



January 25, 2011

Alliance Consulting Engineers
Post Office Box 8147
Columbia, South Carolina 29202-8147

Attention: Ms. Rebecca Murrell

Reference: **Protected Species Assessment**
I-20 Industrial Center
Bishopville, Lee County, South Carolina
S&ME Project No. 1614-10-478

Dear Ms. Murrell:

S&ME, Inc. (S&ME) is pleased to submit our Protected Species Assessment for the above-referenced project located in Lee County, South Carolina. This work was performed in general accordance with S&ME Proposal No. 1614-7314-10, dated January 29, 2010 and the Master Services Agreement between Alliance Consulting Engineers and S&ME dated January 15, 2007. This Protected Species Assessment has been conducted to assess the potential for protected species or suitable habitat within the project area in preparation for proposed industrial and light industrial development.

1.0 PROJECT BACKGROUND

The site consists of an approximate 221.63-acre tract located northwest of the intersection of Interstate 20 (I-20) and U.S. Highway 15 and south of Browntown Road near Bishopville in Lee County, South Carolina (Figure 1 in Appendix A). The tract is located in the I-20 Industrial Center. The site is identified on a portion of the USGS 7.5-minute topographic quadrangle map *Bishopville West*, dated 1988 (Figure 2 in Appendix A). The site is largely open fields and is developed with a speculative building, water tower, electrical substation, detention ponds, and paved roads.

2.0 SITE/HABITAT DESCRIPTIONS

The site is located in central Lee County within the Southeastern Plains/Atlantic Southern Loam Plains ecoregion of South Carolina. The properties adjacent to the project area consist of forestland, farmland, commercial businesses, and industrial facilities. The site primarily consists of four habitat types: open fields, pine-mixed hardwood forestland, forested and herbaceous wetlands, and surface water features (streams, ditches, and detention ponds). Refer to Figure 3 and the site photographs in Appendix A for the locations and depictions of the various habitats.

Open Fields (Photograph 1)

A majority of the project area is maintained open fields. Species observed included a mix of grasses and weedy herbaceous vegetation including bahia grass (*Paspalum notatum*), coastal bermudagrass (*Cynodon dactylon*), broomsedge (*Andropogon* spp.), common dandelion (*Taraxacum officinale*), vetch (*Vicia* spp.), and rabbit tobacco (*Gnaphalium obtusifolium*).

Pine-Mixed Hardwood Forest (Photograph 2)

A mixed pine-hardwood forest community was observed on the southern portion of the site. Dominant canopy species included loblolly pine (*Pinus taeda*), white oak (*Quercus alba*), sweetgum (*Liquidambar styraciflua*), and hickory (*Carya* spp.). The understory consisted of saplings of the canopy species along with southern red oak (*Q. falcata*), blackjack oak (*Q. marilandica*), water oak (*Q. nigra*), American holly (*Ilex opaca*), sweetleaf (*Symplocos tinctoria*), blueberry (*Vaccinium* spp.), yellow jessamine (*Gelsemium sempervirens*), and greenbrier (*Smilax rotundifolia*).

Forested & Herbaceous Wetlands (Photographs 3-4)

Forested wetlands were observed on the western and southwestern portions of the site. The canopy was dominated by sweetgum, red maple, (*Acer rubrum*), and water oak. The understory was dominated by red bay (*Persea borbonia*), Chinese privet (*Ligustrum sinense*), muscadine (*Vitis rotundifolia*), Japanese honeysuckle (*Lonicera japonica*), and greenbrier. A small, herbaceous wetland was observed on the north-central portion of the site. The wetland is periodically mowed during maintenance activities. Herbaceous species observed included cat-tail (*Typha latifolia*), panic grasses (*Panicum* spp.), quillwort (*Isoetes* spp.), and spikerush (*Eleocharis microcarpa*).

Water Features – Streams, Ditches, and Detention Ponds (Photographs 5-6)

Two seasonal/intermittent streams were observed on the western portion of the site. Several man-made ditches and detention ponds were also observed throughout the site. Sapling and shrub species observed on the fringes of the ditches and detention ponds included black willow (*Salix nigra*) and sea myrtle (*Baccharis halimifolia*). Herbaceous species observed included cat-tail, bulrush (*Scirpus cyperinus*), sedge (*Carex* spp.), and soft rush (*Juncus effusus*).

