gopher tortoise habitat based on soil drainage characteristics within Target Impact Area 1. In-field verification determined area to be unsuitable habitat for gopher tortoises.

Photo-4: Area identified in the desktop analysis as potential gopher tortoise habitat based on soil drainage characteristics within Target Impact Area 2. In-field verification determined area to be unsuitable habitat for gopher tortoises.

Photo 5: Area identified in the desktop analysis as potential gopher tortoise habitat based on soil drainage characteristics within Target Impact Area 2. In-field verification determined area to be unsuitable habitat for gopher tortoises.

Photo 6: Area identified in the desktop analysis as potential gopher tortoise habitat based on soil drainage characteristics within Target Impact Area 4. In-field verification determined area to be unsuitable habitat for gopher tortoises.

Photo 7: Gopher tortoise burrow observed adjacent to New Road.

Photo 8: Ephemeral wetland located within Target Impact Area 1. Area determined to be unsuitable habitat for flatwoods salamander.

Photo 9: Large emergent wetland with standing water in rutted areas within Target Impact Area 3. Area determined to be unsuitable habitat for flatwoods salamander.

Photo 10: Small ephemeral ponds located within old road bed within Target Impact Area 7. Area determined to be unsuitable habitat for flatwoods salamander.

Photo 11: Small ephemeral pond adjacent to forested wetland within Target Impact Area 6. Area determined unsuitable habitat for flatwoods salamander.

Photo 12: Small ephemeral pond within drainage ditch within Target Impact Area 8. Area determined unsuitable habitat for flatwoods salamander.

Attachment D

References

References

Drawdy, W., 2011. Personal communication. United States Marine Corps (USMC). Letter re: Proposed Survey Methodology for Eastern Indigo Snake, Gopher Tortoise, Wood Stork, Corkwood, and Dwarf Witch-Alder for the Environmental Impact Statement for the Modernization and Expansion of Townsend Bombing Range, Georgia, dated February 28, 2011, to Robert Brooks, United States Fish and Wildlife Service, Coastal Ecological Services Field Office, Townsend, Georgia.

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Tucker, S. 2011a. Personal communication. Field Supervisor, United States Fish and Wildlife Service, Letter re: FWS Log # 2011-TA-02227 (Survey Methods Concurrence Letter), dated February 3, 2011, to Brenda A. Powell, Ecology and Environment, Inc., Tallahassee, Florida.

Tucker, S. 2011b. Personal communication. Field Supervisor, United States Fish and Wildlife Service, Letter re: FWS Log # 2011-0042 (Survey Methods Concurrence), dated April 1, 2011, to W.A. Drawdy, United States Marine Corps, Beaufort, South Carolina.

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_____. 2010. National Agricultural Inventory Project (NAIP). 1 meter resolution True Color Aerial Imagery.

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_____. 2010. National Wetland Inventory (NWI) State-wide Database for Georgia. Online at http://www.fws.gov/wetlands/Data/DataDownload.html.

Appendix G
Threatened and Endangered Species

Appendix G.1
U.S. Fish and Wildlife Service

Determination of Effects

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UNITED STATES MARINE CORPS
MARINE CORPS AIR STATION
BEAUFORT, SOUTH CAROLINA 29904-5001

IN REPLY REFER TO
5090
NREAO/164
2 AUG 2011

Mr. Robert Brooks
United States Fish and Wildlife Service
Coastal Ecological Services Field Office
4980 Wildlife Drive NE
Townsend, Georgia 31331

Re: Determination of effects on threatened and endangered species for the *Environmental Impact Statement for the Modernization and Expansion of Townsend Bombing Range, Georgia*.

Dear Mr. Brooks

The Marine Corps Air Station (MCAS) Beaufort has analyzed potential biological impacts associated with the modernization and expansion of Townsend Bombing Range, Georgia (TBR). This analysis is based upon literature review, conversations and correspondences with USFWS, and on-the-ground surveys of areas expected to be directly affected by the action.

The species considered in the analysis include the Eastern indigo snake, gopher tortoise (a candidate for listing), frosted flatwoods salamander, striped newt (a candidate for listing), wood stork, Kirtland's warbler, Bachman's warbler, bald eagle (protected under the Bald and Golden Eagle Protection Act), Altamaha spinymussel (proposed for listing as endangered), and hairy rattleweed.

Biological surveys were conducted using methodologies detailed in letters from Brenda Powell of Ecology and Environment, Inc. (E & E) to the USFWS dated 17 December 2010, and from Mr. William Drawdy of the USMC dated 28 February 2011. The survey methodologies were subsequently approved by the USFWS in letters dated 3 February and 1 April 2011, respectively. During reconnaissance of the proposed action area on 9 - 11 February 2011, the USMC and E & E determined that suitable habitat for the Bachman's warbler, Kirtland's warbler, bald eagle, Altamaha spinymussel, and hairy rattleweed did not occur. Based upon the lack of suitable habitat for these species, no field assessments for them were proposed. The USFWS concurred with this decision in a letter dated 1 April 2011.

E & E conducted biological surveys for the eastern indigo snake, flatwoods salamander, striped newt, wood stork, and gopher tortoise in the proposed impact areas between 28 March and 6 April 2011. Survey findings were provided to the USFWS in a letter dated 2 May 2011. Suitable habitat was identified for the Eastern indigo snake and gopher tortoise at impact areas 3 and 6, but neither species and no gopher tortoise burrows were found in those habitats. No suitable habitat or breeding ponds were observed within the impact areas for the frosted flatwoods salamander or striped newt. No wood storks were observed but, due to the project's proximity to a known wood stork rookery, wetland habitats within proposed impact areas 1,2,3,4,6, and 7 may be utilized as foraging habitat for wood storks.

The United States Marine Corps (USMC) has determined that the proposed action may affect but is not likely to adversely affect the Eastern indigo snake, gopher tortoise, and wood stork, and that it will not affect the other species addressed in this biological evaluation. No critical habitat is present in the proposed action area.

Table 1. Determination Summary for Species of Concern that Potentially Occur in the Proposed Action Area.

Species	Summary of Effects
Eastern Indigo Snake	May affect, not likely to adversely affect
Gopher Tortoise	May affect, not likely to adversely affect
Flatwoods Salamander	No effect
Striped Newt	No effect
Wood Stork	May affect, not likely to adversely affect
Kirtland's Warbler	No effect
Bachman's Warbler	No effect
Bald Eagle	No effect
Altamaha Spinymussel	No effect
Hairy Rattle Weed	No effect

We look forward to your timely review of these determinations, and request your concurrence that the proposed action may affect, but is not likely to adversely affect listed species under your

jurisdiction. My point of contact is Mr. Jered Jackson, who can be reached at (904) 542-6308 or via email at jered.jackson@navy.mil.

Sincerely,

WILLIAM A. DRAWDY
Natural Resources and
Environmental Affairs Officer

Attachments

cc: John Conway, NAVFAC SE
Jered Jackson, NAVFAC SE
Brenda Powell, E & E
Jonathan Oravetz, E & E

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United States Department of the Interior

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West Georgia Sub-Office
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Fax: (706) 544-6419

Coastal Sub-Office
4980 Wildlife Drive
Townsend, Georgia 31331
Phone: (912) 832-8739
Fax: (912) 832-8744

September 22, 2011

Mr. W. A. Drawdy
U. S. Marine Corps
Marine Corps Air Station
Beaufort, South Carolina 29904-5001

Re: USFWS File Number 2011-I-0969

Dear Mr. Drawdy:

Thank you for your August 2, 2011, letter regarding the modernization and expansion of Townsend Bombing Range, in McIntosh County, Georgia. We have reviewed the information you provided and submit the following comments under provisions of the Endangered Species Act of 1973 (Act) as amended (16 U.S.C. 1531 et seq.).

According to the information you provided, the federally threatened eastern indigo snake, the federally endangered wood stork, and the gopher tortoise, a federal candidate species, have the potential to occur within the proposed expansion area, but were not found on the proposed impact areas. Therefore, we agree with your determination that this proposed project is not likely to adversely affect any federally listed endangered or threatened species. Also, we believe that the requirements of section 7 of the Endangered Species Act have been satisfied and no further consultation is required. However, obligations under section 7 of the Act must be reconsidered if: (1) new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner not previously considered; (2) this action is subsequently modified in a manner which was not considered in this assessment; or (3) a new species is listed or critical habitat determined that may be affected by the identified action.

We appreciate the opportunity to comment during the planning stages of your project. If you have any questions, please contact staff biologist, Robert Brooks, of our Coastal Georgia Sub-Office at 912-832-8739, extension 107.

Sincerely,

Sandra S. Tucker
Field Supervisor

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Appendix G
Threatened and Endangered Species

Appendix G.2
Georgia Department of Natural Resources

Survey Methodology

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UNITED STATES MARINE CORPS
MARINE CORPS AIR STATION
BEAUFORT, SOUTH CAROLINA 29904-5001

IN REPLY REFER TO
5090
NREAO/057
28 FEB 2011

Matt Elliott
Program Manager
Georgia Department of Natural Resources
Wildlife Resources Division
Nongame Conservation Section
2065 US Hwy 278, SE
Social Circle, GA 30025

Re: Proposed Survey Methodology for Eastern Indigo Snake, Gopher Tortoise, Wood Stork, Corkwood, and Dwarf Witch-alder for the Environmental Impact Statement for the Modernization and Expansion of Townsend Bombing Range, Georgia

Dear Mr. Elliott:

During the informal consultation meeting conducted among personnel from the Georgia Department of Natural Resources (GaDNR), Marine Corps Air Station Beaufort (MCAS Beaufort), Naval Facilities Engineering Command Southeast (NAVFAC SE), and Ecology and Environment, Inc. (E & E) on December 1, 2010, we discussed a preliminary list of state-protected species potentially affected by the modernization and expansion of Townsend Bombing Range (TBR), Georgia.

The preliminary list of 16 state-listed threatened or endangered species discussed during the meeting was developed based upon our review of the GaDNR species lists for Long and McIntosh Counties, Georgia, and was originally provided in tabular format in the *Desktop Analysis of Biological and Environmental Variables for the Environmental Impact Statement* (EIS) *for the Modernization and Expansion of Townsend Bombing Range, Georgia*, dated November 2010 (2010 Desktop Analysis). The table from the 2010 Desktop Analysis is provided below, but includes minor revisions including an updated federal status for the Altamaha spinymussel (*Elliptio spinosa*) as potentially endangered based on comments from the United States Fish and Wildlife Service (USFWS), Coastal Ecological Services Field Office, during a meeting on November 30, 2010.

