



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

Governor's Hill Site – 210.46 Acres
674 Mt. Olivet Road
Camden, Kershaw County, South Carolina
S&ME Project No. 4261-14-035

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 Governor's Hill Site as an industrial/light industrial business 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 210.46-acre site is located at 674 Mt. Olivet Road approximately four miles southeast of downtown 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 secondary roads, forestland, and residential parcels. The site primarily consists of four habitat types:

- Planted Pine Stand
- Pine-Mixed Hardwood Forestland
- Road Corridors and Ruderal Communities
- Aquatic Features (Forested Wetlands and Streams)

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

Planted Pine Stand (Photograph 1)

A planted pine stand was observed on the northern portion of the site. Dominant overstory species included loblolly pine (*Pinus taeda*) approximately 15-20 years old. Midstory species included water oak (*Quercus nigra*), wax myrtle (*Morella cerifera*), and sweet-gum (*Liquidambar styraciflua*). The understory was sparsely vegetated with muscadine (*Vitis rotundifolia*), yellow jessamine (*Gelsemium sempervirens*), and Japanese honeysuckle (*Lonicera japonica*).

Pine-Mixed Hardwood Forestland (Photographs 2-3)

A majority of the site consists of a pine-mixed hardwood forestland community. Dominant overstory and midstory species included loblolly pine, water oak, southern red oak (*Q. falcata*), various hickories (*Carya* spp.), sweet-gum, red-maple (*Acer rubrum*), and black cherry (*Prunus serotina*). Understory species included muscadine, Japanese honeysuckle, common greenbrier (*Smilax rotundifolia*), bracken fern (*Pteridium aquilinum*), ebony spleenwort (*Asplenium platyneuron*), and spotted wintergreen (*Chimaphila maculata*).

Road Corridors and Ruderal Communities (Photographs 5-8)

Several unimproved roads traverse the site including an approximate 100-foot wide main entrance road. Ruderal communities, dominated by plants growing where the natural vegetation cover has been disturbed by man, were observed along these road corridors. Dominant species observed included saplings of sweet-gum, red maple, and water oak as well as shrubby and weedy species such as winged sumac (*Rhus copallinum*), smooth sumac (*R. glabra*), blackberry (*Rubus* spp.), dog fennel (*Eupatorium capillifolium*), pokeweed (*Phytolacca americana*), and various other grasses and forbs.

Aquatic Features/Forested Wetlands and Streams (Photographs 9-12)

Forested wetlands were observed on the southern and central portions of the site. The overstory and midstory of the wetlands consisted of loblolly pine, water oak, sweet-gum, red maple, and Chinese privet (*Ligustrum sinense*). Ground cover included netted chainfern (*Woodwardia areolata*), muscadine, common greenbrier, Japanese honeysuckle, and southern lady fern (*Athyrium asplenioides*). Five perennial streams, one seasonal stream, and four ditch features were also observed on the site. Stream widths varied from two to eight 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 19, April 2, 3, and 16, 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 <i>Haliaeetus leucocephalus</i>	BGEPA	Coastlines, rivers, large lakes which provide adequate feeding grounds.	No
Red-Cockaded Woodpecker <i>Picoides borealis</i>	E	Open pine stands with minimum age of 60 years; nests in live pines with red-heart disease.	No
Atlantic Sturgeon <i>Acipenser oxyrinchus</i>	E	Shallow coastal waters and estuaries; spawns in freshwater areas.	No
Shortnose Sturgeon <i>Acipenser brevirostrum</i>	E	Brackish water of large rivers & estuaries; spawns in freshwater areas.	No
Carolina Heelsplitter <i>Lasmigona decorata</i>	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 <i>Rhus michauxii</i>	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. Although several large ponds are located in the vicinity of the site, there are no coastlines, rivers, or large lakes on or adjacent to the site considered suitable habitat for the bald eagle. 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 various roads 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 Rare 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.



