



PROTECTED SPECIES ASSESSMENT

**LEXINGTON QUARRY PROJECT
LEESVILLE, SOUTH CAROLINA**

SEPTEMBER 2015

PREPARED FOR

VULCAN MATERIALS COMPANY

A handwritten signature in black ink that reads "Heather H. Smith". The signature is written in a cursive, flowing style.

Heather H. Smith
Environmental Scientist

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1.0 INTRODUCTION

Vulcan Construction Materials Inc. (Vulcan) is considering development of approximately 542 acres, and is interested in evaluating the potential for presence of protected species on or near the site. SynTerra was retained by Vulcan to conduct preliminary assessment of protected species for the project site as multiple parcels of property were evaluated for acquisition. The project was initiated in 2012, with the most recent property acquisition in 2015.

This report provides an assessment of protected species that could potentially occur within the project area.

1.1 Site Description

The Site is located approximately three miles to the northwest of Leesville, South Carolina. **Figure 1** shows the Site which can be reached by turning North off US Highway 1 onto Old Field Road and continuing north on Stutman Road for approximately one mile to a tee into Windmill Road. Portions of the site show evidence of past residential and agricultural use and portions of the site were logged within the past three years. Properties near the site are generally wooded and undeveloped, with scattered farms and residences to the south and southeast. **Figure 2** is a United States Geological Service (USGS) Map with elevation contours and shows the property lines of the tract.

The project site is located within the Outer Piedmont Ecoregion (**Figure 3**). Soils on the Site were mapped by the Natural Resource Conservation Service (NRCS) and obtained from the Soil Survey of Lexington County, South Carolina (**Figure 4**). The Site is covered mainly by four soil types which could be subdivided further based on the surface slope. Appling sandy loam covers approximately 80 percent of the Site, with the remaining 20 percent comprised of Fuquay loamy, Troup sand, and Chenneby (a silty clay loam). Soils at the project site are predominantly sandy loam (**Figure 4**).

The site contains approximately 40 isolated wetlands and approximately 13,223 linear feet linear foot of streams.

1.2 Project Description

Vulcan is in the process of obtaining a mine permit for development of a quarry within a portion of the property. The active quarry will be developed in two phases, with phase 1 consisting of approximately 42 acres of active quarry and phase 2 consisting of 89 acres. The total affected area will consist of approximately 287 acres, with an additional 187 acres in buffer. A threatened and endangered species assessment is

necessary to satisfy permitting requirements prior to site development for the project area. .

2.0 ASSESSMENT METHOD

2.1 Information Review

To evaluate the likelihood of protected species occurring within the project site, both animal and plant species were assessed. Since the distribution of a species is based on available habitat, a reasonable means of determining which species to include on the potential list of species for the project site is to include species listed for the county in which the property occurs *i.e.*, Lexington County).

A list of all *potential* species that could occur at the project site was compiled and is presented in **Appendix A** of this report. The list Lexington County state and federal listings of animals and plants protected by the provisions of the Federal Endangered Species Act of 1973. In addition, State protected animals which are subject to protection by the South Carolina Nongame and Endangered Species Conservation Act of 1967 were included as potential species.

Protected species typically require specific habitat conditions. Habitat requirements are well documented for protected species. A literature search was performed to evaluate habitat requirements of the potential protected species listed for the project site.

2.2 Site Reconnaissance

Biologists from SynTerra performed multiple site reconnaissance during the spring and summer of 2012 and again in the spring and summer of 2015. N Site visits were performed during both the initial site due diligence assessments and wetland stream assessment activities for the site. Wetland and stream evaluations were documented and submitted to the US Army Corps of Engineers.

3.0 RESULTS

3.1 Protected Species

A review of the United States Fish and Wildlife Services (US FWS) Endangered Species List for Lexington County revealed that only four federal protected animal species and one federal protected plant species might potentially occur at the project site, based on their general distribution range. Only three state protected animal species are listed for Lexington County by the South Carolina Department of Natural Resources (**Table 1**).

Federal listed animal species include bald eagle (*Haliaeetus leucocephalus*), red-cockaded woodpecker (*Picoides borealis*), wood stork (*Mycteria americana*), and Carolina heelsplitter (*Lasmigona decorata*). Federally listed plant species include smooth coneflower (*Echinacea laevigata*). Additionally, South Carolina Department of Natural Resources (SC DNR) state protected animal species listed for Lexington County include Rafinesque's big-eared bat (*Corynorhinus rafinesquii*) (**Appendix A and Table 1**). South Carolina's protected plant species list for Lexington County (**Appendix A and Table 1**) includes the Federally listed plant species listed above.

Although bald eagle (*Haliaeetus leucocephalus*) is no longer on the Federal endangered species list, the species is listed as a "recovery" species and remains federally protected by the Bald and Golden Eagle Protection Act, Migratory Bird Treaty Act, and is also protected by the State of South Carolina and is ranked as threatened. Red-cockaded woodpecker has Federal and State protection and is listed as "endangered" (**Table 1**).

The wood stork (*Mycteria americana*) is federally listed as "threatened". Rafinesque's Big-eared bat (*Corynorhinus rafinesquii*) is state listed as a "threatened" species. Carolina heelsplitter (*Lasmigona decorata*) and smooth coneflower (*Echinacea laevigata*) are federally listed as "endangered" species.

Table 2 summarizes habitat requirements for the potentially listed species.

3.2 Protected Species Habitat Requirements

The following sections and **Table 2** provide a summary of the habitat requirements for each protected species identified in **Table 1** for Lexington County.

3.2.1 Bald Eagle

Bald eagles require large, fresh, brackish or marine open waters for foraging (**Table 2**). Bald Eagles require large trees with an open limb structure for nesting. Nesting habitats usually have limited disturbance when selected. Prime habitat has shallow, slow moving water with abundant fish and prey species.

3.2.2 Red-cockaded Woodpecker

Red-cockaded woodpecker nest in mature pine with low understory vegetation and forage in pine and pine hardwood stands greater than 30 years old. The Red-cockaded woodpecker prefers longleaf pine for nesting (**Table 2**).

