May 13, 2014

Kershaw County Economic Development Office
Post Office Box 763
Camden, South Carolina 29021

Attention: Peggy B. McLean, Director
peggy.mclean@kershaw.sc.gov

Reference: Protected Species Assessment
Steeplechase Industrial Park – 277.91 Acres
Black River Road
Camden, Kershaw County, South Carolina
S&ME Project No. 4261-14-036

Dear Ms. McLean:

S&ME, Inc. (S&ME) is pleased to submit our Protected Species Assessment for the above-referenced site located in Kershaw County, South Carolina. Our work was performed in general accordance with S&ME Proposal No. 14-1400112, dated February 7, 2014, and our Agreement for Services (AS-071).

1.0 PROJECT BACKGROUND

This Protected Species Assessment has been conducted to assess the potential for the presence of protected species on the site in preparation for proposed development of the Steeplechase Industrial Park. S&ME is requesting the technical assistance (in the form of a written Response Letter) of the U.S. Fish and Wildlife Service (USFWS) as to whether site development would likely result in "take" as defined under Section 9 of the Endangered Species Act (ESA). The 277.91-acre site is located south of Black River Road, north of Interstate 20, west of Haier Boulevard, and east of Campus Drive near Camden in Kershaw County, South Carolina as shown on Figures 1-3 in Appendix A.

2.0 SITE/ HABITAT DESCRIPTIONS

The site is located in southeastern Kershaw County within the Southeastern Plains/Atlantic Southern Loam Plains ecoregion of South Carolina. The site is surrounded by road easements, forestland, residential parcels, an electrical substation, and industrial facilities. The site primarily consists of four habitat types:

- Open Fields
- Ruderal Communities
- Pine-Mixed Hardwood Forestland
- Aquatic Features (Wetlands and Streams)

Please refer to Figure 3 and the site photographs in Appendix A for depictions of these habitat types.

Open Fields (Photographs 1-3)
Open fields were observed on the eastern and central portions of the site. Dominant species include coastal Bermuda grass (*Cynodon dactylon*), crabgrass (*Digitaria* spp.), broomsedge (*Andropogon virginicus*), rabbit tobacco (*Gnaphalium obtusifolium*), field garlic (*Allium vineale*), and Carolina geranium (*Geranium carolinianum*). A cleared and graded open area was observed on the western portion of the site. Species included loblolly pine saplings (*Pinus taeda*), sweet-gum saplings (*Liquidambar styraciflua*), winged sumac (*Rhus copallinum*), smooth sumac (*R. glabra*), broomsedge, coastal Bermuda grass, and blackberry (*Rubus* spp.).

Ruderal Communities (Photographs 4-8)
Ruderal communities, dominated by plants growing where the natural vegetation cover has been disturbed by man, were observed along the edges of open fields and forested wetlands. Dominant species observed included saplings of sweet-gum, loblolly pine, red maple (*Acer rubrum*), and water oak (*Quercus nigra*) as well as shrubby and weedy species such as winged sumac, smooth sumac, Chinese privet (*Ligustrum sinense*), blackberry, dog fennel (*Eupatorium capillifolium),* pokeweed (*Phytolacca americana*), common greenbrier (*Smilax rotundifolia*), Japanese honeysuckle (*Lonicera japonica*), and various other grasses and forbs.

Pine-Mixed Hardwood Forestland (Photograph 9)
Several pockets of pine-mixed hardwood forestland were observed scattered about the site as well as adjacent to the forested wetlands. Dominant overstory and midstory species included loblolly pine, water oak, southern red oak (*Q. falcata*), Chinese privet, American holly (*Ilex opaca*), sweet-gum, red-maple, and black cherry (*Prunus serotina*). Understory species included muscadine, Japanese honeysuckle, common greenbrier, yellow jessamine (*Gelsemium sempervirens*), bracken fern (*Pteridium aquilinum*), and ebony spleenwort (*Asplenium platyneuron*).

