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30 January 2009

To Whom It May Concern:

RE: Listed Species Assessment Status
Bertha Mineral Tract, Camden County, Georgia **ESI#: ES07066.07**

Environmental Services, Inc., (ESI) is pleased to provide the following status update and attachments concerning listed species habitat for the Bertha Mineral Tract, in Camden County, Georgia.

On 26 September 2007, the attached Assessment for Threatened and Endangered Species Habitat Report was completed. The report findings result in a low to very low likelihood that any of the listed species for Camden County occur within the project site, with the exception of the state listed gopher tortoise. During this initial review of the project site gopher tortoise where encountered; however, no evidence of eastern indigo snakes was observed by ESI personnel.

As a result of the above findings, ESI initiated more intensive research and identification of gopher tortoise locations within the project boundaries. On 14 April 2008 the attached Figure 1 labeled Gopher Tortoise Location Map; Crescent Resources / Bertha Mineral Tract, dated April 2008 was completed to illustrate above findings. During the GPS location of all gopher tortoise burrows on the attached map, ESI personnel performed a species specific pedestrian survey for the eastern indigo snake. During this investigation, no sign of this species was encountered.

The land owner is currently in the process of preparing land plans for the development of Tract A known as the Kingsland Commerce Park. This development represents approximately 1,850-acres of the total ~15,000-acres represented by the Bertha Mineral Tract. As depicted on the Figure 1, two gopher tortoise colonies are located within Tract A.

In July of 2008 a meeting was held between Mike DeMell and Mr. Bill Wikoff of USFWS. This meeting addressed the current gopher tortoise locations and the proposed plan for development of this site. Additionally, survey options where discussed and agreed upon regarding the eastern indigo snake within Tract A. ESI is currently under contract and performing intensive monitoring for indigo snakes within Tract A.

Indigo snake monitoring will continue into the spring of 2009. The goal of this monitoring is to demonstrate that indigo snakes do not utilize the gopher tortoise colonies within Tract A. For clarity, ESI is not aware of any indigo snake presence within the Bertha Mineral Tract; however, the current monitoring is limited to Tract A. Following this determination, a plan will be developed to relocate the existing gopher tortoise further west to a suitable recipient site also located within the Bertha Mineral Tract.

If you have any questions or require further information related to this effort, please do not hesitate to contact ESI at (912) 236-4711.

Sincerely yours,

ENVIRONMENTAL SERVICES, INC.

Michael J. DeMell
Vice President and Operations Manager

MD/DH
ES07066.07/TE status let
Jan 2009
Xc: Phillip M. Hayes, Crescent Resources LLC
Gary Howalt, ESI Corporate

Assessment for Threatened and Endangered Species Habitat

BERTHA MINERAL TRACT
WEST OF KINGSLAND, CAMDEN COUNTY, GEORGIA

26 September 2007

Prepared for:

Crescent Resources LLC

Attn: Philip M. Hayes
7810 Ballantyne Commons Parkway, Suite 200
Charlotte, North Carolina 28277

Prepared by:

Environmental Services, Inc.

413 East Liberty Street
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Habitat Assessment for Threatened and Endangered Species
Bertha Mineral Tract
Camden County, Georgia

I. INTRODUCTION

A. Purpose

Environmental Services, Inc., (ESI) was contracted to perform due diligence assessment for protected species and habitat essential to these species within the 15,000-acre Bertha Mineral Tract, herein referred to as Bertha Mineral Tract or *property* (Figure 1). The primary purpose of the assessment was to determine whether any species currently listed or proposed for listing as endangered or threatened by the U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), or Georgia Department of Natural Resources (GADNR) was present on or near the *property*. Given that protected species may not be present or observed during our field investigations, observations are made for the habitats that exist in attempt to determine if listed species could utilize the site during other times of the year.

B. Project Location

The *property* is located west of the City of Kingsland, Camden County, Georgia (see Figure 1). Coordinates for the approximate center of the site are Latitude 30.7293 and Longitude 81.7842. The northern boundary of the site is numerous county roads that include Seals Road and Gumbo Road, extending from just west of Highway 17/Ocean Highway to County road 51/Bartram Trail. The southern boundary of the property also consists of many roads and utility right of ways as the southern boundary as well as Highway 40/Okeefenokee Parkway. The *property* is currently accessed from any of the aforementioned roads.

II. SITE OVERVIEW

A. Existing Conditions and Habitats

ESI personnel conducted primarily vehicular and limited pedestrian assessments of the *property*. The various general habitats found on the *property* were identified and mapped to assist in determining the potential for habitation by any listed species. The following potential habitats, along with the associated flora and fauna, were observed on the *property*:

Pine Plantations

The majority of the uplands can be characterized as southern yellow pine flats and planted pine stands. As is evident on the attached *Threatened and Endangered Species Habitat Sketch* (Figure 1) the parcel has been intensively managed silviculturally for pine plantations. The pine plantations are of varying ages and the older plantations have been thinned leaving a low to medium density of trees per acre in such areas. The plant communities are dominated by pine flats, planted pine stands of various ages, small areas of mixed pine/hardwood, and areas of bare land that appear to have been site prepped for forest regeneration and silvicultural operations. The canopy vegetation consists of primarily of southern yellow pine species (*Pinus sp.*). The understory vegetation consists of sparse sweetgum (*Liquidambar styraciflua*), saw palmetto (*Serenoa repens*), gallberry (*Ilex Sp.*), red maple (*Acer rubrum*), persimmon (*Diospyros virginiana*), live oak *(Q. virginiana)*, water oak (*Quercus nigra*), willow oak (*Quercus phellos*), black gum (*Nyssa sylvatica*), and wax myrtle (*Myrica cerifera*). The herbaceous layer includes sweet peeper bush (*Clethra alnifolia*), greenbrier (*Smilax* spp.), muscadine grapevine (*Vitis rotundifolia*), blackberry (*Rubus*), cinnamon fern (*Osmunda cinnamomea*), and bracken fern (*Pteridium aquilinum*).

Hardwood/Pine

As is evident on Figure 1, the tract has many areas considered to be wetland. These areas have been intensively managed for forestry and many have been converted to pine plantations or been cut over and left for natural regeneration. The dominant vegetation in these systems consist of black gum, loblolly pine *(Pinus taeda)*, bald cypress (*Taxodium distichum*), sweetgum, sweet bay (*Magnolia virginiana*), loblolly bay *(Gordonia lasianthus)*, red maple (*Acer rubrum*), black titi (*Cliftonia monophylla*), water oak, giant cane *(Arundinaria gigantea)*, netted chain-fern (*Woodwardia areolata*), Virginia chain-fern (*Woodwardia virginiana*), royal fern *(Osmunda regalis),* and cinnamon fern.

