

MEMORANDUM

Savannah Station – Phase 2

Project Number: 17-0293



CHW - Certificate of Authorization No. 0005075

From: Tim Sagul
Date: October 29, 2018
RE: Savannah Station, Phase 2 - Preliminary Stormwater Management Design

This memo provides a summary of our preliminary stormwater management design for Savannah Station Phase 2. The Savannah Station, Phase 2 project proposes the construction of a single-family subdivision with associated amenities, stormwater management facilities, utility infrastructure, and related improvements. Existing Phase 1 improvements are permitted with the Suwannee River Water Management District under ERP-001-210481-1. The proposed development encompasses ± 45.1 acres located at the intersection of CR 235 & NW 157th Street, Alachua, Florida.

Design Criteria

The design criteria for the proposed Stormwater Management Facilities are based upon the criteria set forth by the City of Alachua (CoA) and Suwannee River Water Management District (SRWMD) for dry retention system design in a closed watershed. The criteria met by this report are:

1. Provide Water Quality Treatment Volume (WQTV) – The minimum stormwater treatment volume shall be the runoff from the first 2.0 inches of rainfall from the design storm (SRWMD) or 0.5 inch of runoff from the drainage area in an off-line retention system or according to other best management practices as described in the SRWMD's Surface Water Management Permitting Manual, as amended (CoA). WQTV must be recovered within 72 hours (SRWMD).
2. Provide Discharge Rate and Volume Attenuation – Attenuate the post-development peak discharge rates and volumes to be less than the pre-development peak discharge rates and volumes for the 100 year - 1 hour, 100 year - 2 hour, 100 year - 4 hour, 100 year - 8 hour, 100 year - 24 hour, 100 year - 72 hour, 100 year - 168 hour, and 100 year - 240 hour storm events (SRWMD and CoA).
3. Provide Volume Recovery – Retention systems must have one-half of the total volume available within 7 days following the end of the design storm event, and the total volume must be recovered within 30 days following the end of the storm event. Alternatively, if recovery requirements cannot be met, back to back storms can be routed through the system (SRWMD).
4. Freeboard - Retention ponds shall have a freeboard of 1 foot above the maximum stage in order to function properly during storms greater than the design storm (SRWMD).

The City of Alachua and the SRWMD require that best management practices (BMPs) be employed to control erosion and sedimentation and an operation and maintenance entity be established.

Preliminary Soils Data

The National Resource Conservation Service (NRCS) Soil Survey for Alachua County describes the near surface soil profile as *Fort Meade fine sand (0 to 5 percent slopes)* with a hydrologic soil group rating of 'A', *Arredondo fine sand (0 to 5 percent slopes)* with a hydrologic soil group rating of 'A', *Gainesville sand (0 to 5 percent slopes)* with hydrologic soil group rating of 'A', and as *Pits and Dumps*. Refer to Figure 4 for the NRCS Soils Map.

Proposed Northern Stormwater Management Facility (SMF-1)

- Base of mobilized aquifer: 9 ft below land surface (bls)
- Unsaturated vertical infiltration rate: 10.5 ft/day (5.25 ft/day used in calculations)
- Horizontal hydraulic conductivity: 10.5 ft/day (5.25 ft/day used in calculations)
- Fillable porosity: 20%
- Average seasonal high groundwater table: 8.5 ft bls

Proposed Southern Stormwater Management Facility (SMF-2)

- Base of mobilized aquifer: 13.5 ft bls
- Unsaturated vertical infiltration rate: 12.5 ft/day (6.25 ft/day used in calculations)
- Horizontal hydraulic conductivity: 12.5 ft/day (6.25 ft/day used in calculations)
- Fillable porosity: 20%
- Average seasonal high groundwater table: 13 ft bls

Preliminary Stormwater Analysis

The stormwater management facilities will be designed like the basins permitted in Phase 1.

The proposed project is ±45.1 acres. The curve numbers parameters were taken from TR-55.

Post-Development Watershed

Watershed Area =	45.1 acres	
Open Area (Good, Type 'A' Soil) =	3.56 acres	CN = 39
Stormwater management facilities =	6.76 acres	CN = 100
*Residential Lots (1/8 acre, type 'A' soils) =	34.78 acres	CN = 77

*From TR-55, 65% of the area is considered impervious surface.

The ponds have been sized to retain the volumes generated by the 100-year critical duration storms as designated by SRWMD. Final details will be provided with submittal of the construction permit.

DRAFT



ENVIRONMENTAL RESOURCE ASSESSMENT

Savannah Station Phase 2

City of Alachua
Alachua County, Florida

Prepared for

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and

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20 November 2018

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Introduction and Project Description

Ecosystem Research Corporation (ERC) was retained by Mr. Blake Fletcher representing the Fletcher Family Companies to perform an Environmental Resource Assessment (ERA) and Listed Species Survey of a Project Site located in northwest Alachua County within the southwest quadrant of the intersection of NW County Road 235 and NW 157th Street (**Figure 1**). The Project Site lies within the City of Alachua municipal jurisdiction limits. The proposed Project site consists of fallow agricultural lands and successional disturbed forest habitat and is designated for a single-family residential development. The proposed development represents an expansion of an existing residential development designated as Savannah Station. This project is the Phase 2 expansion of the existing neighborhood. The applicant is currently submitting an application for a Preliminary Plat for a Subdivision.

The Project Site consists of two (2) Alachua County tax parcels designated as Parcels 03905-002-000 (13.85 acres) and 03980-002-001 (29.86 acres) within the Alachua County Property Appraiser's database (**Figure 2**). The Project Site Boundary, Topographic and Tree Survey are provided as **Figure 3 (Sheets 1–7)** and indicates the total Project Site acreage equals 44.58 acres. The Project Site acreages represented by the tax parcel boundaries total 43.71 acres which is 0.87 acres less than the survey acreage. For this report, the acreage is assumed to be 44.58 acres as shown on the Certified Survey.

Environmental Resource Assessment Methodology

Field Survey

A field survey of the Project Site was performed 15 and 16 November 2018 to determine the general existing ecological condition of the area and determine if any listed plant or animal species or other environmental constraints were present within the boundaries of the Project Parcel or immediately adjacent parcels. The survey was performed by Peter M. Wallace, MS (Certified Gopher Tortoise Agent #GTA-14-00037A) and Robert A. Garren, MS (Certified Gopher tortoise Agent #GTA-09-00057D) of Ecosystem Research Corporation. A survey of the Project Site was performed by repeatedly traversing the site with a series of pedestrian transects. Observations regarding plant species composition were recorded at **1620** locations within the Project Site and adjacent areas. At each location, plant species, plant habitat type, observations of animal occurrences, and GPS position coordinates were recorded with a hand-held Garmin GPSmap 76CSx unit. Photographs were taken to document the general plant communities, land uses, and historical activities present within the Project Site during the period of the survey. Photographs that show the general physical appearance of the Project Site are contained within **Attachment 1**.

Data Search

To complement the data obtained from the field survey, several existing GIS databases were queried to obtain available published site-specific GIS data for the Project Site and surrounding areas. These databases include the following:

1. USGS High Springs Quadrangle map
2. Alachua County 2001 LiDAR topography
3. Natural Resource Conservation Service (NRCS) Soils
4. Federal Emergency Management Service (FEMA)
5. National Wetlands Inventory (NWI)
6. Alachua County composite wetlands map
7. Alachua County Floridan Aquifer High Recharge Area map
8. Alachua County Hazardous Materials Storage Facilities
9. Alachua County Historic Structures
10. Florida Fish and Wildlife Conservation Commission (FWC) Eagle Nest Locator
11. USFWS Federally Listed Species Database
12. Florida Fish and Wildlife Conservation Commission (FWC) 2016 Florida Black Bear Forage Range and Habitat Database

The field assessment and data review assessment performed for the Project Site addresses the specific requirement of the City of Alachua Comprehensive Plan and Land Development Regulations and Alachua County's Article II Countywide Wetlands Protection Code defined within Chapter 77 Water Quality Standards and Management Practices of the Alachua County Land Development Code. As part of this survey, the entire limits of the Project Site were evaluated as well as the adjacent developed resources occurring along the boundaries of the adjacent Tax Parcels located east and south of the proposed development site.

Results of Data Review

Published Geographic and Hydrologic Data Review

USGS High Springs Quadrangle

The Project Site lies within the geographic area defined by the USGS High Springs Quadrangle map (**Figure 4**). The site lies within Sections 21 and 28, Township 8 South, Range 18 East. The Project Site lies within an area of rolling topography characterized by large broad hills reaching elevations of ± 162 ft (NAVD 88) descending to large closed landscape depressions confined by the 80–85 ft outer concentric contour. Within the area of the Project Site and adjacent areas, there are **NO** drainage features or wetlands shown for the area defined on Figure 4.

Alachua County 2001 LiDAR Topography

The Alachua County 2001 LiDAR topography of the Project Site and surrounding area is provided as **Figure 5**. Based on the 2001 County 2-ft LiDAR topography, the elevations within the Project Site range from a high elevation of 112 ft (NAVD88) located in the

extreme southeast corner of the site and slopes to the west and north to a low elevation of 84 ft. These elevations represent the natural grade of the site. Within the southeast corner of the forested area that occupies the north extent of the site, there is a sand borrow pit. Based on elevations shown on the site survey (Figure 3), the pit ranges in elevation from ± 84 ft at the outer excavation boundary along the north boundary of the pit and 88 ft at the southern excavation boundary of the pit to a bottom elevation of 70 ft. The survey also shows a small borrow area that lies within the extreme west corner of the forested area.

There is a large amount of earthen fill that has been recently placed within the northwestern area of the fallow oldfield habitat (Parcel 03980-002-001). From the survey, the fill height reaches a high elevation of 110–111 ft (Figure 3). The fill has been placed within an irregular aggregation of mounds consisting of a mix of sand and clay. This mound was not present when the LiDAR was obtained in 2001. The fill was placed in the field between 2006 and 2007 during construction of Savannah Station Phase 1.

NRCS Soils Mapping

The NRCS soils map for the Project Site and surrounding area is provided as **Figure 6** and shows there are five (5) soil mapping units occurring on the Project Site. A brief description of each mapping unit is provided, as follows:

Mapping Unit No.	Mapping Unit Name	Drainage Class	Depth to Confining Layer
3	Arredondo fine sand 3-5 percent slopes	Well drained	Clay 54->86 in.
5	Ft. Meade fine sand 0-5 percent slopes	Well drained	None
30	Kendrick sand 2-5 percent slopes	Well drained	Clay 31-83 in.
35	Gainesville sand 0-5 percent slopes	Well drained	None
38	Pits and dumps	---	Clay at surface

The native soils extending through the site are all defined as well drained. The Pits and Dumps symbol represents the location of the borrow pit. In this area all permeable sands have been removed exposing the underlying less permeable clay soils.

The Kendrick and Arredondo soils have a less permeable Argillic (clay) horizon which occurs from 31 to 54 inches below the surface and extends throughout the surface horizon boring depths of 84–86 inches. These soils may perch water for short periods following rain events. The Gainesville and Ft. Meade soils have no surficial Argillic horizons within the top 86 inches of the surface profile.

FEMA Flood Zone Map

The FEMA flood zone for the Project Site and surrounding area is provided on **Figure 7**. All areas of the Project Site occur within Zone “X” and lie outside of the calculated 100-year flood prone area.

National Wetlands Inventory Database and Alachua County Composite Wetlands Data

The results of the wetlands search as provided in the National Wetlands Inventory database and Alachua County composite wetlands database are shown in **Figures 8 and 9**, respectively. Both databases show that **NO** wetlands occur on site or adjacent to the Project Site boundary.

Alachua County Floridan Aquifer High Recharge Area

The Project Site as related to the Floridan Aquifer Recharge Areas is provided as **Figure 10**. The Project Site occurs within the western boundary of the Stream to Sink Area of the High Vulnerability Zone of the Floridan aquifer. In this area, the Hawthorn confining layer is perforated or absent so that the confining layer is discontinuous and therefore recharge from the surface can be high and occur directly to the Floridan.

Alachua County Hazardous Materials Storage Facilities

The locations of Hazardous Materials Storage Facilities monitored by Alachua County are provided in the area of the Project Site are shown on **Figure 11**. The coverage shows there is one facility located ± 0.5 miles northeast of the Project Site, however, none are present in the immediate vicinity of the Project Site.

Historic Structures Database

The locations of historic structures contained within the County’s historic structures database are provided on **Figure 12**. There are **NO** historic structures that occur in the area of the Project Site.

Published Listed Species Occurrence Data

The element occurrence database shows there are **NO** species reports within $\pm 12,000$ feet of the Project Site. The Game Commission database for eagle nests and wading or waterbird colonies contains **NO** report for the area shown on **Figure 13**. The occurrence ranges of federally listed species are shown on **Figure 14**. The ranges show that the site is within the distribution range of the Eastern Indigo Snake, Striped Newt, Florida Scrub-Jay, Wood Stork, and Red-cockaded Woodpecker. There are **NO** natural native habitats remaining on the Project Site; therefore, there is **NO** suitable habitat for the Scrub-Jay, Red-cockaded Woodpecker, or Striped Newt that exist on the Project Site. There are **NO** wetlands on site; therefore, there is **NO** roosting or forage habitat for Wood Storks on site. There are Gopher Tortoise burrows and Armadillo burrows on site as well as historical xeric habitat and soils; therefore, there is the potential that Indigo Snakes are present. In this situation, as recommended by the US Fish and Wildlife Service, the site

should be developed in accordance with “The Standard Protection Measures for the Eastern Indigo Snake” (USFWS, August 12, 2013).

The Project Site occurs within the “occasional” Black Bear forage area (**Figure 15**). Due to the relatively low-density of development around the site and the abundance of open agricultural lands, it is possible that occasional encounters with transient bears could occur. However, there is minimal forage habitat on site or directly adjacent to the site.

Results of Field Survey

The general results of the field survey are provided on **Figure 16**. On this figure the GPS locations where site-specific data were recorded are shown as categorized with respect to the general type of data recorded. The GPS icons shown on Figure 16 represent data collected at **1620** locations within the Project Site. The general existing conditions found on the Project Site are shown in **Photographs 1–16** provided in **Attachment 1**.

Photographs are referenced to specific GPS photo stations as shown on **Figure A-1** and described in **Table A-1**. The common names and botanical names of all plant species encountered during the survey are provided as **Table 1**.

Historical Use of the Site—Parcel 03905-002-000

Parcel number 03905-002-000 has been managed as forested habitat since before 1995. Based on review of Google Earth aerials since 1995, no specific activity other than general recreation is apparent within the forested area. There is an old cattle/horse pen located in the southwest area of the parcel. In addition, dumping of construction and agricultural debris has occurred in this area. There is an old borrow pit located in the southeast corner of this parcel. Although not investigated as part of the survey, the area appears to have been used primarily for removal of overburden sands and surficial clays. Currently, most sand has been removed to depths sufficient to expose dense subsurface clays.