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Biologist
chandley@smeinc.com



Chris Daves, P.W.S.
Biologist
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Appendix A

Figures
Site Photographs

Appendix B

County Species Lists from USFWS and SCDNR

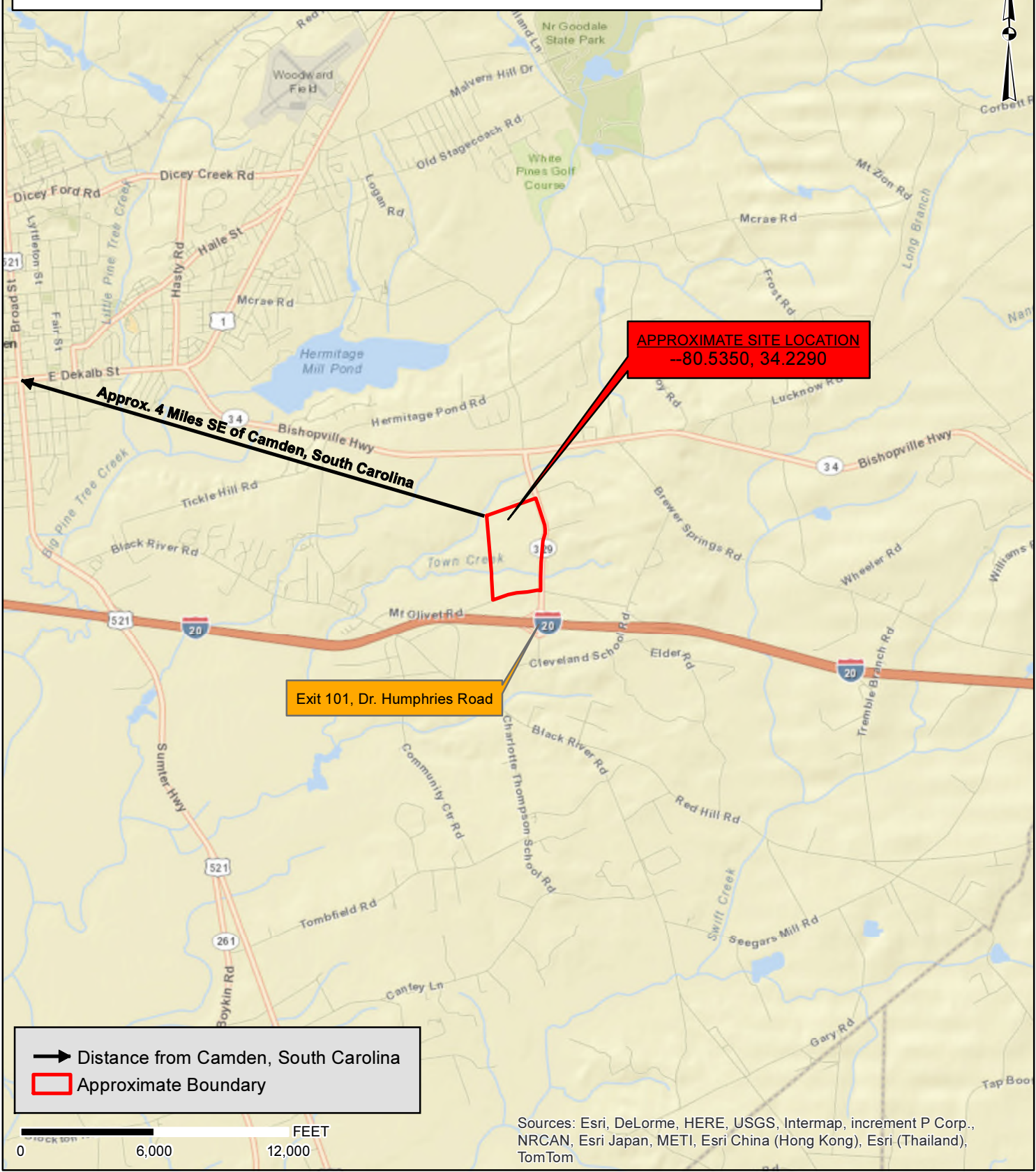
APPENDIX A

Figures

Site Photographs

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.



→ Distance from Camden, South Carolina
□ Approximate Boundary

Sources: Esri, DeLorme, HERE, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom

SCALE:	1 IN = 6,000 feet
CHECKED BY:	CD
DRAWN BY:	CCH
DATE:	4/21/2014



PROJECT NO: 4261-14-035

Site Vicinity Map
Governor's Hill Site +/- 210.46 Acres
Camden, Kershaw County, South Carolina