In continuation with the preparation of the EIS, we have received and reviewed the results of the GaDNR's Coastal Resource Mapping Project completed in 2010 which delineates

vegetative habitats found in Long and McIntosh Counties, Georgia. In addition, we performed a site reconnaissance on February 9 through 11, 2011, to preliminarily ground-truth aerial signatures identified in the 2010 Desktop Analysis and cross-check the habitats identified in the GaDNR Coastal Resource Mapping Project. Lastly, we have reviewed literature regarding life histories, biology, and habitat utilization of the 16 species identified in the table below. Based upon the preliminary habitats identified during the site reconnaissance and our literature review, we have determined that the following state-listed species have the potential to occur within the proposed impact areas and therefore may require field surveys to determine the presence of these species: threatened eastern indigo snake (*Drymarchon corais couperi*), threatened gopher tortoise (*Gopherus polyphemus*), endangered wood stork (*Mycteria Americana*), threatened corkwood (*Leitneria floridana*), threatened dwarf witch-alder (*Fothergilla gardenia*), and threatened frosted flatwoods salamander (*Ambystoma cingulatum*) Proposed survey methodologies for these species are described in Section 1.0.

To date, we have received concurrence from the USFWS to utilize habitat-based surveys methodologies for the flatwoods salamander and striped newt as opposed to using dip net or drift net surveys. The methodology and concurrence letter are provided in Appendix A.

State Protected Species Potentially Occurring in Long and McIntosh Counties, Georgia

Scientific Name	Common Name	Federal Listing	State Listing
	AMPHIBIANS		
Drymarchon corais couperi	Eastern Indigo Snake	T	T
Ambystoma cingulatum	Frosted Flatwoods Salamander	T	T
Gopherus polyphemus	Gopher Tortoise	C	T
	BIRDS		
Haliaeetus leucocephalus	Bald Eagle	.	T
Mycteria americana	Wood Stork	E	E
	MOLLUSKS		
Elliptio spinosa	Altamaha Spinymussel	PE	E
Elliptio arctata	Delicate Spike	.	E
Toxolasma pullus	Savannah Lilliput	.	T
	FISH		
Acipenser brevirostrum	Shortnose Sturgeon	E	E

PLANTS			
Leitneria floridana	Corkwood	.	T
Fothergilla gardenii	Dwarf Witch-adler	.	T
Elliottia racemosa	Georgia Plume	.	T
Pteroglossaspis eristata	Giant Orchid	.	T
Baptista arachnifera	Hairy Rattle weed	E	E
Dicerandra radfordiana	Radford's Mint	.	E
Sageretia minutiflora	Tiny-leaf Buckthorn	.	T

C - Candidate Species; E - Endangered; PE- Proposed Endangered; T - Threatened

Upon review of the same sources listed above, we also have determined that suitable habitats for the following state-list species are unlikely to occur within the proposed impact areas: endangered Kirtland's warbler (*Dendroica kirtlandii*), threatened bald eagle (*Haliaeetus leucocephalus*), threatened Georgia plume (*Elliottia racemosa*), threatened giant orchid (*Pteroglossapis eristata*), endangered hairy rattle weed (*Baptista arachnifera*), endangered Radford's mint (*Dicerandra radfordiana*), threatened tiny-leaf buckthorn (*Sageretia minutiflora*), threatened Savannah lilliput (*Toxolasma pullus*), endangered delicate spike (*Elliptio arctata*), and endangered short-nose sturgeon (*Acipenser brevirostrum*). Based upon the lack of suitable habitat for these species, no further field assessments for these species are proposed. Further rationale for this determination is described in Section 2.0. A list of references used to make these determinations is provided in Appendix B.

We request that the GaDNR review and provide concurrence with the following proposed survey methodologies for the eastern indigo snake, gopher tortoise, wood stork, corkwood, dwarf witch-alder, and frosted flatwoods salamader. We also are requesting concurrence with the rationale for conducting no field surveys for Kirkland's warbler, bald eagle, Georgia plume, giant orchid, hairy rattle weed, Radford's mint, tiny-leaf buckthorn, Savannah lilliput, delicate spike, and short-nose sturgeon.

1.0 Proposed Survey Methodology

We propose to conduct a more thorough site review of proposed impact areas to determine if sufficient habitat exists within the areas to support the eastern indigo snake, gopher tortoise, wood stork, corkwood, dwarf witch-alder, and flatwoods salamander. Follow-up field assessments will be made to confirm the presence or absence or these species and

determine if these species have the potential to utilize habitats within the proposed target area if it is found that sufficient habitat exists to support said species.

Eastern Indigo Snake

Habitat Requirements

Eastern indigo snakes use a variety of habitats that include pine flatwoods, scrubby flatwoods, high pine, dry prairie, hardwood hammocks, edges of freshwater wetlands, agricultural land, coastal dunes, and disturbed areas. Eastern indigo snakes are often associated with gopher tortoise burrows, where they seek shelter from thermal stress and lay eggs. In areas lacking tortoise burrows, decayed stumps and logs are important habitat features for cover. Indigo snakes eat a variety of small mammals and herpetofauna, including eastern diamondback rattlesnakes and gopher tortoise hatchlings. In Georgia, the eastern indigo snake is most often associated with sand ridge habitats which often occur along major coastal plain streams (Speake, Diemer, and McGlincy 1981).

The Georgia Ecological Services Field Office of the USFWS maintains a GIS database of Threatened and Endangered Species Ranges in Georgia. This database indicates that the entirety of Acquisition Areas 1 and 3 is a "Possible Range" for indigo snakes. The database also indicates that "known occurrences" of eastern indigo snakes have been documented within Acquisition Areas 1 and 3. Based upon known occurrence data, an occurrence of indigo snake was documented within the proposed 400-acre Airfield Target Area.

Preliminary Site Review

We will review high-resolution aerial imagery and Natural Resource Conservation Service (NRCS) soil data to identify potential suitable habitat for the eastern indigo snake. Suitable habitat features are: sand ridges, scrubby pine flatwoods, and open upland environments adjacent to freshwater wetlands. Positive indicators for these habitats will be the presence of gopher tortoise burrows. In addition, soil survey data that indicate sandy soils within or adjacent to suitable habitat will be considered a positive indicator.

The NRCS soil data contain soil drainage characteristics. For areas within the proposed impact areas, drainage characteristics are classified as: moderately well drained, somewhat poorly drained, poorly drained, and very poorly drained. Since indigo snakes utilize sandy environments with supporting wetland environments, we assume that areas with poorly drained or very poorly drained soils will not provide

the necessary upland habitat to support indigo snakes. For survey purposes, those areas identified within impact areas with moderately well drained or somewhat poorly drained soils will be examined to determine if significant habitat exist to support indigo snake populations.

Areas of suitable habitat as defined above will be mapped using GIS and will be cross-referenced to known occurrences of eastern indigo snakes from the USFWS Georgia Ecological Services Field Office GIS database of Threatened and Endangered Species Ranges in Georgia. Distances from each area of suitable habitat to the nearest known occurrences of eastern indigo snake will be documented.

Field Assessment

We will conduct follow-up surveys in areas of suitable habitat to determine if the habitat is likely to support eastern indigo snakes. These surveys will assess the potential habitat and include a survey for the presence of gopher tortoise burrows. A detailed habitat description of survey areas, as well as photographs of suitable habitat, will be completed. Upon completion of the field assessment, a summary report of survey findings will be provided to GaDNR staff.

Gopher Tortoise

Habitat Requirements

Gopher tortoises are common in most types of upland communities with open canopies. They are commonly found in habitats such as sandhill, pine flatwoods, scrub, scrubby flatwoods, dry prairies, xeric hammock, pine-mixed hardwoods, and coastal dunes. Gopher tortoises construct burrows in sandy soils. The gopher tortoise resides in these burrows which protect them from other species and extreme heat. These burrows also provide similar protection for over 350 other commensal species. Key species known to occupy gopher tortoise burrows include the eastern indigo snake, eastern diamondback rattlesnake, and gopher frogs (Florida Freshwater Fish and Wildlife Conservation Commission [FWC] 2010a and 2010b).

Preliminary Site Review

We will review high-resolution aerial imagery and NRCS soil data to identify potential suitable habitat for the gopher tortoise. Suitable habitat features are: sand ridges, scrubby pine flatwoods, dry prairies, xeric hammocks, and open upland environments with sandy soils. Positive indicators for these habitats will be the presence of sandy soils as indicated from soil survey data.

The NRCS soil data contain soil drainage characteristics. For areas within the proposed impact areas, drainage characteristics are classified as: moderately well drained, somewhat poorly drained, poorly drained, and very poorly drained. Since gopher tortoises utilize sandy environments with low groundwater elevations, we assume that areas with poorly drained or very poorly drained soils will not support gopher tortoises. For survey purposes, those areas identified within impact areas with moderately well drained or somewhat poorly drained soils will be examined to determine if significant habitat exist to support gopher tortoise populations.

Field Assessment

We will conduct follow-up surveys in areas of suitable habitat to determine if the habitat is currently utilized by gopher tortoises. Canopy and herbaceous cover percentage will be documented for upland habitats identified in the preliminary site review to determine if adequate vegetation exists to support gopher tortoises. Acceptable habitat features will be defined as a canopy cover of less than 60%, with an herbaceous cover of at least 30% (FWC 2009). If acceptable canopy and herbaceous cover percentage exist, pedestrian transects within suitable habitat will be conducted to identify gopher tortoise burrows. Existing burrows will be classified as active or abandoned and marked by Global Positioning System (GPS). A detailed habitat description of survey areas, as well as photographs of existing burrows, will be completed. Upon completion of the field assessment, a summary report of survey findings will be provided to GaDNR staff.

Wood Stork

Habitat Requirements

The wood stork is a colonial bird that nests in large rookeries often constructed in cypress (*Taxodium distichum*), black gum (*Nyssa sylvatica var. biflora*) and southern willow (*Salix carolina*). Wood storks utilize the same nesting colonies from year to year as long as they remain undisturbed (USFWS 1986). They feed in flocks on small fish, crustaceans, amphibians, reptiles, and arthropods found within freshwater marshes, flooded roadside and agricultural ditches, and depressions in cypress heads, swamp sloughs, tidal creeks and pools, and estuaries. The wood stork is known to travel long distances (up to 80 miles) in search of feeding areas. Past research on Georgia wood stork colonies has found that foraging occurs 80% of the time within a 12-mile radius (USFWS 1986).

The USFWS Georgia Ecological Services Field Office GIS database of Threatened and Endangered Species Ranges in Georgia indicates a known wood stork rookery located 9 miles northwest of proposed Acquisition Area 3. During the meeting with the USFWS on November 30, 2010, and a subsequent meeting with GaDNR on December 1, 2010, both agencies confirmed that no wood stork rookeries occur within proposed Acquisition Areas 1 or 3. However, due to the project's proximity to the known rookery and the ability of wood storks to travel long distances for foraging, wetland habitats within the proposed impact areas may be utilized as foraging habitat for wood storks.

Preliminary Site Review

During the preliminary site reconnaissance conducted on February 9 and 10, 2011, we confirmed that potential foraging habitat exist within the proposed impact areas. These habitats include swamp sloughs, forested depressions, and roadside and agricultural ditches. No individual sightings of wood storks were observed during the sight reconnaissance.