Existing Condition of the Project Site

As shown on Figure 16, there are two (2) primary plant communities that can be described for the borrow pit, as follows:

Successional Pine and Hardwoods

This community type extends from the outer edge of the excavation downslope along the outer shelf of the pit. The topography of this area is generally gently sloping from the edge of the pit down to an abrupt deeper excavation boundary. The vegetation in this area is dominated by medium size loblolly pine (*Pinus taeda* L.), with occasional slash pine (*Pinus elliotii* Engelm.) and spruce pine (*Pinus glabra* Walter). Co-dominant in the area is a mix of small to medium size laurel oak (*Quercus hemisphaerica* Bartr.), water oak (*Quercus nigra* L.), and scattered Virginia live oak (*Quercus virginiana* Mill.). Black cherry (*Prunus serotina* var. *serotina* Ehrh.) variously occurs throughout this area of the borrow pit. In this area there is a shallow layer of sand overlain on dense clays. The groundcover is sparse and covered mostly with small oaks and pines. However, there is extensive cover of exotic species such as rose glorybower (*Clerodendrum bungei* Steud.).

Mixed Hardwoods

Within the central deeper area of the borrow pit, the soils are primarily composed of dense clays. The vegetation is dominated primarily by deciduous hardwood species to include sweetgum (*Liquidambar styraciflua* L.), hackberry (*Celtis laevigata* Willd.), box elder (*Acer negundo* L.), redbud (*Cercis canadensis* L.), and black cherry (*Prunus serotina* var. *serotina* Ehrh.). Groundcover species include rose glorybower (*Clerodendrum bungei* Steud.), southern shield fern (*Thelypteris kunthii* (Desv.) C.V. Morton), Japanese climbing fern (*Lygodium japonicum* (Thunb.) Sw.), American pokeweed (*Phytolacca americana* L.), and sand blackberry (*Rubus cuneifolius* Pursh). This is a very disturbed non-significant habitat.

Within the non-borrow pit areas of parcel 03905-002-000, there are three (3) general plant community associations briefly described, as follows:

Successional Oaks-Hardwoods

The majority of the parcel area is occupied by this habitat type. The habitat is a successional habitat type that generally develops on historical sandhill habitat that were, at some time in the past, converted to improved pasture. Following abandonment of the pasture, these areas were rapidly invaded by laurel oak (*Quercus hemisphaerica* Bartr.) and water oak (*Quercus nigra* L.) which became the dominant cover. Currently, the site is dominated by medium size laurel oak (*Quercus hemisphaerica* Bartr.), water oak (*Quercus nigra* L.), loblolly pine (*Pinus taeda* L.), and black cherry (*Prunus serotina* var. *serotina* Ehrh.). There are remnant large southern red oak (*Quercus falcata* Michx.), mockernut hickory (*Carya tomentosa* Nutt.), pignut hickory (*Carya glabra* [Mill.] Sweet), and Virginia live oak (*Quercus virginiana* Mill.). These species are present primarily in areas adjacent to old fence lines. The groundcover is primarily open and is dominated by saplings of oak species as well as yellow jessamine (*Gelsemium sempervirens* (L.) J. St. Hil.), greenbrier (*Smilax bona-nox* L.), sand blackberry (*Rubus cuneifolius* Pursh), and devil's walkingstick (*Aralia spinosa* L.).

Disturbed Mesic Hammock

There is a small area in the northeast corner of the forested parcel that is dominated by relatively large individuals of laurel oak (*Quercus hemisphaerica* Bartr.), water oak (*Quercus nigra* L.), Virginia live oak (*Quercus virginiana* Mill.), sweetgum (*Liquidambar styraciflua* L.), and southern red oak (*Quercus falcata* Michx.). This area has a dense understory dominated by greenbrier (*Smilax bona-nox* L.) and oak saplings.

Hackberry-Sweetgum-Hardwoods

There is a small remnant Mesic Hammock area located along the northeast corner of the borrow pit. The canopy trees in the area are primarily deciduous individuals and dominated by hackberry (*Celtis laevigata* Willd.), sweetgum (*Liquidambar styraciflua* L.), pignut hickory (*Carya glabra* [Mill.] Sweet), black cherry (*Prunus serotina* var. *serotina* Ehrh.), and mockernut hickory (*Carya tomentosa* Nutt.), with scattered southern magnolia (*Magnolia grandiflora*) present.

Historical Condition of Parcel 03980-002-001

From 1995 to 2006, this parcel was managed as improved pasture covered with Bahiagrass (*Paspalum notatum* Flugge) and also used for hay production. This use included the area where Savannah Station Phase 1 is located. Between 2006 and 2007, Savannah Station Phase 1 was developed. During this process, the western section of Parcel 03980-002-001 was used for storage of fill dirt. The fill dirt remains in this area of the site. Since 2007, the remaining area of the improved pasture has not been managed and has been allowed to succeed to an Oldfield condition dominated by a host of briers, blackberries, shrubs, herbs, and grasses to include the following: sand blackberry (*Rubus cuneifolius* Pursh), slender scratchdaisy (*Croptilon divaricatum* (Nutt.) Raf.), Australian beardgrass (*Bothriochloa bladhii* (Retz.) S.T. Blake), dog fennel (*Eupatorium capillifolium* (Lam.) Small), yankeeweed (*Eupatorium compositifolium* Walter), camphorweed (*Heterotheca subaxillaris* (Lam.) Britt. & Rusby), lanceleaf rattlebox (*Crotalaria lanceolata* E. Mey.), pangolagrass (*Digitaria eriantha* Steud.), winged sumac (*Rhus copallina* L.), post oak (*Quercus stellata* Wangenh.), and many others. The best applied plant community nomenclature for this vegetative association is Oldfield.

Along the east perimeter of parcel 03980-002-001, the vegetation community is dominated by a mix of successional oaks and pines and a remnant loblolly pine (*Pinus taeda* L.) plantation. The dominant canopy species in the area include laurel oak (*Quercus hemisphaerica* Bartr.), water oak (*Quercus nigra* L.), black cherry (*Prunus serotina* var. *serotina* Ehrh.), loblolly pine (*Pinus taeda* L.), Virginia live oak (*Quercus virginiana* Mill.), and sweetgum (*Liquidambar styraciflua* L.). The understory is a morass of briers, shrubs, and vines to include wax myrtle (*Morella cerifera* (L.) Small), sand blackberry (*Rubus cuneifolius* Pursh), wild sarsaparilla (*Smilax glauca* Walt.), greenbrier (*Smilax bona-nox* L.), muscadine (*Vitis rotundifolia* Michx.), and summer grape (*Vitis aestivalis* Michx.).

Listed Species Surveys off the Project Site

Surveys for listed plants and animals were conducted in all GPS survey areas shown on **Figure 16**. Extensive gopher tortoise burrow surveys were performed in the forested area and in significant detail within the oldfield area of parcel 03980-002-001 as shown on Figure 16. The results of the surveys are summarized on **Figure 17**. **NO** listed plants were found within the Project Site. Three (3) potentially occupied gopher tortoise burrows were found as shown on Figure 17. In addition, one (1) abandoned gopher tortoise burrow was located. On Figure 17, the distribution of armadillo burrows is shown to delineate the general areas of the site where most of the burrowing animals were located. Please note that armadillos are a nuisance species, not a listed species. The burrow locations are shown only for informational purposes.

Final Statement

From review of the published GIS databases and based on the results of the site-specific field survey, there are **NO** aboveground site-specific issues that would preclude development of the Project Site as proposed. In summary, the following Regulated Natural Resources are **NOT present** on the Project Site to include the following:

- Wetlands
- Surface Waters
- Wetland and Surface Water Buffers
- 100-year Floodplains
- Listed Species Habitat
- Significant Plant and Wildlife Habitat
- Significant Geologic Features
- Naturally Occurring Native Upland Habitat

There were gopher tortoise burrows found on the Project site. As a result of this finding, a 100% gopher tortoise survey will be required prior to development to locate **ALL** burrows present on the Project Site. The tortoises should be relocated to a conservation area pursuant to a relocation permit obtained from the Game Commission. The onsite habitat provides minimal support for this species. Further successional development of the site will result in degradation of the poor-quality habitat that currently exists so relocating the tortoises to a conservation area is the best available option to ensure their future survival. Prior to conducting a 100% survey, the Oldfield habitat should be mowed to increase the visibility of the burrows. Currently the existing vegetation and briers are so dense that burrows are extremely difficult to find.



Alachua County, Board of County Commissioners
Department of Growth Management
10 SW 2nd Ave., Gainesville, FL 32601
Tel. 352.374.5249, Fax. 352.338.3224
<http://growth-management.alachua.fl.us>

Submit to:
Development Services Division

ENVIRONMENTAL RESOURCES ASSESSMENT CHECKLIST

Pursuant to Alachua County Comprehensive Plan 2002, as amended, Conservation Open Space Element Policy 3.4.1, applications for land use change, zoning change, and development approval shall be required to submit an inventory of natural resource information. The inventory shall include site specific identification, analysis and mapping of each resource present on or adjacent to the site. The identification and analysis shall indicate information sources consulted.

Natural Resources Checklist:

Check "Yes" for each resource or resource characteristic identified and discuss and provide supporting material.
Check "N/A" for each resource or resource characteristic not present or otherwise relevant to the application.

Yes	<input type="checkbox"/>	N/A	<input checked="" type="checkbox"/>	Surface Waters (ponds, lakes, streams, springs, etc.)
Yes	<input type="checkbox"/>	N/A	<input checked="" type="checkbox"/>	Wetlands
Yes	<input type="checkbox"/>	N/A	<input checked="" type="checkbox"/>	Surface Water or Wetland Buffers
Yes	<input type="checkbox"/>	N/A	<input checked="" type="checkbox"/>	Floodplains (100-year)
Yes	<input type="checkbox"/>	N/A	<input checked="" type="checkbox"/>	Special Area Study Resource Protection Areas (Cross Creek, Idylwild/Serenola, etc)
Yes	<input type="checkbox"/>	N/A	<input checked="" type="checkbox"/>	Strategic Ecosystems (within or adjacent to mapped areas)
Yes	<input type="checkbox"/>	N/A	<input checked="" type="checkbox"/>	Significant Habitat (biologically diverse natural areas)
Yes	<input checked="" type="checkbox"/>	N/A	<input type="checkbox"/>	Listed Species/Listed Species Habitats (FNAI S1, S2, & S3; State or Federally E, T, SSC)
Yes	<input type="checkbox"/>	N/A	<input checked="" type="checkbox"/>	Recreation/Conservation/Preservation Lands
Yes	<input type="checkbox"/>	N/A	<input checked="" type="checkbox"/>	Significant Geological Features (caves, springs, sinkholes, etc.)
Yes	<input checked="" type="checkbox"/>	N/A	<input type="checkbox"/>	High Aquifer Recharge Areas
Yes	<input type="checkbox"/>	N/A	<input checked="" type="checkbox"/>	Wellfield Protection Areas
Yes	<input type="checkbox"/>	N/A	<input checked="" type="checkbox"/>	Wells
Yes	<input checked="" type="checkbox"/>	N/A	<input type="checkbox"/>	Soils
Yes	<input checked="" type="checkbox"/>	N/A	<input type="checkbox"/>	Mineral Resource Areas Abandoned Borrow Pit
Yes	<input type="checkbox"/>	N/A	<input checked="" type="checkbox"/>	Topography/Steep Slopes
Yes	<input checked="" type="checkbox"/>	N/A	<input type="checkbox"/>	Historical and Paleontological Resources Not Evaluated
Yes	<input type="checkbox"/>	N/A	<input checked="" type="checkbox"/>	Hazardous Materials Storage Facilities
Yes	<input type="checkbox"/>	N/A	<input checked="" type="checkbox"/>	Contamination (soil, surface water, ground water) Not Evaluated

SIGNED: Peter M. Wallace

PROJECT # Savannah DATE: 11/20/2018

For assistance please visit the Alachua County Environmental Protection Department (ACEPD) website at <http://www.alachuacounty.us/government/depts/epd/natural/devchecklist.aspx> or contact ACEPD at (352) 264-6800. (version 5/20/05)

Form revised on March 2007. Downloadable from: <http://growth-management.alachua.fl.us/forms/docs.php>

Table 1. Plant Species Recorded at the Savannah Station Site, November 15–16, 2018

Species Code	Scientific Name	Common Name	USFWS ¹ Classif.	FDEP ² Classif.	Floristic ³ Classif.
ACA GRA	<i>Acalypha gracilens</i> A. Gray	Three-seeded mercury	NL	UPL	NP
ACE NEG	<i>Acer negundo</i> L.	Box elder	FACW	FACW	NC
ALB JUL	<i>Albizia julibrissin</i> Durazz.	Mimosa	NL	UPL	EW
ALY OVA	<i>Alysicarpus ovalifolius</i> (Schum. & Thonn.) J. Leonard	Alyce clover	NL	UPL	EW
AMB ART	<i>Ambrosia artemisiifolia</i> L.	Common ragweed	FACU	UPL	NW
AND PUM	<i>Andropogon glomeratus</i> (Walt.) BSP var. <i>pumilus</i> (Vasey) Vasey ex L.H. Dewey	Bushy bluestem	FACW+	FACW	NP
AND VIR	<i>Andropogon virginicus</i> L. var. <i>virginicus</i>	Broomsedge	FAC-	FAC	NP
ARA SPI	<i>Aralia spinosa</i> L.	Devil's walkingstick	FAC	UPL	NC
ASI OBO	<i>Asimina obovata</i> (Willd.) Nash	Bigflower pawpaw	NL	UPL	NC
ASP PLA	<i>Asplenium platyneuron</i> (L.) Britton et al.	Ebony spleenwort	FACU	UPL	NC
BAC HAL	<i>Baccharis halimifolia</i> L.	Sea myrtle	FAC	FAC	NP
BID ALB	<i>Bidens alba</i> (L.) DC.	Beggarticks	NL	UPL	NW
BOT BLA	<i>Bothriochloa bladhii</i> (Retz.) S.T. Blake	Australian beardgrass	FACU	UPL	EW
CAL AME	<i>Callicarpa americana</i> L.	Beautybush	FACU-	UPL	NC
CAM RAD	<i>Campsis radicans</i> (L.) Seemann ex Bureau	Trumpet creeper	FAC	---	NC
CAN IND	<i>Canna indica</i> L.	Indian shot	OBL	OBL	EW
CAN MUT	<i>Cantinoa mutabilis</i> (Rich.) Harley & J.F.B.Pastore	Tropical bushmint	FAC	UPL	EW
CAR AME	<i>Cartrema americana</i> (L.) G.L. Nesom	Wild olive	FAC	UPL	NC
CAR GLA	<i>Carya glabra</i> (Mill.) Sweet	Pignut hickory	FACU	UPL	NC
CAR TOM	<i>Carya tomentosa</i> Nutt.	Mockernut hickory	NL	UPL	NC
CEL LAE	<i>Celtis laevigata</i> Willd.	Hackberry	FACW	FACW	NC
CER CAN	<i>Cercis canadensis</i> L.	Eastern redbud	FACU	UPL	NC
CHE AMB	<i>Chenopodium ambrosioides</i> L.	Mexican tea	FACU	UPL	EW
CHL COM	<i>Chlorophytum comosum</i> (Thunb.) Jacques	Spider plant	NL	UPL	EW
CIN CAM	<i>Cinnamomum camphora</i> (L.) J.Presl	Camphortree	FACU	UPL	EA
CLE BUN	<i>Clerodendrum bungei</i> Steud.	Rose glorybower	NL	UPL	EW
CNI STI	<i>Cnidioscolus stimulosus</i> (Michx.) Engelm. & A. Gray	Tread-softly	NL	UPL	NC
COM ERE	<i>Commelina erecta</i> L.	Whitemouth day-flower	NL	UPL	NC
CON CAN	<i>Conyza canadensis</i> (L.) Cronq.	Dwarf horseweed	FACU	UPL	NW
CRN FLO	<i>Cornus florida</i> L.	Flowering dogwood	FACU	UPL	NC
CRO DIV	<i>Croptilon divaricatum</i> (Nutt.) Raf.	Slender scratchdaisy	UPL	UPL	NP
CRO LAN	<i>Crotalaria lanceolata</i> E. Mey.	Lanceleaf rattlebox	NL	UPL	EW
CRO SPE	<i>Crotalaria spectabilis</i> Roth	Rattlebox	NL	UPL	EW
CYN DAC	<i>Cynodon dactylon</i> (L.) Pers.	Bermudagrass	FACU	UPL	EA