SOURCE: *World Street Map*

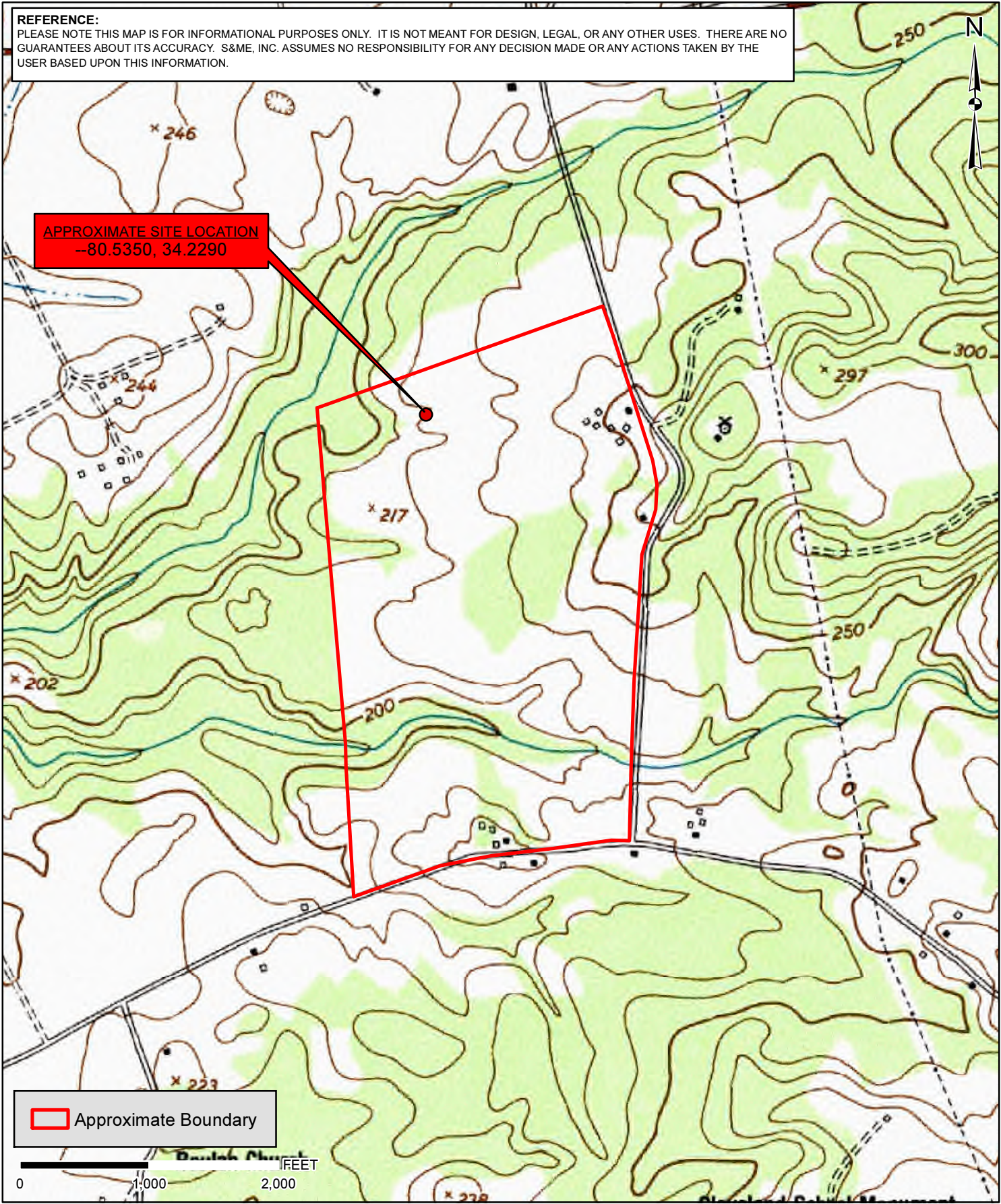
FIGURE NO.
1


REFERENCE:

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APPROXIMATE SITE LOCATION
-80.5350, 34.2290



 **Approximate Boundary**

SCALE: 1 IN = 1,000 feet
CHECKED BY: CD
DRAWN BY: CCH
DATE: 4/21/2014



PROJECT NO: 4261-14-035

Site Topographic Map
Governor's Hill Site +/- 210.46 Acres
Camden, Kershaw County, South Carolina
SOURCE: USGS 7.5 Minute Topo Quad Camden South 1953