3.2.3 Wood Stork

Wood storks prefer cypress swamps or palustrine forested wetlands with trees in standing water for nesting. Wood stork nests are usually large, up to 4 feet in diameter, and built in the upper branches of tall black gum or cypress trees. They feed in shallow, fresh water marshes, tidal creeks, or flooded tidal pools. Their feeding technique requires areas with flooding alternating with dryer periods to concentrate prey species during receding water levels (**Table 2**).

3.2.4 Rafinesque's Big-eared Bat

Rafinesque's big-eared bats characteristically roost in dilapidated buildings or tree cavities near water (**Table 2**). Some coastal plain and sandhills populations use bridges, old bunkers, and tunnels for roosting. Roosting and foraging habitats include black gum stands, bald cypress swamp forests, and old growth hardwood or mixed bottomlands.

3.2.5 Carolina Heelsplitter

The Carolina heelsplitter has a fragmented, relict distribution in South Carolina. Carolina Heelsplitter is found in cool, clean, shallow, heavily shaded streams of moderate gradient. Stable streambanks and channels, with pool, riffle and run sequences, little or no fine sediment, and periodic natural flooding, appear to be required for the Carolina Heelsplitter. In South Carolina, there are four small surviving populations—one each in the Pee Dee and Catawba River systems and two in the Savannah River system. The population in the Pee Dee River system occurs in a relatively short reach of the Lynches River in Chesterfield, Lancaster, and Kershaw Counties and extends into Flat Creek, a tributary to the Lynches River in Lancaster County. In the Catawba River system, the species survives only in a short reach of Gills Creek in Lancaster County. In the Savannah River system, one population is found in Turkey Creek in Edgefield and McCormick Counties, and two of its tributaries. Critical habitat identifies specific areas that are essential to the conservation of a listed species and areas that may require special management consideration or protection. In 2002, critical habitat was designated for the Carolina heelsplitter (**Table 2**).

3.2.6 Smooth Coneflower

Smooth coneflower is typically found in open woods, cedar barrens, roadsides, clear cuts, dry limestone bluffs and power line rights-of-way. Smooth

coneflower prefers abundant sunlight and little competition from other plant species (**Table 2**).

A review of historical and current aerial photos and site descriptions publically available for the site indicated that suitable habitat for the listed species was likely not present within the project area, or available in limited or fragmented capacity.

3.3 Site Habitat Evaluation

Multiple site visits were conducted on the property during spring and summer 2012 and again in 2015. Additionally, aerial photography was reviewed as part of the habitat evaluation.

3.3.1 Bald Eagle

The streams located within the project area would not provide suitable habitat for the Bald Eagle. Bald eagles require large, open waters for feeding (**Table 2**). The nearest large waterbody which would provide quality habitat for the Bald Eagle is Lake Murray.

3.3.2 Red-cockaded Woodpecker

Based on the site visit and aerial photo review, suitable habitat was not present for red-cockaded woodpecker. Red-cockaded woodpecker nest and forage in mature pines, greater than 30 years old. Large portions of the project area have been logged by the previous land owner. The forested portions of the property consist of primarily mixed hardwoods and loblolly pine stands and do not provide suitable habitat for the red-cockaded woodpecker.

3.3.3 Wood Stork

Wood storks prefer black gum (*Nyssa biflora*) or cypress (*Taxodium distichum*) trees that are in standing water for nesting. Standing water deters mammalian predators and is an essential element of wood stork foraging and nesting habitat (**Table 2**). Their feeding technique requires areas with flooding alternating with dryer periods to concentrate prey species during receding water levels. Approximately 3.5 acres of potentially jurisdictional wetlands are located within the project area. The wetlands observed within the project area do not provide the preferred habitat for the wood stork. Additionally, the wood stork was not observed in the project area.

3.3.4 Rafinesque's Big-eared Bat

Rafinesque's big-eared bat characteristically roost in dilapidated buildings or tree cavities near water. Trees with cavities which may support the roost of Rafinesque's big-eared bats were not observed within the project area. No bats or bat guano (droppings) were observed within the site. There are two building

structures still standing on the property. One large barn structure is located on the former Wild Rose Farm portion of the site. Additionally, a largely standing house in ruinous condition is located within the east-central portion of the site, facing Windmill Road. Rafinesque's big-eared bats were not observed within the project area during site visits.

3.3.5 Carolina Heelsplitter

The Carolina heelsplitter has a fragmented, relict distribution in South Carolina. Carolina Heelsplitter is found in cool, clean, shallow, heavily shaded streams of moderate gradient. Stable streambanks and channels, with pool, riffle and run sequences, little or no fine sediment, and periodic natural flooding, appear to be required for the Carolina Heelsplitter. Stable, silt-free stream bottoms appear to be critical to the species. Typically stable areas occur where the stream banks are well-vegetated with trees and shrubs. In South Carolina, there are four small known surviving populations—one each in the Pee Dee and Catawba River systems and two in the Savannah River system. The population in the Pee Dee River system occurs in a relatively short reach of the Lynches River in Chesterfield, Lancaster, and Kershaw Counties and extends into Flat Creek, a tributary to the Lynches River in Lancaster County. In the Catawba River system, the species survives only in a short reach of Gills Creek in Lancaster County. In the Savannah River system, one population is found in Turkey Creek in Edgefield and McCormick Counties, and two of its tributaries.

The Carolina heelsplitter is not anticipated to inhabit the project area.

3.3.6 Smooth Coneflower

Smooth coneflower is typically found in open woods, cedar barrens, roadsides, clear cuts, dry limestone bluffs and power line rights-of-way. Smooth coneflower prefers abundant sunlight and little competition from other plant species. Preferential habitat for the smooth coneflower was not observed within the project area.