III. ASSESSMENT METHODOLOGY

This section describes the methodologies used to determine the presence or likelihood for potential occurrences of listed species within the project site. This includes a review of

existing literature, coordination with wildlife regulatory agencies, and a limited field assessment of potential listed Threatened and Endangered species habitat types. At the time of report submittal, no response has been received from the agencies other than an email response from Mr. Jim Ozier, DNR WRD. The responses will be forwarded to you upon receipt.

A. Field Studies

A team of ESI biologists conducted a limited habitat assessment of the *property* on 05-06 September 2007. The general site studies consisted of vehicular and pedestrian surveys at limited representative locations across the property to identify available habitat types. Major community types were identified and observations concerning dominant vegetation, condition, and habitat quality were noted during the investigation. ESI staff members observed habitat types and continually surveyed the project area for the presence of protected species. All wetland and upland areas within the *property* were located and investigated.

B. Literature Review and Agency Coordination

In addition to our field investigation and subsequent review of available printed material for current listed species, we also provided notice of our investigation to USFWS, NMFS, and GADNR. Through these notifications, we requested that the agencies provide us with any information regarding the known presence of any listed endangered / threatened species on or within the vicinity of the project area. Attachment B contains copies of the wildlife regulatory agency coordination letters and the one response that has been returned by GADNR WRD regarding the presence of known listed species within the vicinity of the project area.

IV. LISTED SPECIES

For the purposes of this report, it should be noted that protection of listed species is provided by the Endangered Species Act for both private and public lands, regardless of permitting needs. For species listed by the State of Georgia as rare, unusual, or in danger of extinction under the Endangered Wildlife Act, the state's jurisdiction is limited to the capture, killing, selling, and protection of suitable habitat of protected species on public land. For plants listed by the state as rare, unusual, or in danger of extinction under the Wildflower Preservation Act,

jurisdiction is also limited to those species found on public land. Species of Management Concern (SMC) are being evaluated to determine population trends and threats. Although SMC have no federal listing, they may currently be listed by the state or may be listed in the future.

Listed species that are federally and/or state classified as Threatened or Endangered that have a documented range encompassing Camden County are compiled in the following Table 1. Several of the species listed as potentially occurring in Camden County are not anticipated to occur within the project site due to habitat requirements and distribution. Species identified to occupy habitats known to exist within Camden County are listed below in Table-2, along with a brief description and statement about their potential for occurrence:

Table 1. Listed Species for Camden County, Georgia. (USFWS list Updated May 2004).

Species	Federal Status	State Status	Habitat	Threats
Mammal				
Humpback Whale *Megaptera novaeangliae*	E	E	Coastal waters during migration	Entanglement in commercial fishing gear and collisions/disturbance associated with boats and barges
Right Whale *Eubalaena galacialis*	E	E	Mate and calve in shallow Coastal waters; critical habitat designated from the mouth of the Altamaha River south to Sebastian Inlet, FL (from shoreline east 5 to 15 nautical miles)	Initial decreases probably due to over harvesting. Slow population growth after exploitation halted maybe due to collisions/disturbance associated with boats and barges, inbreeding, inherently low reproductive rates, or a reduction in population below a critical size for successful reproduction.
Round-tailed muskrat *Neofiber alleni*	No Federal Status	E	Bogs and ponds; creates pyramid-shaped nest in vegetation	-
West Indian manatee *Trichechus manatus*	E	E	Coastal waters, estuaries, and warm water outfalls	Initial decreases probably due to over harvesting for meat, oil, and leather. Current mortality due to collisions with boats and barges and from canal locks operations. Declines also related to coastal development and loss of suitable habitat, particularly destruction of sea grass beds.

Species	Federal Status	State Status	Habitat	Threats
Bird				
Bachman's warbler *Vermivora bachmanii*	E	E	Probably extinct; last seen in Georgia in 1976	
Bald eagle *Haliaeetus leucocephalus*	T	E	Inland waterways and estuarine areas in Georgia. Active eagle nests were located in Camden County 1988-1992, 1994, 1996-1999 and 2000-2002	Major factor in initial decline was lowered reproductive success following use of DDT. Current threats include habitat destruction, disturbance at the nest, illegal shooting, electrocution, impact injuries, and lead poisoning.
Gull-billed tern *Sterna nilotica*	No Federal Status	T	Nests in colonies on sandy sites; forages over salt marsh, dunes and other grassy areas for insects, spiders, and other invertebrates	
Piping plover *Charadrius melodus*	T	T	Winter on Georgia's coast; prefer areas with expansive sand or mudflats (foraging) in close proximity to a sand beach (roosting)	Habitat alteration and destruction and human disturbance in nesting colonies. Recreational and commercial development have contributed greatly to loss of breeding habitat
Red-cockaded woodpecker *Picoides borealis*	E	E	Nest in mature pine with low under-story vegetation (<1.5m); forage in pine and pine hardwood stands > 30 years of age, preferably > 10" DBH	Reduction of older age pine stands and encroachment of hardwood mid-story in older age pine stands due to fire suppression
Wood stork *Mycteria Americana*	E	E	Primarily feed in fresh and brackish wetlands and nest in cypress or other wooded swamps. Active rookeries were located in Camden County 1991-2002.	Decline due primarily to loss of suitable feeding habitat, particularly in south Florida. Other factors include loss of nesting habitat, prolonged drought/flooding, raccoon predation on nests, and human disturbance of rookeries.