Species Code	Scientific Name	Common Name	USFWS ¹ Classif.	FDEP ² Classif.	Floristic ³ Classif.
CYP LEC	<i>Cyperus lecontei</i> Torr.	Leconte's flatsedge	FACW	FACW	NP
CYP OVA	<i>Cyperus ovatus</i> Baldwin	Pinebarren flatsedge	FACU+	FAC	NP
DES TRI	<i>Desmodium triflorum</i> (L.) DC.	Sagotia beggarweed	FACU	UPL	EW
DIC ACI	<i>Dichanthelium aciculare</i> (Desvaux ex Poiret) Gould & Clark	Needle-leaf witchgrass	FACU	UPL	NP
DIC ACU	<i>Dichanthelium acuminatum</i> (Swartz) Gould & Clark	Tapered witchgrass	FAC	UPL	NC
DIC COM	<i>Dichanthelium commutatum</i> (Schultes) Gould	Variable witchgrass	FAC	FAC	NC
DIC LAX	<i>Dichanthelium laxiflorum</i> (Lam.) Gould	Openflower witchgrass	FAC	UPL	NC
DIG ERI	<i>Digitaria eriantha</i> Steud.	Pangolagrass	FACU	UPL	EW
DIO BUL	<i>Dioscorea bulbifera</i> L.	Air-potato	NL	---	EA
DIO VRG	<i>Diospyros virginiana</i> L.	Common persimmon	FAC	FAC	NC
ERA ELL	<i>Eragrostis elliottii</i> S. Wats.	Elliott lovegrass	FACW	FAC	NP
ERE OPH	<i>Eremochloa ophiuroides</i> (Munro) Hack.	Centipedegrass	NL	UPL	EA
EUP CAP	<i>Eupatorium capillifolium</i> (Lam.) Small	Dog fennel	FACU	FAC	NW
EUP COM	<i>Eupatorium compositifolium</i> Walter	Yankeeweed	FAC-	FAC	NP
GAL PIL	<i>Galium pilosum</i> Aiton	Hairy bedstraw	NL	UPL	NC
GEL SEM	<i>Gelsemium sempervirens</i> (L.) J. St. Hil.	Yellow jessamine	FAC	---	NC
HED HEL	<i>Hedera helix</i> L.	English ivy	NL	---	EW
HET SUB	<i>Heterotheca subaxillaris</i> (Lam.) Britt. & Rusby	Camphorweed	FACU-	UPL	NW
IND HIR	<i>Indigofera hirsuta</i> Harv.	Hairy indigo	NL	UPL	EW
IND SPI	<i>Indigofera spicata</i> Forssk.	Trailing indigo	NL	UPL	EW
IPO QUA	<i>Ipomoea quamoclit</i> L.	Cypressvine	FACU+	---	EW
JUN VIR	<i>Juniperus virginiana</i> L.	Red cedar	FACU-	UPL	NC
EUP HET	<i>Euphorbia heterophylla</i> L.	Fiddler's spurge	FAC	UPL	NC
EUP HYS	<i>Euphorbia hyssopifolia</i> L.	Eyebane	FAC	UPL	NW
LIG LUC	<i>Ligustrum lucidum</i> W.T. Aiton	Glossy privet	NL	UPL	EA
LIG SIN	<i>Ligustrum sinense</i> Lour.	Chinese privet	FAC	UPL	EA
LIQ STY	<i>Liquidambar styraciflua</i> L.	Sweetgum	FAC+	FACW	NC
LIR SPI	<i>Liriope spicata</i> Lour.	Border-grass	NL	UPL	EW
LYG JAP	<i>Lygodium japonicum</i> (Thunb.) Sw.	Japanese climbing fern	FAC	---	EA
MAG GRA	<i>Magnolia grandiflora</i> L.	Southern magnolia	FAC+	UPL	NC
MOR CER	<i>Morella cerifera</i> (L.) Small	Wax myrtle	FAC+	FAC	NP
OEN LAC	<i>Oenothera laciniata</i> Hill	Cut-leaved eveningprimrose	FACU	UPL	NW
OPL SET	<i>Oplismenus setarius</i> (Lam.) Roem. & Schult.	Woodsgrass	FACU+	FAC	NC
OXA COR	<i>Oxalis corniculata</i> L.	Common yellow woodsorrel	FACU	UPL	NW
PAR QUI	<i>Parthenocissus quinquefolia</i> (L.) Planch.	Virginia creeper	FAC	---	NC
PAS NIC	<i>Paspalum nicorae</i> Parodi	Brunswickgrass	NL	UPL	EW

Species Code	Scientific Name	Common Name	USFWS ¹ Classif.	FDEP ² Classif.	Floristic ³ Classif.
PAS NOT	<i>Paspalum notatum</i> Flugge	Bahiagrass	FACU+	UPL	EA
PAS SET	<i>Paspalum setaceum</i> Michx.	Thin paspalum	FAC	FAC	NP
PER BOR	<i>Persea borbonia</i> var. <i>borbonia</i> (L.) Spreng.	Red bay	FACW	UPL	NC
PER PAL	<i>Persea palustris</i> (Raf.) Sarg.	Swampbay	FACW	OBL	NC
PHY TEN	<i>Phyllanthus tenellus</i> Roxb.	Mascarene island leafflower	NL	UPL	EW
PHY ARE	<i>Physalis arenicola</i> Kearney	Pubescent ground cherry	NL	UPL	NC
PHY AME	<i>Phytolacca americana</i> L.	American pokeweed	FACU+	UPL	NW
PIN ELL	<i>Pinus elliottii</i> Engelm.	Slash pine	FACW	UPL	NC
PIN GLA	<i>Pinus glabra</i> Walter	Spruce pine	FACW	FACW	NC
PIN PAL	<i>Pinus palustris</i> Mill.	Longleaf pine	FACU+	UPL	NC
PIN TAE	<i>Pinus taeda</i> L.	Loblolly pine	FAC	UPL	NC
PLE POL	<i>Pleopeltis polypodioides</i> (L.) E.G. Andrews & Windham	Resurrection fern	NL	UPL	NC
POL PRO	<i>Polypremum procumbens</i> L.	Rustweed	FACU-	FAC	NP
PRA CLE	<i>Praxelis clematidea</i> (Kuntze) R.M. Knight & H. Rob.	Praxelis	NL	UPL	EW
PRU CAR	<i>Prunus caroliniana</i> (Mill.) Aiton	Carolina laurelcherry	NL	UPL	NC
PRU SER	<i>Prunus serotina</i> var. <i>serotina</i> Ehrh.	Black cherry	FACU	UPL	NC
PRU UMB	<i>Prunus umbellata</i> Elliott	Flatwoods plum	NL	UPL	NC
PTE AQU	<i>Pteridium aquilinum</i> (L.) Kuhn.	Bracken	FACU	UPL	NC
PYR CAR	<i>Pyrrhopappus carolinianus</i> (Walter) DC.	Carolina desertchicory	NL	UPL	NW
QUE FAL	<i>Quercus falcata</i> Michx.	Southern red oak	FACU-	UPL	NC
QUE GEM	<i>Quercus geminata</i> Small	Sand live oak	NL	UPL	NC
QUE HEM	<i>Quercus hemisphaerica</i> Bartr.	Laurel oak	NL	UPL	NC
QUE NIG	<i>Quercus nigra</i> L.	Water oak	FAC	FACW	NC
QUE STE	<i>Quercus stellata</i> Wangenh.	Post oak	FACU	UPL	NC
QUE VIR	<i>Quercus virginiana</i> Mill.	Virginia live oak	FACU+	UPL	NC
RHU COP	<i>Rhus copallina</i> L.	Winged sumac	NI	UPL	NC
RIC BRA	<i>Richardia brasiliensis</i> (Moq.) Gomez	Brazil pusley	NL	UPL	EW
RUB CUN	<i>Rubus cuneifolius</i> Pursh	Sand blackberry	FACU	---	NP
RUB PEN	<i>Rubus pensilvanicus</i> Poir.	Sawtooth blackberry	FACU+	---	NP
RUB TRI	<i>Rubus trivialis</i> Michx.	Southern dewberry	FAC	---	NC
SAB PAL	<i>Sabal palmetto</i> (Walter) Lodd. ex Schult. & Schult. f.	Cabbage palm	FAC	FAC	NC
SAL LYR	<i>Salvia lyrata</i> L.	Lyreleaf sage	FAC-	UPL	NC
SCO DUL	<i>Scoparia dulcis</i> L.	Sweet broom	FAC	FAC	NW
SER TOR	<i>Sericocarpus tortifolius</i> (Michx.) Nees	Whitetop aster	NL	UPL	NC
SID RHO	<i>Sida rhombifolia</i> L.	Cuban jute	FACU	UPL	NW
SMI BON	<i>Smilax bona-nox</i> L.	Greenbrier	FAC	---	NC

Species Code	Scientific Name	Common Name	USFWS ¹ Classif.	FDEP ² Classif.	Floristic ³ Classif.
SMI GLA	<i>Smilax glauca</i> Walt.	Wild sarsaparilla	FAC	---	NC
SMI LAU	<i>Smilax laurifolia</i> L.	Bamboo vine	FACW+	---	NC
SMI SMA	<i>Smilax smallii</i> Morong	Jackson vine	FACU	---	NC
SOL AME	<i>Solanum americanum</i> L.	Common nightshade	FACU+	UPL	NW
SOL SCA	<i>Solidago canadensis</i> L. var. <i>scabra</i> T. & G.	Canada goldenrod	FACU	UPL	NP
SOL LEA	<i>Solidago leavenworthii</i> Torr. & A.Gray	Leavenworth's goldenrod	FAC+	FACW	NC
SPE VER	<i>Spermacoce verticillata</i> L.	Shrubby false buttonweed	NL	UPL	EW
STA FLO	<i>Stachys floridana</i> Shuttlew. ex Benth.	Florida betony	FAC	UPL	NP
STE SEC	<i>Stenotaphrum secundatum</i> (Walter) Kuntze	St.Augustinegrass	FAC	UPL	NW
STI SET	<i>Stipulicida setacea</i> Michx.	Wire weed	NL	UPL	NC
SYM DUM	<i>Symphyotrichum dumosum</i> (L.) G.L. Nesom	Rice button aster	FAC	FAC	NC
THE DEN	<i>Thelypteris dentata</i> (Forsk.) E. St. John	Downy shield fern	FACW	FACW	NC
THE KUN	<i>Thelypteris kunthii</i> (Desv.) C.V. Morton	Southern shield fern	FACW	FACW	NC
TOX RAD	<i>Toxicodendron radicans</i> (L.) Kuntze	Poison ivy	FAC	---	NC
VAC ARB	<i>Vaccinium arboreum</i> Marshall	Sparkleberry	FACU	UPL	NC
VER VIR	<i>Verbesina virginica</i> L.	White crownbeard	FACU	FAC	NC
VIB OBO	<i>Viburnum obovatum</i> Walter	Walter's viburnum	FACW+	FACW	NC
VIB RUF	<i>Viburnum rufidulum</i> Raf.	Rusty blackhaw	FACU	UPL	NC
VIN MIN	<i>Vinca minor</i> L.	Common periwinkle	NL	UPL	EW
VIT AES	<i>Vitis aestivalis</i> Michx.	Summer grape	FAC-	---	NC
VIT ROT	<i>Vitis rotundifolia</i> Michx.	Muscadine	FAC	---	NP
XAN SAG	<i>Xanthosoma sagittifolium</i> (L.) Schott	Arrowleaf elephantear	NL	FACW	EW
YOU JAP	<i>Youngia japonica</i> (L.) DC.	Oriental false hawksbeard	FACU	UPL	EW
YUC ALO	<i>Yucca aloifolia</i> L.	Spanish bayonet	FACU-	UPL	EW
ZAN CLA	<i>Zanthoxylum clava-herculis</i> L.	Hercules'-club	FAC	UPL	NC

¹ USFWS (United States Fish and Wildlife Service) Classifications: OBL = obligate wetland species; FACW = facultative wetland species; FAC = facultative species (neither wetland nor upland); UPL = upland species; NL = not listed in the federal list; NI = non-indicator species

² FDEP (Florida Department of Environmental Protection) Classifications: OBL = obligate wetland species; FACW = facultative wetland species; FAC = facultative species (neither wetland nor upland); UPL = upland species; "----" = vine (non-indicator species)

³ Floristic Classifications (a measure of relative desirability): NC = Native Characteristic species (highly desirable); NP = Native Pioneer species (highly desirable); NW = Native Weedy species (slightly desirable); EW = Exotic Weedy species (undesirable); EA = Exotic Aggressive species (very undesirable)

Figure 1. Location map showing Project Site in relation to local and regional access roads.