3.0 METHODOLOGY

The South Carolina Department of Natural Resources (SCDNR) Rare, Threatened, and Endangered Species Inventory and the U.S. Fish and Wildlife Service (USFWS) websites were reviewed regarding current federally listed species known to occur in Lee County. The purpose of the database search was to identify current and historic documented occurrences of federally protected species located within this county. Additionally, S&ME personnel reviewed available supporting information including the USGS 7.5-minute topographic quadrangle maps (*Bishopville West, SC*) and applicable soil survey sheets. The purpose of reviewing this supporting information was to identify drainage features and soil types in the study area. During the field reconnaissance, S&ME personnel integrated the information obtained from this supporting documentation with the field evaluation in order to determine the presence of

protected species or potential protected species habitat. Portions of the site that matched descriptions of preferred habitat for protected species listed in Table 1 were considered to be potential habitat for the respective protected species. These areas were subsequently field reviewed to confirm the presence/absence of the respective species.

The SCDNR database records did not identify the presence of known federally protected species (threatened or endangered) occurrences on or immediately adjacent to the site. A field survey was performed within the project area on January 19 and 21, 2011. Biologists Chris Daves and Amanda White of S&ME performed the field survey.

4.0 PROTECTED SPECIES

Descriptions of the species and their respective federal and state status are identified in Table 1 and in Appendix B. The SCDNR and USFWS websites identified the following federally listed species for Lee County:

TABLE 1: PROTECTED FLORA & FAUNA SUMMARY I-20 INDUSTRIAL CENTER – LEE COUNTY				
Species	Federal Status	State Status	Habitat Description	Species Impacted
Red-Cockaded Woodpecker <i>Picoides borealis</i>	E	E	Open pine stands with minimum age of 60 years; Nests in live pines with red-heart disease.	No
American Chaffseed <i>Schwalbea americana</i>	E	E	Margins of savannas and cypress ponds that are seasonally wet	No
Canby's Dropwort <i>Oxypolis canbyi</i>	E	E	Wet pineland ponds, savannas, wet meadows, & around edges of open cypress ponds; Prefers habitat with little or no canopy closure	No

E = Endangered

T = Threatened

Red-Cockaded Woodpecker – Federally Listed Endangered

BIOLOGICAL OPINION: NO EFFECT

The red-cockaded woodpecker is a black and white bird measuring approximately seven inches long. The bird displays black and white horizontal stripes on its back. The cheeks and underparts are white and the sides are streaked in black. The cap and stripe on the throat and neck of the bird are black. Male individuals have a small red spot on each side of the black cap and display a red crown patch after the first post-fledgling molt. The red-cockaded woodpecker's range is closely linked to the distribution of southern pines. Loblolly and longleaf pines that are 60-plus years old are generally selected for nesting sites. However, other species of southern pines are occasionally used for nesting. The woodpecker usually excavates nest cavities in trees infected with a fungus that produces red-heart disease. Preferred nesting sites

generally include relatively open, mature pine stands with an undeveloped or low understory layer. Foraging habitat is frequently limited to pine or pine-hardwood stands that are 30 years or older, with a preference for pine trees with a diameter of 10 inches or larger. The USFWS indicates that the maximum foraging range for the red-cockaded woodpecker is approximately one-half mile.

The pines observed the site were not appropriate age, size, or density; therefore, the project area does not contain suitable nesting habitat for the red-cockaded woodpecker. Accordingly, future development of the project area is not expected to impact this species.

American Chaffseed – Federally Listed Endangered
BIOLOGICAL OPINION: NO EFFECT

American chaffseed is an erect, perennial herb that grows to a height of 12 to 24 inches tall. The entire plant, including the leaves and flowers, is covered with fine hairs. Chaffseed has simple, alternate leaves that are lance-shaped to elliptic. The leaves are three to five centimeters long and approximately one centimeter wide, ascending and reduced upwards. The bracts and leaves are purplish-tinged. The corollas range from creamy yellow to purple-tinted green with rose-tinted green, and they are shaped like turtle's heads. The fruit resembles a capsule that is divided into four sections that shed numerous, winged seeds. The seeds are linear and greenish-brown in color. The flowering occurs in May through June, with the fruiting period occurring June through July. American chaffseed occurs in sandy (sandy peat, sandy loam), acidic, seasonally-moist to dry soils. It is generally found in early successional habitats described as open, moist pine flatwoods, fire-maintained savannas, ecotonal areas between peaty wetlands and xeric (dry) sandy soils, bog borders, and other open grass-sedge systems. American chaffseed is dependent on factors such as fire and fluctuating water tables to maintain the crucial open to partly-open conditions that it requires. American chaffseed occurs in species-rich plant communities where grasses, sedges, and savanna dicots are numerous.

