ATTACHMENT H

MUSSEL RELOCATION PLAN

MUSSEL RELOCATION PLAN

CONGAREE RIVER SEDIMENTS
COLUMBIA, SOUTH CAROLINA

Elliptio complanata

Elliptio roanokensis

August 2020

Prepared for:

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MUSSEL RELOCATION PLAN

CONGAREE RIVER SEDIMENTS
COLUMBIA, SOUTH CAROLINA

INTRODUCTION

Dominion Energy South Carolina, Inc. (DESC), formerly South Carolina Electric and Gas Company (SCE&G), plans to complete a Modified Removal Action (MRA) to address the occurrence of a tar-like material (TLM) that is commingled with sediment along the eastern shoreline of the Congaree River, just south of the Gervais Street Bridge in Columbia, South Carolina. The project area location is shown on Figure 1. The TLM is believed to be a coal tar material that originated from the Huger Street former manufactured gas plant (MGP) site, located approximately 1,000 feet to the northeast of the project area. The proposed work is being performed by DESC at the direction of South Carolina Department of Health and Environmental Control (SCDHEC) and is subject to permits and approvals from the U.S. Army Corps of Engineers (USACE) and other agencies.

The overall objective of this project is to remove the impacted sediment from the Congaree River. The current plan is to construct two temporary cofferdams to facilitate removal of the impacted sediment. As currently envisioned, the temporary cofferdams would be constructed in two separate phases over two or three construction seasons. The construction seasons will range from approximately May through October of each year. Figure 2 illustrates the phased approach and the proposed cofferdam locations. After the temporary cofferdam is constructed for each phase, the isolated area will be dewatered and the impacted sediment removed and transported off-site for disposal. Following completion of the impacted sediment removal activities, the cofferdam materials will be completely removed from the river.

PROJECT AREA PREVIOUS MUSSEL SURVEY RESULTS

In 2006 a reconnaissance survey was conducted by Alderman Environmental Services, Inc. to assess the freshwater mussel populations within Lake Murray and the lower Saluda and upper Congaree Rivers in support of the Saluda Hydroelectric Project (FERC No. 516). The findings of the survey were summarized in the “Reconnaissance Survey of the Freshwater Mussel Fauna of the Lower Saluda and Congaree Rivers, Lake Murray, and Selected Tributaries (Alderman Environmental Services, Inc. 2006). The survey included two locations in the upper Congaree River that were within or directly adjacent to (downstream) the planned project area. Figure 2 shows these locations and Appendix B provides the applicable survey report excerpts taken from the Alderman Report.

The first survey area (Station: 20060711.5) was located in the vicinity of the Senate Street alluvial fan, which is within the planned Area 1 removal area. This location will be impacted by project operations. The second survey area (Station: 20060712.5) was located directly south (downstream) and outside of the planned Area 2 removal activities and is not expected to be impacted by the planned project activities.

Table 1 provides a summary of the live mussels encountered at these two locations and their current global and state NatureServe ranks as listed on the South Carolina Department of Natural Resources (SCDNR) Heritage Trust Program Rare, Threatened and Endangered Species and Communities List (Appendix C). No federal or state threatened, endangered or candidate mussel species were identified

within the Congaree River during completion of the survey. A combined total of five mussel species classified as rare by the SCDNR Heritage Trust Program were identified at the two survey locations that were within or adjacent to the project area. These rare species have no legal protection under the federal or state endangered species laws but are tracked by the SCDNR Heritage Trust Program at the request of the Program's biologists.

A total of 33 live mussels of four different species were observed at the first location (Station: 20060711.5). Of the four species, three (*Elliptio congaraea*, *Elliptio angustata and Elliptio roanokensis*) are considered rare by SCDNR. The most abundant species identified at this location (*Elliptio complananta*) is not on the Heritage Trust list.

A total of 21 live mussels of six different species were observed at the second location (Station: 20060712.5). Five of the six species observed (*Elliptio angustata, Elliptio congaraea, Elliptio icterina, Lampsilis splendida,* and *Elliptio roanokensis*) are designated as rare by SCDNR. Again, the unlisted *Elliptio complananta* was also identified.