Species	Federal Status	State Status	Habitat	Threats
Reptile				
Eastern indigo snake *Drymarchon corais couperi*	T	T	During winter, den in xeric sand ridge habitat preferred by gopher tortoises; during warm months, forage in creek bottoms, upland forests, and agricultural fields	Habitat loss due to uses such as farming, construction, forestry, and pasture and to over collecting for the pet trade
Gopher tortoise *Gopherus polyphemus*	No Federal Status	T	Well-drained, sandy soils in forest and grassy areas; associated with pine over-story, open under-story with grass and forb groundcover, and sunny areas for nesting	Habitat loss and conversion to closed canopy forests. Other threats include mortality on highways and the collection of tortoises for pets.
Green sea turtle *Chelonia mydas*	T	T	Rarely nests in Georgia; migrates through Georgia's coastal waters	Exploitation for food, high levels of predation, loss of nesting habitat due to human encroachment, hatchling disorientation due to artificial lights on beaches, and drowning when trapped in fishing and shrimp nets
Hawksbill sea turtle *Eretmochelys imbricate*	E	E	Migrates through Georgia's coastal waters	Primary causes of population decline are development and modification of nesting beaches and exploitation for the shell. Secondary causes include egg consumption, use of the skin for leather, and heavy predation of eggs and hatchlings.
Kemp's ridley sea turtle *Lepidochelys kempi*	E	E	Migrates through Georgia's coastal waters	Over harvesting of eggs and adults for food and skins and drowning when caught in shrimp nets
Leatherback sea turtle *Dermochelys coriacea*	E	E	Rarely nests in Georgia; migrates through Georgia's coastal waters	Human exploitation, beach development, high predation on hatchlings, and drowning when caught in nets of commercial shrimp and fish trawls and long-line and driftnet fisheries
Loggerhead sea turtle *Caretta caretta*	T	T	Nests on Georgia's barrier island beaches; forages in warm ocean waters and river mouth channels	Loss of nesting beaches due to human encroachment, high natural predation, drowning when turtles trapped in fishing and shrimp trawls, and marine pollution

Species	Federal Status	State Status	Habitat	Threats
Fish				
Shortnose sturgeon *Acipenser brevirostrum*	E	E	Atlantic seaboard rivers	Construction of dams and pollution, habitat alterations from discharges, dredging or disposal of material into rivers, and related development activities.
Plant				
Ball-moss *Tillandsia recurvata*	No Federal Status	T	Branches of live oak in Georgia, especially near the coast	
Climbing buckthorn *Sageretia minutiflora*	No Federal Status	T	Calcareous rocky bluffs, forested shell-middens on barrier islands, and evergreen hammocks along stream banks and coastal marshes	
Hartwrightia *Hartwrightia floridana*	No Federal Status	T	Peaty muck of pine flat-woods, sedge meadows, and wettest parts of poorly drained ditches/sloughs; often with water-spider orchid (*Habenaria repens*)	
Pondspice *Litsea aestivalis*	No Federal Status	T	Margins of swamps, cypress ponds, and sand hill depression ponds and in hardwood swamps	
Wagner spleenwort *Asplenium heteroresiliens*	No Federal Status	T	Marl outcrops, damp limestone ledges, and tabby masonry	

Table 2. Biological conclusions for listed species in Camden County, Georgia in relation to the Bertha Minerals Tract.

Species	Federal Status	State Status	Potential Habitat Present	Project Potential for Impacts	Biological Conclusion
Mammal					
Humpback Whale[2] *Megaptera novaeangliae*	E	E	No	None	No Effect
Right Whale[2] *Eubalaena glacialis*	E	E	No	None	No Effect
Round-tailed muskrat *Neofiber alleni*	No Federal Status	T	Yes	Low[1]	May Affect – Not Likely to Adversely Affect
West Indian manatee[2] *Trichechus manatus*	E	E	No	None	No Effect
Bird					
Bachman's warbler[2] *Vermivora bachmanii*	E	E	No	None	No Effect
Bald eagle *Haliaeetus leucocephalus*	T	E	Yes	Low[1]	May Affect – Not Likely to Adversely Affect
Gull-billed tern[2] *Sterna nilotica*	No Federal Status	T	No	None	No Effect
Piping plover[2] *Charadrius melodus*	T	T	No	None	No Effect

Species	Federal Status	State Status	Potential Habitat Present	Project Potential for Impacts	Biological Conclusion
Red-cockaded woodpecker *Picoides borealis*	E	E	No	Low[1]	May Affect – Not Likely to Adversely Affect
Wood stork *Mycteria americana*	E	E	Yes	Low[1]	May Affect – Not Likely to Adversely Affect
Reptile					
Eastern indigo snake *Drymarchon corais couperi*	T	T	Yes	Survey Will be Required to Determine	More Data Needed to Determine
Gopher tortoise *Gopherus polyphemus*	No Federal Status	T	Yes	Survey Will be Required to Determine	More Data Needed to Determine
Green sea turtle[2] *Chelonia mydas*	T	T	No	None	No Effect
Hawksbill sea turtle[2] *Eretmochelys imbricata*	E	E	No	None	No Effect
Kemp's ridley sea turtle[2] *Lepidochelys kempi*	E	E	No	None	No Effect
Leatherback sea turtle[2] *Dermochelys coriacea*	E	E	No	None	No Effect
Loggerhead sea turtle[2] *Caretta caretta*	T	T	No	None	No Effect

Species	Federal Status	State Status	Potential Habitat Present	Project Potential for Impacts	Biological Conclusion
Fish					
Shortnose sturgeon[2] *Acipenser brevirostrum*	E	E	No	None	No Effect
Plant					
Ball-moss *Tillandsia recurvata*	No Federal Status	T	Yes	Low[1]	May Affect – Not Likely to Adversely Affect
Climbing Buckthorn *Sageretia minutiflora*	No Federal Status	T	Yes	Low[1]	May Affect – Not Likely to Adversely Affect
Hartwrightia *Hartwrightia floridana*	No Federal Status	T	Yes	Low[1]	May Affect – Not Likely to Adversely Affect
Pondspice *Litsea aestivalis*	No Federal Status	T	Yes	Low[1]	May Affect – Not Likely to Adversely Affect
Wagner spleenwort *Asplenium heteroresiliens*	No Federal Status	T	Yes	Low[1]	May Affect – Not Likely to Adversely Affect

[1] Low was assigned to all those species that could not be completely eliminated as being potentially utilizing the property in some regard. In this case all of these species were assigned a Biological Conclusion of May Affect – Not Likely to Adversely Affect.

[2] Species that are not applicable to this project site due to habitat requirements and distribution, and are therefore not individually discussed in the following text.

A. Plants

Ball-Moss (*Tillandsia recurvata*)

Ball-moss is a state threatened species in Camden County. Ball moss is a perennial epiphytic herb and is usually observed growing on the branches of live oak trees throughout coastal Georgia. Ball-moss forms a tangled mass of leaves and aerial roots, which are dry and grey

colored for major parts of the year. But the leaves rapidly hydrate and turn green when exposed to moisture.