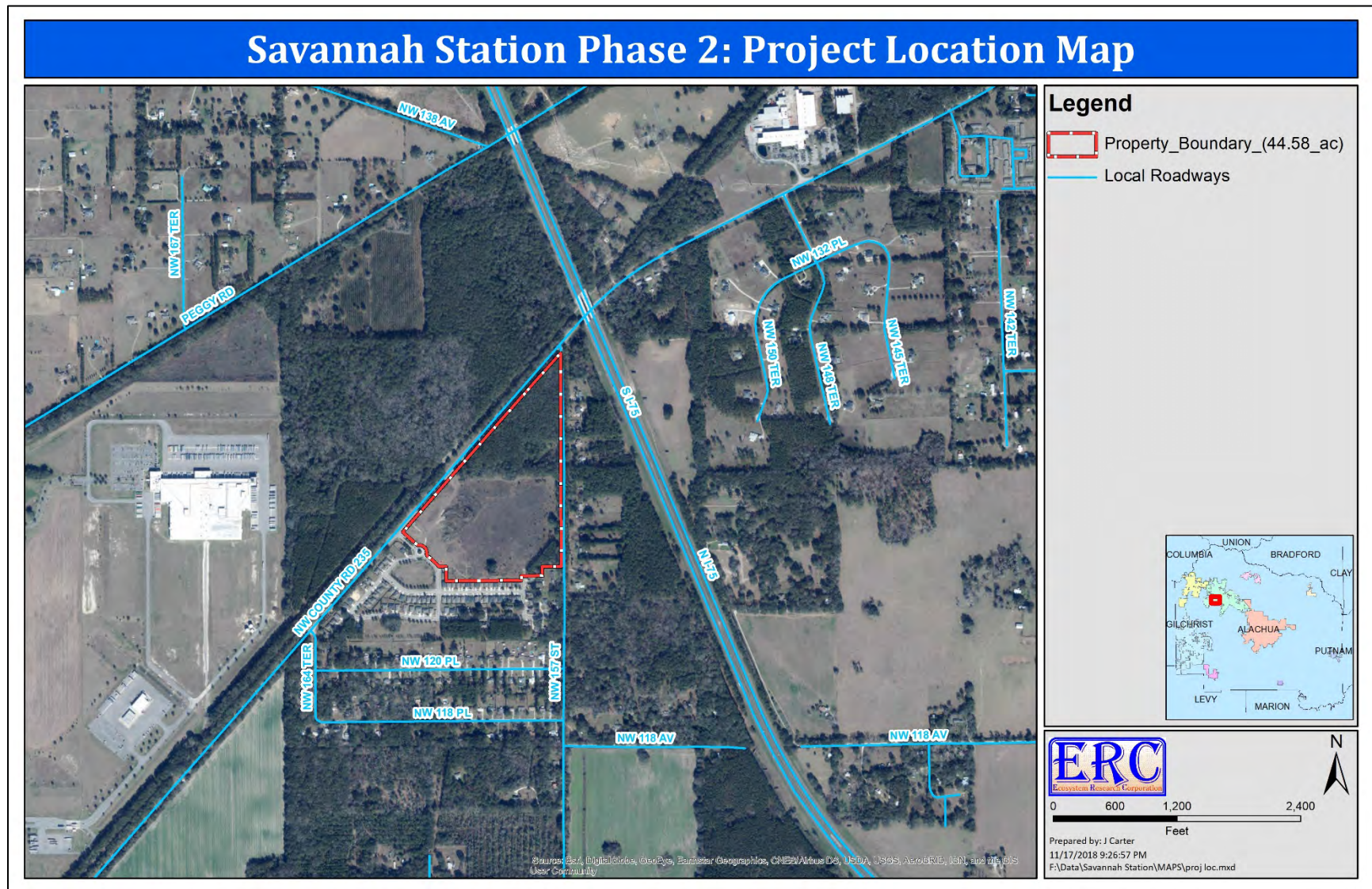


Figure 2. Parcel location map showing the Project Site in relation to the adjacent parcels.

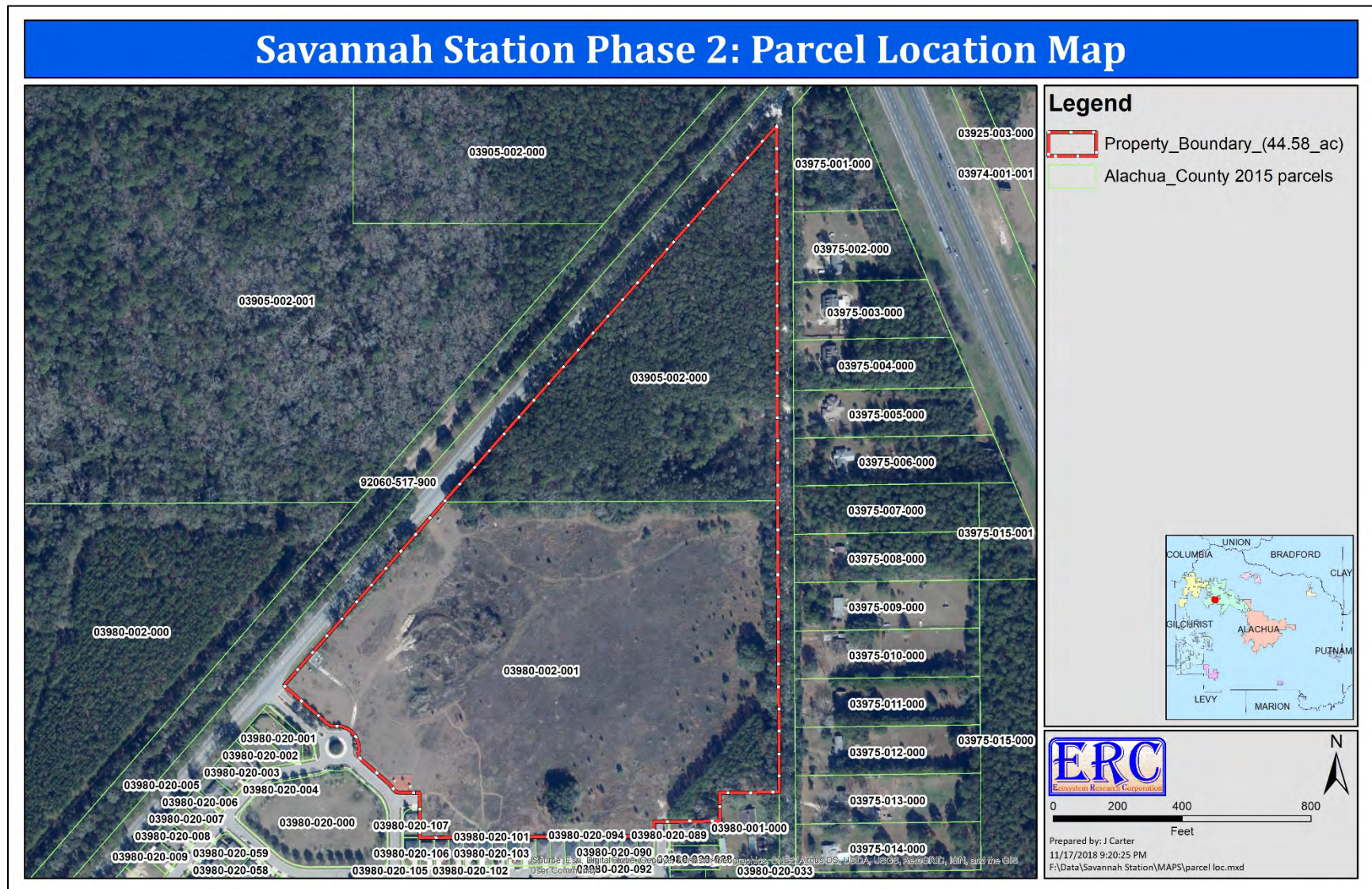
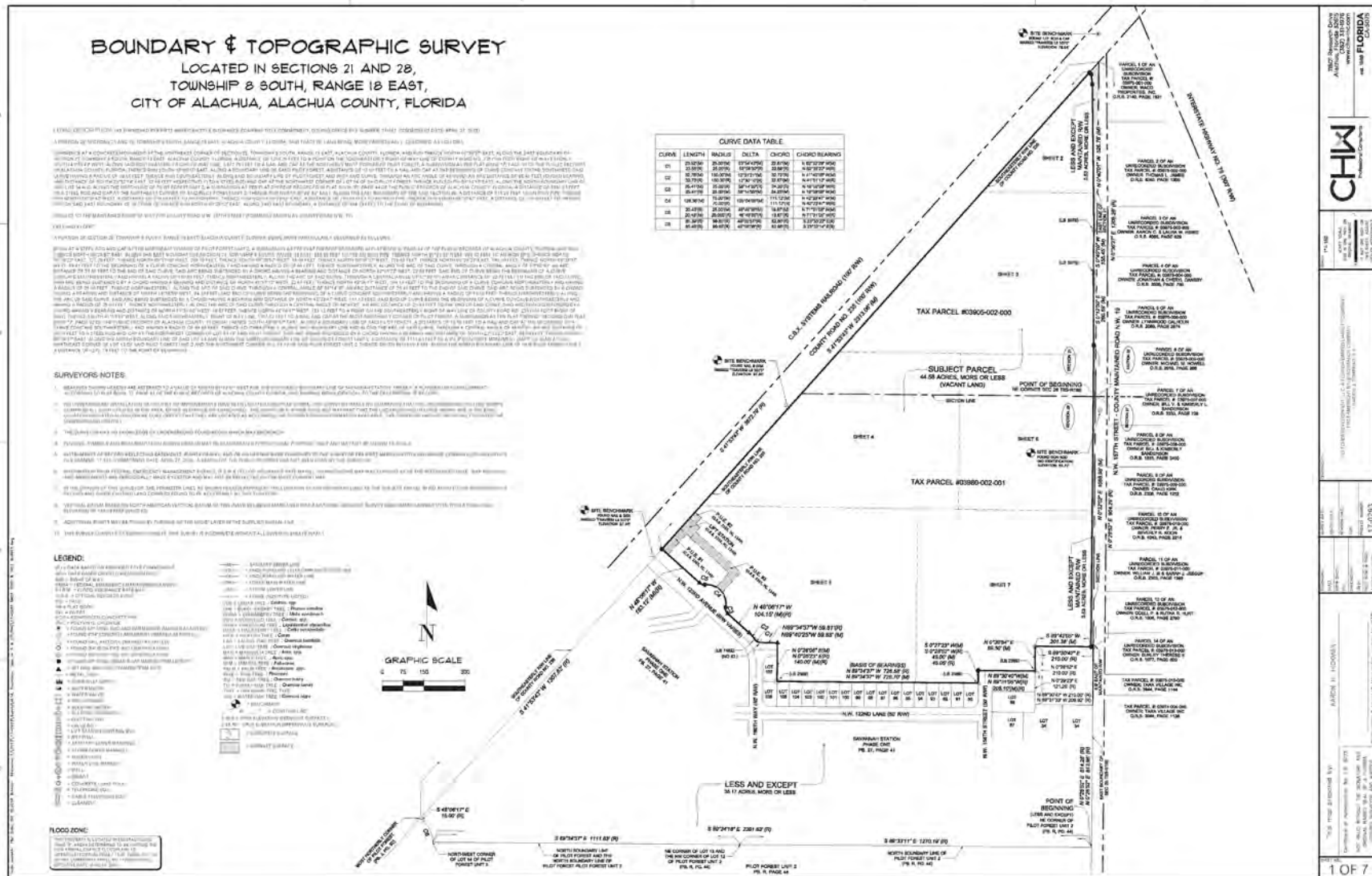
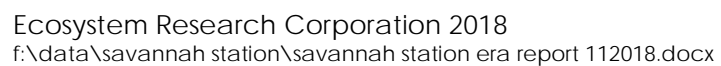
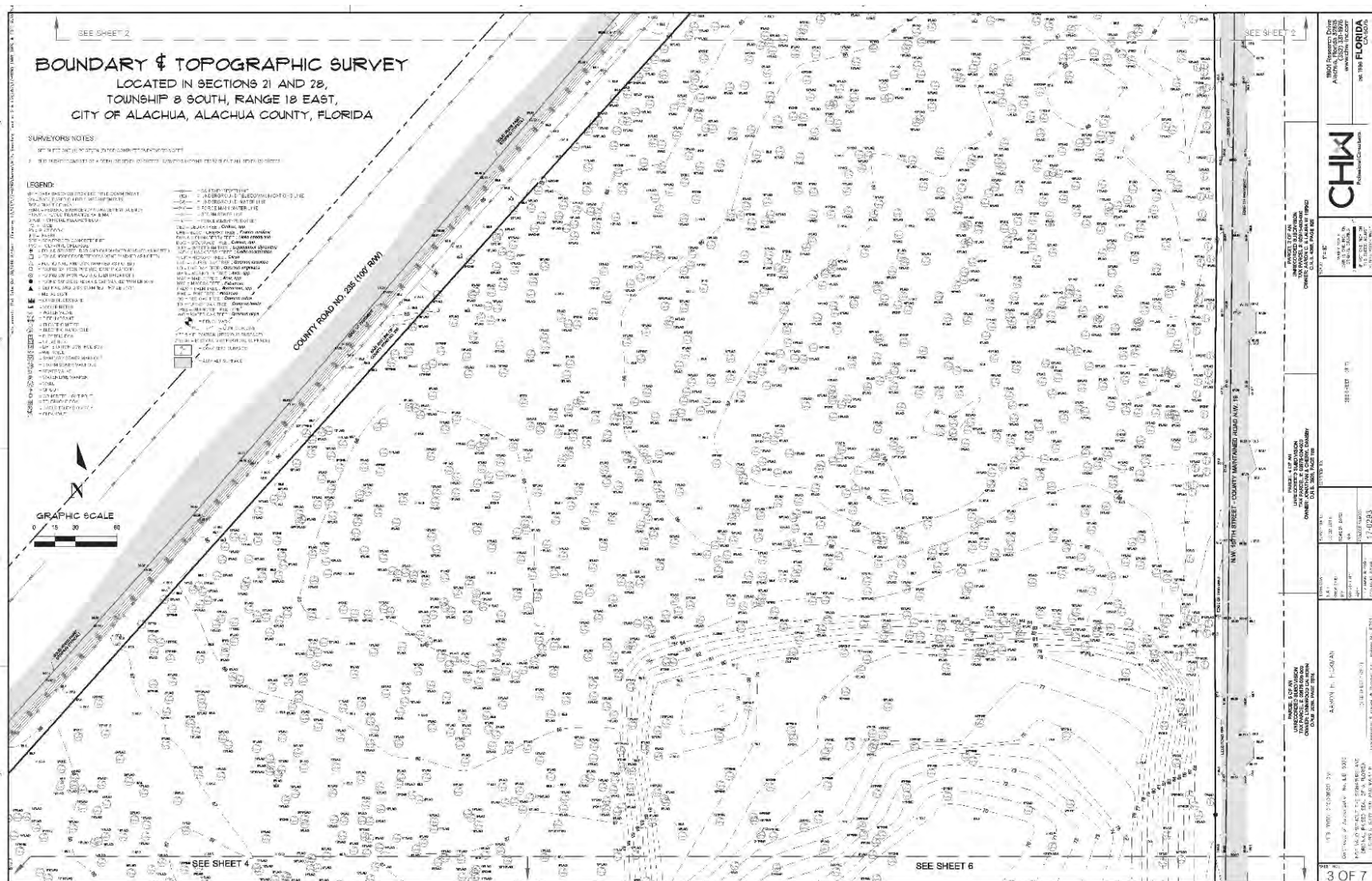


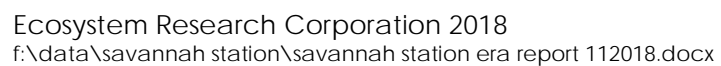
Figure 3. Boundary, topographic and tree survey of the Savannah Station Phase 2 Project Site.