MUSSEL RELOCATION PLAN

As a result of the previous findings from the Alderman survey conducted in 2006, DESC recognizes that no threatened or endangered mussels are likely present within the project area. However, a number of sensitive mussel species are likely located within the cofferdam locations and planned removal areas. In order to complete the project with as minimal of a negative impact to the Congaree River resources as practicable, DESC plans to conduct mussel relocation operations prior to initiating "in-river" construction activities. The mussel relocation activities will include:

- Utilizing qualified personnel to conduct mussel survey activities, finalize project details and complete/supervise the relocation field work;
- Conducting an initial reconnaissance and assessment of the planned project area (the planned footprint of each phase plus a small buffer zone) and immediately downstream;
- Locating a suitable relocation area(s) with acceptable habitat characteristics within the Congaree River as near as possible to the project site;
- Collecting and relocating the mussels identified within the footprint of each phase of the project, to the extent practicable; and
- Providing a summary of completed mussel relocation activities in the Removal Action Report (RAR).

The assessment and relocation activities will be conducted in phases by planned removal area in order to properly time the work with the actual construction windows.

Consultant Selection

DESC will procure the services of a qualified consultant with proven experience in successfully completing freshwater mussel surveys, habitat assessment and relocation activities. Once selected, this consultant will review project details and finalize the overall plan for mussel relocation.

Initial Reconnaissance and Assessment of the Project Area

The selected consultant will conduct an initial assessment of the project area to determine the approximate number, species and other characteristics of the mussels that can be realistically relocated prior to initiation of "in-river" construction activities. This initial assessment will likely be restricted to the area that will be impacted by the upcoming phase of work and will likely be conducted on at least two occasions. The surveyed project area will include the planned cofferdam footprint, the interior removal area and a small buffer on the outboard side of the cofferdam. This buffer will account for small changes in the final cofferdam shape or location and for changes in river currents and hydraulic characteristics that are expected to result from construction of the structure. The assessment will be extended some distance downstream of the phased project areas to account for changes in river hydraulics in these areas while the cofferdam is in place and for potential disturbance during cofferdam construction.

The initial assessments will be conducted during warmer months (generally April or later, prior to cofferdam installation). The information gathered from the assessment will be utilized to determine appropriate relocation areas and other logistical components associated with the collection/relocation phase of the project.

Determine Suitable Relocation Areas

Relocation site investigation will also take place during the warmer months. The relocation site(s) will be within the Congaree River and as near to the project area as possible. Selection will be based on a number of criteria, including:

- The presence and abundance of other mussels;
- Specific habitat characteristics such as substrate and adjacent land uses;
- Flow and gradient characteristics; and
- Potential for future threats.

The Alderman survey area (Station: 20060712.5) located directly downstream of the project area contains the same species of mussels found within the project area and may be a suitable relocation point for some or all of the project area mussels. This location would be ideal, if suitable, due to its close proximity to the project area.

Once the initial reconnaissance survey and relocation site identification have been completed, the consultant will prepare a brief report that outlines the results of the initial survey activities and describes the chosen relocation sites. This report will also contain the general plan for collecting and relocating the mussels. Separate reports for each MRA area are anticipated. The reports will be provided to the agencies for review.

Collect and Relocate Mussels

As stated above, the mussel relocation efforts will likely be conducted in phases corresponding with each MRA area. As currently envisioned, one of two potential scenarios will be implemented based on project logistical considerations. The first scenario includes conducting the mussel collection and relocation in one mobilization per construction phase following determination of a suitable relocation site. A

combination of wading and diving will be necessary in order to adequately survey the majority of the project area.

The second scenario includes mobilizing the collection and relocation team and removing the mussels from the approximate footprint of the planned cofferdam and the outboard buffer zone (see Figure 2). Again, a combination of wading and diving would be required to cover the area to be impacted by the cofferdam. The relocation team would then demobilize until the cofferdam is constructed and the isolated area is partially dewatered. As dewatering operations lower the water level, the team would remobilize and complete the collection and relocation of the mussels within the isolated area. With this scenario, the partial dewatering will facilitate access to the mussels and potentially increase the effectiveness and overall efficiency of the process. With the water level sufficiently lowered the isolated area could be better surveyed through wading, visibility would most likely be improved in most areas and potentially more mussels will be collected.

Warmer months of the year are preferred for relocation and the mussel relocation expert will determine the appropriate timeframe for completion of these operations based on the specific requirements of the mussels identified in the project area. Spawning and glochidia release timeframes will be avoided.

DESC plans to conduct as complete of a relocation effort as possible. Several factors may limit the potential relocation activities. They include:

- The presence of significant TLM in the substrate surrounding mussel locations may necessitate not disturbing these locations;
- Mussels that are coated with TLM will most likely be left in place because adequate decontamination may not be feasible or will overly stress the animal. Tar coated mussels can not be relocated to new unimpacted areas; and
- Other project related constraints (logistical, safety, etc.) may limit the overall relocation effort.