Habitat Present: YES

Ball-moss was not observed within the project study area during the on-site field investigations. Potentially suitable habitat for this species exists within the mature live oaks scattered throughout the site. Ball moss populations are not anticipated to be adversely affected by the proposed project. Due to its lack of federal protection, no surveys are necessary for this species. The proposed project may affect undocumented populations of ball-moss, but is unlikely to adversely affect the existence of the species. Because this project is not considered public land, additional tasks relating to the possible existence of this species on the property is not required.

Climbing Buckthorn (*Sageretia minutiflora*)

Climbing buckthorn is a state threatened species in Camden County. Climbing buckthorn is a deciduous shrub found on calcareous rocky bluffs, forested shell middens on barrier islands, and along banks of streams and coastal marshes. The thorn-tipped branches that serve as identifying characteristics for this species would be present in the absence of the leaf and flower parts during the winter months.

Habitat Present: YES

Climbing buckthorn was not observed within the project study area during the on-site field investigations. Potentially suitable habitat for this species exists along the shoreline of the limited tidal areas within the easternmost portion of the study area. Climbing buckthorn populations are not anticipated to be adversely affected by the proposed project. Due to its lack of federal protection, no surveys are necessary for this species. The proposed project may affect undocumented populations of climbing buckthorn, but is unlikely to adversely affect the existence of the species. Because this project is not considered public land, additional tasks relating to the possible existence of this species on the property is not required.

Hartwrightia (*Hartwrightia floridana*)

Hartwrightia is a state threatened species in Camden County. This species is found in the peaty muck of pine flat woods, sedge meadows, and the wettest parts of poorly drained ditches and sloughs. Leaves are mostly near the base of the stem and the flower head is composed only of disk flowers.

Habitat Present: YES

Hartwrightia was not observed within the project study area during the on-site field investigations. Potentially suitable habitat for this species exists along the edges of the forested wetland systems and the isolated wetlands within the study area. Hartwrightia populations are not anticipated to be adversely affected by the proposed project. Due to its lack of federal protection, no surveys are necessary for this species. The proposed project may affect undocumented populations of hartwrightia, but is unlikely to adversely affect the existence of the species. Because this project is not considered public land, additional tasks relating to the possible existence of this species on the property is not required.

Pondspice (*Litsea aestivalis*)

Pondspice is a deciduous shrub listed as Threatened by the State for Camden County. This species occurs on margins of cypress ponds, sandhill depression ponds and in hardwood swamps. Pondspice is up to 3m tall (usually smaller, 1-2 m tall), with zigzag branches, the twigs bent frequently. The leaves are alternate, oblong to narrowly elliptic, 1.5-4.0 cm long, 0.5-1.0 cm wide, and attached by slender, short (under 5 mm long), purplish leafstalks (petioles). The best time to search for this species is during its entire growing season because its tiny leaves and zigzag twigs are very distinctive.

Habitat Present: YES

Pondspice was not observed within the project study area during the on-site field investigations. Potentially suitable habitat, consisting of the margins of swamps and in hardwood swamps, exists throughout the project site. Due to its lack of federal protection, no surveys are necessary for this species. The proposed project may affect undocumented populations of pondspice, but is unlikely to adversely affect the existence of the species.

Because this project is not considered public land, additional tasks relating to the possible existence of this species on the property is not required.

Wagner spleenwort (*Asplenium heteroresiliens)*

Wagner spleenwort is an evergreen fern listed as Threatened by the State for Camden County. This species occurs on outcrops of marl (a mixture of clay, sand, and a calcareous substrate that is soft and crumbly, usually containing shell fragments), on damp limestone ledges, and on masonry composed of tabby (a mixture of sand, lime, and oyster shells). Wagner spleenwort is very difficult to identify and has opposite leaflets and commonly has spore cases on the undersides. Spore producing period is April to October and best time to obtain spore samples for identification purposes even though the evergreen fern can be identified all year in most instances.

Habitat Present: YES

Wagner spleenwort was not observed within the project study area during the on-site field investigations. A very limited amount of potentially suitable habitat exists on the project site along the banks of the tidal creek in the easternmost portion of the property. Due to its lack of federal protection, no surveys are necessary for this species. The proposed project may affect undocumented populations of wagner spleenwort, but is unlikely to adversely affect the existence of the species. Because this project is not considered public land, additional tasks relating to the possible existence of this species on the property is not required.

B. Animals

Many of the animals that are listed federally or State Species for Camden County are marine or shore species. This species include the humpback whale, right whale, West Indian manatee, Bachman's warbler, gull-billed turn, piping plover, shortnose sturgeon, green sea turtle, hawksbill sea turtle, Kemp's ridley sea turtle, leatherback sea turtle, and loggerhead sea turtle. The *property* does not contain habitat for these species, therefore the project will not affect habitats commonly utilized by the aforementioned species. The remaining federally or State Listed Species for Camden County are discussed below.

Round-tailed muskrat (*Neofiber alleni*)

Listed as a state Threatened species, the round-tailed muskrat typically inhabits shallow freshwater marshes with sandy bottoms and dense aquatic vegetation. The round-tailed muskrat resembles a small muskrat with dense under-fur that is rich brown at the tips on the back and shifts to gray at the base with a pale buff belly. The adult muskrat averages between 15 to 21.5 inches long and the tail is round instead of flattened on the sides like muskrats. Population densities can be from 25 to 100 per acre in good habitats.

Habitat Present: YES

Round-tailed muskrat was not observed within the project study area during the on-site field investigations. A very limited amount of potentially suitable habitat exists on the project site. Due to its lack of federal protection, no surveys are necessary for this species. The proposed project may affect undocumented populations of round-tailed muskrat, but is unlikely to adversely affect the existence of the species. Because this project is not considered public land, additional tasks relating to the possible existence of this species on the property is not required.

Bald eagle (*Haliaeetus leucocephalus*)

The Federally Threatened and State of Georgia Endangered species typically lives near large bodies of open water such as lakes, marshes, seacoasts and rivers, where there are plenty of fish to eat and tall trees for nesting and roosting. They occupy inland waterways and estuarine areas throughout Georgia. Please also make note that the recovery of bald eagle populations has caused procedures for delisting the species to become necessary.

Habitat Present: YES

No known occurrences of bald eagles have been documented within the project site; however one known occurrence is approximately 5 miles northwest of the project site *property* (GADNR 2007, Jim Ozier email dated 09/04/07, attachment B). No evidence of use of the *property* was observed during the field review and the property is not located within the primary zone (1,500 foot radius from a nest tree) of the aforementioned nest. The proximity of

the project to the Saint Mary's river and the drainages throughout the property could potentially contain suitable bald eagle nesting and foraging habitat. The intense silvicultural management of the project site has lessened the amount of potential large nesting trees and foraging areas. Although the bald eagle could use the property for roosting or for foraging purposes; however, given the fact that this site does not offer any truly unique habitat for this species, the likelihood of the project negatively affecting this species is low.