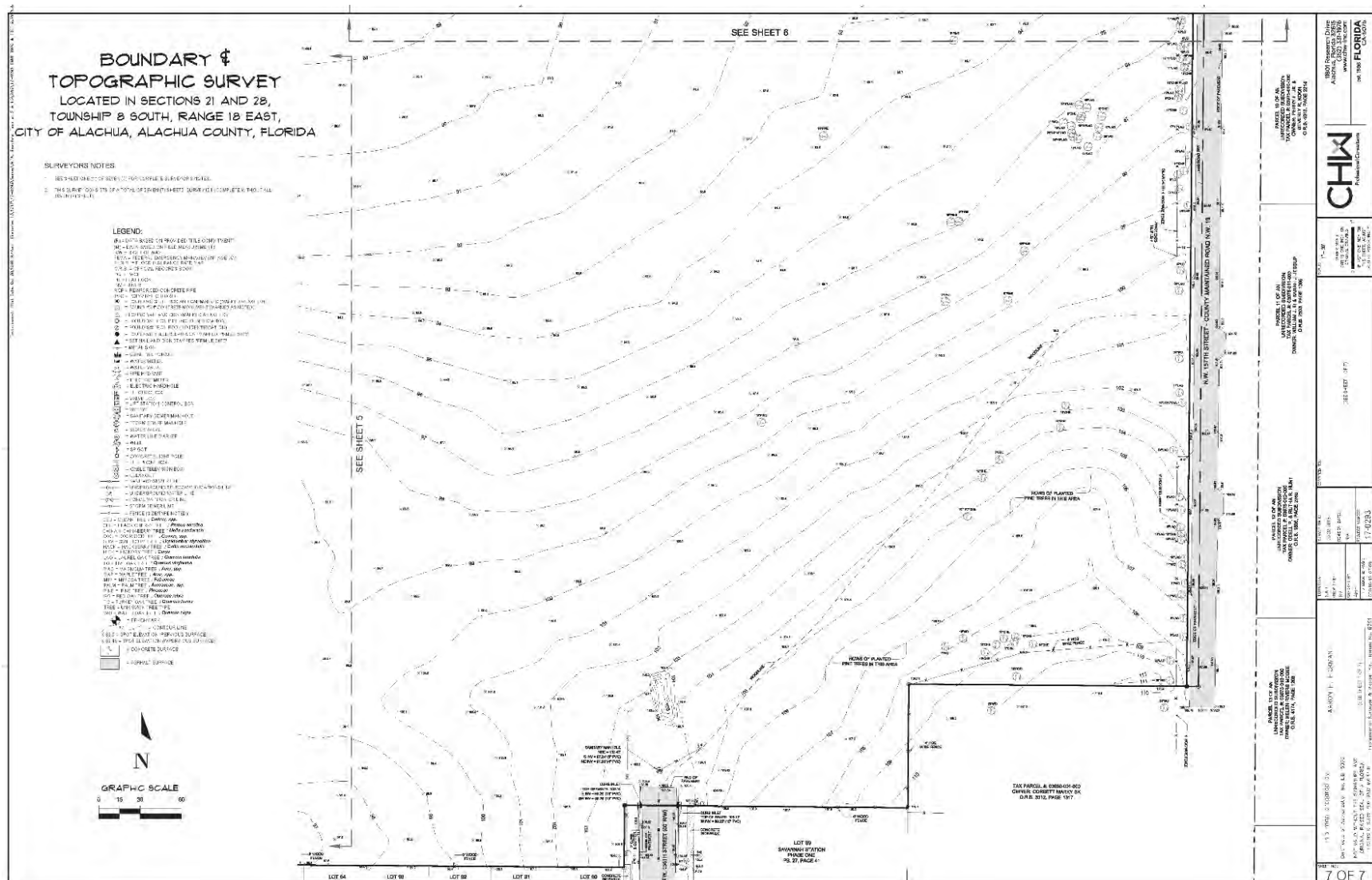


Figure 4. USGS High Springs topographic map of the Project Site and surrounding area.

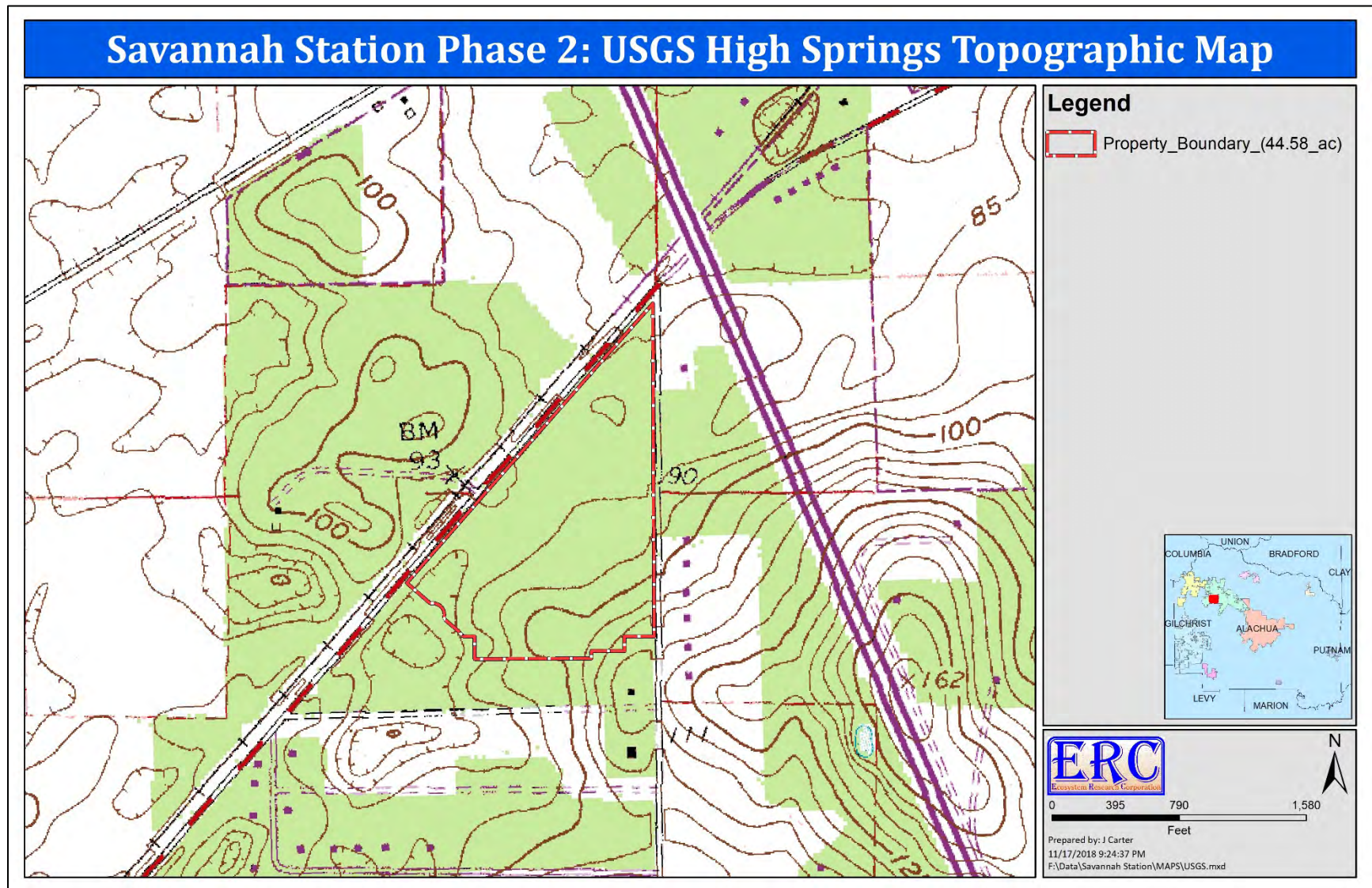


Figure 5. Topography map showing Alachua County 2001 topo contours overlain on a 2017 aerial photograph.

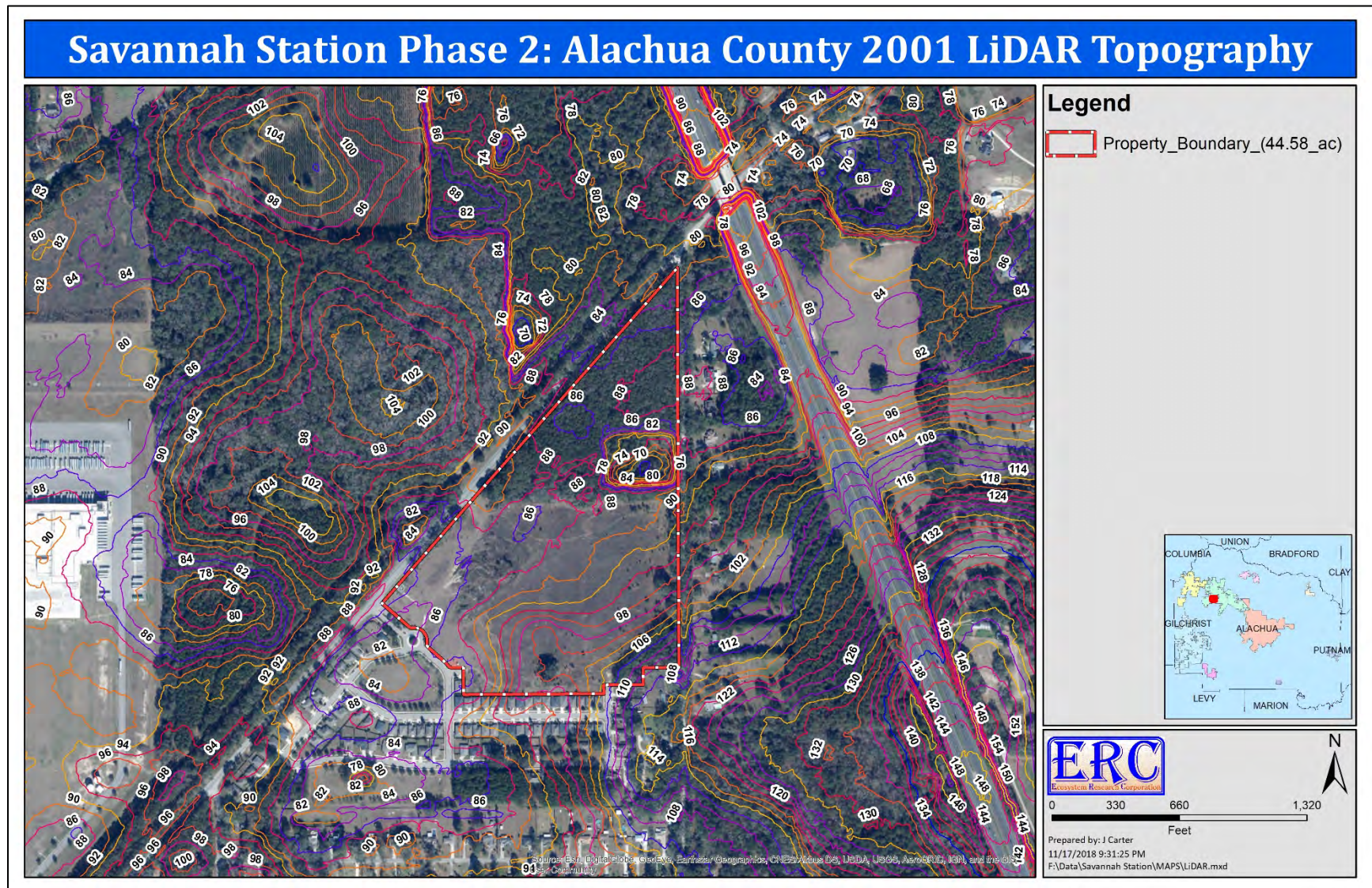


Figure 6. NRCS soils map of the Project Site and surrounding area.

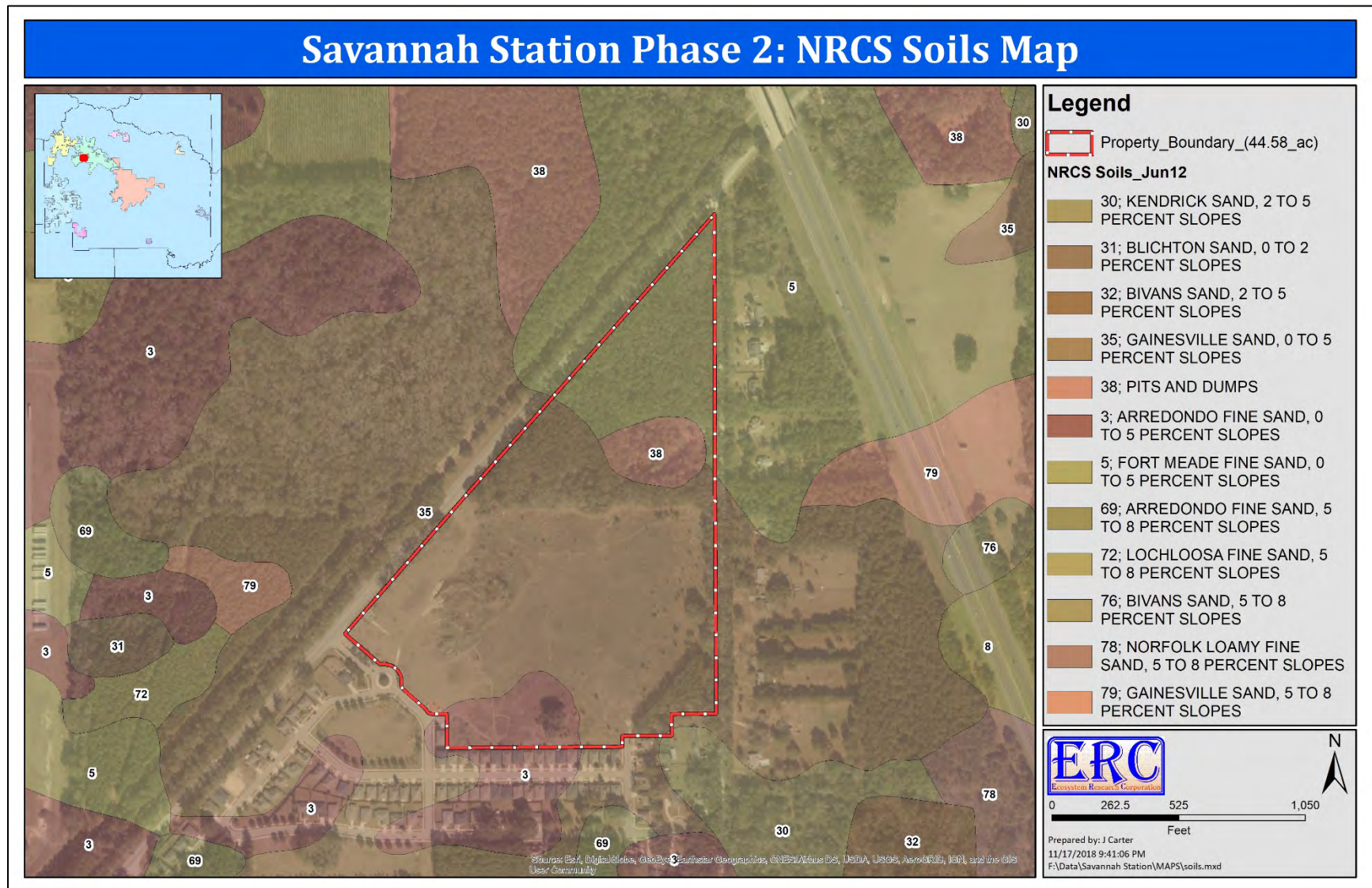


Figure 7. FEMA flood zone map of the Project Site and surrounding area.