4.0 FINDINGS

Six protected species were listed for Lexington County. No reported occurrences of the protected species described in this report are expected to occur within the project area. An evaluation of habitat requirements for these species and an assessment of habitats within the project area indicate that the likelihood for suitable habitat to exist within the project area is low. Additionally, none of these species were observed during the multiple site reconnaissance. Based on a review of habitat requirements by the listed species compared to habitat present at the site, the likelihood of these species occurring at the project site is low. It is therefore anticipated that none of the federal and state protected species occur at the project site.

5.0 REFERENCES

USFWS Federal Endangered and Threatened Species List;

<http://www.fws.gov/angered/>. Website accessed September 2015. .

SCDNR Protected Species List; <http://www.dnr.sc.gov/species/> website accessed in September 2015.

SCDNR <http://www.dnr.sc.gov/cwcs/pdf/Redcockadedwoodpecker.pdf> website accessed in September 2015.

SCDNR <http://www.dnr.sc.gov/cwcs/pdf/Woodstork.pdf> website accessed in September 2015.

ACE Basin Species Gallery: Rafinesque's Big-eared Bat

<http://www.dnr.sc.gov/marine/mrri/acechar/specgal/rafbat.htm> Accessed online September 2015.

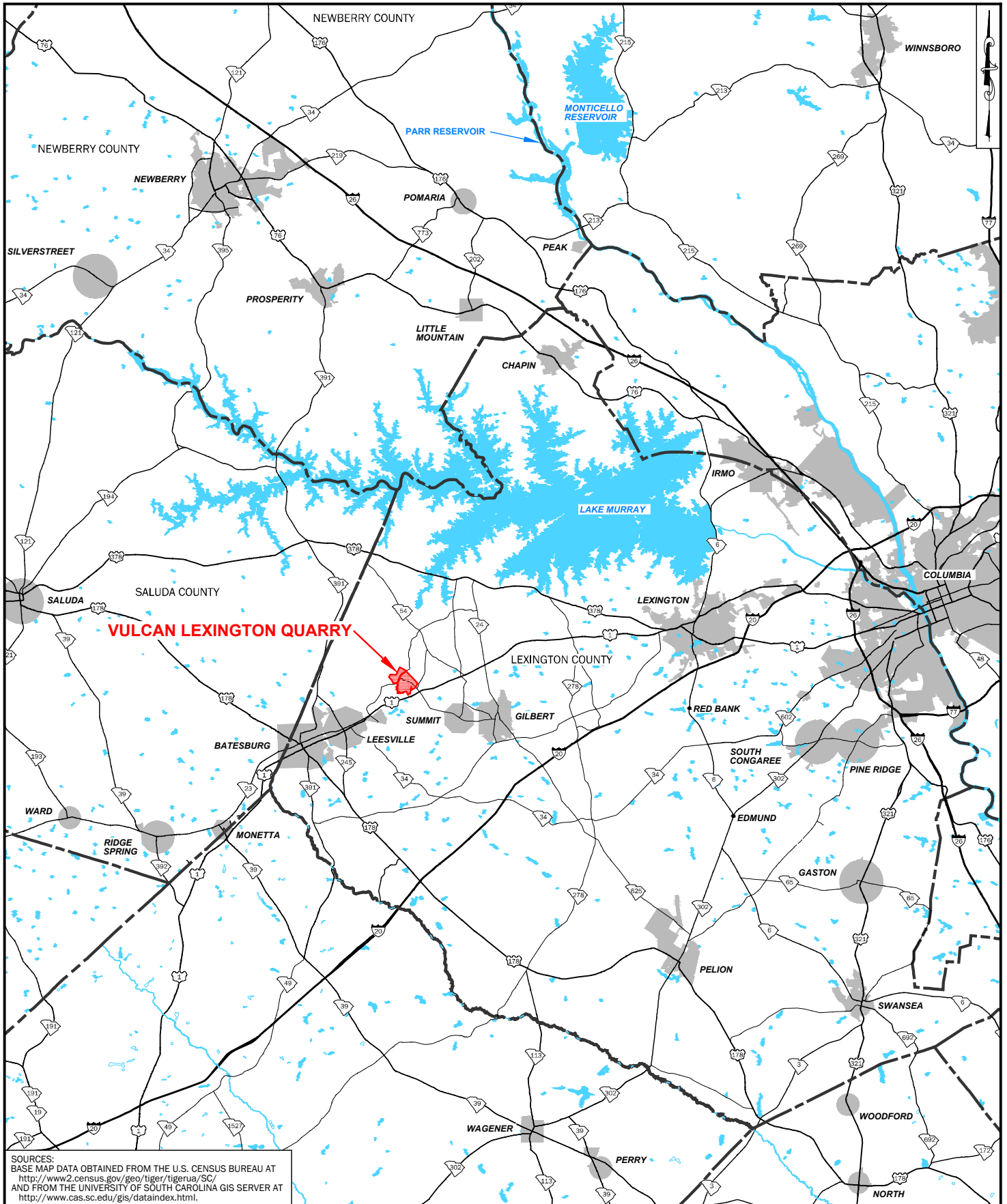
USFWS. Carolina heelsplitter (*Lasmigona decorata*) Species Profile.

<http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?scode=F02L> Accessed online September 2015.

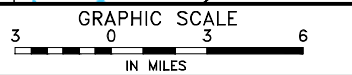
USFWS Smooth Coneflower Recovery Five Year Review.

http://ecos.fws.gov/docs/five_year_review/doc3778.pdf Accessed online September 2015.

Figures



SOURCES:
 BASE MAP DATA OBTAINED FROM THE U.S. CENSUS BUREAU AT
<http://www2.census.gov/geo/tiger/tigerua/SC/>
 AND FROM THE UNIVERSITY OF SOUTH CAROLINA GIS SERVER AT
<http://www.cas.sc.edu/gis/dataindex.html>.