The project area contains marginal suitable habitat for American chaffseed on the open edges immediately adjacent to ditches and detention pond features, and in the herbaceous wetland on the northern-central portion of the site. However, these areas are part of the stormwater drainage plan and will not be impacted. The small herbaceous wetland is also routinely mowed and maintained and is not ideal habitat for American chaffseed. In addition, there are no true pine flatwoods or fire-maintained savannas within the project area. Accordingly, future development of the project area is not expected to impact this species.

Canby's Dropwort – Federally Listed Endangered

BIOLOGICAL OPINION: NO EFFECT

Canby's dropwort is a perennial herb growing from elongate, stoloniferous rhizomes to a height of 2.5 to 4 feet in height. The stems are hollow and erect with slender leaves. The species is aromatic, smelling like dill. The flowering period is from mid-August through October. The flowers of Canby's dropwort have white petals and pale green sepals and are five-parted. The leaves are round in cross-section, thin, and divided by partitions. The primary habitats of Canby's dropwort are wet pineland ponds and savannas, wet meadows, and around the edges of open cypress ponds. The species prefers habitat with little or no canopy closure. Canby's dropwort prefers soils with a high water table.

The project area contains marginal suitable habitat for Canby's dropwort on the open edges adjacent and within the ditches and detention pond features, and within the herbaceous wetland on the northern-central portion of the site. However, these areas are part of the overall stormwater drainage plan and will not be impacted. The small herbaceous wetland is also routinely mowed and maintained and is not ideal habitat for Canby's dropwort. In addition, there are no true wet pineland ponds, savannas, wet meadows, or cypress ponds within the site. Accordingly, future development of the project area is not expected to impact this species.

5.0 QUALIFICATIONS

The field survey was lead by Chris Daves of S&ME. Mr. Daves is a biologist and natural resources project manager with over nine years experience in environmental consulting. Mr. Daves is proficient in conducting wetland delineations, environmental permitting activities, and habitat assessments, including protected species surveys. He is a Professional Wetland Scientist (PWS) and holds a B.S. degree in Biology from Wofford College and a Master's degree in Earth & Environmental Resources Management from the University of South Carolina.

6.0 REFERENCES CITED

Cummings, Candace J. and G.K. Yarrow. 1996. A Guide to South Carolina's Endangered and Threatened Species – EC 693. Clemson Extension Service.

Rayner, D.A. and R.D. Porcher. 2001. A Guide to the Wildflowers of South Carolina. University of South Carolina Press.

SCDNR. June 14, 2010. Rare, Threatened, and Endangered Species and Communities Known to Occur in Lee County, SC - <http://www.dnr.sc.gov/species/pdf/lee.pdf>.

South Carolina Heritage Trust. 2006. Geographic Database of Rare and Endangered Species. Current On-Line Edition - <https://www.dnr.sc.gov:4443/pls/heritage/species.login>.

USFWS. 2010. Listed Endangered Species in South Carolina - <http://www.fws.gov/charleston/countyLists.html#Listed%20Species%20in%20Lee%20County>.

USFWS. 2010. Listed Endangered Species in South Carolina -
<http://www.fws.gov/charleston/countyLists.html#Listed%20Species%20in%20Lee%20County>.

USFWS. March 2010. South Carolina List of Endangered, Threatened & Candidate Species.
<http://www.fws.gov/charleston/pdf/endangeredSpeciescountylist.pdf>.

U.S. Department of Agriculture – National Resources Conservation Service Web Soil Survey.
2010. <http://websoilsurvey.nrcs.usda.gov/app/>.