Proposed Survey Methods

Based upon preliminary site review findings noted above, we determined that appropriate foraging habitat exists within the proposed impact areas and wood storks may utilize these wetland habitats for foraging. While conducting field assessments for other protected species or wetland delineations for the project, we will document any observed sightings of this species and report these sightings in the EIS. No follow-up field surveys are proposed for this species as impacts to wetland habitats, and thus wood stork foraging habitat, will be quantified and further examined in the EIS.

Corkwood

Habitat Requirements

Corkwood is found in shaded marshes accompanied with red maple, cypress, and tupelo and prefers moist poorly drained soils. Corkwood forms a large multi-stemmed colony varying from 5 to 25 feet in height and spread. Flowering occurs in late spring (Patrick, Allison, and Krakow 1995). During the December 1, 2010 meeting, staff from GaDNR provided feedback on state-listed species that are likely to occur within the project site. During this discussion, corkwood was not mentioned by GaDNR staff as likely to occur within the project site.

Preliminary Site Review

The preliminary site recognizance effort conducted on February 9 and 10, 2011, confirmed that portions of the proposed impact areas contain low wetland environments dominated by red maple, cypress, and tupelo.

Proposed Survey Methods
Areas within the proposed impact areas which contain low wetland environments dominated by red maple, cypress, and tupelo will be surveyed using pedestrian transects during the spring/summer of 2011.

Dwarf Witch-alder

Habitat Requirements
Dwarf witch-alder is a deciduous shrub that is found in flat, low lying swampy areas particularly in the shrub dominated margins of upland swamps, Carolina bays, and wet savannas. The flowering period is from March to April, and fruiting occurs between August and October (Patrick, Allison, and Krakow 1995). During the December 1, 2010 meeting, staff from GaDNR provided feedback on state-listed species that are likely to occur within the project site. During this discussion, dwarf witch-alder was not mentioned by GaDNR staff as likely to occur within the project site.

Preliminary Site Review
As confirmed during the preliminary site recognizance effort conducted on February 9 and 10, 2011, the proposed acquisition area is currently managed for silviculture operations and is composed primarily of dense planted pine stands, recently cleared pine stands, and forested wetlands. Most wetland areas lack a transitional environment between wetland and upland areas and therefore the presence of dwarf witch-alder is unlikely. However, on the margins of swamps and bays, transitional shrub areas may exist.

Proposed Survey Methods
Survey efforts for this species will focus on the identified margins of swamps and bays where transitional shrub areas may exist. Surveys will be conducted using pedestrian transects during the March-April flowering period to aid in identification.

Flatwoods Salamander

During the meeting on November 30, 2010, the USFWS expressed concern with ability to conduct of dip net surveys for flatwoods salamanders in the winter of 2011 due to a lack of rainfall in the geographic area of Acquisition Areas 1 and 3.

On December 17, 2010, a survey methodology letter was provided to the USFWS proposing to utilize habitat-based survey methods for assessment of the flatwoods salamander. Details of the proposed habitat-based survey methodology and the USFWS concurrence letter dated February 3, 2011, are provided in Appendix A.

2.0 Rationale for Determination of Species Not Requiring Field Surveys

Our rationale for determining that field surveys will not be required for Kirtland's warbler, bald eagle, Altamaha spinymussel, delicate spike, Savannah lilliput, short-nose sturgeon, Atlantic sturgeon, Georgia plume, giant orchid, hairy rattle weed, Radford's mint, and tiny-leaf buckthorne is provided below.

Kirtland's Warbler

The Kirkland's warbler has one of the most restricted breeding ranges of any North American bird. It breeds in the open jack pine (*Pinus banksiana*) plains of central Michigan. The bird over-winters in the Bahamas with spring departures occurring in late April and early May and fall migrations between August and October (USFWS 1999). The primary migration route follows a narrow band through South Carolina, North Carolina, Virginia, West Virginia, and Ohio before reaching nesting grounds in Michigan (USFWS 1999). When warblers make their spring migration, the first quarter of the route is over water (Mayfield 1988). Some research has shown migration occurs without any stops or with limited stopovers (Mayfield 1988; USFWS 1999). These studies concluded that observations of warblers outside of the main migration route were likely strays, as a disproportionate number of documented observations occurred in Ohio and Michigan, the last quarter of the migratory route.

The Kirtland's warbler is potentially only present in the state of Georgia for a limited time during its migratory period. Because the primary migration route for Kirkland's warbler lies north and northeast of Georgia, and since research indicates they may migrate without stopovers and that warblers within the state of Georgia are likely stray birds, no field assessments for this species are proposed.

Bald Eagle

During the November 30 and December 1, 2010, meetings with the USFWS and GaDNR, respectively, both agencies confirmed that no

known bald eagle nests occur within the proposed project area. The proposed acquisition area is currently managed for silviculture operations and is composed primarily of dense planted pine stands, recently cleared pine stands, and forested wetlands. Bald eagles require tall, mature trees for nesting purposes. Due to clearing activities associated with active management of timber, trees are harvested well before they reach maturity. No suitable nesting habitat within the proposed impact areas exist for bald eagles, and therefore no detailed field assessments for this species are proposed. Visual observations of bald eagles or nests observed during other field activities will be provided to the USFWS and documented in the EIS.

Altamaha Spiny Mussel, Delicate Spike, Savannah Lilliput, and Short-nose Sturgeon

The Altamaha spinymussel, delicate spike, Savannah lilliput, and short-nose sturgeon utilize the Altamaha River. As discussed in the December 1, 2010 meeting, Acquisition Area 2, which is adjacent to the Altamaha River, has been removed from the project scope; therefore no direct or secondary impacts to the Altamaha River are anticipated and no field assessments for these species are proposed.

Georgia Plume

The Georgia plume is found in xeric environments including sand ridges and oak ridges. The flower period is from June to July (Patrick, Allison, and Krakow 1995). No portions of the proposed impact areas contain xeric habitats. During the December 1, 2010 meeting, GaDNR staff provided feedback about state-listed species likely to occur within the proposed acquisition area. During this discussion, Georgia plume was not mentioned by GaDNR staff as likely to occur within the area. Based on the preliminary site recognizance effort conducted on February 9 and 10, 2011, the results of the GaDNR Coastal Mapping Project and aerial photo-interpretation of 2010 true color aerials and 2009 infrared aerial photographs, no appropriate habitat for the Georgia plume exists within the proposed impact areas, and therefore no field assessments for this species are proposed.

Giant Orchid

The giant orchid is found in sandy environments including scrub oak and sand hills, as well as open pine flatwoods. The flowering period is from June to November (Florida Natural Areas Inventory 2000). No portions of the proposed impact

areas contain scrub oak or sand hill communities. The proposed impact areas are composed primarily of dense planted pine stands, recently cleared pine stands, and forested wetlands. Based upon preliminary field assessments conducted February 9 and 10, 2011, areas of recent pine clearing with successional pine development are typically hydric. A majority of soils within these areas are classified hydric by the NRCS and do not maintain ample soil permeability to support the giant orchid. During the December 1, 2010 meeting, staff from GaDNR provided feedback about state-listed species that are likely to occur within the proposed acquisition area. During this discussion, giant orchid was not mentioned by GaDNR staff as likely to occur within the area. No appropriate habitat for the giant orchid exists within the proposed impact areas, and therefore no field assessments for this species are proposed.

Hairy Rattle Weed

The hairy rattle weed inhabits shallow pools on Piedmont granite outcrops in full sunlight. It is known to occur in Brantley and Wayne Counties, Georgia. The USFWS stated in the November 30, 2010, meeting that is not likely that the required habitat for this species would be found within the proposed acquisition areas. Therefore, no field assessments for this species are proposed.

Radford's Mint

During the December 1, 2010, meeting, staff with GaDNR stated that Radford's mint is not likely to occur within the proposed acquisition area. Therefore, no field assessments for this species are proposed.

Tiny-leaf Buckthorne

The tiny-leaf buckthorne is found on calcareous rock bluffs, shell middens and evergreen hammocks along stream banks (Patrick, Allison, and Krakow 1995). No portions of the proposed impact areas contain appropriate habitat for tiny-leaf buckthorne. During the December 1, 2010, meeting, staff from GaDNR provided feedback on state-listed species likely to occur within the proposed acquisition area. During this discussion, tiny-leaf buckthorne was not mentioned by GaDNR staff as likely to occur within the proposed acquisition area. No appropriate habitat for the tiny-leaf buckthorne exists within the proposed impact areas, and therefore no field assessments for this species are proposed.

We respectfully request that GaDNR review the survey methodologies provided herein and provide concurrence within 30 days of receipt of this letter. Please contact Jered Jackson at 904-542-6308 or e-mail jered.jackson@navy.mil with any questions or concerns regarding this submittal or if you require any additional information to process this request.

Sincerely,

WILLIAM A. DRAWDY
Natural Resources and
Environmental Affairs Officer

cc: John Conway, NAVFAC SE
Jered Jackson, NAVFAC SE
Brenda Powell, Ecology and Environment, Inc.
Jonathan Oravetz, Ecology and Environment, Inc.

From: Katrina Morris [mailto:Katrina.Morris@dnr.state.ga.us]
Sent: Thursday, March 10, 2011 10:16
To: Jackson, Jered CIV NAVFAC SE
Subject: Proposed Survey Methodology Document

Mr. Jackson,

Thank you for the opportunity to review the Proposed Survey Methodology Document for the
Townsend Bombing Range Expansion. I have reviewed the document and feel that the

proposed methodology is adequate for the species that may be found on site.

If I can be of further assistance, please don't hesitate to contact me.

Sincerely,

Trina Morris

Trina Morris, Wildlife Biologist
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Appendix G
Threatened and Endangered Species

Appendix G.2
Georgia Department of Natural Resources

Survey Findings

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UNITED STATES MARINE CORPS
MARINE CORPS AIR STATION
BEAUFORT, SOUTH CAROLINA 29904-5001

IN REPLY REFER TO
5090
NREAO/105
2 MAY 2011

Matt Elliott
Program Manager
Georgia Department of Natural Resources
Wildlife Resources Division Nongame Conservation Section
2065 US Hwy 278, SE
Social Circle, GA 30025

Re: Survey Results for Eastern Indigo Snake, Gopher Tortoise, Flatwoods Salamander, Wood Stork, Corkwood and Dwarf Witch-Alder for the *Environmental Impact Statement for the Modernization and Expansion of Townsend Bombing Range, Georgia*

Dear Mr. Elliott:

For the purpose of preparing an *Environmental Impact Statement (EIS) for the Modernization and Expansion of Townsend Bombing Range, Georgia*, Ecology and Environment, Inc. (E & E) conducted biological surveys for selected federally and State-protected species potentially affected by the Proposed Action. This letter summarizes the findings of the surveys conducted for State-protected species, including the eastern indigo snake, gopher tortoise, flatwoods salamander, wood stork, corkwood, and dwarf witch-alder, which were conducted between 28 March and 6 April 2011.