Aquatic Features/Forested Wetlands and Streams (Photographs 10-12)
Forested wetlands were observed on the central portion of the site. The overstory and midstory of the wetlands consisted of loblolly pine, water oak, sweet-gum, red maple, and Chinese privet. Ground cover and vine species included netted chainfern (*Woodwardia areolata*), muscadine, poison ivy (*Toxicodendron radicans*), common greenbrier, Japanese honeysuckle, and giant cane (*Arundinaria gigantea*). A herbaceous wetland was observed on the southwestern portion of the site. Species observed included loblolly pine saplings, woolgrass (*Scirpus cyperinus*), grass rush (*Juncus biflorus*), and sedge (*Cyperus* spp.). A perennial stream, a seasonal stream, and two ditch features were also observed on the site. Stream widths varied from two to five feet.

3.0 METHODOLOGY
S&ME personnel reviewed the South Carolina Department of Natural Resources (SCDNR) and the USFWS websites in order to determine those species that are currently listed as federally protected (threatened or endangered) in Kershaw County. The results of this search, including identified protected species and preferred habitat, served as the basis of the field review and are presented in Table 1.

SCDNR maintains a database of elements of occurrence for protected species in the state of South Carolina. A search of this database did not reveal the known presence of federally protected species (occurrences) on or immediately adjacent to the site. Supporting information was researched for the purpose of identifying soil types, vegetative communities, and possible drainage features in the study area. The supporting information reviewed included aerial photography, topographic quadrangle maps, soil survey sheets, land use information, and data from the National Wetlands Inventory.

S&ME Biologists, Chris Daves and Chris Handley, performed field reviews on March 11, April 17, 22-24, and 30, and May 5, 2014. The information obtained from supporting documentation was integrated with the field review to identify potential areas of preferred habitat of protected species. 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.

4.0 PROTECTED SPECIES

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

TABLE 1: PROTECTED FLORA & FAUNA SUMMARY

Species	Federal Status	Habitat Description	Species Impacted
Bald Eagle *Haliaeetus leucocephalus*	BGEPA	Coastlines, rivers, large lakes which provide adequate feeding grounds.	No
Red-Cockaded Woodpecker *Picoides borealis*	E	Open pine stands with minimum age of 60 years; nests in live pines with red-heart disease.	No
Atlantic Sturgeon *Acipenser oxyrinchus*	E	Shallow coastal waters and estuaries; spawns in freshwater areas.	No
Shortnose Sturgeon *Acipenser brevirostrum*	E	Brackish water of large rivers & estuaries; spawns in freshwater areas.	No
Carolina Heelsplitter *Lasmigona decorata*	E	Variety of substrates of river and creek beds, including mud, clay, sand, gravel, and cobble/bolder/bedrock; Catawba, Pee Dee, Savannah, and Saluda River systems.	No
Michaux's Sumac *Rhus michauxii*	E	Open upland woods, along forest edges, roadsides, powerline easements, and clearings.	No

BGEPA = Bald & Golden Eagle Protection Act E = Endangered

Bald Eagle
BIOLOGICAL OPINION: NO EFFECT

This large raptor has characteristic adult plumage consisting of a white head and tail with a dark brown body. Juvenile eagles are completely dark brown and do not fully develop the majestic white head and tail until the fifth or sixth year. Adults average about three feet from head to tail, weigh approximately 10 to 12 pounds and have a wingspread that can reach seven feet. Generally, female bald eagles are larger than the males. The typical nest is constructed of large sticks and is lined with soft materials such as pine needles and grasses. The nests are very large, measuring up to six feet across and weighing hundreds of pounds. Nesting and feeding sites are generally in the vicinity of large bodies of open water (coastlines, rivers, large lakes).

The site does not contain suitable nesting habitat for the bald eagle. There are no coastlines, rivers, or large lakes on or adjacent to the site considered suitable habitat for the bald eagle. The Wateree River is located over a mile southwest of the site. In addition, no nests were observed on the site. Accordingly, future development of the site is not expected to impact this species.

Red-Cockaded Woodpecker
BIOLOGICAL OPINION: NO EFFECT

This black and white bird measures approximately seven inches long and has 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 of the species 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 site does not contain suitable habitat for red-cockaded woodpecker. There are no pine stands of sufficient age on or immediately adjacent to the site. Accordingly, future development of the site is not expected to impact this species.

Atlantic Sturgeon
BIOLOGICAL OPINION: NO EFFECT

The Atlantic sturgeon is a cartilaginous, anadromous fish growing to a length of up to 14 feet. Individuals are bluish-black or olive brown with a white belly and have five rows of plates along the body. Four barbels are located in front of the mouth are used to locate food along the bottom.