7.0 SUMMARY AND CONCLUSIONS

Based on the literature review, habitat assessment, and pedestrian field review of the project area, it is our opinion that the project area does not provide suitable habitat for the listed protected species with the possible exception of American chaffseed and Canby's dropwort. Marginally suitable habitat was observed for American chaffseed and Canby's dropwort in the open areas immediately adjacent to the ditches and detention ponds, as well as a small herbaceous wetland. However, these areas are part of the overall stormwater drainage plan and will not be impacted. The small herbaceous wetland is also routinely mowed and maintained. Based on these findings, the proposed project will have "no effect" on the listed protected species with documented populations in Lee County.

No further action is recommended at this time. This Protected Species Assessment will be forwarded to the USFWS for review and comment. The USFWS comments will be provided to you as soon as S&ME receives them.

S&ME appreciates the opportunity to be of service to you by performing this Protected Species Assessment for the project area. Please contact us at (803) 561-9024 with questions regarding this report or if you require additional information.

Sincerely,

S&ME, Inc.



Amanda White
Biologist



Chris Daves, P.W.S.
Biologist

Senior Reviewed by Tom Behnke, P.G. – Environmental Department Manager

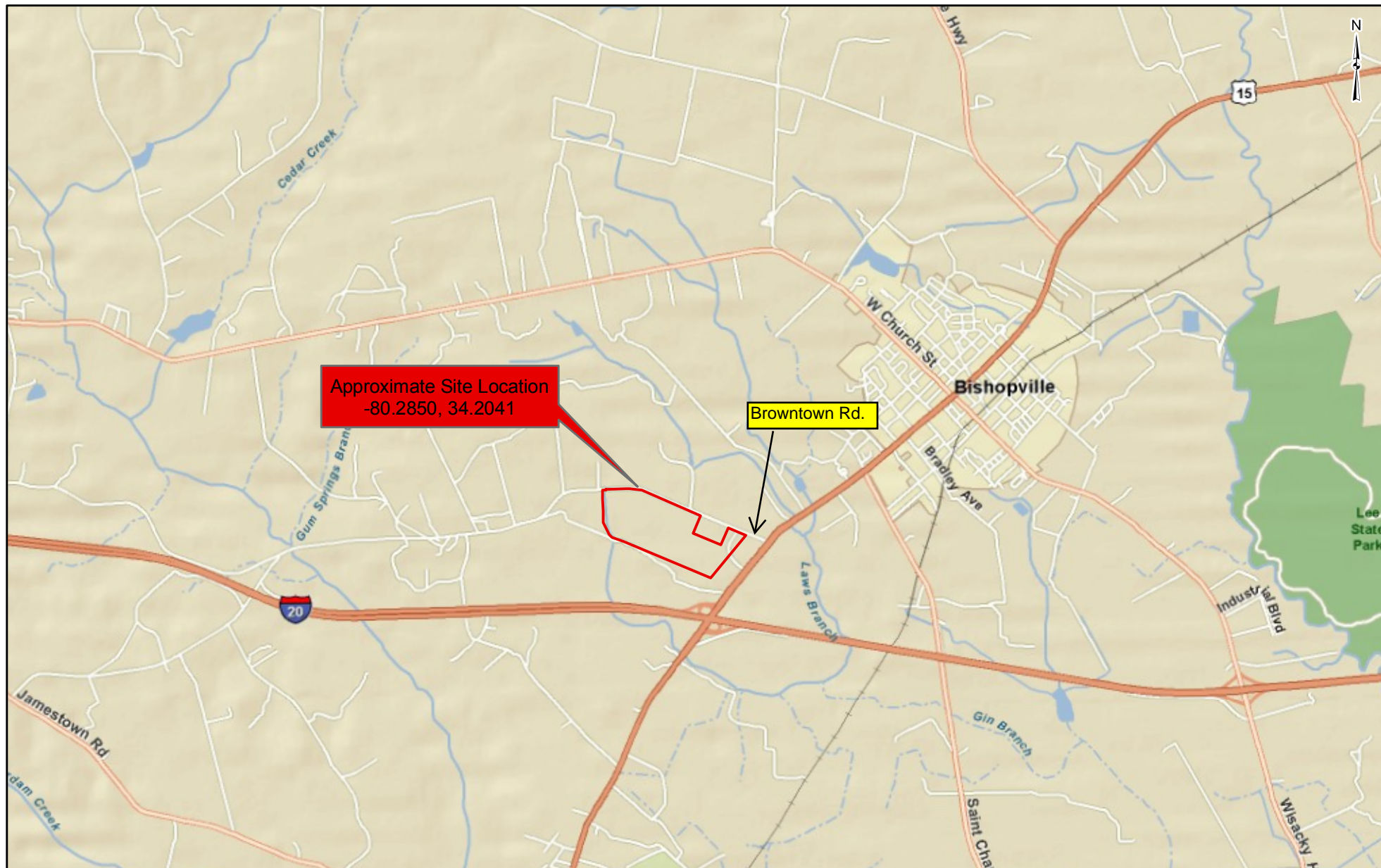
Appendix A – Figures & Site Photographs