These surveys were conducted using methodologies detailed in a letter from Mr. William Drawdy of the United States Marine Corps (USMC) to Mr. Matt Elliott of the Georgia Department of Natural Resources (GaDNR) dated 28 February 2011. The survey methodologies were approved by Ms. Katrina Morris of the GaDNR in an electronic mail to Mr. Jered Jackson of Naval Facilities Engineering Command Southeast (NAVFAC SE) on 10 March 2011. Under separate cover, the USMC coordinated with the United States Fish and Wildlife Service's (USFWS) Coastal Ecological Services Field Office to receive approval of survey methodologies for federally-protected species potentially affected by the Proposed Action. These items of correspondence are provided in Attachment A.

Prior to conducting onsite field surveys, a desktop analysis of habitats found in the eight Target Areas was conducted to identify potential habitat for each species. The location of

each Target Area is illustrated in Attachment B, on Figure 1-1. During the desktop analysis, the following data sets were reviewed:

- National Wetlands Inventory (NWI; USFWS 2010);
- Natural Resources Conservation Service (NRCS) soil surveys for Long and McIntosh Counties (NRCS 2002 and NRCS 2007, respectively);
- United States Department of Agriculture (USDA) National Agricultural Inventory Project (NAIP) 2010 True Color Aerial Imagery;
- USDA NAIP 2009 Infrared Aerial Imagery; and
- Ecological Community data from the GaDNR's Coastal Resource Mapping Project completed in 2010.

Areas identified as potential species habitat were downloaded onto sub-meter accurate Geographic Positioning System (GPS) units for subsequent in-field verification. The in-field findings for each species identified as requiring surveys are summarized below.

Eastern Indigo Snake (*Drymarchon corais couperi*)

Suitable habitat for the eastern indigo snake was defined as sand ridges, scrubby pine flatwoods, and open upland environments adjacent to freshwater wetlands (Drawdy 2011). A positive indicator for these habitats was the presence of gopher tortoise burrows.

Field surveys identified two areas considered suitable habitat for the eastern indigo snake. The first area consists of a 1.8-acre open canopy upland habitat located within Target Area 3 (see Attachment B, Figure 1-2). This upland area was adjacent to recently harvested emergent wetlands to the east. The NRCS classified soils within this area as Bladen Fine Sandy Loam, defined as hydric, poorly drained soils. Field surveys determined that this small upland area had coarse sandy soils supporting loblolly pine (*Pinus taeda*), saw palmetto (*Serenoa repens*), gallberry (*Ilex glabra*), broom sedge (*Andropogon* sp.), and shiny blueberry (*Vaccinium myrsinites*) (see Attachment C, Photo 1). The area was surveyed using pedestrian transects for the presence of gopher tortoise burrows; however, no burrows or eastern indigo snakes were observed in the field.

The second area with suitable eastern indigo snake habitat was identified within Target Area 6 (see Attachment B, Figure 1-3). The USFWS Georgia Ecological Services Field Offices

maintains a GIS database of threatened and endangered species ranges in Georgia. This database indicates that a known occurrence of indigo snake was documented within the vicinity of Target Area 6. Field surveys located a 12.8-acre sandy upland area of planted immature loblolly pines on the east side of an existing access road and adjacent to mature forested wetland areas (see Attachment B, Figure 1-3). The NRCS classified soils within this area as Mascotte Fine Sand, defined as partially hydric, poorly drained soils. Vegetation in this area included loblolly pine, saw palmetto, gallberry, broom sedge, winged sumac (*Rhus copallinum*), and shiny blueberry (see Attachment C, Photo 2). The area was surveyed using pedestrian transects for the presence of gopher tortoise burrows; however, no burrows or eastern indigo snakes were observed in the field.

The remainder of the Target Areas consisted of densely planted stands of loblolly pine with low species diversity. The majority of these areas contain poorly drained soils that do not meet suitable habitat requirements for the eastern indigo snake.

Gopher Tortoise (*Gopherus polyphemus*)

Suitable habitat for gopher tortoise was defined as sand ridges, scrubby pine flatwoods, dry prairies, xeric hammocks, and open upland environments with sandy soils (Drawdy 2011). Acceptable habitat features were defined as a canopy cover of less than 60%, with an herbaceous cover of at least 30% (Drawdy 2011). The presence of sandy soils as indicated from soil survey data was a positive indicator for these habitats. Those areas, with soils drainage patterns defined by NRCS as moderately well-drained or somewhat poorly drained soils, were identified during the desktop analysis as potential gopher tortoise habitat and were loaded into GPS units.

Potential gopher tortoise habitat that was identified during the desktop analysis was surveyed to determine if suitable habitat exists. Onsite field surveys located two areas that would be considered suitable habitat for gopher tortoises. These are the same area identified above as suitable eastern indigo snake habitat located within Target Areas 3 and 6 (see Attachment B, Figures 1-2 and 1-3). Both areas were surveyed using pedestrian transects for the presence of gopher tortoise burrows; however, no burrows were observed.

Additional areas that were identified as potential gopher tortoise habitat during the desktop analysis consisted of densely planted stands of loblolly pine with canopy cover

greater than 60% and herbaceous cover less than 30%. Photographs of representative planted pine habitats are attached (see Attachment C, Photos 3 through 6). These areas did not meet the definition of suitable gopher tortoise habitat.

Numerous active gopher tortoise burrows were observed along New Road near the intersection of GC&P Road (see Attachment C, Photo 7). This area consists of an open, sandy xeric environment that has been replanted with longleaf pine. Multiple gopher tortoise burrows were located within 200 feet of the road. This area was not extensively surveyed for gopher tortoise burrows as it occurs outside of the defined Target Areas (see Attachment B, Figure 1-4).

Flatwoods Salamander (*Ambystoma cingulatum*)

Suitable habitat for flatwoods salamander was defined as isolated ephemeral or depressional wetlands or ephemeral ponds with the absence of deep water, a treeless ecotone, and adjacency to open pine savannas or pine flatwoods (Drawdy 2011, Powell 2010).

To identify potential breeding ponds and suitable habitat for flatwoods salamander, pedestrian transects where conducted at 50- to 100-foot intervals throughout all areas classified as wetland habitats identified by the NWI maps (USFWS 2010).

Isolated ephemeral ponds were located within Target Areas 1, 3, 6, 7, and 8 (see Attachment C, Photos 8 through 12). No salamanders were observed under leaf debris in any of these ponds. The ponds located within Target Area 6 (see Attachment C, Photo 11) and Target Area 7 (see Attachment C, Photo 10), supported some amphibian species, including tadpoles and frogs. However, none of the ponds in any of the Target Areas met suitable habitat requirements as they did not have treeless ecotones or not were supported by appropriate upland habitats including open pine savannahs or pine flatwoods.

Wood Stork (*Mycteria Americana*)

The USFWS Georgia Ecological Services Field Offices GIS database of threatened and endangered species ranges in Georgia indicates a known wood stork rookery 9 miles northwest of proposed Acquisition Area 1 (illustrated on Figure 1-1 in Attachment B). No additional wood stork rookeries are known to occur in the study area. Past research on Georgia wood stork colonies has found that foraging occurs 80% of the time within a 12-mile radius (USFWS 1986). Target Areas 1, 2, 3, 4, 6, and

7 are within 12 miles of the rookery located to the northwest of Acquisition Area 1. Due to the project's proximity to the known rookery outside of the Acquisition Area, and the ability of wood storks to travel long distances for foraging, all wetland habitats within these Target Areas are presumed to be utilized as foraging habitat for wood storks.

No wood storks were observed foraging in onsite wetlands during the survey timeframe of 28 March through 6 April 2011. However, surveys were conducted early in the spring migration period and it is likely wood storks had not reached coastal Georgia during the survey period. As stated in the 28 February 2011 survey methodology letter sent to your agency (see Attachment A), no follow-up field surveys are proposed for this species. They are presumed to utilize the wetlands located within Target Areas 1, 2, 3, 4, 6, and 7 for foraging, so impacts to wetland habitats, and thus wood stork foraging habitat, will be quantified and further examined in the EIS.

Corkwood (*Duboisia myoporoides*) and Dwarf Witch-Alder (*Fothergilla gardenia*)

Suitable habitat for corkwood was defined as wetland environments dominated by red maple, cypress, and black gum (Drawdy, February 2011). Suitable habitat for dwarf witch-alder was defined as transitional shrub areas along the margins of swamps and bays (Drawdy 2011). Prior to conducting field surveys, linear transects were digitized in GIS through all areas identified as wetlands based on the NWI maps. These transects were uploaded on sub-meter accurate GPS units for field reference during surveys.

Pedestrian transects where conducted at 50-to-100-foot intervals throughout all areas identified as wetland habitats to survey for corkwood and dwarf witch-alder. Most wetland systems surveyed contained some portions of suitable habitat for corkwood and dwarf witch-alder. However, within the Target Areas, no specimens were observed.

Other Observed Wildlife and Plants

Observations of non-threatened and endangered species were recorded in field notes and were GPS located. Several pitcher plants (*Sarracenia* sp.) were observed within wetland environments at Target Areas 1, 5, and 7. The hooded pitcher plant (*Sarracenia minor)* is State-listed as unusual. A summary of non-protected species observed during the field surveys is provided in Table 1.

Table 1 Non-Protected Wildlife and Plants Observed During Field Surveys	
Common Name	**Scientific Name**
Swallow Tailed Kite	*Elanoides forficatus*
Turkey	*Meleagris gallopavo*
Northern Bobwhite Quail	*Colinus virginianus*
Night Heron	*Nycticorax nycticorax*
Barred Owl	*Strix varia*
American Kestrel	*Falco sparverius*
Osprey	*Pandion haliaetus*
Red-Shouldered Hawk	*Buteo lineatus*
Cerulean Warbler	*Dendroica cerulea*
Black Racer	*Coluber constrictor*
Black Rat Snake	*Elaphe obsoleta*
Southern Toad	*Anaxyrus terrestris*
Ornate Chorus Frog	*Pseudacris ornata*
Musk Turtle	*Sternotherus odoratus*
Coyote	*Canis latrans*
Feral Pig	*Sus scrofa*
Pitcher Plant	*Sarracenia* sp.

Findings Summary

Field surveys conducted for State-listed threatened and endangered species identified two areas, one within Target Area 3 and one within Target Area 6, as suitable habitat for the eastern indigo snake and gopher tortoise (see Attachment B, Figures 1-2 and 1-3). Gopher tortoise burrows were observed near the intersection of New Road and GC&P Road, outside the Target Areas but within Acquisition Area 1 (see Attachment B, Figure 1-4).

Approximately 511 acres of wetland habitats were surveyed for potential breeding ponds and suitable habitat for flatwoods salamanders. No flatwoods salamander breeding ponds and suitable habitat were observed within the Target Areas.

No wood storks were observed during the onsite surveys. However, due to the project's proximity to a known wood stork rookery outside of Acquisition Area 1, and the ability of wood storks to travel long distances for foraging, wetland habitats within the proposed Target Areas 1, 2, 3, 4, 6, and 7 are presumed to be utilized as foraging habitat for wood storks.