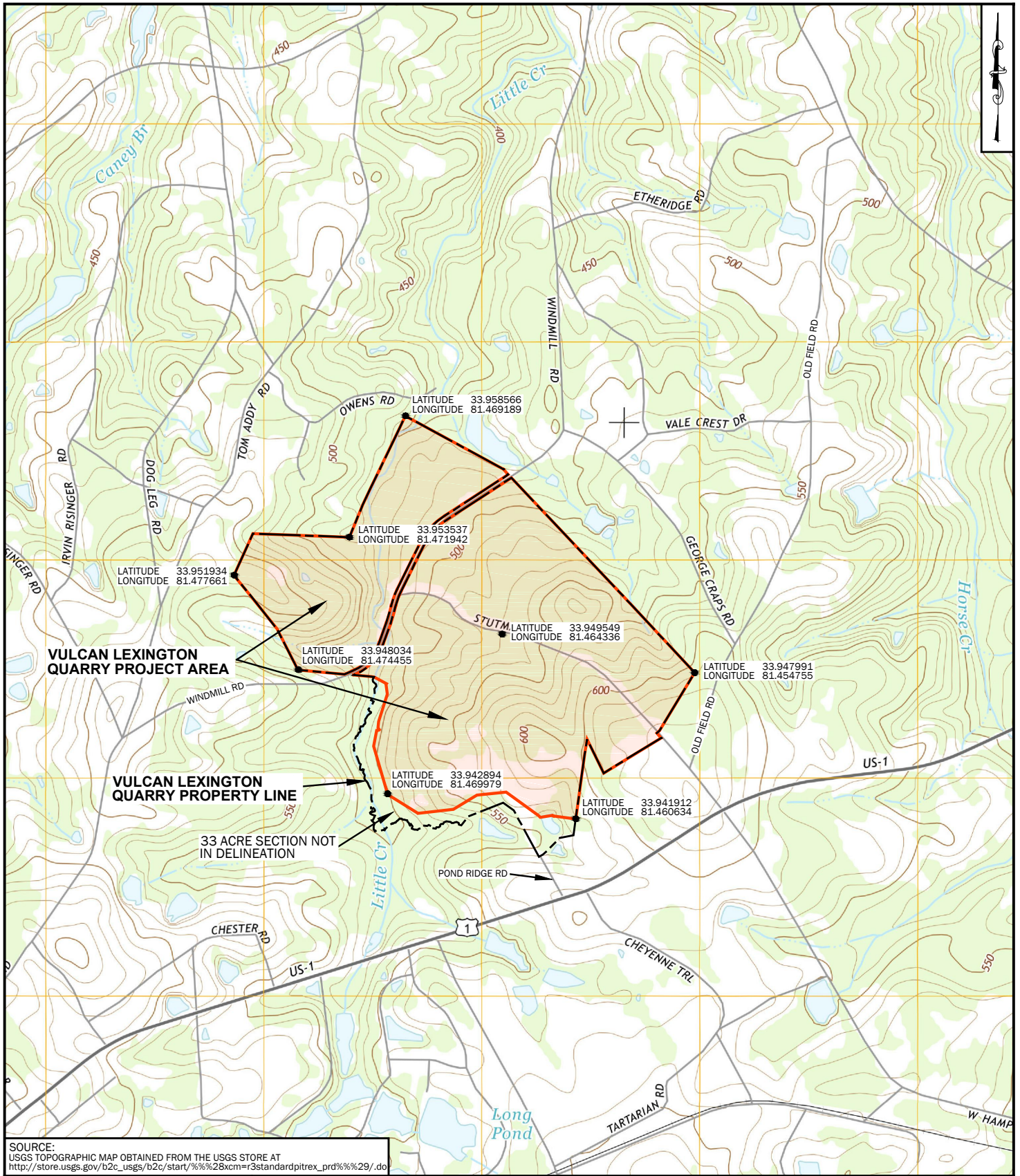


148 RIVER STREET, SUITE 220
 GREENVILLE, SOUTH CAROLINA 29601
 PHONE 864-421-9999
www.synterracorp.com

DRAWN BY: JOHN CHASTAIN DATE: 08/31/2015
 PROJECT MANAGER: M. BOWEN
 LAYOUT: FIG 1 (LOC MAP)

FIGURE 1
LOCATION MAP
VULCAN CONSTRUCTION MATERIALS, LLC.
LEXINGTON QUARRY
STUTMAN RD
LEESVILLE, SOUTH CAROLINA





SOURCE:
 USGS TOPOGRAPHIC MAP OBTAINED FROM THE USGS STORE AT
http://store.usgs.gov/b2c_usgs/b2c/start/%28cm=r3standardpitrex_prd%29.do