Appendix B – County Species Lists from USFWS and SCDNR

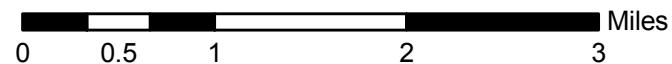
APPENDIX A

Figures

Site Photographs



Source: ESRI Streetmap



SCALE:	1 inch = 1 mile
CHECKED BY:	TB
DRAWN BY:	WCD
DATE:	1/25/2011



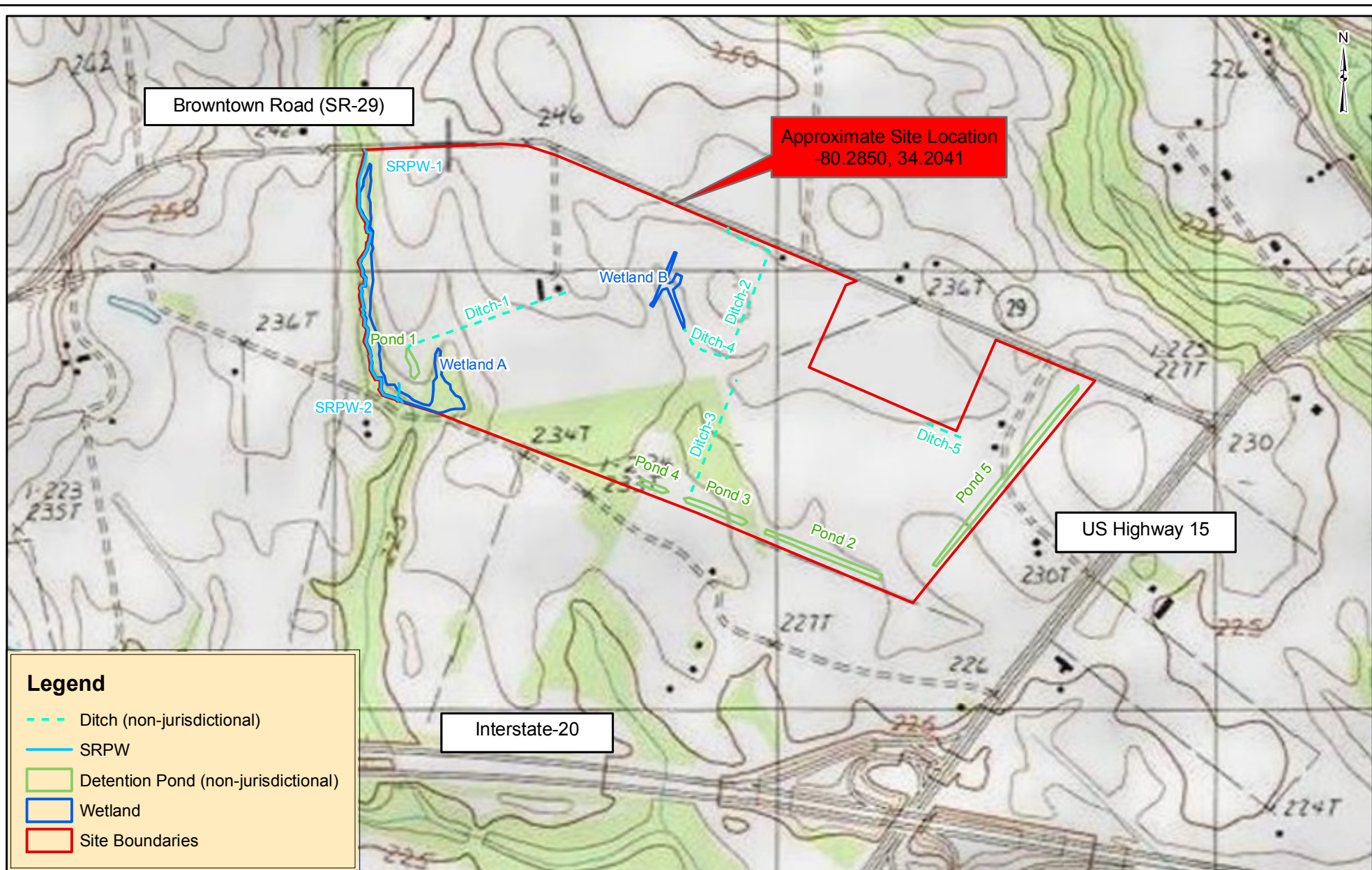
Vicinity Map

I-20 Industrial Center - 221.61 Acres
Bishopville, Lee County, South Carolina

S&ME PROJECT NO. 1614-10-478

FIGURE NO.

1



Source: USGS 7.5-minute quadrangle
Bishopville West, SC - 1988

0 500 1,000 2,000 3,000 Feet

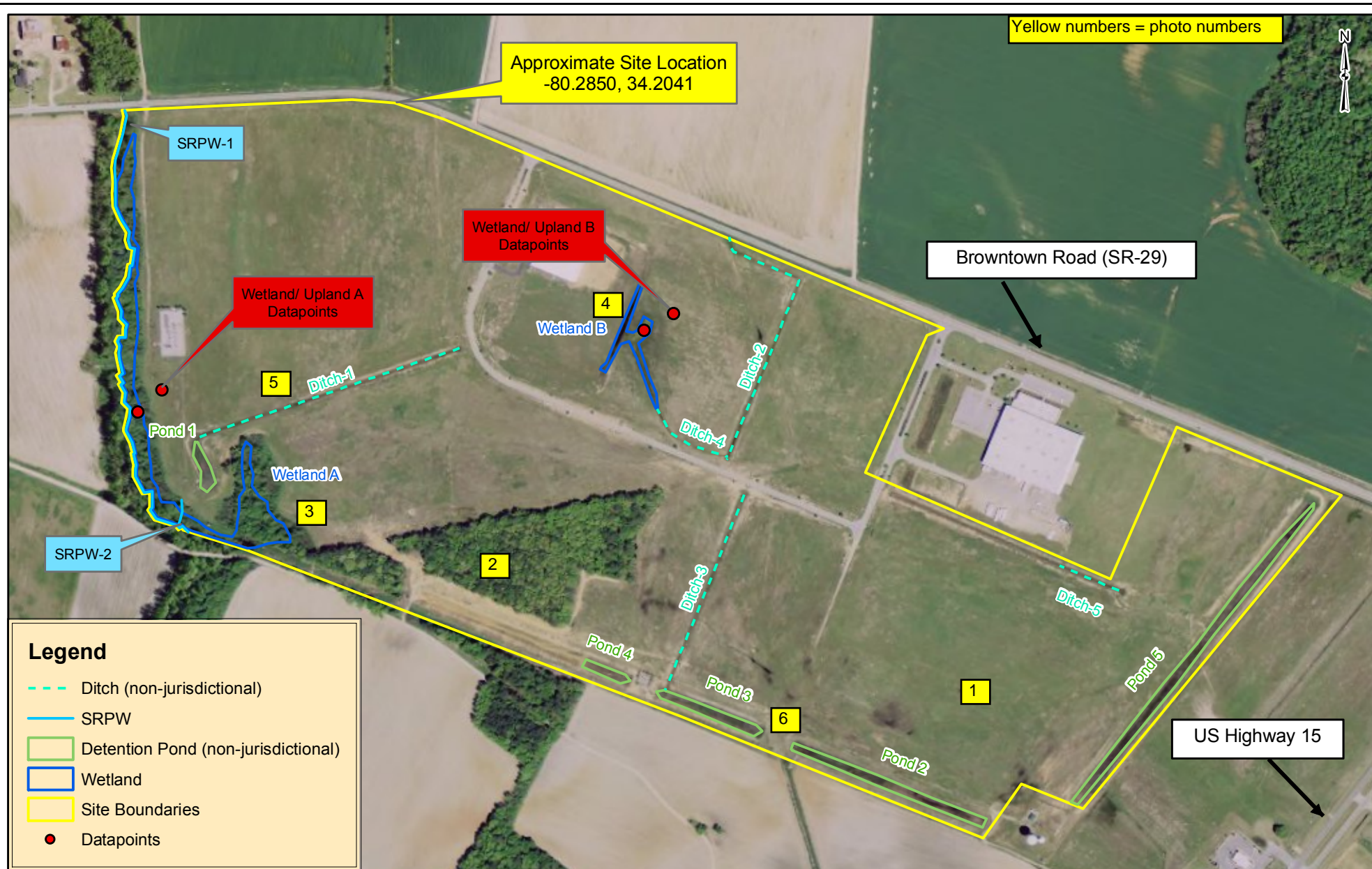
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Topographic Map	
I-20 Industrial Center Site - 221.61 Acres Bishopville, Lee County, South Carolina	
S&ME PROJECT NO.	1614-10-478