Approximately 511 acres of wetland habitats were surveyed for corkwood and dwarf witch-alder and portions of these areas contained suitable habitat for these species. However, neither species was observed during pedestrian transects surveys within the Target Areas. Silviculture operations such as ditching, bedding, furrowing, tilling, and clearing were evidenced in a majority of the wetland environments observed and it is likely these activities hinder propagation of corkwood and dwarf witch-alder.

We appreciate GaDNR providing results of its Coastal Resource Mapping Project to support these species surveys and are happy for the opportunity to provide your agency with these survey results. Findings described herein will be incorporated into the EIS that will be prepared for the Proposed Action. Please contact Mr. Jered Jackson at 904-542-6308 or e-mail jered.jackson@navy.mil with any questions or concerns regarding these findings or if you would like additional information.

Sincerely,

WILLIAM A. DRAWDY
Natural Resources and
Environmental Affairs Officer

Attachments

cc: John Conway, NAVFAC SE
Jered Jackson, NAVFAC SE
Brenda Powell, E & E
Jonathan Oravetz, E & E

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Attachment A

Proposed GA DNR and USFWS Survey Methodology and Concurrence Letters

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ecology and environment, inc.
Global Environmental Specialists
1974 Commonwealth Lane
Tallahassee, Florida 32303
Tel: (850) 574-1400, Fax: (850) 574-1400

December 17, 2010

Mr. Robert Brooks
United States Fish and Wildlife Service
Coastal Ecological Services Field Office
4980 Wildlife Drive NE
Townsend, Georgia 31331

Re: Proposed Use of Habitat-Based Flatwoods Salamander and Striped Newt Survey Methodology for the Environmental Impact Statement for the Modernization and Expansion of Townsend Bombing Range, Georgia

Dear Mr. Brooks:

As a follow-up to the informal consultation meeting conducted between personnel from the United States Fish and Wildlife Service (USFWS), Coastal Ecological Services Field Office, Naval Facilities Engineering Command Southeast (NAVFAC SE), Marine Corps Air Station Beaufort (MCAS Beaufort), and Ecology and Environment, Inc. (E & E) on November 30, 2010, and a subsequent teleconference between you and E & E representatives on December 13, 2010, we request the USFWS review and provide concurrence with the following proposed survey methodology for the federally threatened flatwoods salamander (*Ambystoma cingulatum*) and the striped newt (*Notophthalmus perstriatus*), a candidate species for federal listing, that would be used if surveys for these species are necessary. Such surveys would be conducted to determine impact to these species and would be utilized for Section 7 consultation, as necessary, to complete the Environmental Impact Statement for the Modernization and Expansion of Townsend Bombing Range, Georgia (referred to herein as the TBR EIS).

During the meeting on November 30, 2010, your agency expressed concern with the ability to conduct dip net surveys, if warranted, in the winter of 2011 due to a lack of rainfall in the geographic area of the Proposed Action, which includes Long and McIntosh Counties, Georgia. Therefore, on behalf of NAVFAC SE, E & E has conducted research on established survey methodologies for flatwoods salamanders. The findings of this research are summarized below. The striped newt utilizes similar habitat and has a similar life history as the flatwoods salamander. Therefore one survey methodology is proposed for the assessment of both species.

Currently, there is no set protocol for determining presence or absence of flatwoods salamanders in a particular breeding pond. The general study consensus is that a survey with drift net fences surrounding a breeding pond for two consecutive "normal" weather years will indicate an affirmative result on the determination of the pond as a breeding pond. For dip net surveys, multiple years of breeding pond surveys are required to definitively determine the presence or absence of flatwoods salamanders.[1] The drought conditions present in the project area during the recent past and the timeframe for completing the TBR EIS would make these survey methodologies infeasible for this project.

[1] USFWS, 2005a. *Biological Opinion for the Relocation of Panama City-Bay County International Airport (West Bay Site Alternative)*, Dated October 3, 2005, Prepared by USFWS, 1601 Balboa Avenue Panama City, Florida.

Habitat-based survey methods have been applied in the past for projects potentially impacting flatwoods salamanders.[1, 2] Two biological opinions issued by the USFWS Panama City, Florida office are provided as Attachments A and B for your review. Both of these studies utilized habitat-based surveys.

Habitat-based surveys examine existing habitats to determine if they are likely to be utilized as flatwoods salamander breeding ponds. These surveys typically examine ephemeral or depressional wetlands that are geographically isolated from larger water bodies. To determine if these areas serve as potential breeding ponds, a thorough assessment of the pond, ectone, and adjacent upland is conducted. Positive indicators are absence of deep water, a treeless ecotone, and adjacency to open pine savannas or pine flatwoods. Areas that maintain appropriate habitat within the pond, adjacent upland, and treeless ecotone are then assumed to be potentially utilized as a flatwoods salamander breeding pond.[2]

The proposed acquisition areas (Areas 1 and 3) are primarily composed of planted pine stands and deep forested wetlands. As such, your agency has indicated that little habitat for the flatwoods salamander or striped newt is expected to be found within the proposed target areas. In the winter of 2011, E & E will conduct wetland delineations and upland habitat classifications for the proposed target areas. Following this preliminary field effort, a detailed wetland delineation and habitat assessment report, identifying potential flatwoods salamander habitat, will be provided to USFWS.

If any areas are identified as suitable habitat for flatwoods salamanders or striped newts during the winter 2011 surveys, E & E would propose additional targeted field surveys be conducted during April and May 2011 to determine if the habitat is a potential breeding pond. These surveys would be conducted by appropriately educated botanists and/or biologists familiar with southeastern flora. For these follow-up surveys, E & E would propose to use a variation (e.g., modified slightly to include plant species found in Georgia) of the "Potential Breeding Pond Description Data Sheet for Flatwoods Salamander (*Ambystoma cingulatum*) and Striped Newt (*Notophthalmus perstriatus*)" provided in Appendix II of the *Biological Opinion for U.S. Army Corps of Engineers Regional General Permit 86 (RGP-86)*.[2] The modified data sheet proposed for follow-up habitat based surveys is provided herein as Attachment C. A list of proposed follow-up survey locations and rationale for why the area requires follow-up surveys (e.g., based on the winter 2011 survey findings, results of recent infrared aerial photo-interpretation, and review of Natural Resources Conservation Service soils datum) would be provided to the USFWS prior to the commencement of any necessary follow-up field surveys. The results of any targeted follow-up surveys would also be provided to the USFWS in report format.

Please review the methodologies herein that would be used in the event that flatwoods salamander and striped newt surveys are necessary. We respectfully request that you provide concurrence, within 30 days of receipt of this letter, with the use of habitat-based follow-up surveys as opposed to conducting dip net surveys over multiple years to confirm the presence of flatwoods salamander and striped newt breeding ponds within proposed impact areas.

[2] USFWS 2005b. *Biological Opinion for U.S. Army Corps of Engineers Regional General Permit 86 (RGP-86)*, Dated March 3, 2005, Prepared by USFWS, 1601 Balboa Avenue Panama City, Florida.

Please feel free to contact me (bpowell@ene.com; 850-574-1400, ext. 3911) or Jonathan Oravetz (joravetz@ene.com; 850-574-1400, ext. 3928) if you have any questions regarding this submittal or require any additional information to process this request.

Sincerely,

ECOLOGY & ENVIRONMENT, INC.

Brenda A. Powell

Brenda A. Powell
Project Biologist

Attachments

cc: Jered Jackson, NAVFAC SE
John Conway, NAVFAC SE
Billy Drawdy, MCAS Beaufort
Alice Howard, MCAS Beaufort

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United States Department of the Interior

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West Georgia Sub-Office
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Coastal Sub-Office
4980 Wildlife Drive
Townsend, Georgia 31331
Phone: (912) 832-8739
Fax: (912) 832-8744

February 3, 2011

Ms. Brenda A. Powell
Ecology & Environment, Inc.
1974 Commonwealth Lane
Tallahassee, Florida 32303

Re: USFWS File Number 2011-TA-0227

Dear Ms. Powell:

Thank you for your December 17, 2010, letter and attachments regarding your proposed use of habitat based flatwoods salamander and striped newt survey methodology for the Environmental Impact Statement for the proposed Modernization and Expansion of Townsend Bombing Range, Georgia. These surveys will be conducted for preparation of a draft Environmental Impact Statement for the proposed expansion of the range in McIntosh and Long Counties, Georgia. We have reviewed the information you provided and submit the following comments under provisions of the Endangered Species Act of 1973 (Act) as amended (16 U.S.C. 1531 et seq.).

According to the information you provided, the proposed acquisition areas will be assessed to determine if they have appropriate habitat for the frosted flatwoods salamander, a federally listed species, or the striped newt, a candidate species. Since the proposed acquisition areas consist mainly of planted pine stands and the area has been through a drought year, these habitat surveys will be used to determine the presence or absence of the salamander and newt, as opposed to conducting dip net surveys over several years. A more detailed description of the proposed habitat surveys are included with your letter and attachments, along with a modified habitat data sheet. We have reviewed this information and therefore agree with your proposed method of habitat surveys for the frosted flatwoods salamander and the striped newt.

We appreciate the opportunity to comment during the planning stages of your project. If you have any questions, please write or call staff biologist, Robert Brooks, of our Coastal Georgia Sub Office at 912-832-8739, extension 107.

Sincerely,

Sandra S. Tucker
Field Supervisor

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UNITED STATES MARINE CORPS
MARINE CORPS AIR STATION
BEAUFORT, SOUTH CAROLINA 29904-5001

IN REPLY REFER TO
5090
NREAO/057
28 FEB 2011

Matt Elliott
Program Manager
Georgia Department of Natural Resources
Wildlife Resources Division
Nongame Conservation Section
2065 US Hwy 278, SE
Social Circle, GA 30025

Re: Proposed Survey Methodology for Eastern Indigo Snake, Gopher Tortoise, Wood Stork, Corkwood, and Dwarf Witch-alder for the Environmental Impact Statement for the Modernization and Expansion of Townsend Bombing Range, Georgia

Dear Mr. Elliott:

During the informal consultation meeting conducted among personnel from the Georgia Department of Natural Resources (GaDNR), Marine Corps Air Station Beaufort (MCAS Beaufort), Naval Facilities Engineering Command Southeast (NAVFAC SE), and Ecology and Environment, Inc. (E & E) on December 1, 2010, we discussed a preliminary list of state-protected species potentially affected by the modernization and expansion of Townsend Bombing Range (TBR), Georgia.