148 RIVER STREET, SUITE 220
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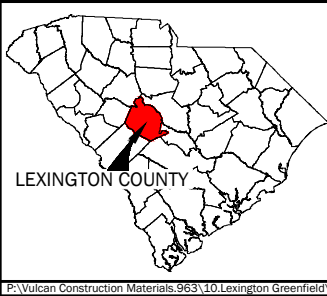
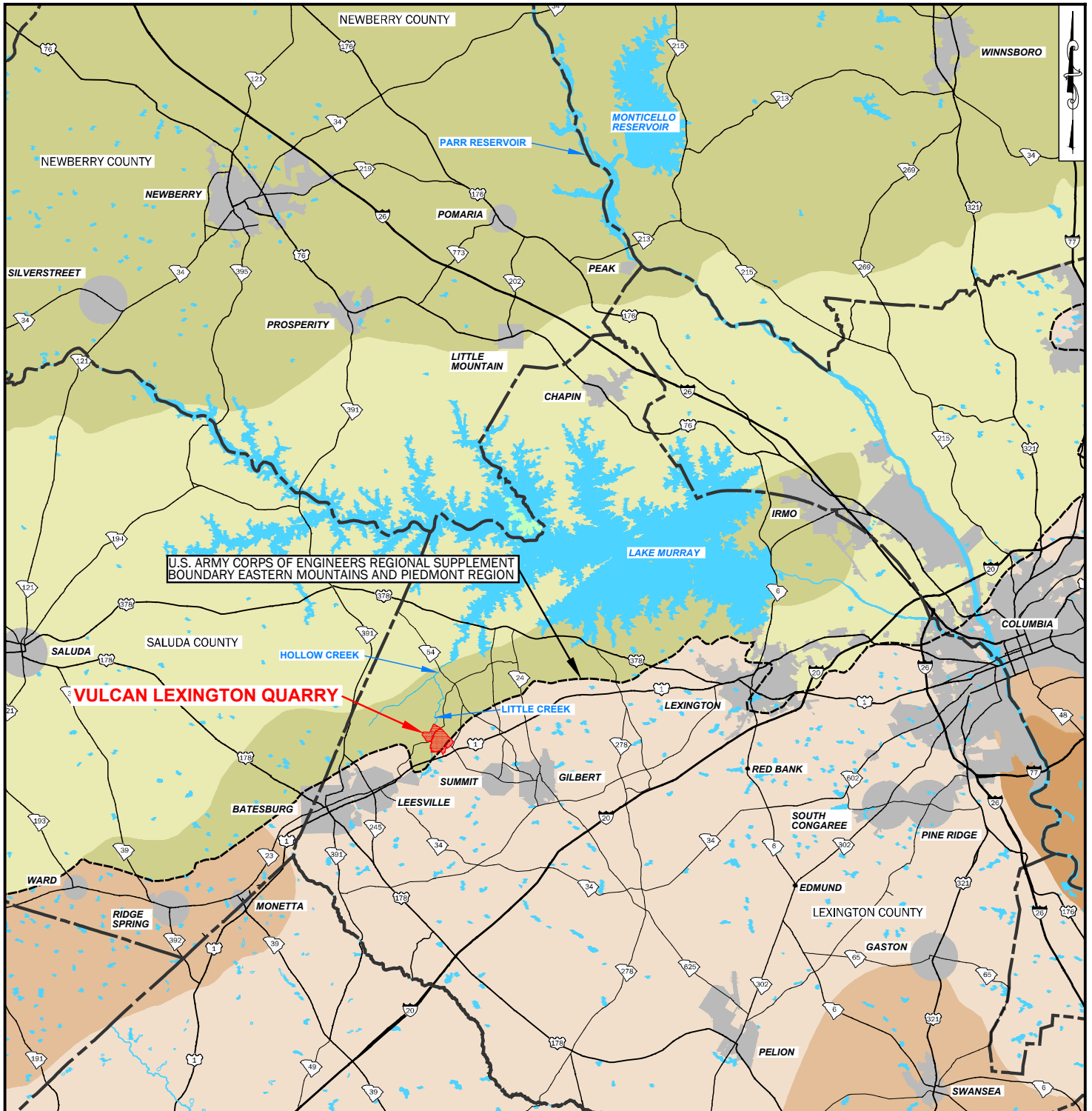


FIGURE 2
USGS TOPOGRAPHIC MAP
VULCAN CONSTRUCTION MATERIALS, LLC
LEXINGTON QUARRY
STUTMAN RD
BATESBURG-LEESVILLE, SOUTH CAROLINA
GILBERT SC QUADRANGLE

DRAWN BY: JOHN CHASTAIN
 PROJECT MANAGER: B. BOWEN
 LAYOUT: FIG 2 (USGS MAP)

DATE: 03/14/2015
 CONTOUR INTERVAL: 10 FEET
 MAP DATE: 2014

GRAPHIC SCALE
 1000 0 1000 2000
 IN FEET



U.S. ARMY CORPS OF ENGINEERS REGIONAL SUPPLEMENT BOUNDARY EASTERN MOUNTAINS AND PIEDMONT REGION

VULCAN LEXINGTON QUARRY

LEGEND

- U.S. ARMY CORPS OF ENGINEERS REGIONAL SUPPLEMENT BOUNDARY EASTERN MOUNTAINS AND PIEDMONT REGION
- SC ECOREGION 45b SOUTHERN OUTER PIEDMONT
- SC ECOREGION 45c CAROLINA SLATE BELT ATLANTIC AND GULF COASTAL PLAIN REGION
- SC ECOREGION 65c SAND HILLS
- SC ECOREGION 65i ATLANTIC SOUTHERN LOAM PLAINS
- SC ECOREGION 65p SOUTHERN FLOOD PLAINS AND LOW TERRACES

SOURCES:
 BASE MAP DATA OBTAINED FROM THE U.S. CENSUS BUREAU AT <http://www2.census.gov/geo/tiger/tigerua/SC/>
 AND FROM THE UNIVERSITY OF SOUTH CAROLINA GIS SERVER AT <http://www.cas.sc.edu/gis/dataindex.html>.