The Atlantic sturgeon can be differentiated from the shortnose sturgeon by its larger size, smaller mouth, narrower snout, and their plates. This species migrates from salt water to freshwater to spawn from February to March. The Atlantic sturgeon's habitat consists of nearshore coastal waters along the Atlantic coast of North America.

The site does not contain suitable habitat for Atlantic sturgeon. There are no rivers or large streams within the site. Accordingly, future development of the site is not expected to impact this species.

Shortnose Sturgeon
BIOLOGICAL OPINION: NO EFFECT

The shortnose sturgeon is a bony, anadromous fish growing to a length of up to four feet. Shortnose sturgeon exhibit five rows of plates along the body, with olive to black coloring along the back, and yellow to white coloring on the belly. Four barbels are located in front of the mouth are used to locate food along the river bottom. The shortnose sturgeon migrates from salt water to freshwater to spawn from April to May. The shortnose sturgeon's habitat consists of tidal river systems along the Atlantic coast of North America. This species typically occupies the channels and deeper holes within the river, while feeding in shallow areas at night.

The site does not contain suitable habitat for shortnose sturgeon. There are no rivers or large streams within the site. Accordingly, future development of the site is not expected to impact this species.

Carolina Heelsplitter
BIOLOGICAL OPINION: NO EFFECT

The Carolina heelsplitter is a medium-sized freshwater mussel with an ovate, trapezoid-shaped shell. The shell is yellowish, greenish-brown to dark brown in color. Younger specimen's shells have greenish-brown or black rays. The inside of the shell (nacre) is pearly-white to bluish-white. The umbo area is orange or a mottle-orange. The heelsplitter has been documented in Catawba, Pee Dee River, Saluda, and Savannah River basins and is often associated with Slate Belt morphology of the Piedmont ecoregion of the Carolinas. The Carolina heelsplitter has been recorded in a variety of substrates, including mud, clay, sand, gravel, and cobble/bolder/bedrock. A majority of these areas are without significant silt accumulations and are along stable, well-shaded stream banks. Habitat is severely affected by siltation.

The site does not contain suitable habitat for Carolina heelsplitter. Although there are streams on the site, the site itself is not located in the Slate Belt region of the Piedmont. Accordingly, future development of the site is not expected to impact this species.

Michaux's Sumac
BIOLOGICAL OPINION: NO EFFECT

Michaux's sumac is a densely hairy, deciduous shrub that generally grows between one to three feet in height. The leaves are compound, alternate, and divided into rows of 9-13 stalkless leaflets. Leaflets are winged at the base with toothed edges. The flowers are greenish-yellow to white. Michaux's sumac blooms from May to June. Fruiting (drupes) occurs August to October. The habitat of Michaux's sumac is open upland woods, along forest edges, roadsides, powerline easements, and clearings.

The site contains areas that may provide suitable habitat for the Michaux's sumac along the edges of the open fields and within the ruderal communities. S&ME conducted a field survey (May 5) during the flowering season to determine the presence or absence of the species. Michaux's sumac was not observed on the site. Accordingly, future development of the site 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 13 years of 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. Mr. Chris Handley holds a B.S. degree in Forest Resource Management and a Master's degree in Forest Resources (GIS Emphasis) from Clemson University.

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.

South Carolina Department of Natural Resources. 2012. Rare, Threatened, and Endangered Species Inventory, Species Found in Kershaw County - http://www.dnr.sc.gov/species/index.html.

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

USFWS. 2013. South Carolina List of Endangered, Threatened & Candidate Species. http://www.fws.gov/charleston/EndangeredSpecies_County.html.

U.S. Department of Agriculture – National Resources Conservation Service Web Soil Survey. 2014. http://websoilsurvey.nrcs.usda.gov/app/.

7.0 SUMMARY AND CONCLUSIONS

Based on the literature review, habitat assessment, and pedestrian field review of the site, it is our opinion that the site does not provide suitable habitat for the federally listed species for Kershaw County, except for Michaux's sumac. The pedestrian field review did not reveal the presence of federally listed protected species on the site. In summary, the proposed development of the site will have "no effect" on these species.

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

8.0 CLOSING

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

Sincerely,

S&ME, Inc.