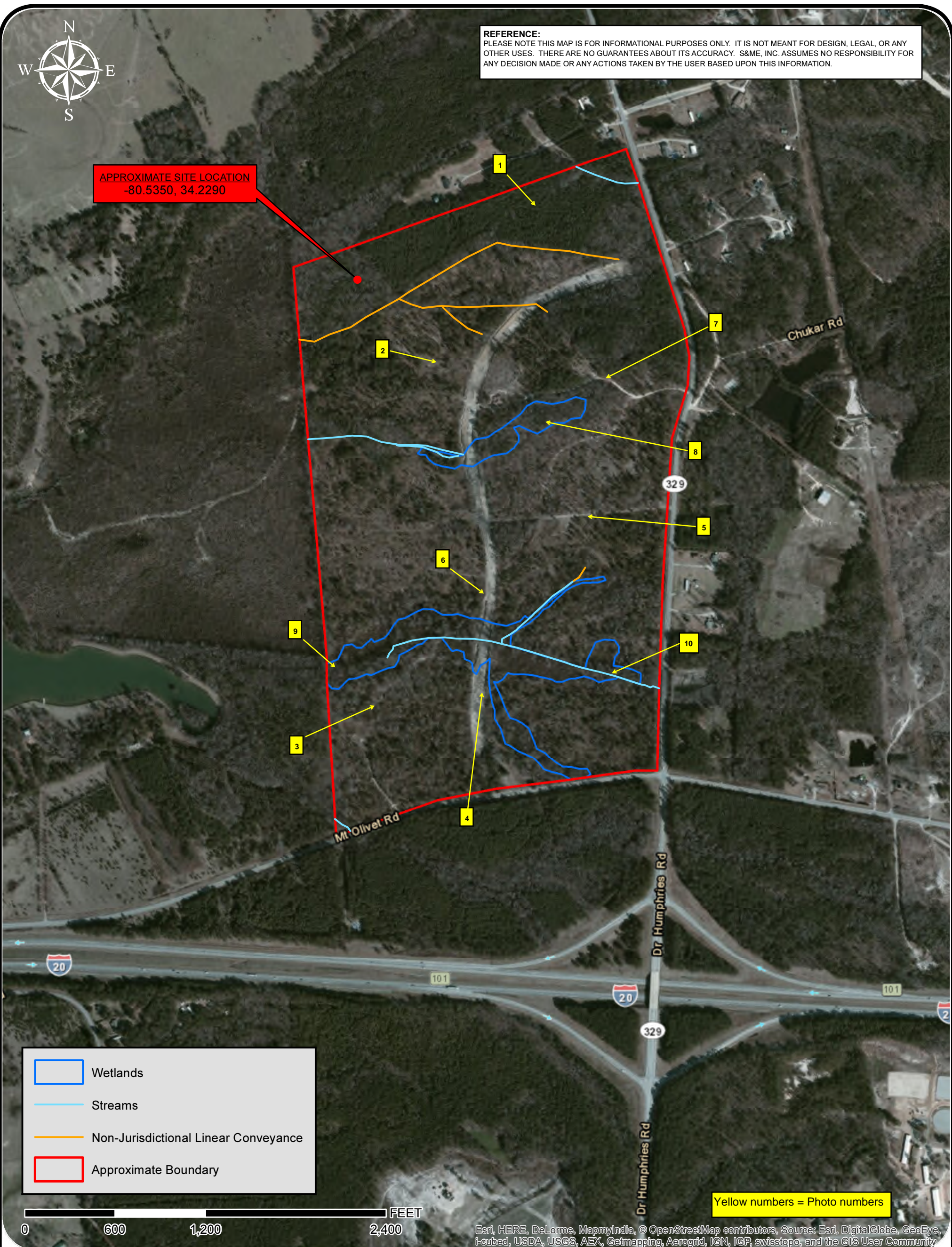
FIGURE NO.
2



REFERENCE:

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APPROXIMATE SITE LOCATION
-80.5350, 34.2290



Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors, Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

SCALE: 1 inch = 600 feet

DATE: 5/12/2014

DRAWN BY: CCH

PROJECT NO:
4261-14-035



Site Aerial Map
Governor's Hill Site +/- 210.46 Acres
Camden, Kershaw County, South Carolina

Source: World Imagery 2010 and World Transportation

FIGURE
NO.

3



1 Planted pine stand on northeastern portion of site.



2 Pine-mixed hardwood forestland (secondary growth) on north-central portion of site.



3 Pine-mixed hardwood forestland on southwestern portion of site.



4 Road corridor and ruderal community along its edges. Southern portion of site.





5 Road corridor and ruderal community along its edges. Eastern portion of site.



6 Road corridor and ruderal community along its edges. Central portion of site.



7 Winged sumac (*Rhus copallinum*) commonly observed along roads on the site. Also, smooth sumac (*R. glabra*) was commonly observed in similar areas.



8 Forested wetland on northern portion of site.



9

Forested wetland on southern portion of site.



10

Perennial stream on southern portion of site.