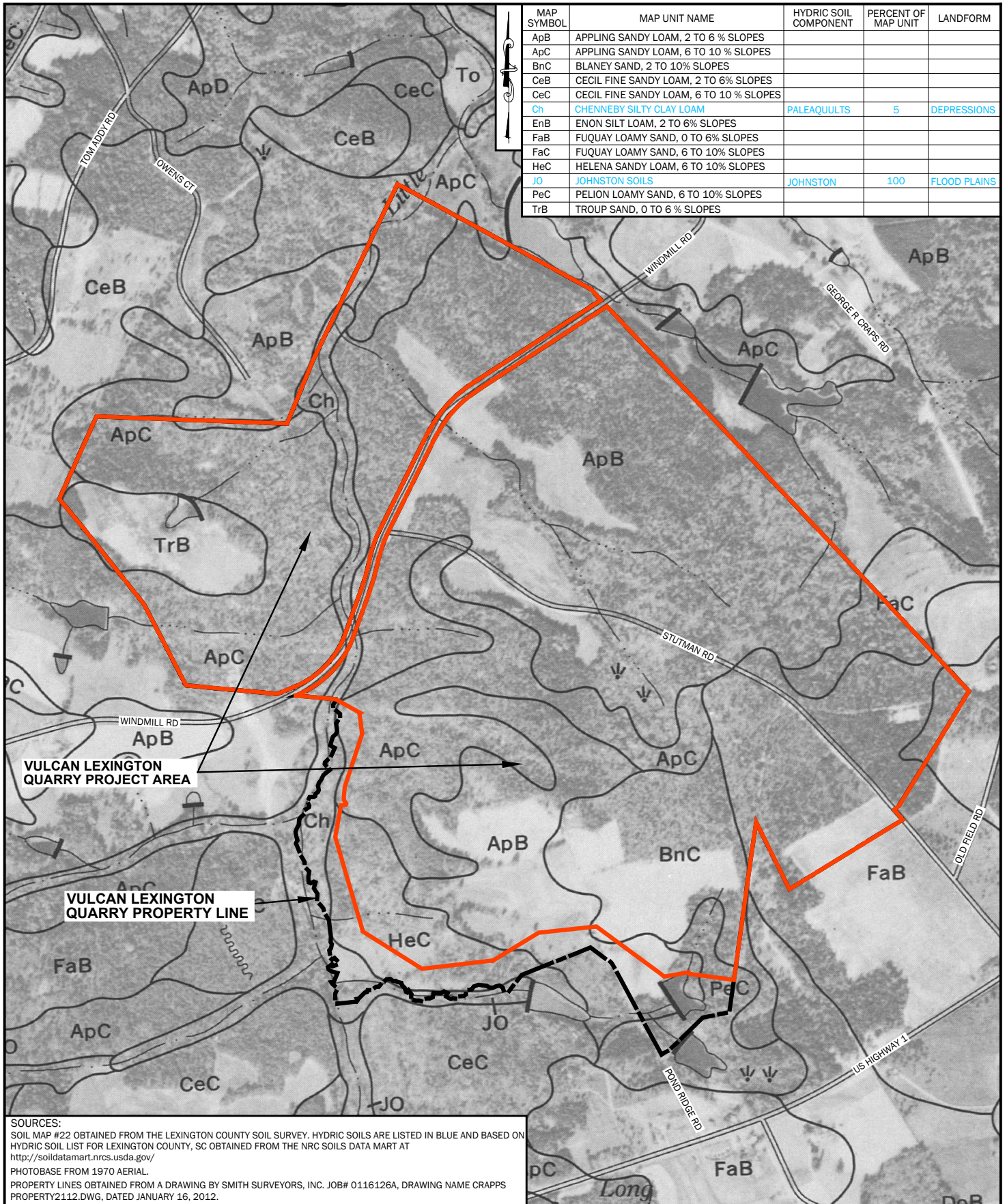
GRAPHIC SCALE
 3 0 3 6
 IN MILES

148 RIVER STREET, SUITE 220
 GREENVILLE, SOUTH CAROLINA 29601
 PHONE 864-421-9999
 www.synterracorp.com

DRAWN BY: JOHN CHASTAIN DATE: 03/11/2015
 PROJECT MANAGER: B. BOWEN
 LAYOUT: FIG 3 (ECO MAP)

09/18/2015 2:27 PM P:\Vulcan Construction Materials.963\10.Lexington Greenfield\TE Assessment\FIG 3 VULCAN LEXINGTON ECOREGION MAP.dwg

FIGURE 3
ECOREGION MAP
VULCAN CONSTRUCTION MATERIALS, LLC.
LEXINGTON QUARRY
STUTMAN RD
LEESVILLE, SOUTH CAROLINA



SOURCES:
 SOIL MAP #22 OBTAINED FROM THE LEXINGTON COUNTY SOIL SURVEY. HYDRIC SOILS ARE LISTED IN BLUE AND BASED ON HYDRIC SOIL LIST FOR LEXINGTON COUNTY, SC OBTAINED FROM THE NRC SOILS DATA MART AT <http://soildatamart.nrcs.usda.gov/>
 PHOTOBASE FROM 1970 AERIAL.
 PROPERTY LINES OBTAINED FROM A DRAWING BY SMITH SURVEYORS, INC. JOB# 0116126A, DRAWING NAME CRAPPS PROPERTY2112.DWG, DATED JANUARY 16, 2012.



GRAPHIC SCALE
 500 0 500 1000
 IN FEET
 148 RIVER STREET, SUITE 220
 GREENVILLE, SOUTH CAROLINA 29601
 PHONE 864-421-9999
 www.synterracorp.com
 DRAWN BY: JOHN CHASTAIN DATE: 08/30/2015
 PROJECT MANAGER: MARK TAYLOR
 LAYOUT: FIG 4 (SOILS MAP)
 09/18/2015 2:32 PM P:\Vulcan Construction Materials.963\10.Lexington Greenfield\TE Assessment\FIG 4 VULCAN LEXINGTON SOILS MAP.dwg

FIGURE 4
SOILS MAP
VULCAN CONSTRUCTION MATERIALS, LLC.
LEXINGTON QUARRY
STUTMAN RD
LEESVILLE, SOUTH CAROLINA

Tables

**TABLE 1. State and Federal Protected Species
 (Lexington County, Leesville South Carolina)**

Species*	Protection Status*	
	State	Federal
Bald eagle (<i>Haliaeetus leucocephalus</i>)	Threatened	Recovery
Red-cockaded woodpecker (<i>Picoides borealis</i>)	Endangered	Endangered
Wood stork (<i>Mycteria americana</i>)	--	Threatened
Rafinesque's Big-eared Bat (<i>Corynorhinus rafinesquii</i>)	Threatened	--
Carolina heelsplitter (<i>Lasmigona decorata</i>)	--	Endangered
Smooth coneflower (<i>Echinacea laevigata</i>)	-	Endangered

* USFWS Federal Endangered and Threatened Species List; <http://www.fws.gov/endangered/> website accessed in September 2015.

* SCDNR Protected Species List; <http://www.dnr.sc.gov/species/> website accessed in September 2015.

US Endangered Species Act (USES Act) Designation:

Rank Definition

LE: Endangered A species "in danger of extinction throughout all or a significant portion of its range."

LT: Threatened A species "likely to become endangered within the foreseeable future throughout all or a significant portion of its range."

State Protection Definitions:

Rank Definition

SE: Endangered Any species or subspecies of wildlife whose prospects of survival or recruitment within the State are in jeopardy or are likely within the foreseeable future to become so.

