



October 29, 2015

Thomas and Hutton
50 Park of Commerce Way
Savannah, GA 31405

Attn: Mr. Ralph Forbes
P: 912-721-4157
E: forbes.r@thomasandhutton.com

Re: Threatened and Endangered (T&E) Species Report
Georgia Historic Heartland Mega Site
Highway 11 and Hollis Road
Social Circle, Newton and Walton County, Georgia
Terracon Project No. 49157647A

Dear Mr. Forbes:

Terracon Consultants, Inc. (Terracon) is pleased to provide a review of the site conditions observed and available documentation pertaining federally and state protected species at the above-referenced site. This work was performed in general accordance with the scope of services outlined in Terracon Proposal No. P49140514R2, dated February 27, 2015. At your request, below is a summary of information pertaining to federal and state protected species in the area of the site. This report was prepared for the exclusive reliance of Thomas and Hutton. Reliance by any other party (other than a regulatory agency having jurisdiction) is prohibited without the written authorization of Thomas and Hutton and Terracon.

Terracon performed a T&E review including a habitat assessment at the site. The United States Fish and Wildlife Service (USFWS) Information Planning and Conservation (IPAC) system was utilized to identify potential federally protected species that may occur in the site area. No critical habitat or refuges are identified in the on or in the vicinity of the site. Species listed that may potentially occur in the vicinity of the site include the federally endangered Black Spored Quillwort and Michaux's Sumac, and the federally threatened Little Amphianthus. The site consists primarily of wooded land consisting of mixed hardwood forest and pine stands. There are three wetland areas located on the site. One large open emergent wetland is located on the western portion and two forested wetlands on the southern portion of the site. Details on federally listed species in relation to habitat on the site are provided below.

Black Spored Quillwort – Federally Endangered

The Black Spored Quillwort (*Isoetes melanospora*) (BSQ) is a perennial herb with a bulb-like base and forking roots. The leaves are commonly 1-3 inches (3-8 cm) tall, very narrow, with a pointed tip and a wide base. Each leaf contains 4 hollow air chambers separated by partitions. The BSQ usually inhabits shallow, temporarily flooded, flat-bottomed pools formed by natural

T&E Assessment

Georgia Historic Heartland Mega Site ■ Social Circle, Georgia
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erosion on granite outcrops. The BSQ is endemic to the piedmont of Georgia and South Carolina. Threats include development of wooded land, quarrying of outcrops, horseback or cattle trampling, and trash dumping. The site consists primarily of wooded land with no granite outcrops observed, and does not have adequate habitat for the Black Spored Quillwort.

Little Amphianthus – Federally Threatened

The Little Amphianthus (*Amphianthus pusillus*) (LA) is an aquatic, annual herb with two types of leaves. The floating leaves are less than ¼ inch (3-5 mm) long, oval, and paired at the end of the thread-like stem. The submerged leaves are arranged in a rosette at the top of a tiny, underwater stem, where each leaf is less than ¼ inch (3-5 mm) long, and has a pointed tip. The LA is found in shallow, flat-bottomed depressions (solution pits, vernal pools) on granite outcrops, with thin, gravelly soils. Threats to this species are development, quarrying, off-road vehicle use, and trash dumping. The site consists primarily of wooded land with no granite outcrops or depressions, and does not have adequate habitat for the Little Amphianthus.

Michaux's sumac – Federally Endangered

The Michaux's sumac (*Rhus michauxii*) (MS) is a rhizomatous, densely hairy shrub that has erect stems from 1-3 feet (30.5-91 cm) tall. It has compound leaves containing evenly serrated, oblong to lanceolate, acuminate leaflets. This plant inhabits sandy or rocky open woods usually found in basic soils. The MS plant survives best where some form of disturbance has provided more open areas. A rocky bluff area with basic soils and adequate sunlight hosts the only known population in Georgia which is on the far eastern end of the state. The MS is endemic to the coastal plain and piedmont area of Georgia, Florida, South Carolina, North Carolina, and Virginia. The biggest threat to this species is the low reproductive capacity. The site consists primarily of wooded land with no large bluff openings, and does not have adequate habitat for the Michaux's sumac.