The mussel relocation expert will conduct and supervise the collection of the mussels from within the specified area. An effort will be made to adequately survey all areas that will be impacted by the project. More than one pass will likely be conducted depending on the expert's recommendations and other project constraints.

The mussels will be gently removed, kept cool and moist and quickly transported to the relocation area. Extreme fluctuations in temperature or other environmental factors will be avoided. Mussels will be correctly placed within the relocation area. The number and species of mussels will be documented.

Reporting

The details of the mussel relocation activities will be provided in the Removal Action Report (RAR), which will document the entire sediment removal operations. The documented activities will include:

- Results of the initial project area surveying activities;
- The relocation area characteristics and details from the relocation area decision process;
- Mussel collection, transport and relocation activities; and
- Limiting factors, if any.

Progress reports for each phase of work may also be provided, if requested by the agencies.

Post Project Completion Activities

DESC plans on removing all sediment and gravel, small rocks, etc. (both visually impacted with TLM and visually unimpacted material) from the removal areas to the extent practicable. Large rocks that are visually unimpacted may be temporarily relocated within the work area to facilitate sediment removal and then returned to their approximate original locations.

Current plans do not include replacing any removed material with backfill. The impacted sediment will be removed down to the top of the underlying bedrock. In many areas, this will only require removal of several inches of sediment. Following completion of the removal activities, the cofferdam will be removed and over time, the natural depositional processes of the river will restore the river bottom to natural conditions. This process will allow for natural re-deposition of sediment within the removal area based on current river hydraulics. Not replacing the impacted sediment with fill material will also eliminate the potential for backfill materials to be washed downstream and deposited in other areas or degrade other habitats through siltation, etc.

DESC anticipates that the same river hydraulic characteristics that created the current mussel habitat within the project area will naturally recreate similar habitat characteristics given an appropriate amount of time. As a result, mussel repopulation of the project area is expected to occur naturally as the project area substrate is reestablished.

REFERENCES

Alderman Environmental Services, Inc. 2006. Reconnaissance Survey of the Freshwater Mussel Fauna of the Lower Saluda and Congaree Rivers, Lake Murray, and Selected Tributaries. Alderman Survey Report.

Luzier, C. and S. Miller. 2009. Pacific Northwest Native Freshwater Mussel Workgroup. Freshwater Mussel Relocation Guidelines.

U.S. Fish and Wildlife Services and Virginia Dept. of Game and Inland Fisheries. 2013. Freshwater Mussel Guidelines for Virginia.

APPENDICES

A Tables and Figures

B Excerpts taken from “Reconnaissance Survey of the Freshwater Mussel Fauna of the Lower Saluda and Congaree Rivers, Lake Murray, and Selected Tributaries (Alderman Environmental Services, Inc. 2006)

C Tracked Rare, Threatened and Endangered Species Communities List

APPENDIX A

Tables and Figures

TABLE 1

2006 FRESHWATER MUSSEL SURVEY RESULTS FOR PROJECT AREA*

Congaree River Sediments
Columbia, South Carolina

Station	Species	Common Name	Number Identified	NatureServe Ranking	
				Global Rank	State Rank
20060711.5	*Elliptio complanata*	Common Elliptio	23	G5 - Secure	--
	Elliptio congaraea	Carolina Slabshell	1	G3 - Vulnerable	S3 - Vulnerable
	Elliptio roanokensis	Roanoke Slabshell	1	G3 - Vulnerable	S2 - Imperiled
	Elliptio angustata	Carolina Lance	8	G4 - Apparently Secure	S3 - Vulnerable
20060712.5	*Elliptio angustata*	Carolina Lance	2	G4 - Apparently Secure	S3 - Vulnerable
	Elliptio congaraea	Carolina Slabshell	1	G3 - Vulnerable	S3 - Vulnerable
	Elliptio icterina	Variable Spike	1	G5Q - Secure	S4 - Apparently Secure
	Elliptio complanata	Common Elliptio	3	G5 - Secure	--
	Lampsilis splendida	Rayed Pink Fatmucket	1	G3 - Vulnerable	S2 - Imperiled
	Elliptio roanokensis	Roanoke Slabshell	13	G3 - Vulnerable	S2 - Imperiled

Notes:

* - Information obtained from Reconnaissance Survey of the Freshwater Mussel Fauna of the Lower Saluda and Congaree Rivers, Lake Murray and Selected Tributaries by John M. Alderman, Alderman Environmental Services, Inc. (October 2006).
- NatureServe Ranks taken from Rare, Threatened and Endangered Species Communities Tracked by the SCDNR Heritage Trust Program (June 11, 2014). Verified on NatureServe website on 8/6/2020.
- No federal or state threatened, endangered or candidate species were identified in the Congaree River during the survey.
- Elliptio complanata is not included on the SCDNR Heritage Trust Program list.
- The "Q" qualifier for Elliptio icterina represents "questionable taxonomy that may reduce conservation priority."