ST: Threatened A species that is likely to become endangered and in need of management.

**TABLE 2. State and Federal Protected Species Habitat Requirements
 (Lexington County, Leesville South Carolina)**

Species*	Habitat Requirements	Habitat Present	
		Yes	No
Bald eagle <i>Haliaeetus leucocephalus</i>	Rivers, large lakes, estuaries. ^a Open-topped trees near open water. ^b		X
Red-cockaded woodpecker <i>Picoides borealis</i>	Red-cockaded woodpeckers depend on open, park-like mature pine woodlands and savannahs with large old pines for nesting and foraging habitat. Will utilize nearly all of the southern yellow pines for cavity trees, including loblolly pine (<i>Pinus taeda</i>), shortleaf pine (<i>Pinus echinata</i>), pond pine (<i>Pinus serotina</i>), slash pine (<i>Pinus elliottii</i>) and longleaf pine (<i>Pinus palustris</i>), but prefer longleaf pine. Nest in mature pine with low understory vegetation (less than 1.5m); forage in pine and pine hardwood stands greater than 30 years old. ^a Nest in mature pine preferably 60-80 years old. ^b		X
Wood stork <i>Mycteria americana</i>	Wood storks typically nest in the upper branches of black gum (<i>Nyssa biflora</i>) or cypress (<i>Taxodium distichum</i>) trees that are in standing water. Standing water deters mammalian predators and is an essential element of colony sites. Storks require open access to nest trees and are frequently found in trees adjacent to open water areas. Range-wide, there has been a trend towards the use of manmade wetlands as colony sites in recent years as these sites are not totally dependent on rainfall for water (Rodgers 1996). In South Carolina, colony sites are typically surrounded by extensive wetlands, in particular palustrine forested wetlands (Mitchell 2002). Occurs in wetland habitat. Wood storks have a unique feeding technique and require higher prey concentrations than other wading birds. Optimal water regimes for the wood stork involve periods of flooding, during which prey (fish) populations increase, alternating with dryer periods, during which receding water levels concentrate fish at higher densities coinciding with the stork's nesting season. ^c		X
Rafinesque's big-eared bat <i>Corynorhinus rafinesquii</i>	Rafinesque's big-eared bats inhabit the southeastern United States. In South Carolina's coastal plain the bats hibernate rather than move south during winter months. Rafinesque's big-eared bats characteristically roost in dilapidated buildings or tree cavities near water. In the ACE Basin, Rafinesque's big-eared bats are known to inhabit Donnelley Wildlife Management Area, where they roost in an old plantation house. One of the biggest		X

**TABLE 2. State and Federal Protected Species Habitat Requirements
 (Lexington County, Leesville South Carolina)**

Species*	Habitat Requirements	Habitat Present	
		Yes	No
	colonies in the state resides in Hampton Plantation on the South Santee River. ^d		
Carolina heelsplitter <i>(Lasmigona decorata)</i>	Carolina Heelsplitter is found in cool, clean, shallow, heavily shaded streams of moderate gradient. Stable streambanks and channels, with pool, riffle and run sequences, little or no fine sediment, and periodic natural flooding, appear to be required for the Carolina Heelsplitter. The species has a fragmented, relict distribution, currently known from six streams and one small river in the Carolinas. On July 2, 2002 critical habitat for Carolina heelsplitter was designated. US Fish and Wildlife Service designate critical habitat, approximately 148.4 kilometers (92.2 miles) of streams in the Carolinas. Designated stream segments include all areas where Carolina heelsplitter had been observed at the time of designation and are considered currently occupied. For Lexington County, no known populations of the Carolina heelsplitter are listed. ^e		X
Smooth coneflower <i>Echinacea laevigata</i>	All of the known <i>Echinacea laevigata</i> populations occur in the Piedmont or Mountain physiographic provinces. The USFWS 1995 recovery plan states that this species is typically found in open woods, cedar barrens, roadsides, clear cuts, dry limestone bluffs and power line rights-of-way. The species is usually found on magnesium and calcium rich soils associated with diabase (in NC and SC) and marble (in SC). The best <i>Echinacea laevigata</i> populations receive abundant sunlight and little competition from other plant species. According to Albert Pittman (Botanist, SC Heritage Trust pers. comm.), <i>Echinacea laevigata</i> occupies a number of distinct physiographic provinces and habitats in SC including open woodlands over marble, sandy loams, chert and amphibolites. Some type of disturbance such as fire is essential for germination and growth. Many of the populations are being managed with prescribed fire to maintain preferred growing conditions. ^f		X

* USFWS Federal Endangered and Threatened Species List; <http://www.fws.gov/angered/> website accessed September 2015.

* SCDNR Protected Species List; <http://www.dnr.sc.gov/species/> website accessed September 2015.

^a USFWS <http://www.fws.gov/angered/> website accessed September 2015.

^b SCDNR <http://www.dnr.sc.gov/cwcs/pdf/Redcockadedwoodpecker.pdf> website accessed September 2015.

^c SCDNR <http://www.dnr.sc.gov/cwcs/pdf/Woodstork.pdf> website accessed on September 2015.

^d ACE Basin Species Gallery: Rafinesque's Big-eared Bat <http://www.dnr.sc.gov/marine/mrri/acechar/specgal/rafbat.htm> Accessed online September 2015.

^e USFWS. <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=F02L> Accessed online September 2015.

^f USFWS Smooth Coneflower Recovery Five Year Review. http://ecos.fws.gov/docs/five_year_review/doc3778.pdf Accessed online September 2015.