Terracon also reviewed a state list of protected species for Newton and Walton Counties utilizing the Georgia Department of Natural Resources (GDNR) website. Site cover consists of wooded land and planted pine stands that do not support suitable habitat for state listed plant and animal species, with the exception of the Chattahoochee Crayfish (*Cambarus howardi*). The site could have potential habitat for the Chattahoochee Crayfish in Strouds Creek (perennial stream on the northwest end of the site). Specific development activities in relation to the on-site stream channel are unknown at this time. If future impact is proposed within Strouds Creek, additional studies may be necessary to determine the presence/absence of the species.

Based on a review of federal and state listed species that could potentially occur in the area of the site, it is Terracon's opinion that future development at the site would have no effect on federal and state listed threatened and endangered species (with exception to the Chattahoochee Crayfish depending on future development plans). If future impacts are proposed to Strouds Creek, Terracon recommends further coordination to determine if additional studies will be necessary in regards to the Chattahoochee Crayfish. Following a

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review of this report by the client, Terracon will forward this letter report to the USWFS Athens, Georgia field office and GDNR office for concurrence on the preliminary finding of “no effect”.

Terracon’s services were performed in a manner consistent with generally accepted practices of the profession undertaken in similar studies in the same geographical area during the same time period. Terracon makes no warranties, express or implied, regarding the findings, conclusions or recommendations. Please note that Terracon does not warrant the work of laboratories, regulatory agencies or other third party resources supplying information used in the preparation of the report. These services were performed in accordance with the scope of work agreed to with our client. Findings, conclusions, and recommendations resulting from these services are based upon information derived from the on-site activities and other services performed under this scope of work; such information is subject to change over time.

We appreciate the opportunity to provide services to Thomas and Hutton. If you have any questions concerning this report, or if we can assist you in any other matter, please call our office at 770-623-0755.

Sincerely,

Terracon

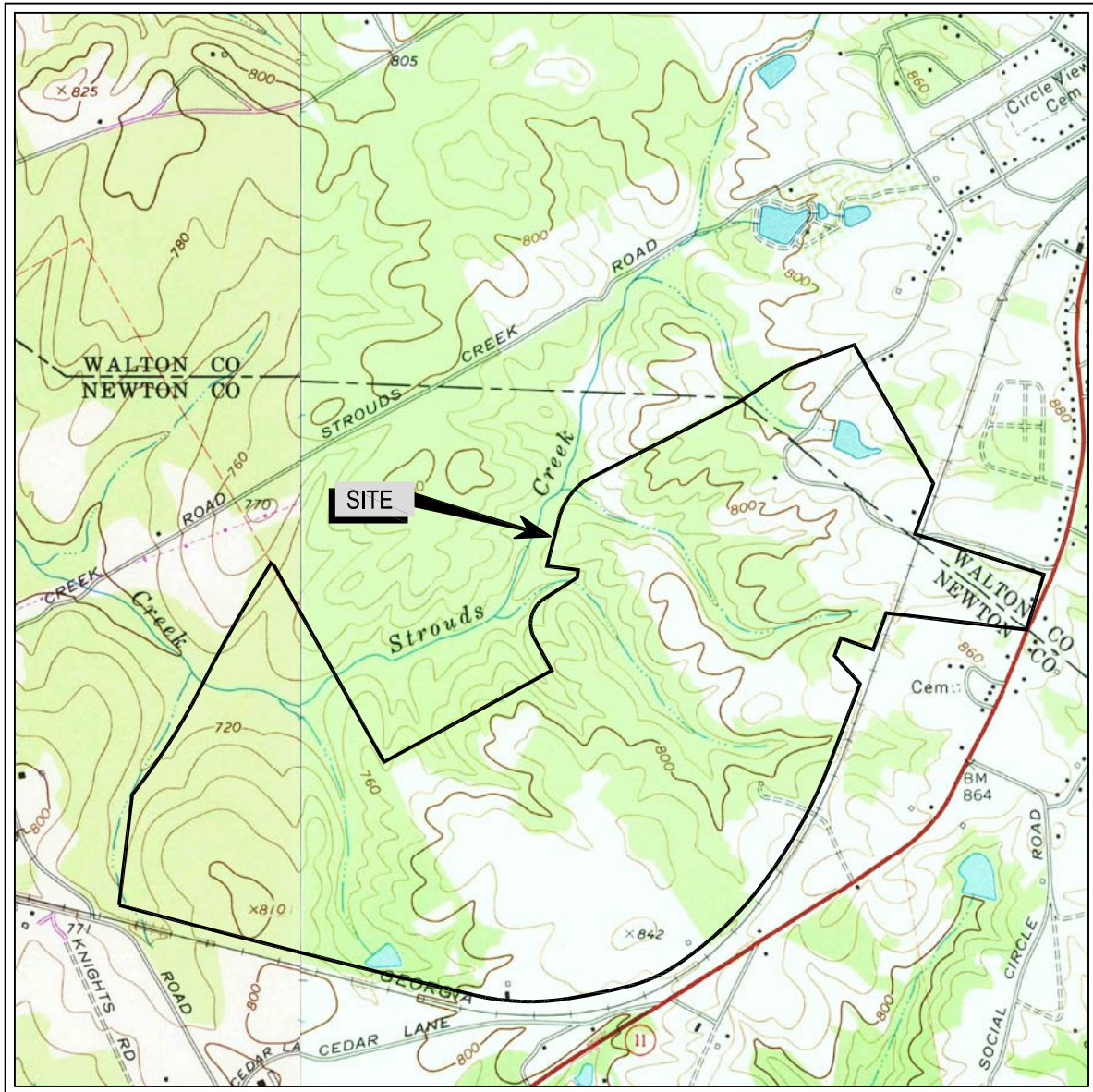
A handwritten signature in blue ink that reads "Chip Belcher".