Chris Handley
Biologist
chandley@smeinc.com

Chris Daves, P.W.S.
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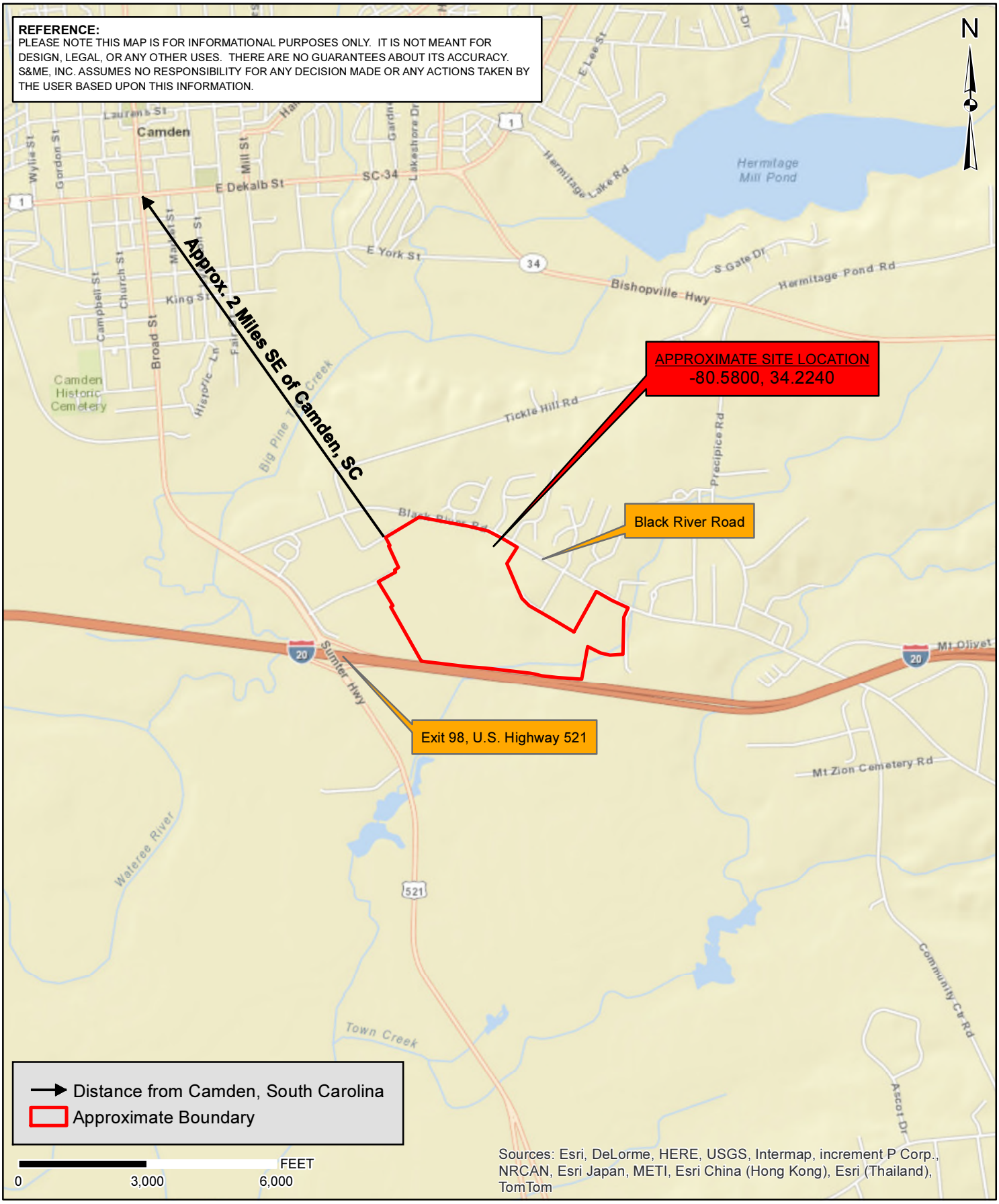
Appendix A
Figures
Site Photographs