APPENDIX A
Listing of Threatened and
Endangered Species

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

June 11, 2014

Scientific Name	Common Name	USES Designation	State Protection	Global Rank	State Rank
<u>Vertebrate Animals</u>					
<i>Haliaeetus leucocephalus</i>	Bald Eagle		ST: Threatened	G5	S2
<i>Micrurus fulvius</i>	Eastern Coral Snake			G5	S2
<i>Picoides borealis</i>	Red-cockaded Woodpecker	LE: Endangered	SE: Endangered	G3	S2
<i>Sciurus niger</i>	Eastern Fox Squirrel			G5	S4
<i>Seminatrix pygaea</i>	Black Swamp Snake			G5	SNR
<u>Vascular Plants</u>					
<i>Andropogon gyrans</i> var. <i>stenophyllus</i>	Elliott's Bluestem			G5T4	S1
<i>Aristida condensata</i>	Piedmont Three-awned Grass			G4?	S2
<i>Asplenium pinnatifidum</i>	Lobed Spleenwort			G4	S1
<i>Burmannia biflora</i>	Northern Burmannia			G4G5	S2
<i>Carex collinsii</i>	Collins' Sedge			G4	S2
<i>Ceratiola ericoides</i>	Sandhills Rosemary			G4	S1
<i>Chrysoma pauciflosculosa</i>	Woody Goldenrod			G4G5	S1S2
<i>Coreopsis gladiata</i>	Southeastern Tickseed			G4G5	SNR
<i>Euonymus atropurpureus</i>	Eastern Wahoo			G5	S1
<i>Gaylussacia mosieri</i>	Woolly Huckleberry			G4	S1
<i>Hymenocallis coronaria</i>	Shoals Spider-lily			G2Q	S2
<i>Hypericum nitidum</i>	Carolina St. John's-wort			G4	S1
<i>Liatris microcephala</i>	Small-head Gayfeather			G3G4	S1
<i>Lobelia</i> sp. 1	Lobelia			G3	SNR
<i>Lycopus cokeri</i>	Carolina Bugleweed			G3	S2
<i>Menispermum canadense</i>	Canada Moonseed			G5	S2S3
<i>Mysiophyllum laxum</i>	Piedmont Water-milfoil			G3	S2
<i>Nolina georgiana</i>	Georgia Beargrass			G3G5	S3
<i>Oxypolis ternata</i>	Piedmont Cowbane			G3	S1
<i>Pityopsis pinifolia</i>	Pine-leaved Golden Aster			G4	S2
<i>Polygala nana</i>	Dwarf Milkwort			G5	S1
<i>Rhynchospora alba</i>	White Beakrush			G5	S1
<i>Rhynchospora inundata</i>	Drowned Hornedrush			G4?	S2?
<i>Rhynchospora leptocarpa</i>	Narrow-fruited Beaksedge			G3	S1
<i>Rhynchospora stenophylla</i>	Chapman Beakrush			G4	S2
<i>Rorippa sessiliflora</i>	Stalkless Yellowcress			G5	SNR

Scientific Name	Common Name	USES Designation	State Protection	Global Rank	State Rank
<i>Sagittaria isoetiformis</i>	Slender Arrow-head			G4?	S3
<i>Sarracenia rubra</i>	Sweet Pitcher-plant			G4	S3S4
<i>Scirpus subterminalis</i>	Water Bulrush			G4G5	SNR
<i>Sporobolus teretifolius</i>	Wire-leaved Dropseed			G2	S1
<i>Stylisma pickeringii</i> var. <i>pickeringii</i>	Pickering's Morning-glory			G4T3	S1
<i>Tridens carolinianus</i>	Carolina Fluff Grass			G3G4	S1
<i>Vaccinium crassifolium</i>	Creeping Blueberry			G4G5	SNR
<i>Vaccinium crassifolium</i> ssp. <i>sempervirens</i>	Rayner's Blueberry			G4G5T1	S1
<i>Warea cuneifolia</i>	Nuttall Warea			G4	S1
<i>Xyris chapmanii</i>	Chapman's Yellow-eyed Grass			G3	S1
<u>Communities</u>					
Atlantic white cedar swamp				G2	S2
Bay forest				G3G4	S3
Bottomland hardwoods				G5	S4
Oak - hickory forest				G5	S5
Pine - scrub oak sandhill				G4	S4
<i>Pinus palustris</i> / <i>Quercus laevis</i> / <i>Leiophyllum buxifolium</i> - <i>Cyrilla racemiflora</i> - <i>Clethra alnifolia</i> Woodland	Sandstone/Gravel Longleaf Pine Woodland			G1	SNR
Seepage pocosin				G3	S1S2
Small stream forest				G5	S5
Swamp tupelo pond				G3	S3
Upland pine - wiregrass woodland				G3	S3
Xeric sandhill scrub				G5	S3
<u>Ecological</u>					
Carolina bay				GNR	SNR
Outcrop				GNR	SNR
Sandstone outcrop				GNR	SNR

Group	Name	Population	Status	Lead Office	Recovery Plan Name	Recovery Plan Stage
Birds	Bald eagle (Haliaeetus	lower 48 States	Recovery	Rock Island Ecological Services	Recovery Plan for the Pacific	Final
Birds	Bald eagle (Haliaeetus	lower 48 States	Recovery	Rock Island Ecological Services	Southwestern Bald Eagle	Final
Birds	Bald eagle (Haliaeetus	lower 48 States	Recovery	Rock Island Ecological Services	Chesapeake Bay Bald Eagle	Final Revision 1
Birds	Bald eagle (Haliaeetus	lower 48 States	Recovery	Rock Island Ecological Services	Northern States Bald Eagle	Final
Birds	Bald eagle (Haliaeetus	lower 48 States	Recovery	Rock Island Ecological Services	Southeastern States Bald Eagle	Final Revision 1
Birds	Red-cockaded woodpecker	Entire	Endangered	Mississippi Ecological Services	Red-cockaded Woodpecker	Final Revision 2
Birds	Wood stork (Mycteria	AL, FL, GA, MS, NC, SC	Threatened	North Florida Ecological	Revised Recovery Plan for the	Final Revision 1
Clams	Carolina heelsplitter (Lasmigona	Entire	Endangered	Asheville Ecological Services	Carolina Heelsplitter	Final
Flowering Plants	Smooth coneflower (Echinacea		Endangered	Raleigh Ecological Services	Smooth Coneflower	Final