Chip Belcher
Staff Biologist

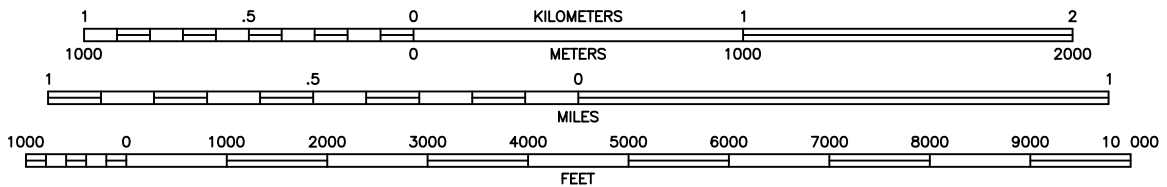
A handwritten signature in black ink that reads "Jim W. Baxter".

Jim W. Baxter
Senior Ecologist

Attachments: Exhibit 1: Topographic Vicinity Map
Exhibit 2: 2015 National Wetland Inventory Aerial Photograph
IPAC List
GDNR List
Site Photographs



SCALE 1:24 000



CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

QUADRANGLE
JERSEY, GA 1964 PR 1985
SOCIAL CIRCLE, GA 1971 PI 1981
7.5 MINUTE SERIES (TOPOGRAPHIC)