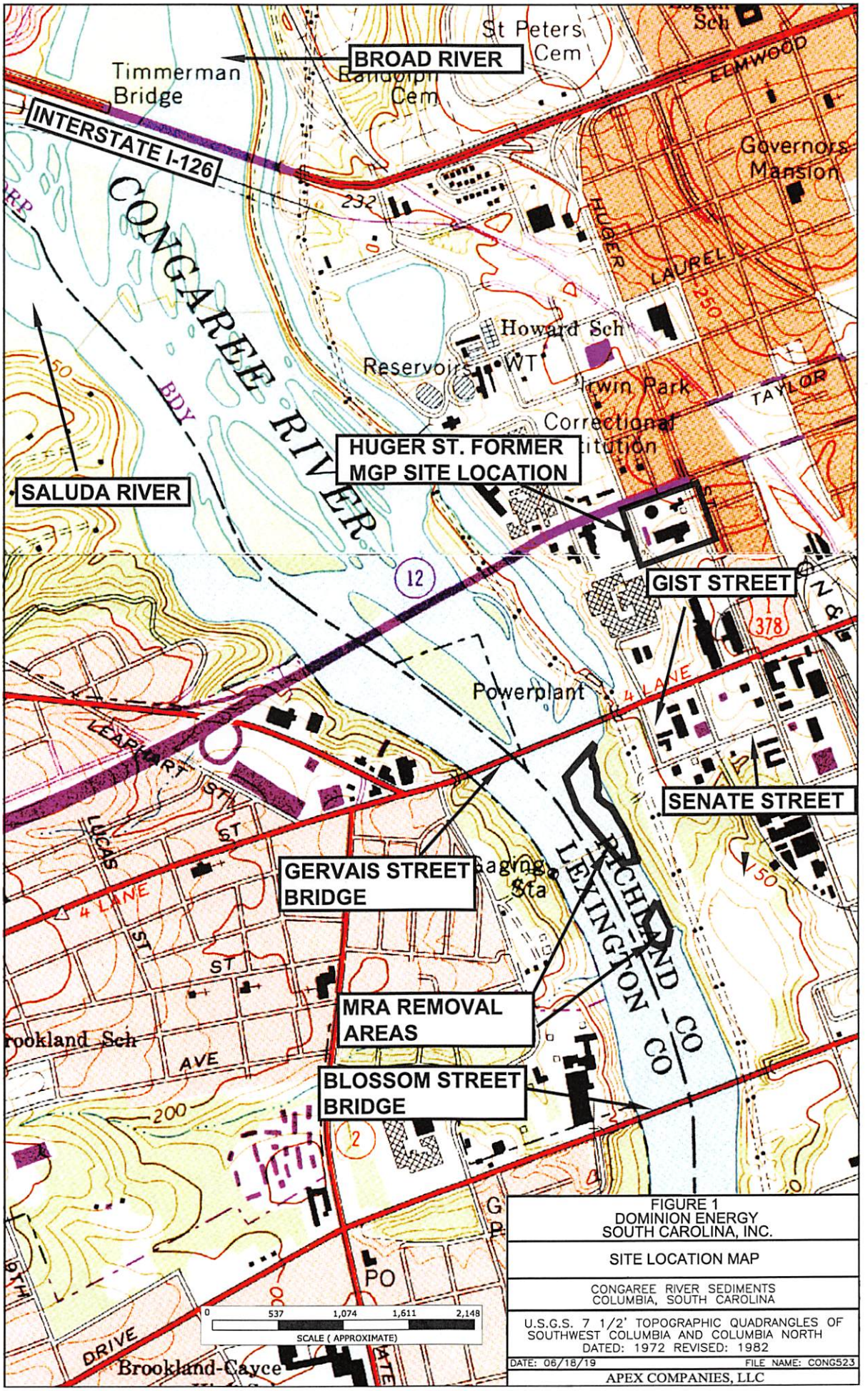

FIGURE 1
DOMINION ENERGY
SOUTH CAROLINA, INC.