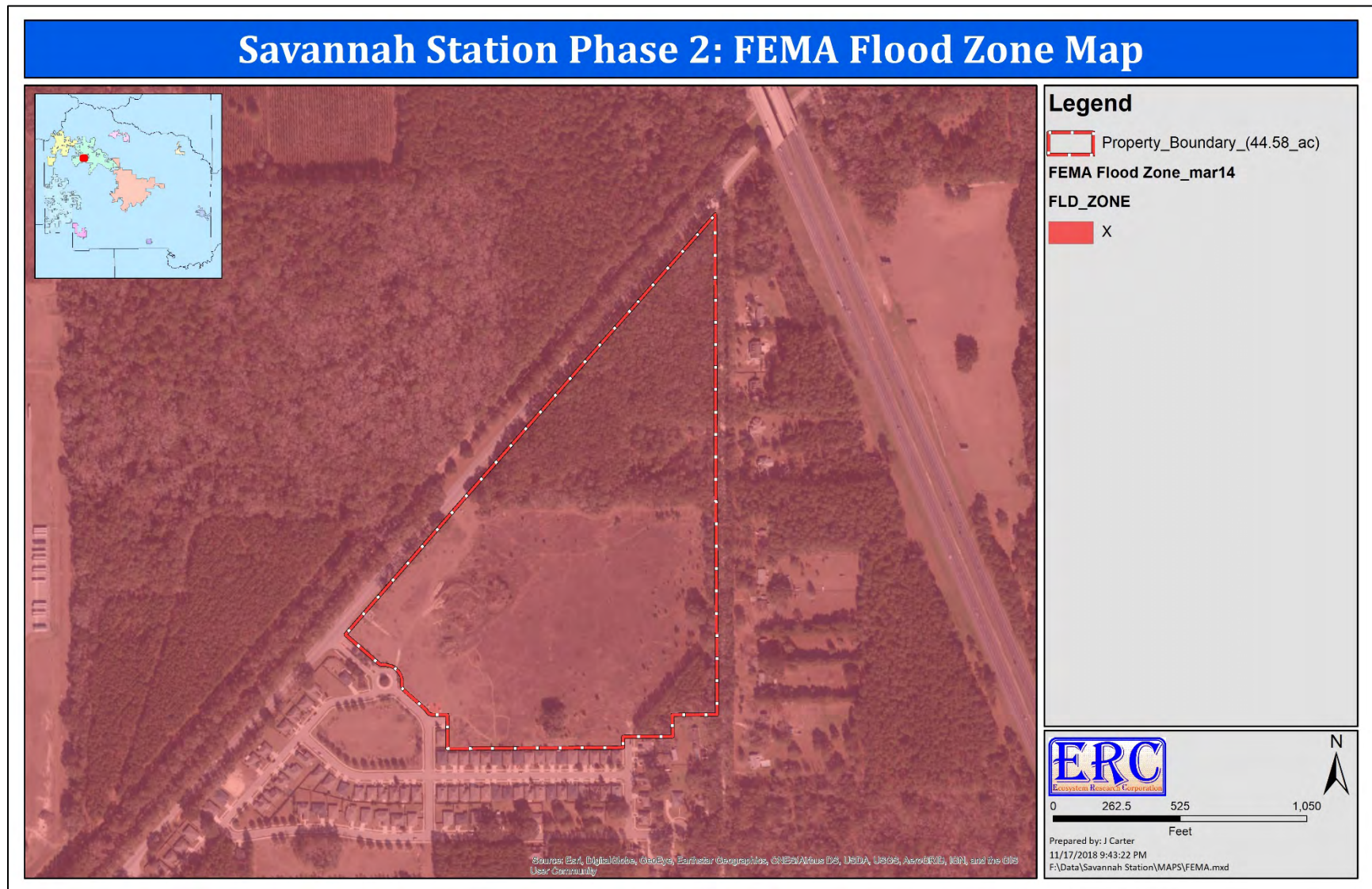


Figure 8. National Wetlands Inventory wetlands map of the Project Site and surrounding area.

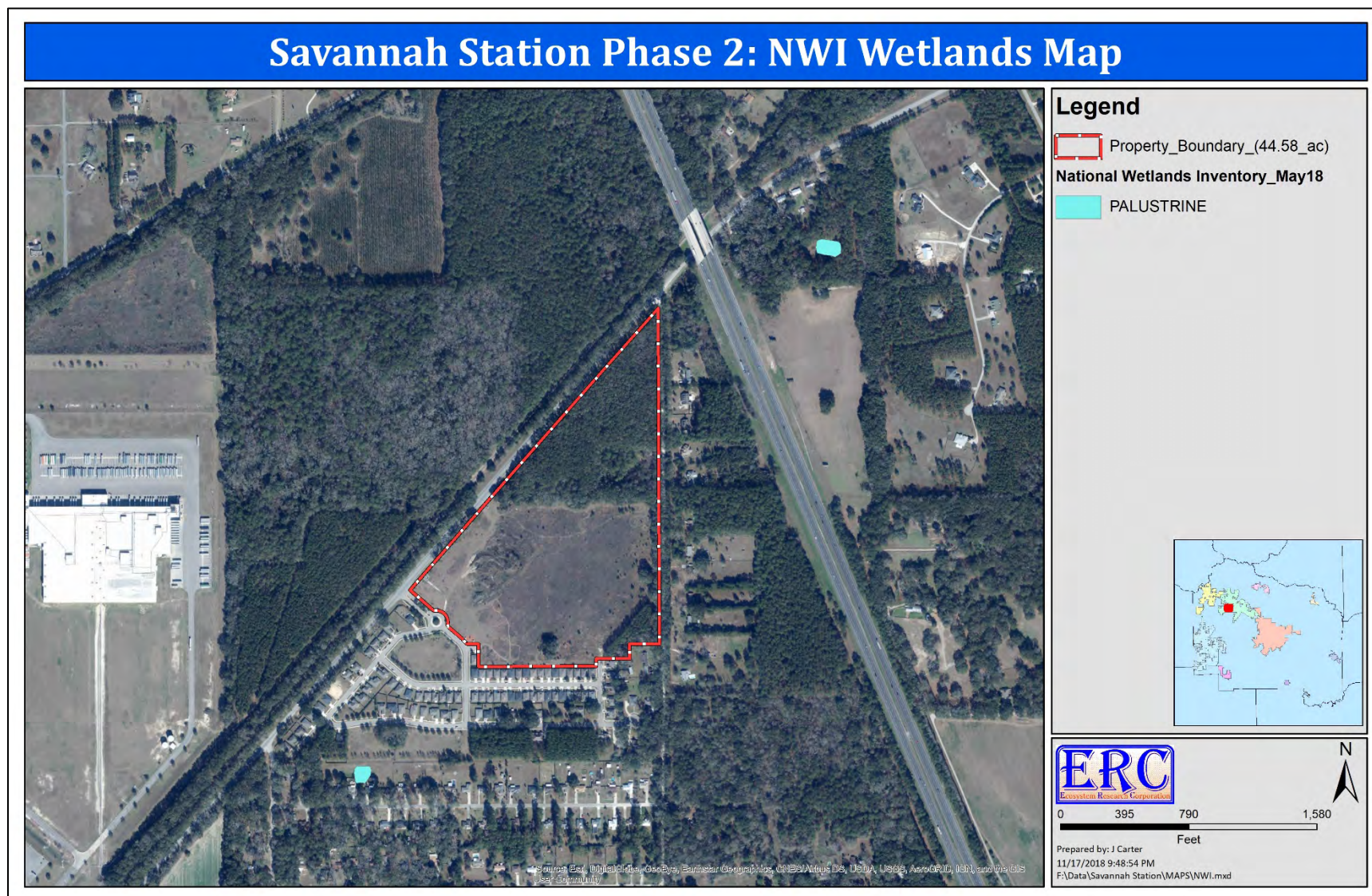


Figure 9. National Wetlands Inventory wetlands shown in relation to the Alachua County composite wetlands of the Project Site and surrounding area.

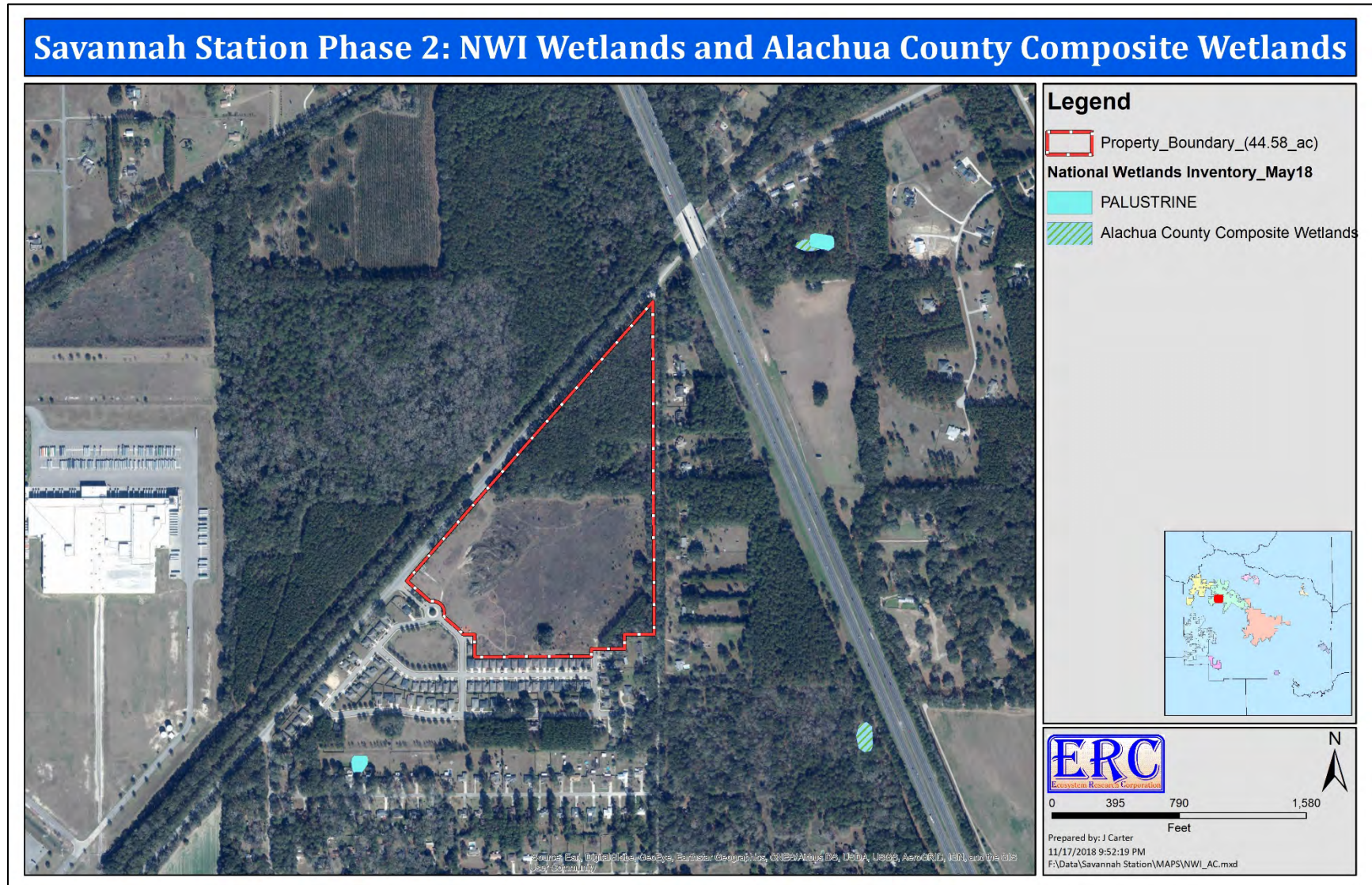


Figure 10. Alachua County Floridan Aquifer High Recharge Area.

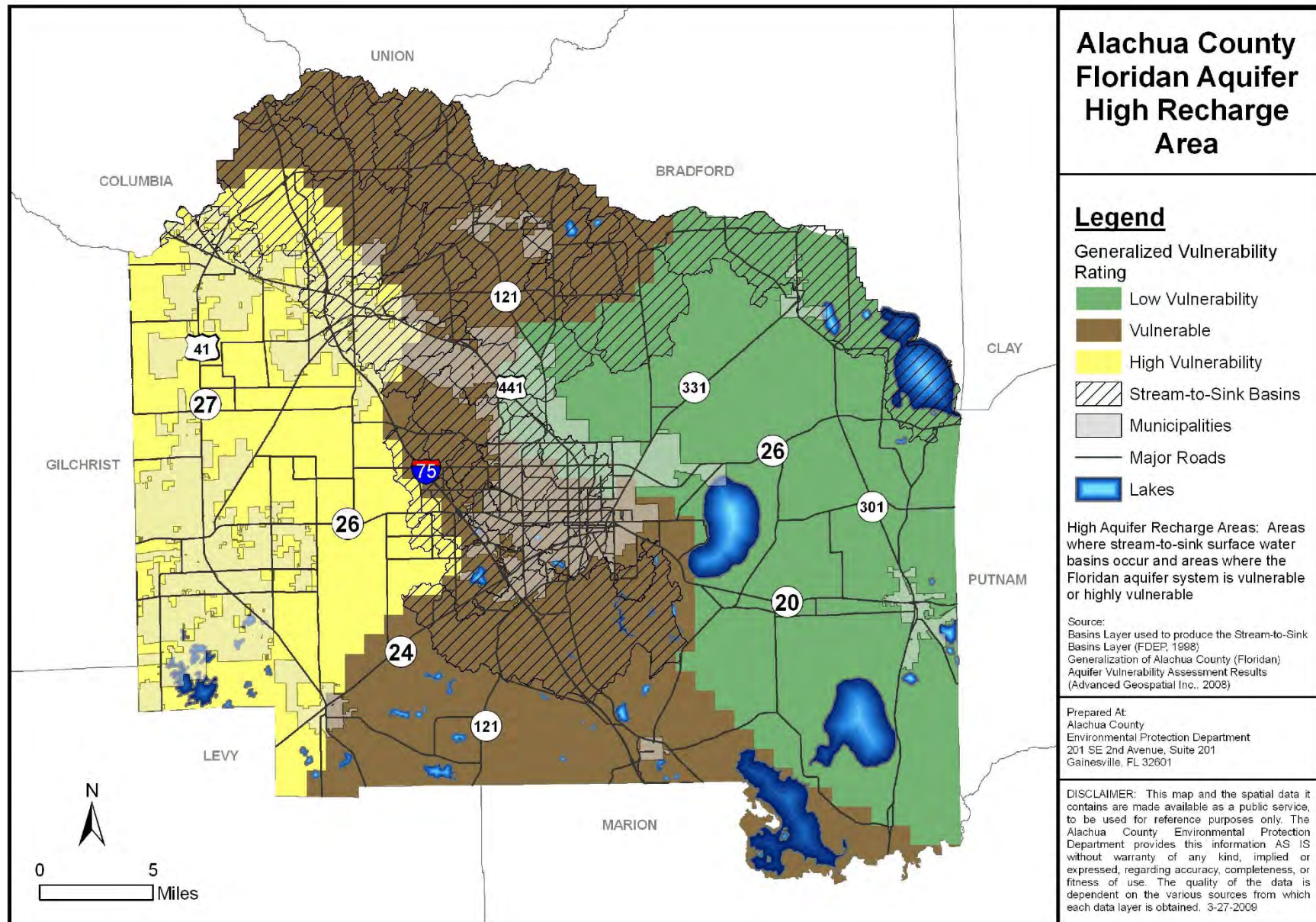


Figure 11. Alachua County hazardous materials storage facilities shown in relation to the Project Site.