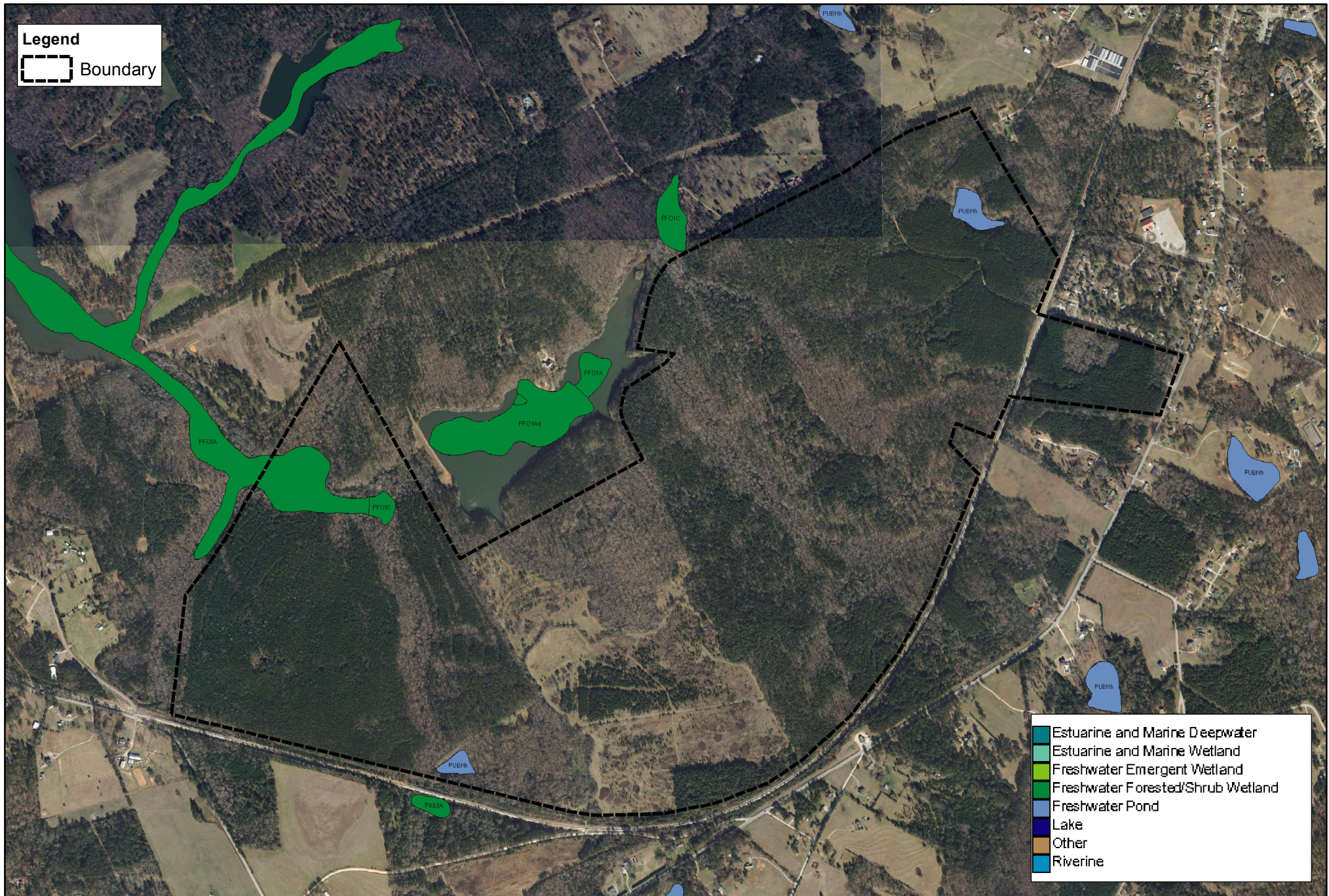










*INDICATES WHICH MAP SITE IS LOCATED ON

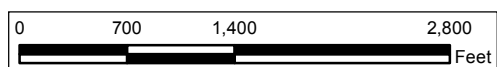
Project Mngr: JKW	Project No. 49157647	<p>Terracon Consulting Engineers and Scientists</p> <p>2855 Premiere Parkway, Suite C Duluth, GA 30097 (770) 623-0755 (770) 623-9628</p>	TOPOGRAPHIC VICINITY MAP	EXHIBIT
Drawn By: SEG	Scale: AS SHOWN		ECOLOGICAL SERVICES GEORGIA HISTORIC HEARTLAND MEGA SITE	1
Checked By: MRF/JKW	File No. ESA49157647-1		HIGHWAY 11 AND HOLLIS ROAD SOCIAL CIRCLE, GEORGIA	
Approved By: JAM	Date: OCT. 2015			

Legend

 Boundary



-  Estuarine and Marine Deepwater
-  Estuarine and Marine Wetland
-  Freshwater Emergent Wetland
-  Freshwater Forested/Shrub Wetland
-  Freshwater Pond
-  Lake
-  Other
-  Riverine