SITE LOCATION MAP

CONGAREE RIVER SEDIMENTS
COLUMBIA, SOUTH CAROLINA

U.S.G.S. 7 1/2' TOPOGRAPHIC QUADRANGLES OF
SOUTHWEST COLUMBIA AND COLUMBIA NORTH
DATED: 1972 REVISED: 1982

DATE: 06/18/19 FILE NAME: CONG523

APEX COMPANIES, LLC

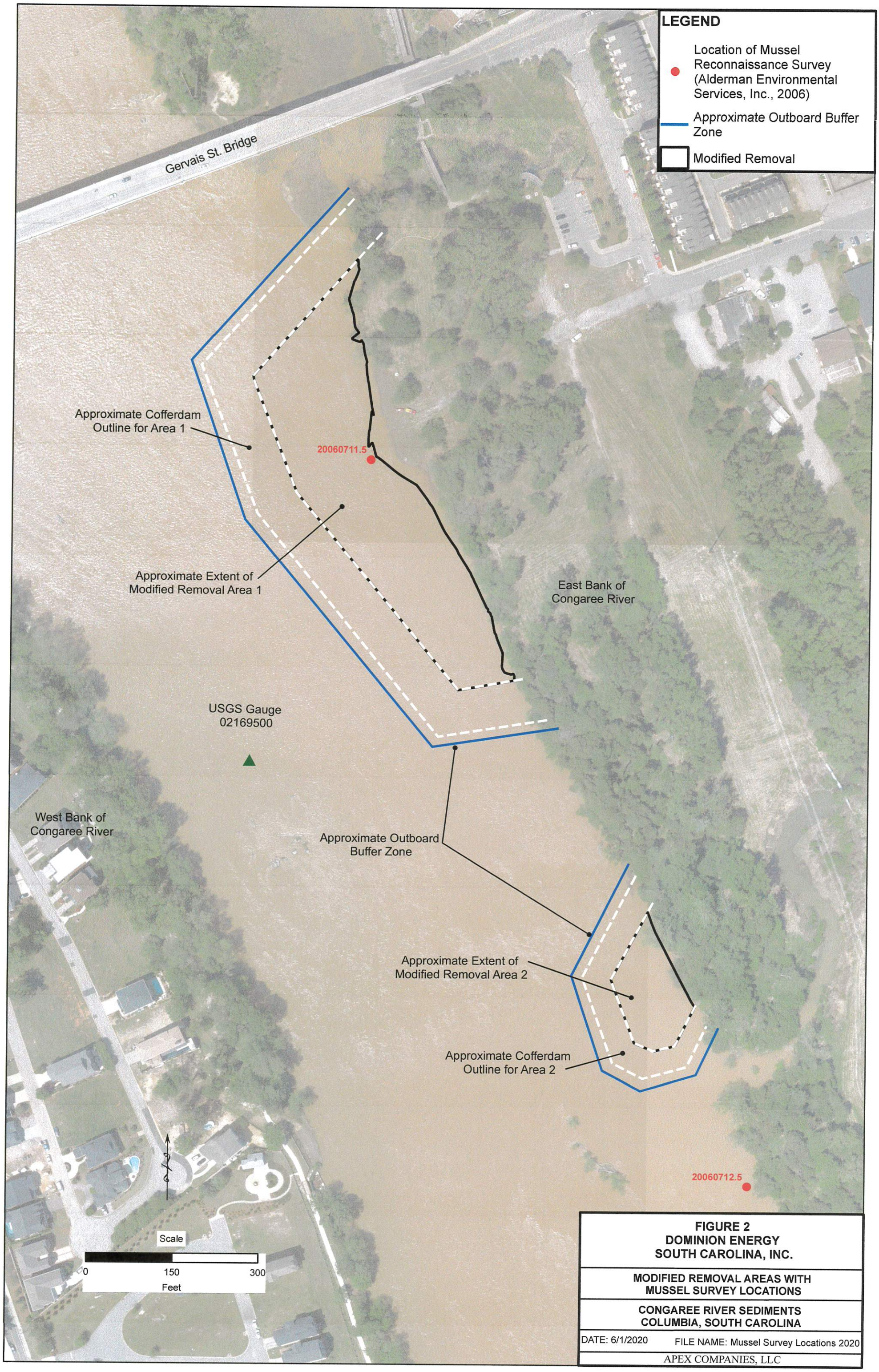

FIGURE 2
DOMINION ENERGY
SOUTH CAROLINA, INC.