Red-cockaded woodpecker (***Picoides borealis***)

This State and Federally Endangered woodpecker inhabits old growth, open pine forests, and makes its cavities in live pine trees of sufficient age to produce heartwood, a sapless component in the bole of the tree. Additionally, the birds prefer to forage in pines older than 30 years of age, and occupy a foraging range of over 100-acres (Lennartz and Henry 1985, Henry 1989).

Habitat Present: NO

No red-cockaded woodpeckers or evidence of habitation was found within the project site during the limited habitat assessment that has been conducted on the property. Please be advised that the limited budget and lack of compartment maps available for the site did not allow for all mature stands of timber to be accurately identified and age estimations obtained. ESI did not observe any suitable timber stands during our limited investigation. Although both suitable foraging and nesting trees would be required for the species to thrive on or very near to the project site, USFWS has recently asked applicants to conduct further surveys if one habitat parameter is found on site. The pine plantations and mixed hardwood/pine habitats found on the property did not appear to contain trees of adequate density, age and size required as suitable foraging or nesting habitat. This site does not appear to offer any unique or presently suitable habitat for this species. This project is not likely to adversely affect the red-cockaded woodpecker, however a more definitive conclusion in regard to this species may be possible, if deemed necessary, as more ground-truthing of the existing conditions within this extensive project area is conducted.

Wood stork (*Mycteria americana*)

The State and Federally Endangered wood stork occupies swamps and wetlands, usually nesting in cypress or mangrove swamps and feeding in freshwater or brackish wetlands (Bentzien 1986). Wood storks are large long-legged wading birds that feed on small fish. The potential for sporadic roosting habitation exists throughout coastal Georgia.

Habitat Present: YES

No wood storks or evidence thereof was observed during the habitat evaluation that was conducted on the property. Suitable foraging habitat that has an adequate hydrologic regime does exist within the project site. This is primarily due to the generic habitat description used for the wood stork that in essence, does not allow for a no effect determination for this species throughout its range in coastal Georgia. The 2004 Wood Stork Report does not indicate known wading birds or wood stork rookeries on the property or within 3 miles of the property. Although the wood stork could use the property for roosting or for foraging purposes; however, given the fact that this site does not offer any unique habitat for this species, the likelihood of the project negatively affecting this species is low.

Eastern indigo snake (*Drymarchon corais couperi*)

This species is federally listed as Endangered and the indigo snake seems to be strongly associated with high, dry, well-drained sandy soils, closely paralleling the sand hill habitat preferred by the gopher tortoise. During warmer months, indigos also frequent streams and swamps, and individuals are occasionally found in flat woods. Gopher tortoise burrows and other subterranean cavities are commonly used as dens and for egg laying. The eastern indigo snake is a large, docile, non-poisonous snake growing to a maximum length of about 8 feet. The color in both young and adults is shiny bluish-black, including the belly, with some red or cream coloring about the chin and sides of the head.

Habitat Present: YES

No eastern indigo snakes or evidence thereof was observed within the project site. Potentially suitable habitat, consisting of well-drained sandy areas, exists within the project site as well as numerous identified gopher tortoise burrows. Additionally, due to the altered nature of the site

from past silvicultural activities as well as the prevalence of a dense shrub understory throughout most of the site, potential use of the project site by the eastern indigo snake would be considered low. However, given the summer habitat description including swamps, which are present on the property, completely excluding this species is not possible. Furthermore, ESI is aware of a known population of this species on a property to the east called Cabin Bluff. The eastern indigo snake could use the property's wetland and gopher tortoise burrow areas however, given the fact that this site does not offer any truly unique habitat for this species due to past silvicultural activities; the likelihood of the project negatively affecting this species is low but further studies may need to be conducted to satisfy resource agencies concerning the presence or absence of this species.

Gopher tortoise (***Gopherus polyphemus***)

Listed as a state Threatened species, the gopher tortoise typically occurs in well drained, sandy soils in relatively open grassy areas with a sparse pine overstory. Gopher tortoises dig burrows, typically ranging in size from 20 to 30 feet long and from six to eight feet deep, with their shovel-like front legs. The burrows are found in dry places such as sandhills, flatwoods, prairies and coastal dunes or in human-made environments such as pastures, grassy roadsides and old fields. The gopher tortoise is a keystone species, meaning its extinction would result in measurable changes to the ecosystem in which it occurs. Specifically, other animals, such as gopher frogs, several species of snakes, gopher crickets, and several small mammals, depend on tortoise burrows. For the gopher tortoise to thrive, the animal generally needs three things: well-drained sandy soil (for digging burrows), plenty of low plant growth (for food) and open, sunny areas (for nesting and basking).

Habitat Present: Yes

During our evaluation 12 gopher tortoise burrows were documented within the project and visually observed by ESI personnel on the property. Therefore suitable habitats, consisting of well-drained sandy areas, do exist within the project site. Additionally, due to the altered nature of the site from past silvicultural activities as well as the prevalence of a hindering shrub under story throughout most of the site, use of this project site by gopher tortoises may

be limited to specific areas that meet their habitat requirements. This project may need additional studies to evaluate the gopher tortoise burrows identified as well as search for additional burrows (which are likely to exist), and for the presence of the federally protected eastern indigo snake that is considered a communal species of the gopher tortoise. ESI recommends that a formal systematic survey of the property to define and outline gopher tortoise burrow locations be conducted on the property. The identified burrows should be located by GPS and placed on a base map aerial photograph of the property. Upon completion of this effort, monitoring the gopher tortoise burrows will likely be required by resource agencies to eliminate the property as potentially supporting the eastern indigo snake. There is no set amount of time that the gopher tortoise burrows are required to be monitored, however recent project experience has been that more than one monitoring season (approximately first frost-February/March) is generally necessary.

V. CRITICAL HABITAT

The project site was reviewed for the presence of areas designated as critical habitat for protected species by the USFWS. "Critical habitat" is a term in the Endangered Species Act referring to specific areas that contain physical or biological features essential to the conservation of a threatened or endangered species. .No critical habitat has been determined to exist within the property by the appropriate regulatory agencies.