Project No.
49157647A
Drawn By: MDP
Approved By: CAW
Date: 10/7/2015

Terracon
Consulting Engineers & Scientists
2855 Premier Parkway, Suite C Duluth, GA 30097
PH: (770) 623-0755 FAX: (770) 623-9628

National Wetland Inventory Map
Georgia Historic Heartland Mega Site
Newton and Walton Counties, Georgia

Exhibit
4

Georgia Historic Heartland Mega Site

IPaC Trust Resource Report

Generated October 22, 2015 05:56 AM MDT

This report is for informational purposes only and should not be used for planning or analyzing project-level impacts. For projects that require FWS review, please return to this project on the IPaC website and request an official species list from the Regulatory Documents page.



US Fish & Wildlife Service

IPaC Trust Resource Report



Project Description

NAME

Georgia Historic Heartland Mega Site

PROJECT CODE

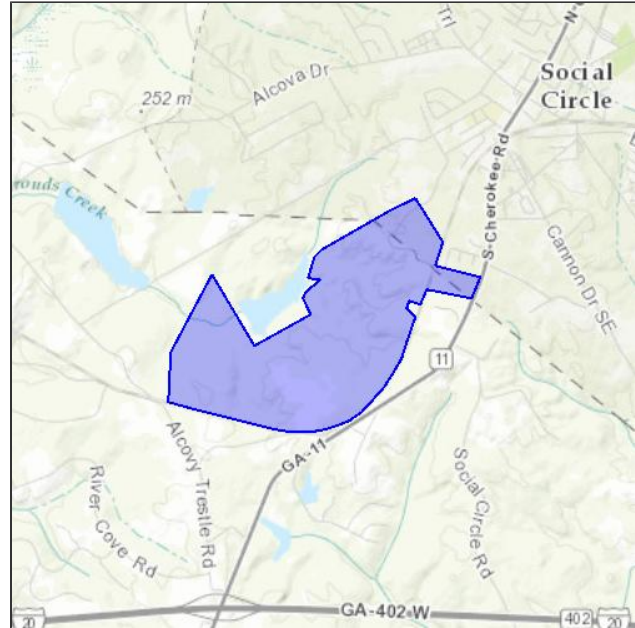
ZUTD7-2Q34B-B5NNU-4VWCJ-LYHMQI

LOCATION

Newton and Walton counties, Georgia

DESCRIPTION

No description provided



U.S. Fish & Wildlife Contact Information

Species in this report are managed by:

Georgia Ecological Services Field Office

105 Westpark Drive

WESTPARK CENTER SUITE D

Athens, GA 30606-3175

(706) 613-9493

Endangered Species

Proposed, candidate, threatened, and endangered species that are managed by the [Endangered Species Program](#) and should be considered as part of an effect analysis for this project.

This unofficial species list is for informational purposes only and does not fulfill the requirements under [Section 7](#) of the Endangered Species Act, which states that Federal agencies are required to "request of the Secretary of Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action." This requirement applies to projects which are conducted, permitted or licensed by any Federal agency.

A letter from the local office and a species list which fulfills this requirement can be obtained by returning to this project on the IPaC website and requesting an official species list on the Regulatory Documents page.

Ferns and Allies

Black Spored Quillwort *Isoetes melanospora*

Endangered

CRITICAL HABITAT

No critical habitat has been designated for this species.

<https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?sPCODE=S015>

Flowering Plants

Little Amphianthus *Amphianthus pusillus*

Threatened

CRITICAL HABITAT

No critical habitat has been designated for this species.

<https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?sPCODE=Q1ST>

Michaux's Sumac *Rhus michauxii*

Endangered

CRITICAL HABITAT

No critical habitat has been designated for this species.

<https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?sPCODE=Q2HH>

Critical Habitats

Potential effects to critical habitat(s) within the project area must be analyzed along with the endangered species themselves.

There is no critical habitat within this project area

Migratory Birds

Birds are protected by the [Migratory Bird Treaty Act](#) and the Bald and Golden Eagle Protection Act.