Figure 12. Historic structures shown in relationship to the Project Site.

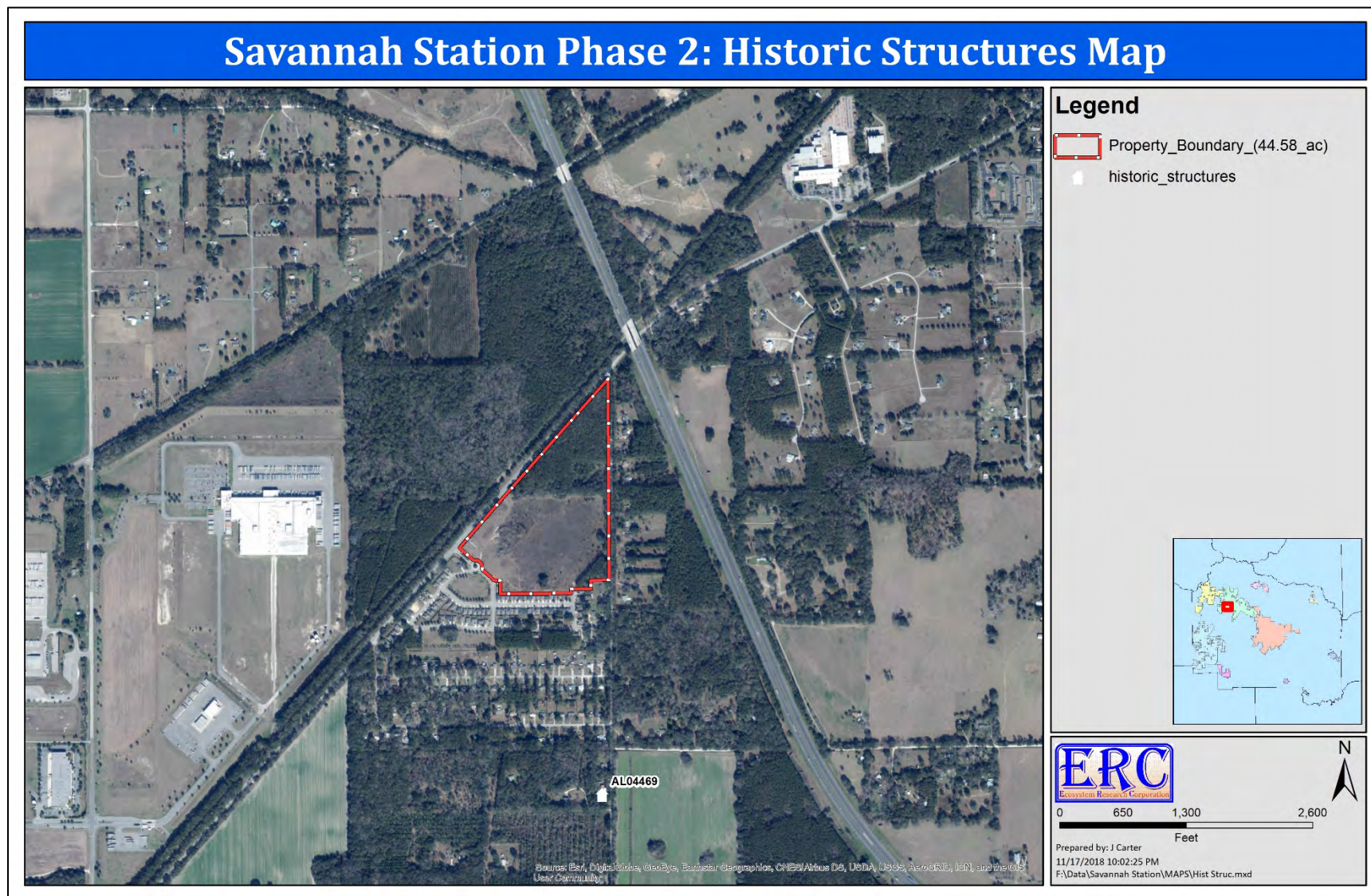


Figure 13. Florida Natural Areas Inventory element occurrence records shown in relation to the Project Site and surrounding area.

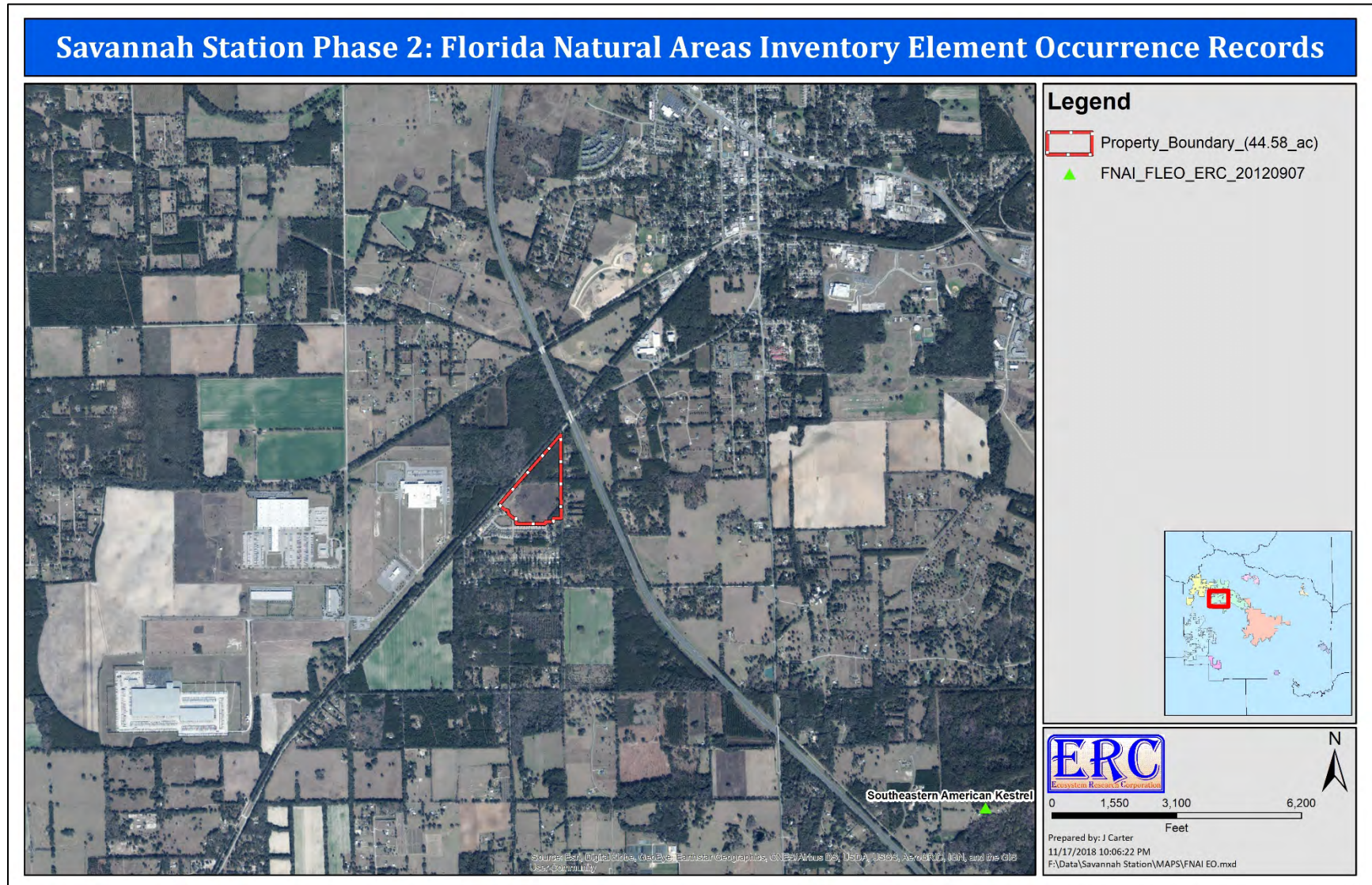


Figure 14. Known occurrence ranges of Federally listed species in relation to the Project Site location.

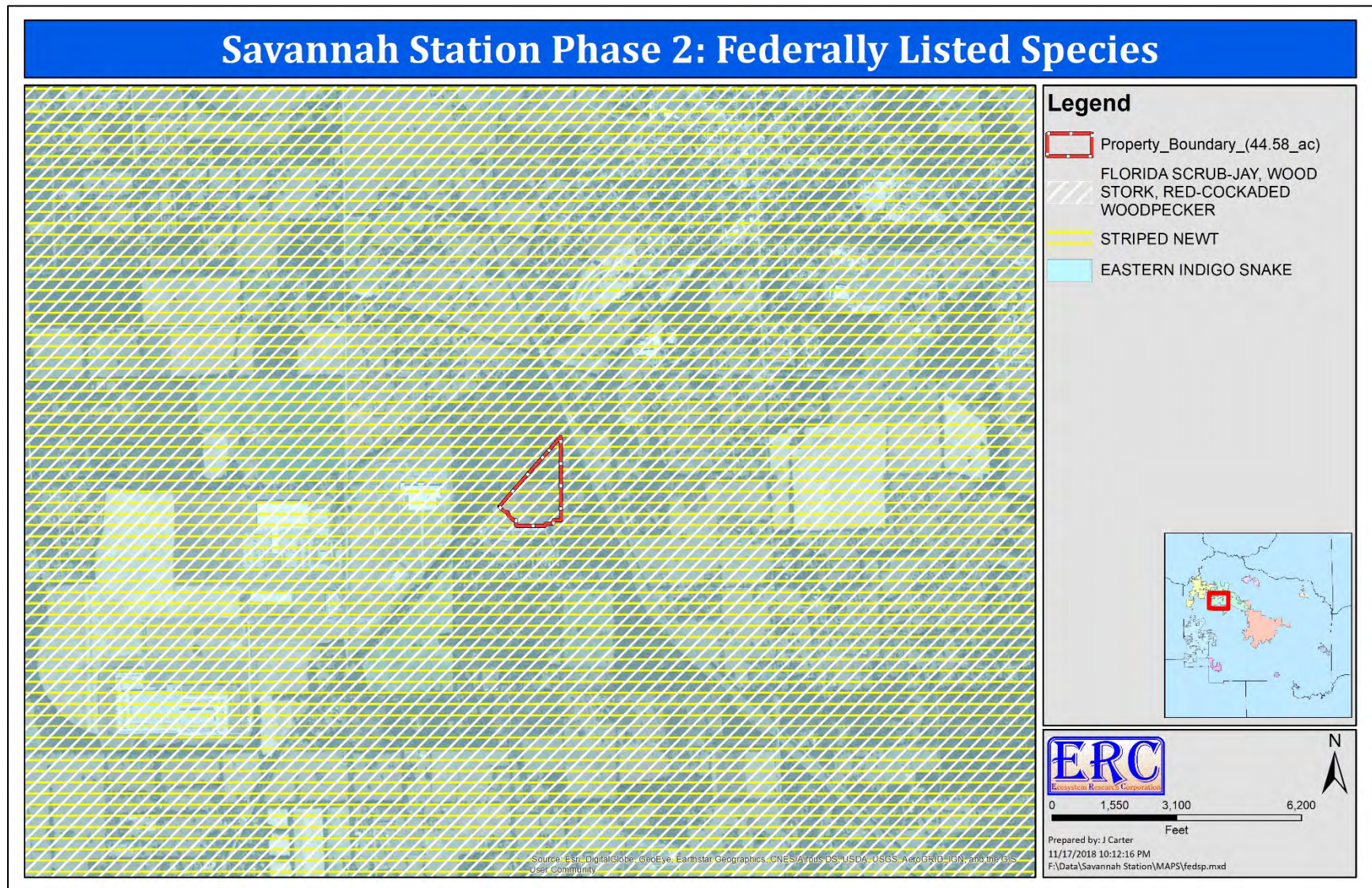


Figure 15. Black bear forage area where black bears are known to “occasionally” occur.

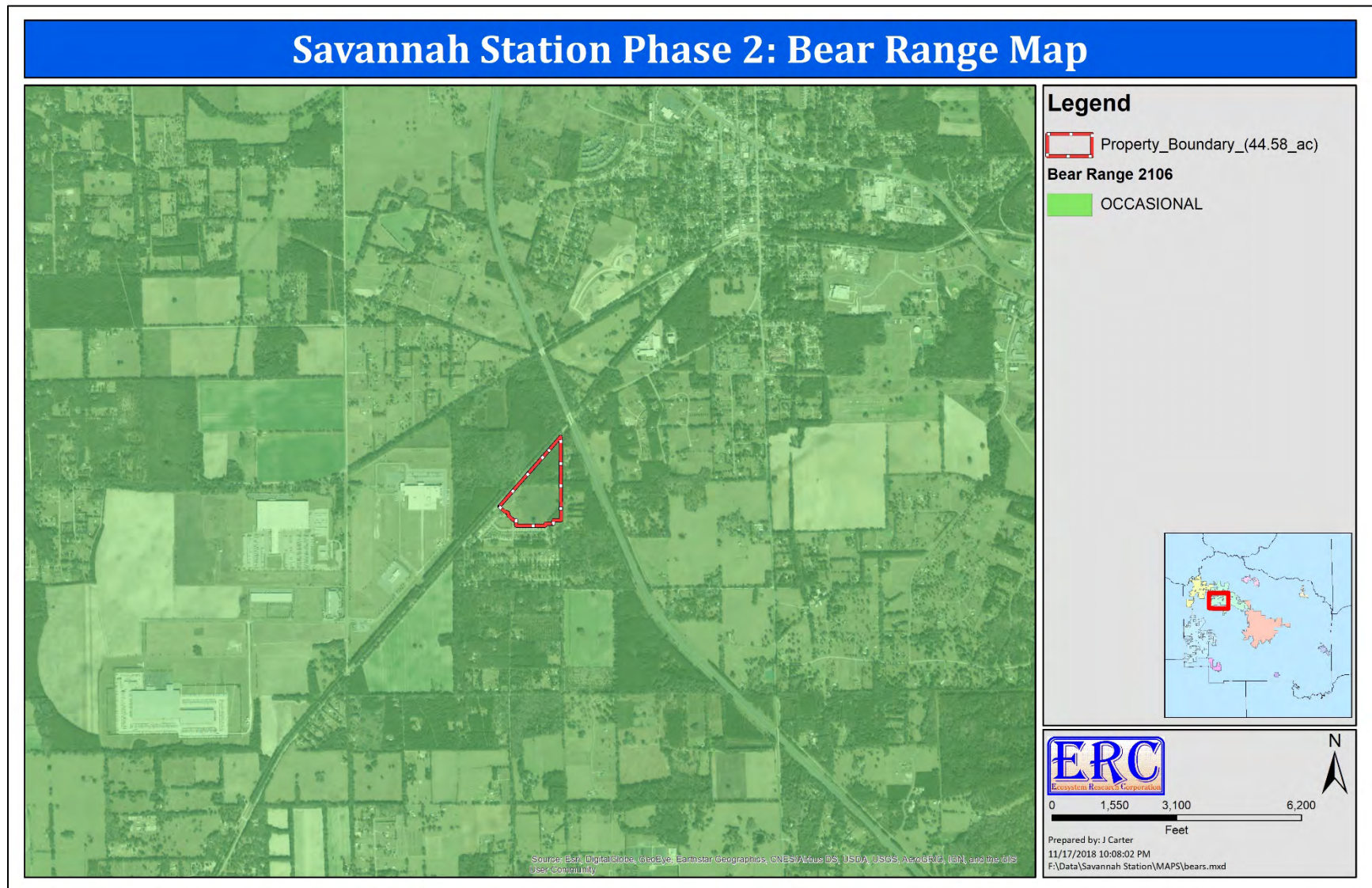


Figure 16. GPS locations where site-specific data were collected within the Project Site and adjacent areas.