Appendix B
County Species Lists from USFWS and SCDNR

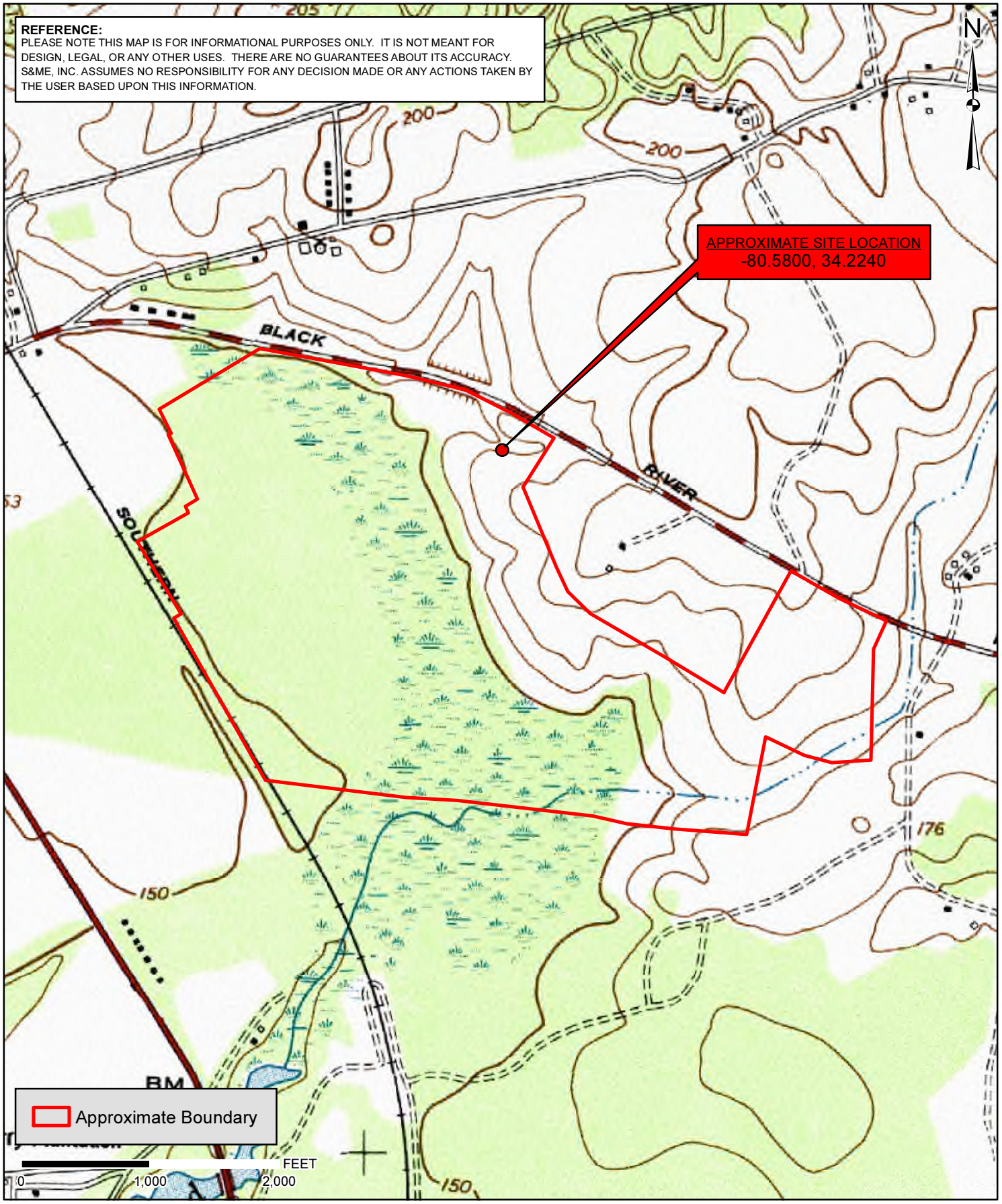
APPENDIX A

Figures

Site Photographs



SCALE: 1 IN = 3,000 feet	S&ME	**Site Vicinity Map**	FIGURE NO.
CHECKED BY: CD		Steeplechase Industrial Park +/- 277.91 Acres	1
DRAWN BY: CCH		Camden, Kershaw County, South Carolina	
DATE: 5/7/2014	PROJECT NO: 4261-14-036	SOURCE: *World Street Map*	