Any activity which results in the take of migratory birds or eagles is prohibited unless authorized by the U.S. Fish and Wildlife Service (1). There are no provisions for allowing the take of migratory birds that are unintentionally killed or injured.

You are responsible for complying with the appropriate regulations for the protection of birds as part of this project. This involves analyzing potential impacts and implementing appropriate conservation measures for all project activities.

American Bittern <i>Botaurus lentiginosus</i> Season: Wintering https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?sPCODE=B0F3	Bird of conservation concern
Bald Eagle <i>Haliaeetus leucocephalus</i> Year-round https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?sPCODE=B008	Bird of conservation concern
Brown-headed Nuthatch <i>Sitta pusilla</i> Year-round	Bird of conservation concern
Chuck-will's-widow <i>Caprimulgus carolinensis</i> Season: Breeding	Bird of conservation concern
Fox Sparrow <i>Passerella iliaca</i> Season: Wintering	Bird of conservation concern
Kentucky Warbler <i>Oporornis formosus</i> Season: Breeding	Bird of conservation concern
Least Bittern <i>Ixobrychus exilis</i> Season: Breeding	Bird of conservation concern
Loggerhead Shrike <i>Lanius ludovicianus</i> Year-round https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?sPCODE=B0FY	Bird of conservation concern
Prairie Warbler <i>Dendroica discolor</i> Season: Breeding	Bird of conservation concern
Prothonotary Warbler <i>Protonotaria citrea</i> Season: Breeding	Bird of conservation concern
Red-headed Woodpecker <i>Melanerpes erythrocephalus</i> Year-round	Bird of conservation concern
Rusty Blackbird <i>Euphagus carolinus</i> Season: Wintering	Bird of conservation concern
Wood Thrush <i>Hylocichla mustelina</i> Season: Breeding	Bird of conservation concern
Worm Eating Warbler <i>Helmitheros vermivorum</i> Season: Breeding	Bird of conservation concern

Refuges

Any activity proposed on [National Wildlife Refuge](#) lands must undergo a 'Compatibility Determination' conducted by the Refuge. If your project overlaps or otherwise impacts a Refuge, please contact that Refuge to discuss the authorization process.

There are no refuges within this project area

Wetlands

Impacts to [NWI wetlands](#) and other aquatic habitats from your project may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal Statutes.

Project proponents should discuss the relationship of these requirements to their project with the Regulatory Program of the appropriate [U.S. Army Corps of Engineers District](#).

DATA LIMITATIONS

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

DATA EXCLUSIONS

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

DATA PRECAUTIONS

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Freshwater Forested/shrub Wetland

PFO1A	65.7 acres
PFO1C	1.4 acres

Freshwater Pond

PUBHh	3.78 acres
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WILDLIFE RESOURCES DIVISION

Known occurrences of special concern plants, animals and natural communities
Walton County — Fips Code: 13297






Find details for these species at [Georgia Rare Species and Natural Community Data](#) and [NatureServe Explorer](#).

[US] indicates species with federal status (Protected or Candidate).
Species that are federally protected in Georgia are also state protected.
[GA] indicates Georgia protected species.

 link to species profile on our site (not available for all species).

 link to report for element on NatureServe Explorer (only available for animals and plants).

Animal Occurrences

- *Cyprinella xaenura* (Altamaha Shiner) [GA]   - fish
- *Haliaeetus leucocephalus* (Bald Eagle) [GA]   - bird
- *Tyto alba* (Barn owl)  - bird

Community Occurrences

- *Bare rock/lichens, pd granite outcrop* (Granite Outcrop Rock/lichens)
- *Herbaceous veg., pd granite outcrop* (Granite Outcrop Herb Community)
- *Rocky bank/shoal, brownwater stream* ()
- *Shrub/scrub veg., pd granite outcrop* (Granite Outcrop Shrub/scrub Community)