The preliminary list of 16 state-listed threatened or endangered species discussed during the meeting was developed based upon our review of the GaDNR species lists for Long and McIntosh Counties, Georgia, and was originally provided in tabular format in the *Desktop Analysis of Biological and Environmental Variables for the Environmental Impact Statement* (EIS) *for the Modernization and Expansion of Townsend Bombing Range, Georgia*, dated November 2010 (2010 Desktop Analysis). The table from the 2010 Desktop Analysis is provided below, but includes minor revisions including an updated federal status for the Altamaha spinymussel (*Elliptio spinosa*) as potentially endangered based on comments from the United States Fish and Wildlife Service (USFWS), Coastal Ecological Services Field Office, during a meeting on November 30, 2010.

In continuation with the preparation of the EIS, we have received and reviewed the results of the GaDNR's Coastal Resource Mapping Project completed in 2010 which delineates

vegetative habitats found in Long and McIntosh Counties, Georgia. In addition, we performed a site reconnaissance on February 9 through 11, 2011, to preliminarily ground-truth aerial signatures identified in the 2010 Desktop Analysis and cross-check the habitats identified in the GaDNR Coastal Resource Mapping Project. Lastly, we have reviewed literature regarding life histories, biology, and habitat utilization of the 16 species identified in the table below. Based upon the preliminary habitats identified during the site reconnaissance and our literature review, we have determined that the following state-listed species have the potential to occur within the proposed impact areas and therefore may require field surveys to determine the presence of these species: threatened eastern indigo snake (*Drymarchon corais couperi*), threatened gopher tortoise (*Gopherus polyphemus*), endangered wood stork (*Mycteria Americana*), threatened corkwood (*Leitneria floridana*), threatened dwarf witch-alder (*Fothergilla gardenia*), and threatened frosted flatwoods salamander (*Ambystoma cingulatum*) Proposed survey methodologies for these species are described in Section 1.0.

To date, we have received concurrence from the USFWS to utilize habitat-based surveys methodologies for the flatwoods salamander and striped newt as opposed to using dip net or drift net surveys. The methodology and concurrence letter are provided in Appendix A.

State Protected Species Potentially Occurring in Long and McIntosh Counties, Georgia

Scientific Name	Common Name	Federal Listing	State Listing
AMPHIBIANS			
Drymarchon corais couperi	Eastern Indigo Snake	T	T
Ambystoma cingulatum	Frosted Flatwoods Salamander	T	T
Gopherus polyphemus	Gopher Tortoise	C	T
BIRDS			
Haliaeetus leucocephalus	Bald Eagle	.	T
Mycteria americana	Wood Stork	E	E
MOLLUSKS			
Elliptio spinosa	Altamaha Spinymussel	PE	E
Elliptio arctata	Delicate Spike	.	E
Toxolasma pullus	Savannah Lilliput	.	T
FISH			
Acipenser brevirostrum	Shortnose Sturgeon	E	E

PLANTS			
Leitneria floridana	Corkwood	.	T
Fothergilla gardenii	Dwarf Witch-adler	.	T
Elliottia racemosa	Georgia Plume	.	T
Pteroglossaspis eristata	Giant Orchid	.	T
Baptista arachnifera	Hairy Rattle weed	E	E
Dicerandra radfordiana	Radford's Mint	.	E
Sageretia minutiflora	Tiny-leaf Buckthorn	.	T

C - Candidate Species; E - Endangered; PE- Proposed Endangered; T - Threatened

Upon review of the same sources listed above, we also have determined that suitable habitats for the following state-list species are unlikely to occur within the proposed impact areas: endangered Kirtland's warbler (*Dendroica kirtlandii*), threatened bald eagle (*Haliaeetus leucocephalus*), threatened Georgia plume (*Elliottia racemosa*), threatened giant orchid (*Pteroglossapis eristata*), endangered hairy rattle weed (*Baptista arachnifera*), endangered Radford's mint (*Dicerandra radfordiana*), threatened tiny-leaf buckthorn (*Sageretia minutiflora*), threatened Savannah lilliput (*Toxolasma pullus*), endangered delicate spike (*Elliptio arctata*), and endangered short-nose sturgeon (*Acipenser brevirostrum*). Based upon the lack of suitable habitat for these species, no further field assessments for these species are proposed. Further rationale for this determination is described in Section 2.0. A list of references used to make these determinations is provided in Appendix B.

We request that the GaDNR review and provide concurrence with the following proposed survey methodologies for the eastern indigo snake, gopher tortoise, wood stork, corkwood, dwarf witch-alder, and frosted flatwoods salamader. We also are requesting concurrence with the rationale for conducting no field surveys for Kirkland's warbler, bald eagle, Georgia plume, giant orchid, hairy rattle weed, Radford's mint, tiny-leaf buckthorn, Savannah lilliput, delicate spike, and short-nose sturgeon.

1.0 Proposed Survey Methodology

We propose to conduct a more thorough site review of proposed impact areas to determine if sufficient habitat exists within the areas to support the eastern indigo snake, gopher tortoise, wood stork, corkwood, dwarf witch-alder, and flatwoods salamander. Follow-up field assessments will be made to confirm the presence or absence or these species and

determine if these species have the potential to utilize habitats within the proposed target area if it is found that sufficient habitat exists to support said species.

Eastern Indigo Snake

Habitat Requirements

Eastern indigo snakes use a variety of habitats that include pine flatwoods, scrubby flatwoods, high pine, dry prairie, hardwood hammocks, edges of freshwater wetlands, agricultural land, coastal dunes, and disturbed areas. Eastern indigo snakes are often associated with gopher tortoise burrows, where they seek shelter from thermal stress and lay eggs. In areas lacking tortoise burrows, decayed stumps and logs are important habitat features for cover. Indigo snakes eat a variety of small mammals and herpetofauna, including eastern diamondback rattlesnakes and gopher tortoise hatchlings. In Georgia, the eastern indigo snake is most often associated with sand ridge habitats which often occur along major coastal plain streams (Speake, Diemer, and McGlincy 1981).

The Georgia Ecological Services Field Office of the USFWS maintains a GIS database of Threatened and Endangered Species Ranges in Georgia. This database indicates that the entirety of Acquisition Areas 1 and 3 is a "Possible Range" for indigo snakes. The database also indicates that "known occurrences" of eastern indigo snakes have been documented within Acquisition Areas 1 and 3. Based upon known occurrence data, an occurrence of indigo snake was documented within the proposed 400-acre Airfield Target Area.

Preliminary Site Review

We will review high-resolution aerial imagery and Natural Resource Conservation Service (NRCS) soil data to identify potential suitable habitat for the eastern indigo snake. Suitable habitat features are: sand ridges, scrubby pine flatwoods, and open upland environments adjacent to freshwater wetlands. Positive indicators for these habitats will be the presence of gopher tortoise burrows. In addition, soil survey data that indicate sandy soils within or adjacent to suitable habitat will be considered a positive indicator.

The NRCS soil data contain soil drainage characteristics. For areas within the proposed impact areas, drainage characteristics are classified as: moderately well drained, somewhat poorly drained, poorly drained, and very poorly drained. Since indigo snakes utilize sandy environments with supporting wetland environments, we assume that areas with poorly drained or very poorly drained soils will not provide

the necessary upland habitat to support indigo snakes. For survey purposes, those areas identified within impact areas with moderately well drained or somewhat poorly drained soils will be examined to determine if significant habitat exist to support indigo snake populations.

Areas of suitable habitat as defined above will be mapped using GIS and will be cross-referenced to known occurrences of eastern indigo snakes from the USFWS Georgia Ecological Services Field Office GIS database of Threatened and Endangered Species Ranges in Georgia. Distances from each area of suitable habitat to the nearest known occurrences of eastern indigo snake will be documented.

Field Assessment

We will conduct follow-up surveys in areas of suitable habitat to determine if the habitat is likely to support eastern indigo snakes. These surveys will assess the potential habitat and include a survey for the presence of gopher tortoise burrows. A detailed habitat description of survey areas, as well as photographs of suitable habitat, will be completed. Upon completion of the field assessment, a summary report of survey findings will be provided to GaDNR staff.

Gopher Tortoise

Habitat Requirements

Gopher tortoises are common in most types of upland communities with open canopies. They are commonly found in habitats such as sandhill, pine flatwoods, scrub, scrubby flatwoods, dry prairies, xeric hammock, pine-mixed hardwoods, and coastal dunes. Gopher tortoises construct burrows in sandy soils. The gopher tortoise resides in these burrows which protect them from other species and extreme heat. These burrows also provide similar protection for over 350 other commensal species. Key species known to occupy gopher tortoise burrows include the eastern indigo snake, eastern diamondback rattlesnake, and gopher frogs (Florida Freshwater Fish and Wildlife Conservation Commission [FWC] 2010a and 2010b).

Preliminary Site Review

We will review high-resolution aerial imagery and NRCS soil data to identify potential suitable habitat for the gopher tortoise. Suitable habitat features are: sand ridges, scrubby pine flatwoods, dry prairies, xeric hammocks, and open upland environments with sandy soils. Positive indicators for these habitats will be the presence of sandy soils as indicated from soil survey data.

The NRCS soil data contain soil drainage characteristics. For areas within the proposed impact areas, drainage characteristics are classified as: moderately well drained, somewhat poorly drained, poorly drained, and very poorly drained. Since gopher tortoises utilize sandy environments with low groundwater elevations, we assume that areas with poorly drained or very poorly drained soils will not support gopher tortoises. For survey purposes, those areas identified within impact areas with moderately well drained or somewhat poorly drained soils will be examined to determine if significant habitat exist to support gopher tortoise populations.

Field Assessment

We will conduct follow-up surveys in areas of suitable habitat to determine if the habitat is currently utilized by gopher tortoises. Canopy and herbaceous cover percentage will be documented for upland habitats identified in the preliminary site review to determine if adequate vegetation exists to support gopher tortoises. Acceptable habitat features will be defined as a canopy cover of less than 60%, with an herbaceous cover of at least 30% (FWC 2009). If acceptable canopy and herbaceous cover percentage exist, pedestrian transects within suitable habitat will be conducted to identify gopher tortoise burrows. Existing burrows will be classified as active or abandoned and marked by Global Positioning System (GPS). A detailed habitat description of survey areas, as well as photographs of existing burrows, will be completed. Upon completion of the field assessment, a summary report of survey findings will be provided to GaDNR staff.

Wood Stork

Habitat Requirements

The wood stork is a colonial bird that nests in large rookeries often constructed in cypress (*Taxodium distichum*), black gum (*Nyssa sylvatica var. biflora*) and southern willow (*Salix carolina*). Wood storks utilize the same nesting colonies from year to year as long as they remain undisturbed (USFWS 1986). They feed in flocks on small fish, crustaceans, amphibians, reptiles, and arthropods found within freshwater marshes, flooded roadside and agricultural ditches, and depressions in cypress heads, swamp sloughs, tidal creeks and pools, and estuaries. The wood stork is known to travel long distances (up to 80 miles) in search of feeding areas. Past research on Georgia wood stork colonies has found that foraging occurs 80% of the time within a 12-mile radius (USFWS 1986).