MODIFIED REMOVAL AREAS WITH MUSSEL SURVEY LOCATIONS

CONGAREE RIVER SEDIMENTS
COLUMBIA, SOUTH CAROLINA

DATE: 6/1/2020 FILE NAME: Mussel Survey Locations 2020

APEX COMPANIES, LLC

APPENDIX B

Excerpts taken from “Reconnaissance Survey of the Freshwater Mussel Fauna of the Lower Saluda and Congaree Rivers, Lake Murray, and Selected Tributaries” (Alderman Environmental Services, Inc. 2006)

Table 3. Freshwater mussels of the Saluda River (below L. Murray Dam), lower Broad River, and upper Congaree River

Station	Latitude Longitude	Species	Live, Shells	Substrate*
20060711.1 Saluda R.	34.05037 N 81.20573 W	None		sa,g,Co,Bo
20060711.2 Saluda R.	34.04843 N 81.19653 W	None		s,Sa,G,co,bo,b
20060711.3 Saluda R.	34.02978 N 81.13944 W	None		s,Sa,G,co,bo
20060711.4 Saluda R.	34.00969 N 81.07800 W	None		s,sa,g,co,bo,b
20060712.1 Saluda R.	34.00639 N 81.06508 W	None		s,sa,g,co
20060712.2 Broad R.	34.00714 N 81.06232 W	*Elliptio roanokensis* *Elliptio complanata* *Villosa delumbis* *Elliptio angustata* *Lampsilis cariosa*	0,2 0,5 0,1 1,1 1,0	s,sa,g,co,bo,b
20060712.3 Saluda R. (Broad R. washout area)	34.00541 N 81.06282 W	*Elliptio angustata* *Villosa delumbis* *Strophitus undulatus*	1,2 0,2 0,1	s,Sa,g
20060712.4 Congaree R. (Saluda R. side)	33.98949 N 81.04859 W	*Elliptio complanata*	1,0	s,sa,g,co,bo,b
20060711.5 Congaree R. (Broad R. side)	33.99461 N 81.04913 W	*Elliptio complanata* *Elliptio congaraea* *Elliptio roanokensis* *Villosa delumbis* *Elliptio angustata*	23,-- 1,0 1,0 0,1 8,--	s,sa,g,co,bo

Table 3 (continued). Freshwater mussels of the Saluda River (below L. Murray Dam), lower Broad River, and upper Congaree River

Station	Latitude Longitude	Species	Live, Shells	Substrate*
20060712.5 Congaree R. (Broad R. side)	33.99111 N 81.04692 W	*Elliptio angustata* *Elliptio congaraea* *Elliptio icterina* *Elliptio complanata* *Lampsilis splendida* *Elliptio roanokensis*	2,0 1,0 1,0 3,0 1,0 13,0	s,sa,go,co,bo,b
20060712.6 Congaree R. (Saluda R. side)	33.97967 N 81.04757 W	*Elliptio roanokensis* *Elliptio angustata*	2,0 1,0	s,Sa,G,co,bo
20060712.7 Congaree R. (Borad R. side)	33.98031 N 81.04546 W	*Elliptio complanata* *Elliptio congaraea* *Strophitus undulatus* *Elliptio roanokensis* *Elliptio angustata* *Lampsilis splendida* *Lampsilis cariosa* *Villosa delumbis*	5,0 2,0 1,0 19,0 9,0 1,0 2,0 0,1	S,Sa,G,co,bo
20060712.8 Congaree R. (Saluda R. side)	33.96535 N 81.03777 W	None	--	s,sa,g
20060804.1 Saluda R.	34.02287 N 81.10009 W	None	--	s,sa,g,co,bo,B
20060804.2 Saluda R.	34.01835 N 81.09807 W	None	--	s,sa,g,co,bo,b
20060804.3 Rawls Cr.	34.07949 N 81.20251 W	None	--	c,s,sa,g,co,bo,b
20060804.4 12 Mile Cr.	34.03275 N 81.16173 W	None	--	s,sa,g,co,bo

* s-silt, sa- sand, c-clay, co-cobble, b-bedrock, bo-boulder, g-gravel, r-roots, v-vegetation, d-detritus, m-mud

PROJECT: Reconnaissance Survey of the Freshwater Mussel Fauna of the Lower Saluda and Congaree River, Lake Murray, and Selected Tributaries

STATION: 20060711.5jma

BIOLOGISTS: **John M. Alderman**
Joseph D. Alderman
Jennifer M. Summerlin

U.S. FISH AND WILDLIFE SERVICE ES PERMIT: **TE065756-0**

S.C. DEPARTMENT OF NATURAL RESOURCES AUTHORIZATION: November 25, 2002

LOCATION: Congaree River, Lexington/Richland county line, South Carolina; 33.99461 N, 81.04913 W; **see Figure 4**

SURVEY DATE: July 11, 2006

SITE COMMENTS: -

HABITAT:

WATERBODY TYPE:	River
FLOW:	Run, slack, pool
RELATIVE DEPTH:	Very shallow
DEPTH (%<2 FEET):	90
SUBSTRATE:	Silt, sand, gravel, cobble, boulder
COMPACTNESS:	Compact and normal
SAND/GRAVEL BARS:	Present
WOODY DEBRIS:	Low
BEAVER ACTIVITY:	None
WINDTHROW:	Low
TEMPORARY POOLS:	None
CHANNEL WIDTH:	300+ meters
BANK HEIGHT:	Varies

HABITAT (cont.):

BANK STABILITY:	Very stable
BUFFER WIDTH:	Narrow to moderate
RIPARIAN VEGETATION:	Wooded, shrub-brush, grass
LAND USE:	Urban
PERCENT COVER:	0
WOODLAND EXTENT:	Not extensive
NATURAL LEVEES:	-
VISIBILITY:	Slightly turbid
WATER LEVEL:	Low
WEATHER:	Sun-Cloud, hot

TECHNIQUES AND SURVEY TIME:

TECHNIQUES:	Visual
SURVEY TIME:	0.5 person-hours

FRESHWATER MUSSELS:

Elliptio roanokensis – 1 live (93 mm)
Elliptio complanata – 23 live (78, 74, 71, 53, 66, 76, 60, 58, 63, 56, 55, 61, 62, 53, 55, 59, 58, 56, 58, 62, 48, 50, 36 mm)
Elliptio congaraea – 1 live (55 mm)
Elliptio angustata – 8 live (80, 69, 58, 67, 67, 58, 57, 58 mm)
Villosa delumbis – 1 old shell

OTHER DOCUMENTED TAXA:

Elimia catenaria - common
Corbicula fluminea

PROJECT: Reconnaissance Survey of the Freshwater Mussel Fauna of the Lower Saluda and Congaree River, Lake Murray, and Selected Tributaries

STATION: 20060712.5jma

BIOLOGISTS: **John M. Alderman**
Jeffrey West
Joseph D. Alderman
Christopher S. Boring
Jennifer M. Summerlin

U.S. FISH AND WILDLIFE SERVICE ES PERMIT: **TE065756-0**

S.C. DEPARTMENT OF NATURAL RESOURCES AUTHORIZATION: November 25, 2002

LOCATION: Congaree River, Lexington/Richland county line, South Carolina; 33.99111 N, 81.04692 W; **see Figure 4**

SURVEY DATE: July 12, 2006

SITE COMMENTS: Broad River side of Congaree River

HABITAT:

WATERBODY TYPE:	River
FLOW:	Run, slack
RELATIVE DEPTH:	Very shallow
DEPTH (%<2 FEET):	75
SUBSTRATE:	Silt, sand, gravel, cobble, boulder, bedrock
COMPACTNESS:	Normal
SAND/GRAVEL BARS:	Present
WOODY DEBRIS:	Low
BEAVER ACTIVITY:	Evidence (gnawed sticks)
WINDTHROW:	Low
TEMPORARY POOLS:	-
CHANNEL WIDTH:	300+ meters
BANK HEIGHT:	2.5+ meters

HABITAT (cont.):

BANK STABILITY:	Very stable
BUFFER WIDTH:	Moderate to wide
RIPARIAN VEGETATION:	Wooded, shrub-brush
LAND USE:	Urban
PERCENT COVER:	1
WOODLAND EXTENT:	Intermediate
NATURAL LEVEES:	-
VISIBILITY:	Slightly turbid
WATER LEVEL:	Low
WEATHER:	Sun-Cloud, hot

TECHNIQUES AND SURVEY TIME:

TECHNIQUES:	Visual
SURVEY TIME:	0.83 person-hours

FRESHWATER MUSSELS:

Elliptio roanokensis – 13 live (100, 111, 89, 91, 95, 108, 105, 95, 102, 107, 110, 89, 91 mm)
Elliptio complanata –3 live (93, 78, 73 mm)
Elliptio congaraea – 1 live (61 mm)
Elliptio angustata –2 live (63, 66 mm)
Elliptio icterina – 1 live (72 mm)
Lampsilis splendida – 1 live male (67 mm)
Villosa delumbis – 1 old shell

OTHER DOCUMENTED TAXA:

Elimia catenaria - common
Corbicula fluminea

APPENDIX C

Tracked Rare, Threatened and Endangered Species Communities List

Rare, Threatened and Endangered Species and Communities Tracked by the SC DNR Heritage Trust Program