FIGURE NO.

2



Source: ESRI Resource Center Imagery
NAIP - 2009

0 300 600 1,200 1,800 Feet

SCALE: 1 inch = 600 feet
CHECKED BY: TB
DRAWN BY: WCD
DATE: 1/25/2011



Aerial Map

I-20 Industrial Center - 221.61 Acres
Bishopville, Lee County, South Carolina

S&ME PROJECT NO. 1614-10-478

FIGURE NO.

3



Photo #1 Open field on east-central portion of site.



Photo #2 Pine-mixed hardwood forestland on southern portion of site.



Photo #3 Forested wetland on southwestern portion of site.



Photo #4 Small, herbaceous wetland on north-central portion of site.



Photo #5 Ditch on southwestern portion of site facing east.



Photo #6 Detention pond on southern portion of site.

APPENDIX B

County Species Lists from USFWS and SCDNR For Lee County

Rare, Threatened, and Endangered Species and Communities Known to Occur in Lee County, South Carolina

August 25, 2010

Scientific Name	Common Name	USESA Designation	State Protection	Global Rank	State Rank
<u>Vertebrate Animals</u>					
<i>Clemmys guttata</i>	Spotted Turtle		ST-Threatened	G5	S5
<i>Picoides borealis</i>	Red-cockaded Woodpecker	LE: Listed endangered	SE-Endangered	G3	S2
<i>Rana palustris</i>	Pickerel Frog			G5	SNR
<i>Sciurus niger</i>	Eastern Fox Squirrel			G5	S4
<u>Vascular Plants</u>					
<i>Aristida condensata</i>	Piedmont Three-awned Grass			G4?	S2
<i>Ilex amelanchier</i>	Sarvis Holly			G4	S3
<i>Oxypolis canbyi</i>	Canby's Dropwort	LE: Listed endangered		G2	S2
<i>Pteroglossaspis ecristata</i>	Crestless Plume Orchid			G2G3	S2
<i>Rhexia aristosa</i>	Awned Meadowbeauty			G3	S3
<i>Rhynchospora tracyi</i>	Tracy Beakrush			G4	S3
<i>Sarracenia rubra</i>	Sweet Pitcher-plant			G4	S4
<i>Schwalbea americana</i>	Chaffseed	LE: Listed endangered		G2G3	S3
<i>Xyris difformis</i> var. <i>floridana</i>	Florida Yellow-eyed Grass			G5T4T5	S2
<u>Communities</u>					
Atlantic white cedar swamp				G2	S2
Bottomland hardwoods				G5	S4
Pine flatwoods				G5	S3S4
Pine savanna				G3	S2
Pond cypress pond				G4	S4
Pond cypress savanna				G3	S2
<u>Ecological</u>					
Carolina bay				GNR	SNR

South Carolina List of Endangered, Threatened and Candidate Species March 2010

E	Federally endangered
T	Federally threatened
P	Proposed in the Federal Register
CH	Critical Habitat
C	The U.S. Fish and Wildlife Service or the National Marine Fisheries Service has on file sufficient information on biological vulnerability and threat(s) to support proposals to list these species
S/A	Federally protected due to similarity of appearance to a listed species
*	Contact the National Marine Fisheries Service for more information on this species
**	The U.S. Fish and Wildlife Service and the National Marine Fisheries Service share jurisdiction of this species
BGEPA	Federally protected under the Bald and Golden Eagle Protection Act

These lists should be used only as a guideline, not as the final authority. The lists include known occurrences and areas where the species has a high possibility of occurring. Records are updated continually and may be different from the following. For a list of state endangered, threatened, and species of concern go to <http://www.dnr.sc.gov/species/index.html>.