SCALE: 1 IN = 1,000 feet	S&ME	**Site Topographic Map**	FIGURE NO.
CHECKED BY: CD		Steeplechase Industrial Park +/- 277.91 Acres	2
DRAWN BY: CCH		Camden, Kershaw County, South Carolina	
DATE: 5/7/2014	PROJECT NO: 4261-14-036	SOURCE: *USGS 7.5 Minute Topo Quad Camden South 1953*	

REFERENCE:
PLEASE NOTE THIS MAP IS FOR INFORMATIONAL PURPOSES ONLY. IT IS NOT MEANT FOR DESIGN, LEGAL, OR ANY OTHER USES. THERE ARE NO GUARANTEES ABOUT ITS ACCURACY. S&ME, INC. ASSUMES NO RESPONSIBILITY FOR ANY DECISION MADE OR ANY ACTIONS TAKEN BY THE USER BASED UPON THIS INFORMATION.

Source: ESRI Resources - World Imagery 2010 & World Transportation
Applicant: Kershaw County

Feet
0 700 1,400 2,800

SCALE:	1 inch = 700 feet
CHECKED BY:	CD
DRAWN BY:	CH
DATE:	5/12/2014

S&ME

Site Aerial Map
Steeplechase IP Site +/- 277.91 Acres
Camden, Kershaw County, South Carolina

S&ME PROJECT NO. 4261-14-036

FIGURE NO.
3

1 Open field on eastern portion of site.

2 Open field on central portion of site.

3 Open land on western portion of site. Area was cleared and graded approximately 5-6 years ago.

4 Ruderal community on southwestern portion of site near I-20.

S&ME	**Site Photographs** **Steeplechase Industrial Park** **Camden, Kershaw County, South Carolina**	S&ME Project 4261-14-036	
		Taken by: CD/CH	Date: March 11, April 17, 22-24, 30 & May 5, 2014

5 Ruderal community on northern portion of site at edge of field.

6 Ruderal community on eastern portion of site at edge of field.

7 Ruderal community on northeastern portion of site.

8 Pocket of winged sumac (*Rhus copallinum*) typical of ruderal communities on the site.

S&ME	**Site Photographs** **Steeplechase Industrial Park** **Camden, Kershaw County, South Carolina**	S&ME Project 4261-14-036	
		Taken by: CD/CH	Date: March 11, April 17, 22-24, 30 & May 5, 2014

9 Pine-mixed hardwood forest on western portion of site.

10 Forested wetland on central portion of site.

11 Herbaceous wetland on southwestern portion of site.

12 Perennial stream feature on central portion of site.

S&ME	**Site Photographs** **Steeplechase Industrial Park** **Camden, Kershaw County, South Carolina**	S&ME Project 4261-14-036	
		Taken by: CD/CH	Date: March 11, April 17, 22-24, 30 & May 5, 2014

APPENDIX B

County Species Lists from USFWS and SCDNR
For Kershaw County

South Carolina List of At-Risk, Candidate, Endangered, and Threatened Species - Kershaw County

*	Contact National Marine Fisheries Service (NMFS) for more information on this species
**	The U.S. Fish and Wildlife Service (FWS) and NMFS share jurisdiction of this species
ARS	At-Risk Species - Species that the FWS has been petitioned to list and for which a positive 90-day finding has been issued (listing may be warranted); information is provided only for conservation actions as no Federal protections currently exist.
BGEPA	Federally protected under the Bald and Golden Eagle Protection Act
C	FWS or NMFS has on file sufficient information on biological vulnerability and threat(s) to support proposals to list these species
CH	Critical Habitat
E	Federally Endangered
P or P - CH	Proposed for listing or critical habitat in the Federal Register
S/A	Federally protected due to similarity of appearance to a listed species
T	Federally Threatened