June 11, 2014

Scientific Name	Common Name	USESA Status	State Protection	GRank	SRank
Procambarus enoplosternum				G4G5	SNR
Procambarus hirsutus	a Crayfish			G4	S4
Procambarus lepidodactylus	Pee Dee Lotic Crayfish			G4	S4
Procambarus lunzi	a Crayfish			G4	S2S3
Procambarus pearsei	Sandhills Crayfish			G4	S3
Procambarus pubescens	a Crayfish			G4G5	S3?
Insects					
Agarodes griseus	a Caddisfly			G5	SNR
Amblyscirtes reversa	Reversed Roadside Skipper			G3G4	SNR
Atrytone arogos	Arogos Skipper			G3	SNR
Autochton cellus	Golden-banded Skipper			G4	S2S4
Cicindela dorsalis media	White Tiger Beetle			G3G4T3T4	S3S4
Dolania americana	American Sand Burrowing Mayfly			G4	S3
Macromia margarita	Margaret's River Cruiser			G3	SNR
Megaleuctra williamsae	Smokies Needlefly			G2	SNR
Polycentropus carlsoni	Carlson's Polycentropus Caddisfly			G2G3	S1S3
Protoptila morettii	Moretti's Caddisfly			G1G2	SNR
Pseudogoera singularis				G2G3	SNR
Psilotreta frontalis				G5	SNR
Somatochlora calverti	Calvert's Emerald			G3	SNR
Speyeria diana	Diana Fritillary			G3G4	S3?
Stylurus townesi	Townes' Clubtail			G3	S1S3
Wormaldia thyria				G3	SNR
Spiders					
Sphodros coylei	Coyle's Purseweb Spider			G4?	SNR
Mollusks					
Alasmidonta undulata	Triangle Floater			G4	S1
Alasmidonta varicosa	Brook Floater			G3	SNR
Anodonta couperiana	Barrel Floater			G4	S1
Elimia catenaria	Gravel Elimia			G4	SNR
Elliptio "angustata-producta" complex	Carolina Lance-Atlantic Spike complex			G3	S3
Elliptio angustata	Carolina Lance			G4	S3
Elliptio congaraea	Carolina Slabshell			G3	S3

Rare, Threatened and Endangered Species and Communities Tracked by the SC DNR Heritage Trust Program

June 11, 2014

Scientific Name	Common Name	USESA Status	State Protection	GRank	SRank
Elliptio fisheriana	Northern Lance			G4	SNR
Elliptio folliculata	Pod Lance			G2G3Q	S2S3
Elliptio fraterna	Brother Spike		SE-Endangered	G1G2	S1
Elliptio icterina	Variable Spike			G5Q	S4
Elliptio producta	Atlantic Spike			G3Q	S3
Elliptio roanokensis	Roanoke Slabshell			G3	S2
Elliptio waccamawensis	Waccamaw Spike			G2G3Q	S1
Fusconaia masoni	Atlantic Pigtoe		SE-Endangered	G2	SH
Gillia altilis	Buffalo Pebblesnail			G5	S1
Lampsilis cariosa	Yellow Lampmussel			G3G4	S2
Lampsilis radiata	Eastern Lampmussel			G5	S2
Lampsilis splendida	Rayed Pink Fatmucket			G3	S2
Lasmigona decorata	Carolina Heelsplitter	LE: Endangered	SE: Endangered	G1	S1
Leptodea ochracea	Tidewater Mucket			G3G4	S2
Ligumia nasuta	Eastern Pondmussel			G4	S2
Lioplax subcarinata	Ridged Lioplax			G4G5	S1
Pyganodon cataracta	Eastern Floater			G5	SNR
Somatogyrus virginicus	Panhandle Pebblesnail			G2G3	SNR
Strophitus undulatus	Creeper			G5	S2
Toxolasma pullus	Savannah Lilliput			G2	S1
Uniomerus caroliniana	Florida Pondhorn			G4	S3
Utterbackia imbecillis	Paper Pondshell			G5	SNR
Villosa constricta	Notched Rainbow			G3	S1
Villosa delumbis	Eastern Creekshell			G4	S4
Villosa vaughaniana	Carolina Creekshell			G2	S1
Villosa vibex	Southern Rainbow			G5Q	S2
Animal Assemblage					
Waterbird Colony				GNR	SNR
Vascular Plants					
Dicots					
Acer pensylvanicum	Striped Maple			G5	S2
Aconitum uncinatum	Blue Monkshood			G4	S2
Aesculus parviflora	Small-flowered Buckeye			G3	S1
Agalinis aphylla	Coastal Plain False-foxglove			G3G4	S1