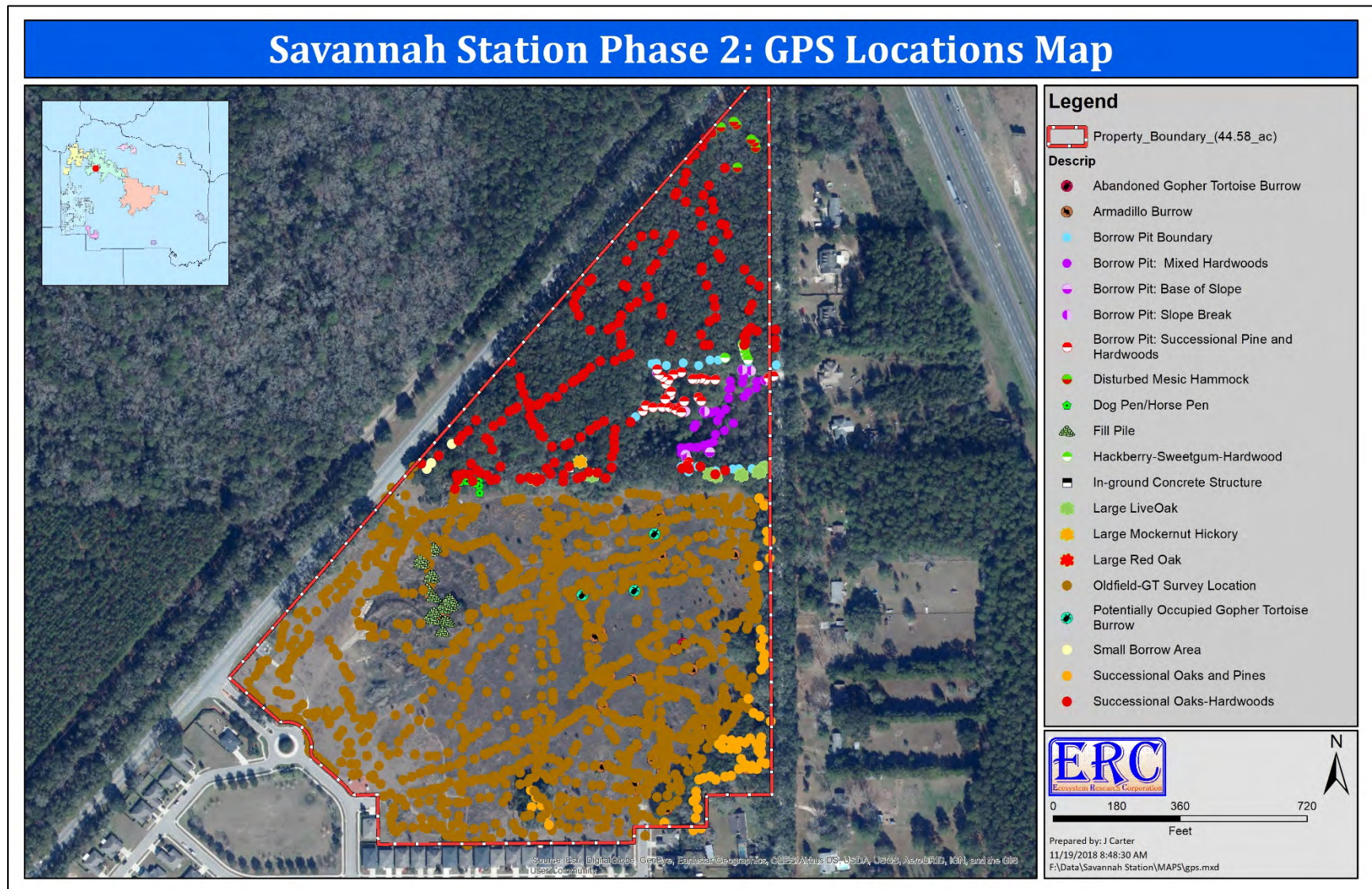
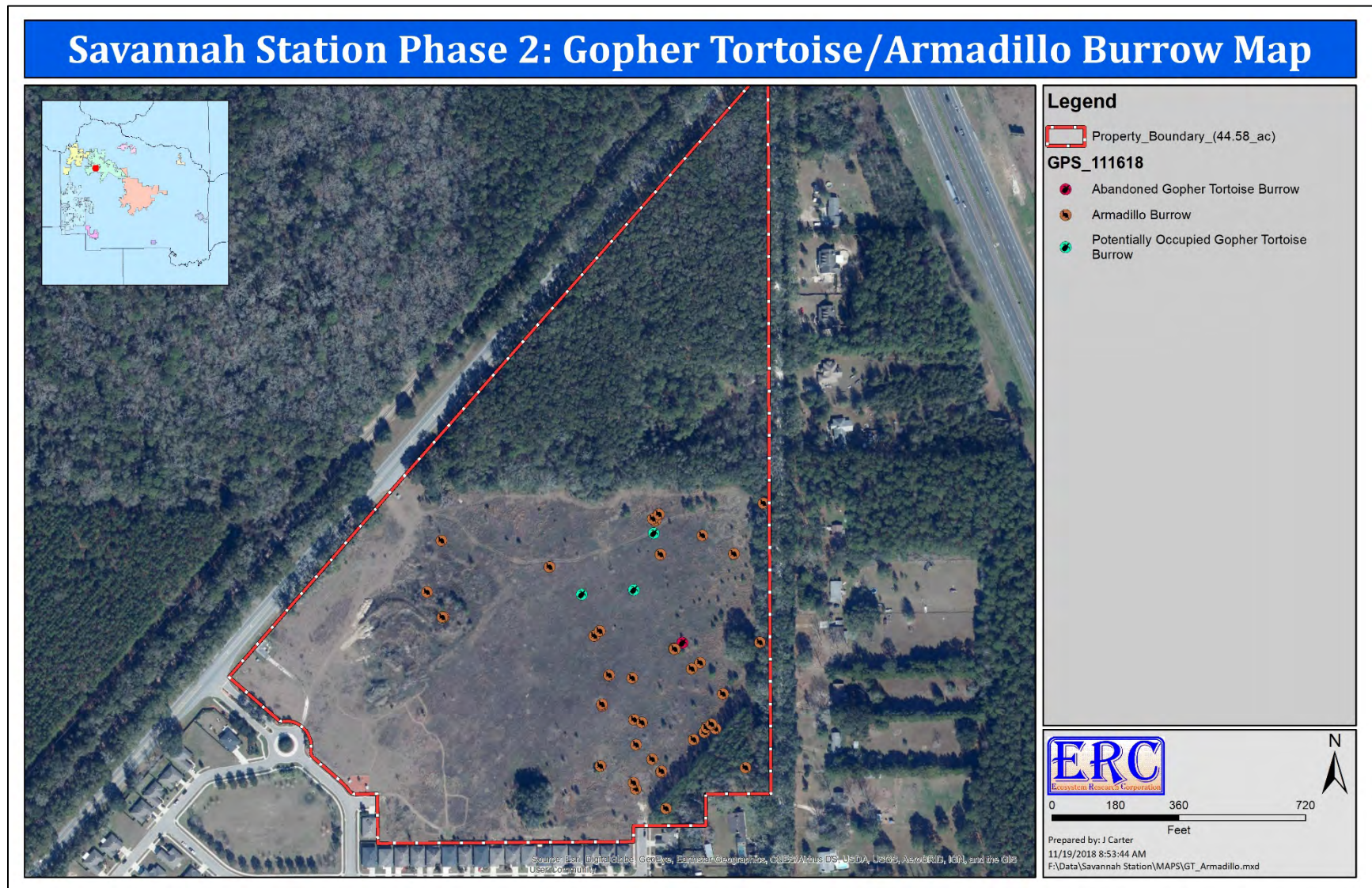


Figure 17. Distribution of Gopher Tortoise burrows and Armadillo burrows as related to areas of the Project Site.



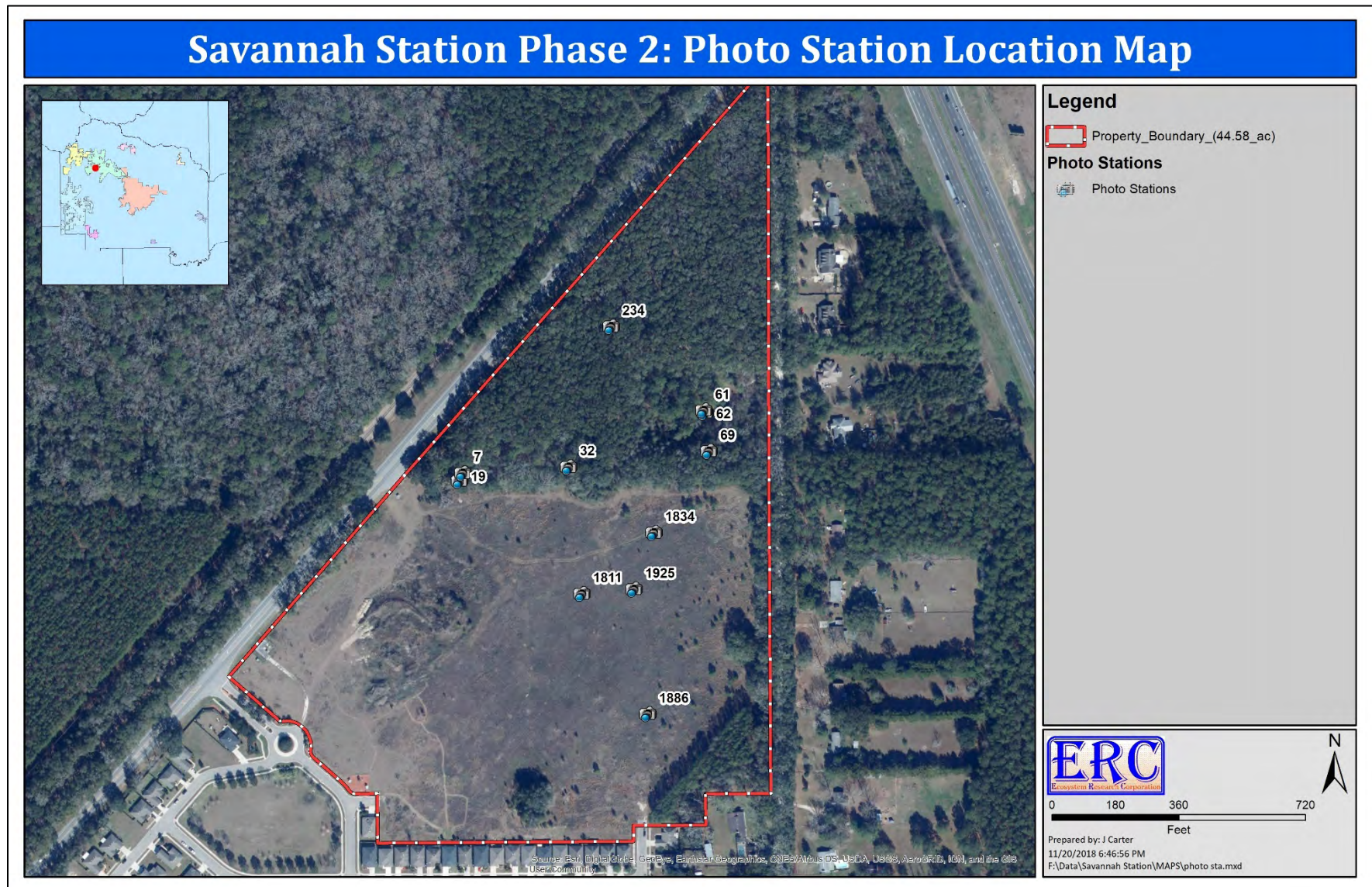
Attachment 1—Photographs

General appearance of the Project Site and adjacent areas during the field survey on 15–16 November 2018.

Table A-1. Tabular listing for each photograph provided in the Photographic Atlas.

Photo Number	GPS Number	Photo Direction	Habitat / Description
1	007	North	Tires and construction debris
2	019	Southwest	Cattle/horse/dog pen
3	032	Southwest	Circular in-ground concrete structure
4	061	North-northwest	Successional: Oaks and hardwoods
5	062	South	Borrow pit: Mixed hardwoods
6	069	South	Borrow pit: Successional pine and hardwoods
7	069	North	Borrow pit: Successional pine and hardwoods
8	234	North	Successional: Oaks and hardwoods
9	234	East	Successional: Oaks and hardwoods
10	234	South	Successional: Oaks and hardwoods
11	234	West	Successional: Oaks and hardwoods
12	1834	North	Oldfield
13	1886	Northwest	Oldfield
14	1811	Southeast	Potentially occupied gopher tortoise burrow
15	1834	Northeast	Potentially occupied gopher tortoise burrow
16	1925	Southeast	Potentially occupied gopher tortoise burrow

Figure A-1. Photo station locations shown as designated by specific GPS locations.





11/15/2018
Photo 1
1Frames 4776-4777 GPS 007 Tires and debris (North).jpg



11/15/2018
Photo 2
2Frames 4778 GPS 019 Dog pen(Southwest).jpg



11/15/2018
Photo 3
3Frames 4779 GPS 032 Circular concrete structure.jpg



11/15/2018
Photo 4
4Frames 4780-4781 GPS 061 (NNW).jpg



11/15/2018
Photo 5
5Frames 4782-4783 GPS 062 (South).jpg



11/15/2018
Photo 6
6Frames 4784-4785 GPS 069 (Southwest).jpg



11/15/2018
Photo 7
7Frames 4786-4787 GPS 069 (Northeast).jpg



11/15/2018
Photo 8
8Frames 4788 GPS 234 (North).jpg



11/15/2018
Photo 9
9Frames 4789 GPS 234 (East).jpg



11/15/2018
Photo 10
10Frames 4790 GPS 234 (South).jpg



11/15/2018
Photo 11
11Frames 4791 GPS 234 (West).jpg



11/16/2018
Photo 12
12Frames 4793-4794 GPS 834 (PMW Unit) GT Habitat.jpg



11/16/2018
Photo 13
13Frames 4795-4796 GPS 886 (PMW Unit) (Northwest).jpg



11/16/2018
Photo 14
14Frames 4797 GPS 811 (PMW Unit) GT-PO.jpg



11/16/2018
Photo 15
15Frames 4792 GPS 834 (PMW Unit) GT-PO.jpg



11/16/2018
Photo 16
16Frames 4798 GPS 925 (PMW Unit) GT-PO.jpg