VI. CONCLUSION

Based on visual surveys of the property, document search, and knowledge of the habitat ranges of threatened and endangered species in this area, it is the *opinion* of ESI that the potential for any of the listed species to occur within the potential impact area is either low or very low, with the exception of the federally protected eastern indigo snake and state listed gopher tortoise.

Twenty-two state and/or federally listed species are documented to have ranges known to extend into Camden County. Eleven listed species have been identified as having potential habitat on the property. Four of the eleven species are federally listed and seven are state listed. The federally listed eastern indigo snake commonly shares habitat with the state listed

gopher tortoise, which was observed on site and will likely require further on site study to satisfy resource agency requirements to obtain Section 404 wetland impact permits. The remaining nine species have a very low probability of being affected by this project, however given the sweeping habitat descriptions used for these species a "no effect" determination is not possible at this time.

The flatwoods salamander was approved for federal listing in 1999 and documented occurrences have yet to be identified for Camden County but have been identified in neighboring Charlton County. The potential for this species being present is low due to past intensive silvicultural activities on site, however please be aware that potential habitat likely exists on the site and further studies may be desired by agency personnel despite the species not being listed for Camden County. We do not recommend any studies concerning this species at this time unless forced by the resource agencies.

Portions of the site may provide potentially suitable habitat for the state listed ball-moss, climbing buckthorn, hartwrightia, pondspice, wagner spleenwort, and the gopher tortoise. Potentially suitable habitat for federally protected species is present for the wood stork, eastern indigo snake, and bald eagle. This determination is primarily based upon the extremely broad habitat descriptions favored by these species, which thereby precludes ESI from eliminating some areas as potential habitat. No federally protected species or evidence thereof was noted by ESI during the habitat evaluation. Please remain aware that although the potentially suitable habitat for the federally protected species is either low or very low, except for the eastern indigo snake, we cannot guarantee that listed species would not nor could not use this site currently or in the future.

Please remember that protected species typically have survey windows associated with the flowering, fruiting, or wintering and mating seasons of the specific species, as is the case with the eastern indigo snake (late November-first frost to February/March). ESI recommends that if development plans are scheduled to begin construction within the next few years that any eastern indigo snake due diligence that is desired begin during the upcoming season in order to avoid the possibility of future project plans and permits being delayed due to pending

surveys for the eastern indigo snake. Recent project history and recommendations from Dirk Stevenson, a well respected herpetologist in the coastal Georgia area, has been that eastern indigo snake monitoring be conducted over 2 years or more in order to obtain USFWS release that no indigo snakes are present on the site. This time line is not formally defined and ESI would work to reduce this as much as possible, however prudent planning is necessary when addressing protect species issues.

We remain prepared to discuss any portion of this assessment in further detail if needed. We appreciate the opportunity to serve your needs in this capacity.

Donald W. Hendrix
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SC Registered Forester
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Web Site: www.environmentalservicesinc.com <http://www.environmentalservicesinc.com>

Wetland Delineation and Permitting ▪Wetland Mitigation ▪Mitigation Banking ▪Endangered Species Studies ▪Water Quality Studies ▪Site Remediation ▪Phase I and Phase II ESAs ▪Mold and Indoor Air Quality ▪Asbestos ▪Geology/Hydrology ▪Archaeology/Cultural Resources ▪Forestry ▪Stream Restoration

Noel Holcomb, Commissioner
Dan Forster, Director

Georgia Department of Natural Resources
Wildlife Resources Division
Nongame Conservation Section
2065 U.S. Highway 278, S.E., Social Circle, Georgia 30025-4743
(770) 918 6411

September 18, 2007

Donald Hendrix, Senior Scientist
Brandon Smith, Senior Project Manager
Environmental Services, Inc.
413 E. Liberty Street
Savannah, GA 31401

Subject: Known Occurrences of Conservation Areas and Special Concern Animals and Plants On or Near Project West of Kingsland, Camden County, Georgia

Dear Mr. Hendrix & Mr. Smith:

This is in response to your requests of August 20 September 4, 2007. According to our records, within a three-mile radius of the project area there are the following Natural Heritage Database occurrences:

East End of Project (-81.70580, 30.85580; NAD27):
US *Drymarchon couperi* (Eastern Indigo Snake) [HISTORIC] approx 1.7 mi. W of site
US *Trichechus manatus* (Manatee) in tidal waters

Project Center (-81.75799, 30.84197; NAD27):
No occurrences

West End of Project (-81.82883, 30.81447; NAD27):
Calopogon multiflorus (Many-flowered Grass-pink) approx. 1.5 mi. W of site
GA *Elanoides forficatus* (Swallow-tailed Kite) approx. 1.5 mi. S of site
St. Mary's River [High Priority Stream] approx. 1.5 mi. S of site

* Entries above proceeded by "US" indicates species with federal status (Protected, Candidate or Partial Status). Species that are federally protected in Georgia are also state protected; "GA" indicates Georgia protected species.

Recommendations:

We have no records of species of concern within the project area. However, two federally listed species, *Drymarchon couperi* (Eastern Indigo Snake) [HISTORIC] and *Trichechus manatus* (Manatee) are within three miles of the proposed project. Section 9 of the Endangered Species Act states that taking or harming of a listed species is prohibited. We recommend all requestors with projects located near federally protected species consult with Robin Goodloe of the United States Fish and Wildlife Service (706-613-9493, ext.221 or Robin_Goodloe@fws.gov).

We recommend completing thorough surveys for these and other species of concern within the

project area. We are also concerned about stream and wetland habitats that could be impacted by construction activities. In order to protect aquatic habitats and water quality, we recommend that all machinery be kept out of creeks during construction. We urge you to use stringent erosion control practices during construction activities. Further, we strongly advocate leaving vegetation intact within 100 feet of creeks, which will reduce inputs of sediments, assist with maintaining riverbank integrity, and provide shade and habitat for aquatic species. We realize that some trees may have to be removed, but recommend that shrubs and ground vegetation be left in place.

Please be aware that this project occurs near the St. Mary's River, a high priority stream. As part of an effort to develop a comprehensive wildlife conservation strategy for the state of Georgia, the Wildlife Resources division has developed and mapped a list of streams that are important to the protection or restoration of rare aquatic species and aquatic communities. High priority waters and their surrounding watersheds are a high priority for a broad array of conservation activities, but do not receive any additional legal protections. We now have GIS ESRI shapefiles of GA high priority waters available on our website (http://www.georgiawildlife.com/content/displaycontent.asp?txtDocument=89&txtPage=13). Please contact the Georgia Natural Heritage Program if you would like additional information on high priority waters.