Site Photographs
Governor's Hill Site
Camden, Kershaw County, South Carolina

S&ME Project 4261-14-035

Taken by: CD/CH

Date: March 19, April 2,3,16, and 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	<i>Haliaeetus leucocephalus</i>	BGEPA
	Bird	Red-cockaded woodpecker	<i>Picoides borealis</i>	E
	Crustacean	Mimic crayfish	<i>Distocambarus carlsoni</i>	ARS
	Fish	American eel	<i>Anguilla rostrata</i>	ARS
	Fish	Atlantic Sturgeon*	<i>Acipenser oxyrinchus*</i>	E
	Fish	Blueback herring	<i>Alosa aestivalis</i>	ARS
	Fish	Carolina pygmy sunfish	<i>Elassoma boehlkei</i>	ARS
	Fish	Robust redhorse	<i>Moxostoma robustum</i>	ARS
	Fish	Shortnose sturgeon*	<i>Acipenser brevirostrum*</i>	E
	Insect	None Found		
	Mammal	None Found		
	Mollusk	Brook floater	<i>Alasmidonta varicosa</i>	ARS
	Mollusk	Carolina heelsplitter	<i>Lasmiigona decorata</i>	E, CH
	Plant	Georgia aster	<i>Symphotrichum georgianum</i>	C
	Plant	Michaux's sumac	<i>Rhus michauxii</i>	E
	Plant	Wire-leaved dropseed	<i>Sporobolus teretifolius</i>	ARS
	Reptile	Southern hognose snake	<i>Heterdon simus</i>	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
<u>Vertebrate Animals</u>					
<i>Corynorhinus rafinesquii</i>	Rafinesque's Big-eared Bat		SE-Endangered	G3G4	S2?
<i>Elassoma boehlei</i>	Carolina Pygmy Sunfish		ST-Threatened	G2	S1
<i>Etheostoma brevispinum</i>	Carolina Fantail Darter			G4	SNR
<i>Haliaeetus leucocephalus</i>	Bald Eagle		SE-Endangered	G5	S2
<i>Hyla andersonii</i>	Pine Barrens Treefrog		ST-Threatened	G4	S2S3
<i>Myotis austroriparius</i>	Southeastern Bat			G3G4	S1
<i>Picoides borealis</i>	Red-cockaded Woodpecker	LE: Listed endangered	SE-Endangered	G3	S2
<i>Puma concolor</i>	Mountain Lion			G5	SH
<i>Sciurus niger</i>	Eastern Fox Squirrel			G5	S4
<i>Semotilus lumbee</i>	Sandhills Chub			G3	S2
<u>Invertebrate Animals</u>					
<i>Elliptio congareea</i>	Carolina Slabshell			G3	S3
<i>Lasmigona decorata</i>	Carolina Heelsplitter	LE: Listed endangered	SE-Endangered	G1	S1
<u>Animal Assemblage</u>					
Waterbird Colony					
Vascular Plants					
<i>Anemone berlandieri</i>	Southern Thimble-weed			G4?	S1
<i>Anemone caroliniana</i>	Carolina Anemone			G5	SH
<i>Draba aprica</i>	Open-ground Whitlow-grass			G3	S1
<i>Isoetes piedmontana</i>	Piedmont Quillwort			G3	S2
<i>Kalmia cuneata</i>	White-wicky			G3	S2
<i>Litsea aestivalis</i>	Pondspice			G3	S3
<i>Minuartia uniflora</i>	One-flower Stitchwort			G4	S3
<i>Myriophyllum laxum</i>	Piedmont Water-milfoil			G3	S2
<i>Nestronia umbellula</i>	Nestronia			G4	S3
<i>Nolina georgiana</i>	Georgia Beargrass			G3G5	S3
<i>Portulaca umbraticola</i>	Wing-podded Purslane			G5	S1
<i>Quercus georgiana</i>	Georgia Oak			G3	S1
<i>Rhus michauxii</i>	Michaux's Sumac	LE: Endangered		G2G3	SX

Scientific Name	Common Name	USES Designation	State Protection	Global Rank	State Rank
<i>Scirpus etuberculatus</i>	Canby Bulrush			G3G4	SNR
<i>Sedum pusillum</i>	Granite Rock Stonecrop			G3	S2
<i>Sporobolus teretifolius</i>	Wire-leaved Dropseed			G2	S1
<i>Syngonanthus flavidulus</i>	Yellow Pipewort			G5	S2
<i>Tofieldia glabra</i>	White False-asphodel			G4	S1S2
<i>Trillium lancifolium</i>	Narrow-leaved Trillium			G3	S1
<i>Viola pubescens</i> var. <i>leiocarpon</i>	Yellow Violet			G5T5	S2
<u>Communities</u>					
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
<u>Ecological</u>					
Carolina bay				GNR	SNR
Granitic flatrock				G3	S2