The USFWS Georgia Ecological Services Field Office GIS database of Threatened and Endangered Species Ranges in Georgia indicates a known wood stork rookery located 9 miles northwest of proposed Acquisition Area 3. During the meeting with the USFWS on November 30, 2010, and a subsequent meeting with GaDNR on December 1, 2010, both agencies confirmed that no wood stork rookeries occur within proposed Acquisition Areas 1 or 3. However, due to the project's proximity to the known rookery and the ability of wood storks to travel long distances for foraging, wetland habitats within the proposed impact areas may be utilized as foraging habitat for wood storks.

Preliminary Site Review

During the preliminary site reconnaissance conducted on February 9 and 10, 2011, we confirmed that potential foraging habitat exist within the proposed impact areas. These habitats include swamp sloughs, forested depressions, and roadside and agricultural ditches. No individual sightings of wood storks were observed during the sight reconnaissance.

Proposed Survey Methods

Based upon preliminary site review findings noted above, we determined that appropriate foraging habitat exists within the proposed impact areas and wood storks may utilize these wetland habitats for foraging. While conducting field assessments for other protected species or wetland delineations for the project, we will document any observed sightings of this species and report these sightings in the EIS. No follow-up field surveys are proposed for this species as impacts to wetland habitats, and thus wood stork foraging habitat, will be quantified and further examined in the EIS.

Corkwood

Habitat Requirements

Corkwood is found in shaded marshes accompanied with red maple, cypress, and tupelo and prefers moist poorly drained soils. Corkwood forms a large multi-stemmed colony varying from 5 to 25 feet in height and spread. Flowering occurs in late spring (Patrick, Allison, and Krakow 1995). During the December 1, 2010 meeting, staff from GaDNR provided feedback on state-listed species that are likely to occur within the project site. During this discussion, corkwood was not mentioned by GaDNR staff as likely to occur within the project site.

Preliminary Site Review

The preliminary site recognizance effort conducted on February 9 and 10, 2011, confirmed that portions of the proposed impact areas contain low wetland environments dominated by red maple, cypress, and tupelo.

Proposed Survey Methods
Areas within the proposed impact areas which contain low wetland environments dominated by red maple, cypress, and tupelo will be surveyed using pedestrian transects during the spring/summer of 2011.

Dwarf Witch-alder

Habitat Requirements
Dwarf witch-alder is a deciduous shrub that is found in flat, low lying swampy areas particularly in the shrub dominated margins of upland swamps, Carolina bays, and wet savannas. The flowering period is from March to April, and fruiting occurs between August and October (Patrick, Allison, and Krakow 1995). During the December 1, 2010 meeting, staff from GaDNR provided feedback on state-listed species that are likely to occur within the project site. During this discussion, dwarf witch-alder was not mentioned by GaDNR staff as likely to occur within the project site.

Preliminary Site Review
As confirmed during the preliminary site recognizance effort conducted on February 9 and 10, 2011, the proposed acquisition area is currently managed for silviculture operations and is composed primarily of dense planted pine stands, recently cleared pine stands, and forested wetlands. Most wetland areas lack a transitional environment between wetland and upland areas and therefore the presence of dwarf witch-alder is unlikely. However, on the margins of swamps and bays, transitional shrub areas may exist.

Proposed Survey Methods
Survey efforts for this species will focus on the identified margins of swamps and bays where transitional shrub areas may exist. Surveys will be conducted using pedestrian transects during the March-April flowering period to aid in identification.

Flatwoods Salamander

During the meeting on November 30, 2010, the USFWS expressed concern with ability to conduct of dip net surveys for flatwoods salamanders in the winter of 2011 due to a lack of rainfall in the geographic area of Acquisition Areas 1 and 3.

On December 17, 2010, a survey methodology letter was provided to the USFWS proposing to utilize habitat-based survey methods for assessment of the flatwoods salamander. Details of the proposed habitat-based survey methodology and the USFWS concurrence letter dated February 3, 2011, are provided in Appendix A.

2.0 Rationale for Determination of Species Not Requiring Field Surveys

Our rationale for determining that field surveys will not be required for Kirtland's warbler, bald eagle, Altamaha spinymussel, delicate spike, Savannah lilliput, short-nose sturgeon, Atlantic sturgeon, Georgia plume, giant orchid, hairy rattle weed, Radford's mint, and tiny-leaf buckthorne is provided below.

Kirtland's Warbler

The Kirkland's warbler has one of the most restricted breeding ranges of any North American bird. It breeds in the open jack pine (*Pinus banksiana*) plains of central Michigan. The bird over-winters in the Bahamas with spring departures occurring in late April and early May and fall migrations between August and October (USFWS 1999). The primary migration route follows a narrow band through South Carolina, North Carolina, Virginia, West Virginia, and Ohio before reaching nesting grounds in Michigan (USFWS 1999). When warblers make their spring migration, the first quarter of the route is over water (Mayfield 1988). Some research has shown migration occurs without any stops or with limited stopovers (Mayfield 1988; USFWS 1999). These studies concluded that observations of warblers outside of the main migration route were likely strays, as a disproportionate number of documented observations occurred in Ohio and Michigan, the last quarter of the migratory route.

The Kirtland's warbler is potentially only present in the state of Georgia for a limited time during its migratory period. Because the primary migration route for Kirkland's warbler lies north and northeast of Georgia, and since research indicates they may migrate without stopovers and that warblers within the state of Georgia are likely stray birds, no field assessments for this species are proposed.

Bald Eagle

During the November 30 and December 1, 2010, meetings with the USFWS and GaDNR, respectively, both agencies confirmed that no

known bald eagle nests occur within the proposed project area. The proposed acquisition area is currently managed for silviculture operations and is composed primarily of dense planted pine stands, recently cleared pine stands, and forested wetlands. Bald eagles require tall, mature trees for nesting purposes. Due to clearing activities associated with active management of timber, trees are harvested well before they reach maturity. No suitable nesting habitat within the proposed impact areas exist for bald eagles, and therefore no detailed field assessments for this species are proposed. Visual observations of bald eagles or nests observed during other field activities will be provided to the USFWS and documented in the EIS.

Altamaha Spiny Mussel, Delicate Spike, Savannah Lilliput, and Short-nose Sturgeon

The Altamaha spinymussel, delicate spike, Savannah lilliput, and short-nose sturgeon utilize the Altamaha River. As discussed in the December 1, 2010 meeting, Acquisition Area 2, which is adjacent to the Altamaha River, has been removed from the project scope; therefore no direct or secondary impacts to the Altamaha River are anticipated and no field assessments for these species are proposed.

Georgia Plume

The Georgia plume is found in xeric environments including sand ridges and oak ridges. The flower period is from June to July (Patrick, Allison, and Krakow 1995). No portions of the proposed impact areas contain xeric habitats. During the December 1, 2010 meeting, GaDNR staff provided feedback about state-listed species likely to occur within the proposed acquisition area. During this discussion, Georgia plume was not mentioned by GaDNR staff as likely to occur within the area. Based on the preliminary site recognizance effort conducted on February 9 and 10, 2011, the results of the GaDNR Coastal Mapping Project and aerial photo-interpretation of 2010 true color aerials and 2009 infrared aerial photographs, no appropriate habitat for the Georgia plume exists within the proposed impact areas, and therefore no field assessments for this species are proposed.

Giant Orchid

The giant orchid is found in sandy environments including scrub oak and sand hills, as well as open pine flatwoods. The flowering period is from June to November (Florida Natural Areas Inventory 2000). No portions of the proposed impact

areas contain scrub oak or sand hill communities. The proposed impact areas are composed primarily of dense planted pine stands, recently cleared pine stands, and forested wetlands. Based upon preliminary field assessments conducted February 9 and 10, 2011, areas of recent pine clearing with successional pine development are typically hydric. A majority of soils within these areas are classified hydric by the NRCS and do not maintain ample soil permeability to support the giant orchid. During the December 1, 2010 meeting, staff from GaDNR provided feedback about state-listed species that are likely to occur within the proposed acquisition area. During this discussion, giant orchid was not mentioned by GaDNR staff as likely to occur within the area. No appropriate habitat for the giant orchid exists within the proposed impact areas, and therefore no field assessments for this species are proposed.

Hairy Rattle Weed

The hairy rattle weed inhabits shallow pools on Piedmont granite outcrops in full sunlight. It is known to occur in Brantley and Wayne Counties, Georgia. The USFWS stated in the November 30, 2010, meeting that is not likely that the required habitat for this species would be found within the proposed acquisition areas. Therefore, no field assessments for this species are proposed.

Radford's Mint

During the December 1, 2010, meeting, staff with GaDNR stated that Radford's mint is not likely to occur within the proposed acquisition area. Therefore, no field assessments for this species are proposed.

Tiny-leaf Buckthorne

The tiny-leaf buckthorne is found on calcareous rock bluffs, shell middens and evergreen hammocks along stream banks (Patrick, Allison, and Krakow 1995). No portions of the proposed impact areas contain appropriate habitat for tiny-leaf buckthorne. During the December 1, 2010, meeting, staff from GaDNR provided feedback on state-listed species likely to occur within the proposed acquisition area. During this discussion, tiny-leaf buckthorne was not mentioned by GaDNR staff as likely to occur within the proposed acquisition area. No appropriate habitat for the tiny-leaf buckthorne exists within the proposed impact areas, and therefore no field assessments for this species are proposed.

We respectfully request that GaDNR review the survey methodologies provided herein and provide concurrence within 30 days of receipt of this letter. Please contact Jered Jackson at 904-542-6308 or e-mail jered.jackson@navy.mil with any questions or concerns regarding this submittal or if you require any additional information to process this request.

Sincerely,

WILLIAM A. DRAWDY
Natural Resources and
Environmental Affairs Officer

cc: John Conway, NAVFAC SE
Jered Jackson, NAVFAC SE
Brenda Powell, Ecology and Environment, Inc.
Jonathan Oravetz, Ecology and Environment, Inc.

From: Jackson, Jered CIV NAVFAC SE [jered.jackson@navy.mil]
Sent: Thursday, March 10, 2011 11:12 AM
To: Oravetz, Jonathan; Powell, Brenda A.; Conway, John D CIV NAVFAC SE, JAXS; Drawdy CIV William A; Howard CIV Alice G
Subject: FW: Proposed Survey Methodology Document
Signed By: There are problems with the signature. Click the signature button for details.

We have concurrence with our letter for the state-listed species surveys at Townsend.

V/R
Jered

-----Original Message-----
From: Katrina Morris [mailto:Katrina.Morris@dnr.state.ga.us]
Sent: Thursday, March 10, 2011 10:16
To: Jackson, Jered CIV NAVFAC SE
Subject: Proposed Survey Methodology Document

Mr. Jackson,

Thank you for the opportunity to review the Proposed Survey Methodology Document for the Townsend Bombing Range Expansion. I have reviewed the document and feel that the proposed methodology is adequate for the species that may be found on site.

If I can be of further assistance, please don't hesitate to contact me.