COUNTY	CATEGORY	COMMON NAME	SCIENTIFIC NAME	STATUS
Kershaw	Amphibian	None Found		
	Bird	Bald eagle	*Haliaeetus leucocephalus*	BGEPA
	Bird	Red-cockaded woodpecker	*Picoides borealis*	E
	Crustacean	Mimic crayfish	*Distocambarus carlsoni*	ARS
	Fish	American eel	*Anguilla rostrata*	ARS
	Fish	Atlantic Sturgeon*	*Acipenser oxyrinchus**	E
	Fish	Blueback herring	*Alosa aestivalis*	ARS
	Fish	Carolina pygmy sunfish	*Elassoma boehlkei*	ARS
	Fish	Robust redhorse	*Moxostoma robustum*	ARS
	Fish	Shortnose sturgeon*	*Acipenser brevirostrum**	E
	Insect	None Found		
	Mammal	None Found		
	Mollusk	Brook floater	*Alasmidonta varicosa*	ARS
	Mollusk	Carolina heelsplitter	*Lasmiigona decorata*	E, CH
	Plant	Georgia aster	*Symphyotrichum georgianum*	C
	Plant	Michaux's sumac	*Rhus michauxii*	E
	Plant	Wire-leaved dropseed	*Sporobolus teretifolius*	ARS
	Reptile	Southern hognose snake	*Heterdon simus*	ARS

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 as deemed necessary and may differ from earlier lists.

For a list of State endangered, threatened, and species of concern, please visit https://www.dnr.sc.gov/species/index.html.

Rare, Threatened, and Endangered Species and Communities Known to Occur in Kershaw County, South Carolina
February 10, 2012

Scientific Name	Common Name	USESA Designation	State Protection	Global Rank	State Rank
Vertebrate Animals					
Corynorhinus rafinesquii	Rafinesque's Big-eared Bat		SE-Endangered	G3G4	S2?
Elassoma boehlkei	Carolina Pygmy Sunfish		ST-Threatened	G2	S1
Etheostoma brevispinum	Carolina Fantail Darter			G4	SNR
Haliaeetus leucocephalus	Bald Eagle		SE-Endangered	G5	S2
Hyla andersonii	Pine Barrens Treefrog		ST-Threatened	G4	S2S3
Myotis austroriparius	Southeastern Bat			G3G4	S1
Picoides borealis	Red-cockaded Woodpecker	LE: Listed endangered	SE-Endangered	G3	S2
Puma concolor	Mountain Lion			G5	SH
Sciurus niger	Eastern Fox Squirrel			G5	S4
Semotilus lumbee	Sandhills Chub			G3	S2
Invertebrate Animals					
Elliptio congaraea	Carolina Slabshell			G3	S3
Lasmigona decorata	Carolina Heelsplitter	LE: Listed endangered	SE-Endangered	G1	S1
Animal Assemblage					
Waterbird Colony				GNR	SNR
Vascular Plants					
Anemone berlandieri	Southern Thimble-weed			G4?	S1
Anemone caroliniana	Carolina Anemone			G5	SH
Draba aprica	Open-ground Whitlow-grass			G3	S1
Isoetes piedmontana	Piedmont Quillwort			G3	S2
Kalmia cuneata	White-wicky			G3	S2
Litsea aestivalis	Pondspice			G3	S3
Minuartia uniflora	One-flower Stitchwort			G4	S3
Myriophyllum laxum	Piedmont Water-milfoil			G3	S2
Nestronia umbellula	Nestronia			G4	S3
Nolina georgiana	Georgia Beargrass			G3G5	S3
Portulaca umbraticola	Wing-podded Purslane			G5	S1
Quercus georgiana	Georgia Oak			G3	S1
Rhus michauxii	Michaux's Sumac	LE: Endangered		G2G3	SX

Scientific Name	Common Name	USESA Designation	State Protection	Global Rank	State Rank
Scirpus etuberculatus	Canby Bulrush			G3G4	SNR
Sedum pusillum	Granite Rock Stonecrop			G3	S2
Sporobolus teretifolius	Wire-leaved Dropseed			G2	S1
Syngonanthus flavidulus	Yellow Pipewort			G5	S2
Tofieldia glabra	White False-asphodel			G4	S1S2
Trillium lancifolium	Narrow-leaved Trillium			G3	S1
Viola pubescens var. leiocarpon	Yellow Violet			G5T5	S2
Communities					
Atlantic white cedar swamp				G2	S2
Bottomland hardwoods				G5	S4
Non-alluvial swamp forest				G5	S4S5
Pine - scrub oak sandhill				G4	S4
Pond cypress pond				G4	S4
Seepage pocosin				G3	S1S2
Xeric sandhill scrub				G5	S3
Ecological					
Carolina bay				GNR	SNR
Granitic flatrock				G3	S2