In the future, please submit project descriptions with your request for threatened and endangered species information. This will allow us to make more specific recommendations for the projects proposed at each site and allow us to adequately assess the threats to species of concern. Thanks for your cooperation.

Future requests for rare and endangered species information should be sent direction to the Nongame Conservation Section, Social Circle office. Please send future correspondence to Katrina Morris, Environmental Review Coordinator using the address on the letterhead.

New Data Available on the Nongame Conservation Section Website

We have recently updated the Nongame Conservation Section Website!!! You can view the updated rare species and natural community information by Quarter Quad, County and HUC8 Watershed. To access this information, please visit our GA Rare Species and Natural Community Information page at:
http://georgiawildlife.dnr.state.ga.us/content/displaycontent.asp?txtDocument=89

An updated ESRI shape file of our rare species and natural community data by quarter quad and county is also available. It can be downloaded from:
http://georgiawildlife.dnr.state.ga.us/assets/documents/gnhp/gnhpds.zip

Disclaimer:

Please keep in mind the limitations of our database. The data collected by the Nongame Conservation Section comes from a variety of sources, including museum and herbarium records, literature, and reports from individuals and organizations, as well as field surveys by our staff biologists. In most cases the information is not the result of a recent on-site survey by our

staff. Many areas of Georgia have never been surveyed thoroughly. Therefore, the Nongame Conservation Section can only occasionally provide definitive information on the presence or absence of rare species on a given site. Our files are updated constantly as new information is received. **Thus, information provided by our program represents the existing data in our files at the time of the request and should not be considered a final statement on the species or area under consideration.**

If you know of populations of special concern species that are not in our database, please fill out the appropriate data collection form and send it to our office. Forms can be obtained through our web site (http://www.georgiawildlife.com) or by contacting our office. If I can be of further assistance, please let me know.

Sincerely,

Katrina Morris
Environmental Review Coordinator

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE

Southeast Regional Office
263 13th Avenue South
St. Petersburg, FL 33701
(727) 824-5312, Fax 824-5309
http://sero.nmfs.noaa.gov

SEP 19 2007

Dear Colleague:

Pursuant to section 7(a)(2) of the Endangered Species Act (ESA), the Protected Resources Division of NOAA's National Marine Fisheries Service (NMFS) has reviewed your letters dated August 20, 2007, concerning the "ESI Project No.: ES07066.00 in Camden County, Georgia and ESI Project No.: ES06090.00 in Wayne County, Georgia."

__X__**There are no ESA-listed species** or designated critical habitat under our purview in the action area.

___**We cannot determine** impacts to threatened or endangered species, or designated critical habitat, under NOAA Fisheries purview because the letter lacks sufficient information to evaluate the project.
Enclosed are guidelines to conduct a proper biological evaluation.

___**Please provide a letter** from the lead federal action agency designating you to conduct ESA section 7 consultation with this office.

____**Enclosed is a list** of federally-protected species under the jurisdiction of NMFS for the state of _____. Biological information on federally-protected species and candidate species can be found at the following website addresses:
http://www.nmfs.noaa.gov/prot_res/prot_res.html; http://www.cccturtle.org;.
http://noflorida.fws.gov/SeaTurtles/seaturtle-info.htm);
http://endangered.fws.gov/wildlife.html#Species; http://www.cmc-ocean.org/main.php3;
http://floridaconservation.org/psm/turtles/turtle.htm;
http://obis.env.duke.edu/data/sp_profiles.php;
www.mote.org/~colins/Sawfish/SawfishHomePage.html; www.floridasawfish.com;
www.flmnh.ufl.edu/fish/sharks/InNews/sawprop.htm;.Gulf sturgeon critical habitat rule and maps (http://alabama.fws.gov/gs/).

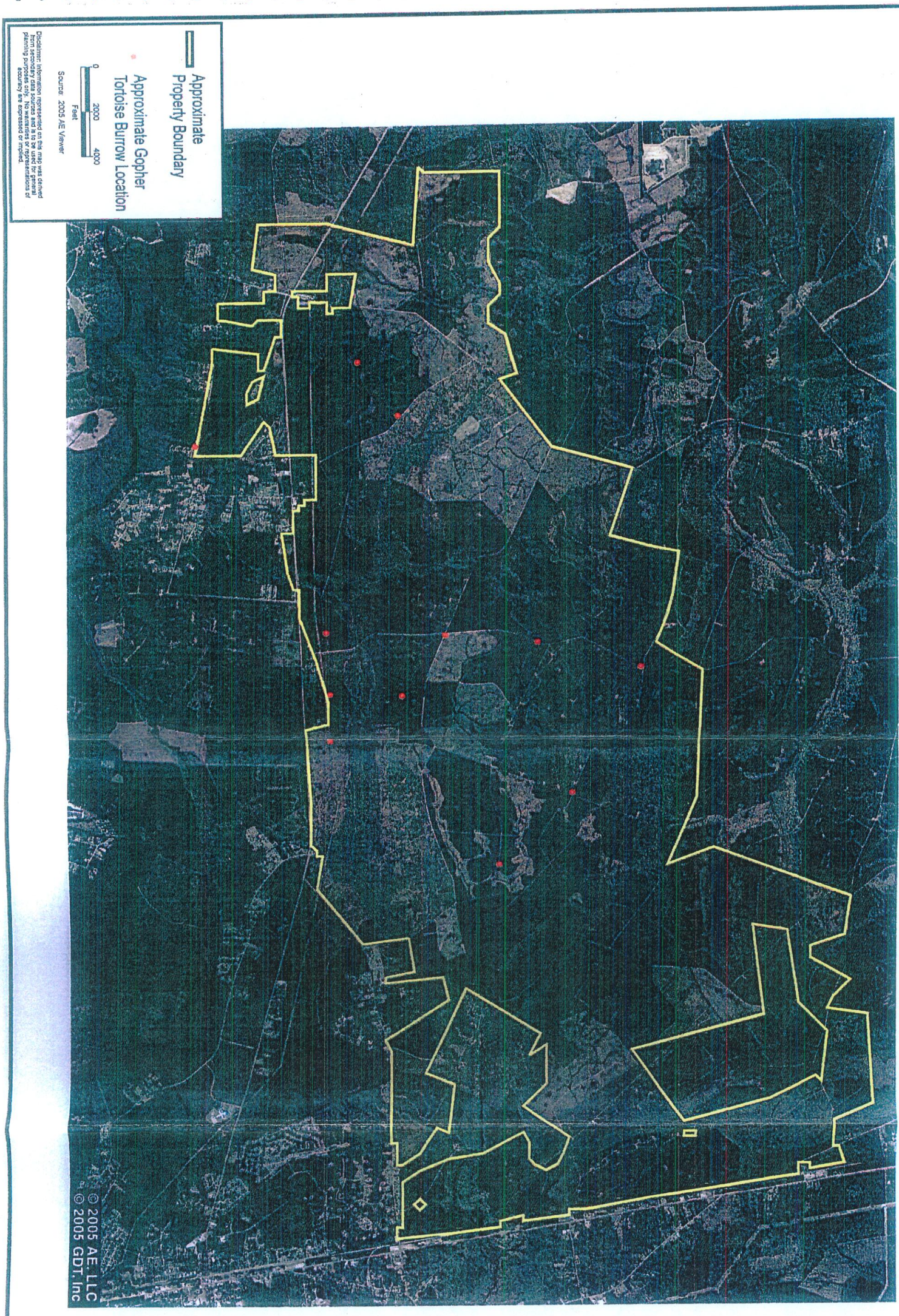
___ **It is NMFS' opinion that the project will have no effect** on listed species or critical habitat protected by the ESA under NOAA Fisheries purview. No further consultation with NOAA Fisheries pursuant to section 7(a)(2) of the ESA is required unless the project description changes.