Sincerely,

Trina Morris

Trina Morris, Wildlife Biologist
Environmental Review Coordinator
Georgia Dept. of Natural Resources
Nongame Conservation Section
2065 U.S. Hwy. 278 S.E.
Social Circle, GA 30025-4743
Ph: 770-918-6411 or 706-557-3032
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katrina.morris@dnr.state.ga.us
http://georgiawildlife.dnr.state.ga.us/

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Attachment B

Figures

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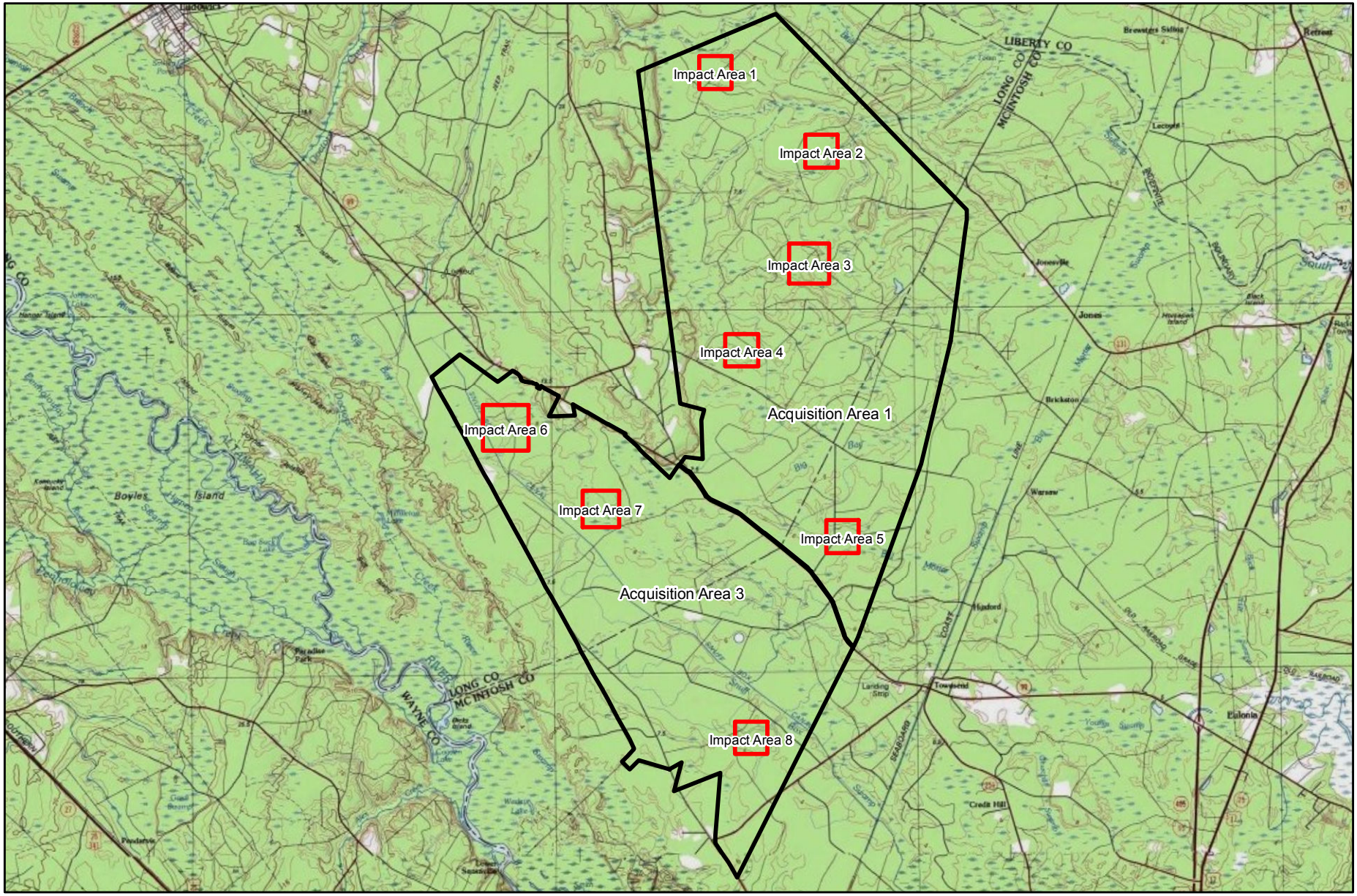

Target Impact Area

Acquisition Area

Source: USGS US Topo Maps online, 2011

Figure 1-1
Target Impact Areas
Townsend Bombing Range
Long County, Georgia

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Picture

Suitable Habitat Eastern Indigo Snake/Gopher Tortoise

Target Impact Area

Source: USDA, 2010

Figure 1-2
Suitable Habitat Eastern Indigo Snake/Gopher Tortoise
Target Impact Area 3
Townsend Bombing Range
Long County, Georgia

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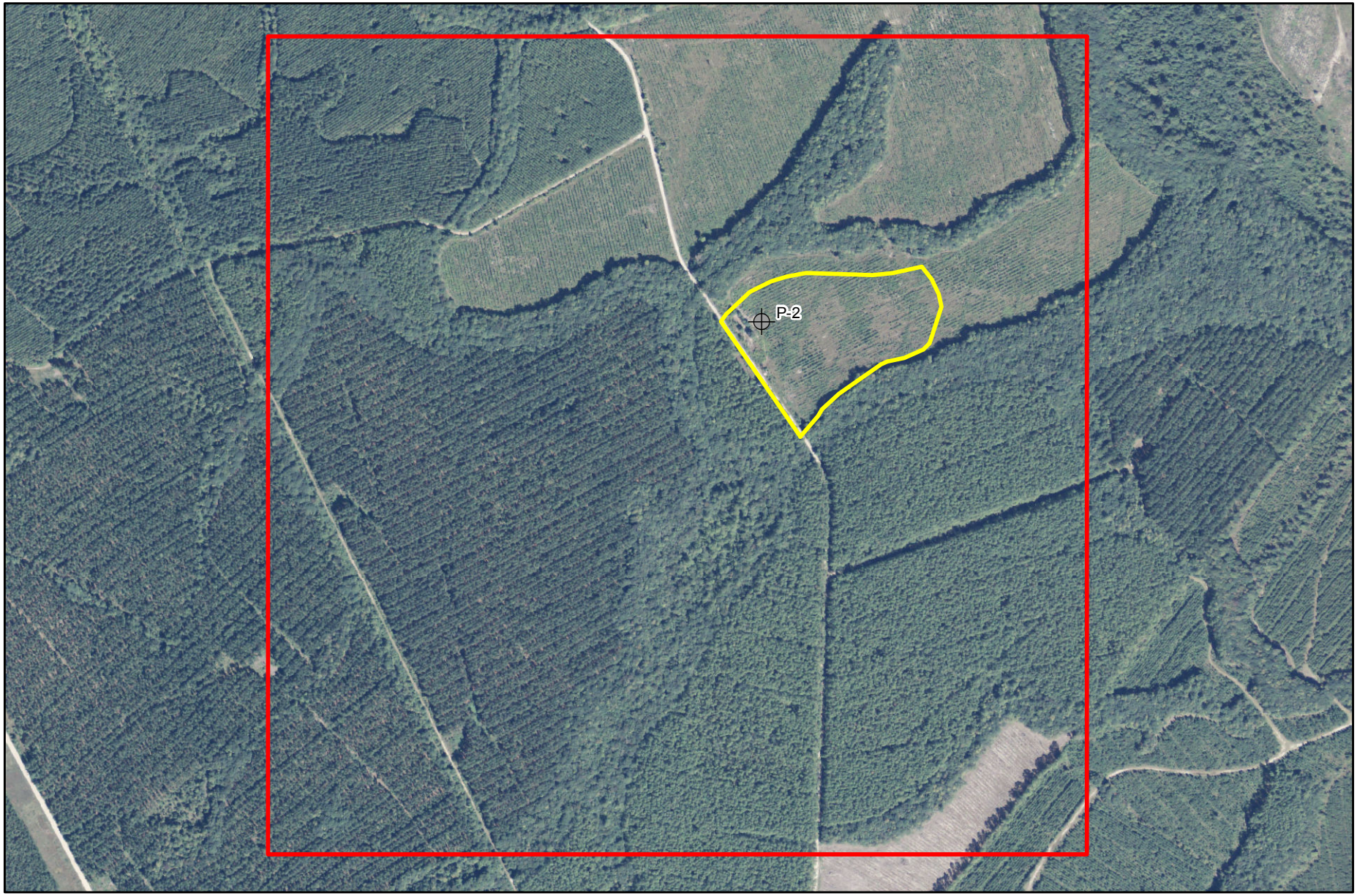

Picture

Suitable Habitat Eastern Indigo Snake/Gopher Tortoise

Target Impact Area

Source: USDA, 2010

Figure 1-3
Suitable Habitat Eastern Indigo Snake/Gopher Tortoise
Target Impact Area 6
Townsend Bombing Range
Long County, Georgia

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Picture

Source: USDA, 2010

Figure 1-4
Observed Gopher Tortoise Burrows and Habitat
Acquisition Area 1
Townsend Bombing Range
Long County, Georgia

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Attachment C

Photographs

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Photographic Log

Photo 1: 1.8-acre sandy upland area located within Target Impact Area 3, illustrating suitable habitat for eastern indigo snake and gopher tortoise.

Photo 2: 12.8-acre sandy upland area located within Target Impact Area 6, illustrating suitable habitat for eastern indigo snake and gopher tortoise.

Photo 3: Area identified in the desktop analysis as potential gopher tortoise habitat based on soil drainage characteristics within Target Impact Area 1. In-field verification determined area to be unsuitable habitat for gopher tortoises.

Photo-4: Area identified in the desktop analysis as potential gopher tortoise habitat based on soil drainage characteristics within Target Impact Area 2. In-field verification determined area to be unsuitable habitat for gopher tortoises.

Photo 5: Area identified in the desktop analysis as potential gopher tortoise habitat based on soil drainage characteristics within Target Impact Area 2. In-field verification determined area to be unsuitable habitat for gopher tortoises.

Photo 6: Area identified in the desktop analysis as potential gopher tortoise habitat based on soil drainage characteristics within Target Impact Area 4. In-field verification determined area to be unsuitable habitat for gopher tortoises.

Photo 7: Gopher tortoise burrow observed adjacent to New Road.

Photo 8: Ephemeral wetland located within Target Impact Area 1. Area determined to be unsuitable habitat for flatwoods salamander.

Photo 9: Large emergent wetland with standing water in rutted areas within Target Impact Area 3. Area determined to be unsuitable habitat for flatwoods salamander.

Photo 10: Small ephemeral ponds located within old road bed within Target Impact Area 7. Area determined to be unsuitable habitat for flatwoods salamander.

Photo 11: Small ephemeral pond adjacent to forested wetland within Target Impact Area 6. Area determined unsuitable habitat for flatwoods salamander.

Photo 12: Small ephemeral pond within drainage ditch within Target Impact Area 8. Area determined unsuitable habitat for flatwoods salamander.

Attachment D

References

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