Plant Occurrences

- *Allium speculae* (Flatrock Onion) [GA]  
- *Amphianthus pusillus* (Pool Sprite) [US]  
- *Amsonia ludoviciana* (Louisiana Blue Star) 
- *Anemone berlandieri* (Glade Windflower)  
- *Draba aprica* (Sun-loving Draba) [GA]  
- *Elatine brachysperma* (Shortseed Waterwort) 
- *Eleocharis wolfii* (Spikerush) 
- *Eriocaulon koernickianum* (Dwarf Hatpins) [GA]  
- *Eurybia avita* (Alexander Rock Aster) 
- *Fimbristylis brevivaginata* (Flatrock Fimbry)  
- *Gratiola graniticola* (Granite Hedge-hyssop) 
- *Nestronia umbellula* (Indian Olive) [GA]  
- *Pilularia americana* (American Pillwort) 
- *Sedum pusillum* (Granite Stonecrop) [GA]  
- *Trepocarpus aethusae* (Trepocarpus) 

Generated from Georgia DNR's NatureServe Biotics conservation database on December 28, 2014



WILDLIFE RESOURCES DIVISION

Known occurrences of special concern plants, animals and natural communities Newton County — Fips Code: 13217

Find details for these species at [Georgia Rare Species and Natural Community Data](#) and [NatureServe Explorer](#).

[US] indicates species with federal status (Protected or Candidate).
Species that are federally protected in Georgia are also state protected.
[GA] indicates Georgia protected species.

link to species profile on our site (not available for all species).

link to report for element on NatureServe Explorer (only available for animals and plants).

Animal Occurrences

- *Alasmodonta arcula* (Altamaha Arcmussel) [GA] - mollusk
- *Cambarus howardi* (Chattahoochee Crayfish) [GA] - crustacean
- *Cyprinella xaenura* (Altamaha Shiner) [GA] - fish
- *Elimia mutabilis* (Oak Elimia) - mollusk
- *Haliaeetus leucocephalus* (Bald Eagle) [GA] - bird
- *Hemidactylium scutatum* (Four-toed Salamander) - amphibian
- *Moxostoma sp. 4* (Brassy Jumprock) - fish
- *Pyganodon gibbosa* (Inflated Floater) - mollusk
- *Somatogyrus alcoviensis* (Reverse Pebblesnail) - mollusk
- *Tyto alba* (Barn owl) - bird

Community Occurrences

- *Brownwater stream floodplain forest* (Alluvial River Swamp)
- *Pd xeric broadleaf decid.-needleleaf ever. forest* (Piedmont Xeric Hardwood-pine Forest)

Plant Occurrences

- *Amphianthus pusillus* (Pool Sprite) [US]
- *Eriocaulon koernickianum* (Dwarf Hatpins) [GA]
- *Eurybia avita* (Alexander Rock Aster)
- *Gnaphalium graniticola* (Granite Hedge-hyssop)
- *Isoetes melanospora* (Black-spored Quillwort) [US]
- *Portulaca umbraticola ssp. coronata* (Wingpod Purslane)
- *Quercus prinoides* (Dwarf Chinkapin Oak)
- *Rhus michauxii* (Dwarf Sumac) [US]
- *Sedum pusillum* (Granite Stonecrop) [GA]
- *Zanthoxylum americanum* (Northern Prickly-ash)

Generated from Georgia DNR's NatureServe Biotics conservation database on December 28, 2014



Photo 1: View of the pond located on the southern portion of the site.



Photo 2: View of piped culvert from the pond discharging to stream S3.



Photo 3: View of Strouds Creek (stream S7) where it meets the western site boundary.



Photo 4: View of stream S3 located on the southwestern portion of the site.



Photo 5: View of Wetland A.



Photo 6: View of Wetland A.



Photo 7: View of the culvert from the large pond to the east of the site discharging into Wetland A.



Photo 8: View of stream S7.



Photo 9: View of Wetland C.



Photo 10: View of the hydric soil observed in the wetland.



Photo 11: View of the beaver activity near Wetland B.



Photo 12: View of stream S11.



Photo 13: View of the upland vegetation.



Photo 10: View of the upland vegetation.



Photo 11: View of the upland vegetation.



Photo 12: View of the upland vegetation.