<u>COUNTY</u>	<u>COMMON NAME</u>	<u>SCIENTIFIC NAME</u>	<u>STATUS</u>
Abbeville	Bald eagle	<i>Haliaeetus leucocephalus</i>	BGEPA
	Carolina heelsplitter	<i>Lasmigona decorata</i>	E
	Georgia aster	<i>Aster georgianus</i>	C
Aiken	Bald eagle	<i>Haliaeetus leucocephalus</i>	BGEPA
	Piedmont bishop-weed	<i>Ptilimnium nodosum</i>	E
	Red-cockaded woodpecker	<i>Picoides borealis</i>	E
	Relict trillium	<i>Trillium reliquum</i>	E
	Shortnose sturgeon	<i>Acipenser brevirostrum</i> *	E
	Smooth coneflower	<i>Echinacea laevigata</i>	E
	Wood stork	<i>Mycteria americana</i>	E
Allendale	Bald eagle	<i>Haliaeetus leucocephalus</i>	BGEPA
	Canby's dropwort	<i>Oxypolis canbyi</i>	E
	Red-cockaded woodpecker	<i>Picoides borealis</i>	E
	Shortnose sturgeon	<i>Acipenser brevirostrum</i> *	E
	Smooth coneflower	<i>Echinacea laevigata</i>	E
	Wood stork	<i>Mycteria americana</i>	E

<u>COUNTY</u>	<u>COMMON NAME</u>	<u>SCIENTIFIC NAME</u>	<u>STATUS</u>
Lancaster	Black-spored quillwort	<i>Isoetes melanospora</i>	E
	Carolina heelsplitter	<i>Lasmigona decorata</i>	E, CH
	Little amphianthus	<i>Amphianthus pusillus</i>	T
	Schweinitz's sunflower	<i>Helianthus schweinitzii</i>	E
	Smooth coneflower	<i>Echinacea laevigata</i>	E
Laurens	Carolina heelsplitter	<i>Lasmigona decorata</i>	E
	Georgia aster	<i>Aster georganus</i>	C
	Red-cockaded woodpecker	<i>Picoides borealis</i>	E
Lee	American chaffseed	<i>Schwalbea americana</i>	E
	Canby's dropwort	<i>Oxypolis canbyi</i>	E
	Red-cockaded woodpecker	<i>Picoides borealis</i>	E
Lexington	Bald eagle	<i>Haliaeetus leucocephalus</i>	BGEPA
	Red-cockaded woodpecker	<i>Picoides borealis</i>	E
	Shortnose sturgeon	<i>Acipenser brevirostrum*</i>	E
	Smooth coneflower	<i>Echinacea laevigata</i>	E
Marion	Bald eagle	<i>Haliaeetus leucocephalus</i>	BGEPA
	Canby's dropwort	<i>Oxypolis canbyi</i>	E
	Red-cockaded woodpecker	<i>Picoides borealis</i>	E
	Shortnose sturgeon	<i>Acipenser brevirostrum*</i>	E
	Wood stork	<i>Mycteria americana</i>	E
Marlboro	Bald eagle	<i>Haliaeetus leucocephalus</i>	BGEPA
	Canby's dropwort	<i>Oxypolis canbyi</i>	E
	Red-cockaded woodpecker	<i>Picoides borealis</i>	E
	Shortnose sturgeon	<i>Acipenser brevirostrum*</i>	E
McCormick	Bald eagle	<i>Haliaeetus leucocephalus</i>	BGEPA
	Carolina heelsplitter	<i>Lasmigona decorata</i>	E, CH
	Georgia aster	<i>Aster georgianus</i>	C
	Miccosukee gooseberry	<i>Ribes echinellum</i>	T
	Red-cockaded woodpecker	<i>Picoides borealis</i>	E
	Wood stork	<i>Mycteria americana</i>	E
Newberry	Bald eagle	<i>Haliaeetus leucocephalus</i>	BGEPA