Consultation with NMFS' Habitat Conservation Division (HCD), pursuant to the Magnuson-Stevens Fishery Conservation and Management Acts requirements for essential fish habitat consultation, may be required. Please contact HCD at (727) 824-5317. If you have any ESA questions, please contact our Acting ESA section 7 Coordinator, Robert Hoffman, at (727) 824-5312 or by e-mail at Robert.Hoffman@noaa.gov.

Sincerely,

Teletha Mincey
Administrative Support Assistant
Protected Resources Division

File: 1514-22.B



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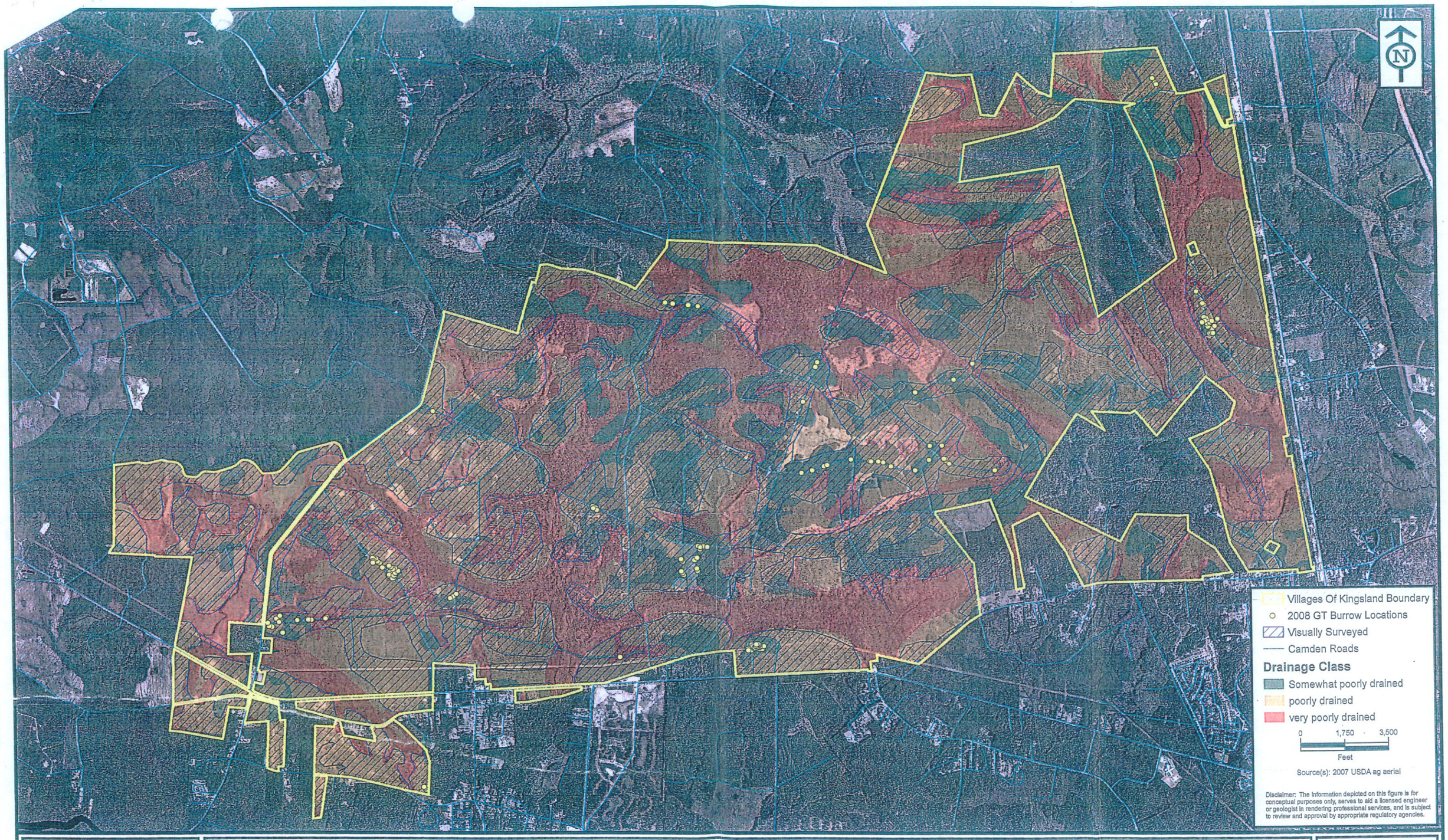
Threatened and Endangered Species Habitat Sketch

Bertha Mineral Tract 15,000-Acres

Kingsland, Camden County, Georgia

Project:	ES07066.00
Date:	Sept 2007
Drwn/Chkd:	DH/BS
Figure:	1

P:\Projects\graphics\2007\ES07066.00\T&E Report Sketch



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Gopher Tortoise Location Map

Crescent Resources / Bertha Mineral Tract

Camden County, Georgia

Project:	ES07066.01
Date:	April 2008
Drwn/Chkd:	TS/BS
Figure:	1

File: P:\Projects\Graphics\2007\ES07066.00\geo_r01\figures\2008 GT locations