ATTACHMENT G

DRAFT NAVIGATION PLAN WITH USCG APPLICATION

DEPARTMENT OF HOMELAND SECURITY

U.S. Coast Guard

OMB Approval: 1625-0011

Expiration Date: 05/31/2021

PRIVATE AIDS TO NAVIGATION APPLICATION

(See attached instructions and copy of Code of Federal Regulations, Title 33, Chap. 1, Part 66)

NO PRIVATE AID TO NAVIGATION MAY BE AUTHORIZED UNLESS A COMPLETED APPLICATION FORM HAS BEEN RECEIVED (14 U.S.C. 83; 33 CFR. 66. 01-5).

1. ACTION REQUESTED FOR PRIVATE AIDS TO NAVIGATION:	☐ A. ESTABLISH AND MAINTAIN ☐ B. DISCONTINUE ☐ C. CHANGE ☐ D. TRANSFER OWNERSHIP	2. DATE ACTION TO START:
3. AIDS WILL BE OPERATED:	☐ A. YEAR-ROUND ☐ B. TEMPORARILY UNTIL _____ ☐ C. SEASONAL FROM _____ TO _____	

4. NECESSITY FOR AID *(Continue in Block 8)*	5. GENERAL LOCALITY	6. AUTHORIZING PERMIT FOR THIS STRUCTURE OR BUOY USACE ☐ PERMIT AND/ OR STATE ☐ PERMIT (Valid Permit Number) _____

FOR DISTRICT COMMANDERS ONLY		7. APPLICANT WILL FILL IN APPLICABLE REMAINING COLUMNS									
LIGHT LIST NUMBER	NAME OF AID	NO. OR LTR (7a)	LIGHT			POSITION (7e)	DEPTH OF WATER (7f)	CANDELA (7g)	FOCAL PLANE HEIGHT (7h)	STRUCTURE	REMARKS *(See instructions) (7j)*
			FLASH PERIOD (7b)	FLASH LENGTH (7c)	COLOR (7d)					TYPE, COLOR, AND HEIGHT ABOVE GROUND (7i)	

8. ADDITIONAL COMMENTS

9a. NAME AND ADDRESS OF PERSON IN DIRECT CHARGE OF THE AID(S)	10a. NAME AND ADDRESS OF PERSON OR CORPORATION AT WHOSE EXPENSE THE AID(S) WILL BE MAINTAINED	10b. THE APPLICANT AGREES TO SAVE THE COAST GUARD HARMLESS WITH RESPECT TO ANY CLAIM OR CLAIMS THAT MAY RESULT ARISING FROM THE ALLEGED NEGLIGENCE OF THE MAINTENANCE OR OPERATION OF THE APPROVED AID(S).
9b. TELEPHONE NO.		10c. DATE / 10d. SIGNATURE AND TITLE OF OFFICIAL SIGNING
9c. E-MAIL ADDRESS		

FOR USE BY DISTRICT COMMANDER		RECD	DATE APPROVED	SIGNATURE *(By direction)*
SERIAL NO.	CLASSIFICATION OF AIDS(S)	CHART		
		LNM		

REMARKS

DATE	REFERENCE	ACTION AND REMARKS

J F M A M J J A S O N D

NAME OF AID

LIGHT LIST NO.

PRIVACY NOTICE

Authority: 14 U.S.C. 83, 14 U.S.C. 85.

Purpose: To obtain approval to establish a private aid to navigation, applicants must submit CG 2554 (Private Aids to Navigation Application). Information about the private aid to navigation (type, color, geographic position), as well as the applicant's contact information is stored in the U.S. Coast Guard's United States Aids to Navigation Information Management System (USAIMS). USAIMS is the U.S. Coast Guard's comprehensive database for managing information about aids to navigation. USAIMS has user access controls in place to govern who may view or access information.

Routine Uses: Authorized USCG personnel will utilize this information to contact owners in the event of a discrepancy or a mishap to a private aid to navigation. Any external disclosures of data within this record will be made in accordance with DHS/ALL-002, Department of Homeland Security (DHS) Mailing and Other Lists System, November 25, 2008, 73 FR 71659.

Consequences of Failure to Provide Information: Mandatory. Failure to provide the required contact information will prevent approval to establish a private aid to navigation.

U.S. COAST GUARD
PRIVATE AIDS TO NAVIGATION APPLICATION
INSTRUCTIONS

1. The rules, regulations, and procedures pertaining to private aids to navigation are set forth in the excerpt of the Code of Federal Regulations; Title 33, Chapter 1, Part 66 on the following pages.

2. One copy of the application for private aids to navigation shall be forwarded via postal mail, electronic mail, or facsimile to the Commander of the Coast Guard District in which the aids will be located. Sections of charts or sketches showing the work proposed should accompany each application.

3. When making application for private aids to navigation to mark structures and mooring buoys in navigable waters or to mark the excavating or depositing of material therein, evidence is required of the authorization obtained from the U.S. Army Corps of Engineers (USACE), Department of the Army, for such work, (Code of Federal Regulations; Title 33, Part 322.) and/or State Regulatory Agency.

4. The applicant shall complete all of Blocks 1, 2, 3, 4, 5, 9 and 10 for all new applications. When a private aid to navigation is being discontinued, Block 3 need not be completed. Block 6 shall be completed whenever authorization is required to be obtained from Corps of Engineers (See Instruction No. 3). Columns in Block 7 will be completed as follows:
   a. Unlighted buoy(s) - 7a, 7e, 7f, and 7j.
   b. Lighted buoy(s) - 7a, 7b, 7c, 7d, 7e, 7f, 7g, 7h, and 7j.
   c. Daybeacon(s) - 7a, 7e, 7f (if applicable), 7h, 7i, and 7j.
   d. Light(s) on a structure - 7a, 7b, 7c, 7d, 7e, 7f (if applicable), 7g, 7h, 7i, and 7j.

5. When a private aid to navigation is being changed, Block 8 shall be used to describe the nature of the change.

6. The required information for each column includes the following:
   (7a) Proposed number or letter to be assigned to the private aid to navigation.
   (7b) Period of light (time in seconds for one complete cycle).
   (7c) Flash length in seconds. For complex or multiple flashes, explain in column (7j).
   (7d) Color of light.
   (7e) Position as determined by Global Positioning System (GPS), differential GPS, professional surveyor, by two or more horizontal angles, or bearing and distance from a prominent charted landmark. If a prominent charted landmark is not available, show latitude and longitude as precisely as the chart permits.
   (7f) Depth of water at buoy or structure (if marine site). All depths are measured from mean lower low water except on Great Lakes where depths are measured from low water datum.
   (7g) Candela, if known; otherwise, include the following information in column (7j); lens size, lamp voltage and amperage if electric, or details of other illuminant to be used.
   (7h) If lighted, the height of the light's optic above the water.
   (7i) Include details of structure (type, color).
   (7j) Used for the following specific information, plus any other useful details: a. buoys - size, shape, color, and reflective material used; b. structures - dayboard shape and color; c. sound signal on a buoy or structure - type and model, audible range, and characteristic (number of strokes or blasts, period and blast length).

7. This form may be used to cover more than one private aid to navigation in the same geographic area. Draw a line between each aid as indicated in example below. Attach separate sheet if additional space is required.

8. Attach a section of chart showing the proposed location of the private aid(s) to navigation.

9. a. After receipt of the approved form, the applicant will advise the District Commander by telephone, postal mail, electronic mail, or facsimile when the authorized work is actually accomplished.
   b. If the private aid(s) to navigation have not been installed within one year of the approval date, the approved application is automatically cancelled.
   c. Any discrepancy in the operation of the private aid(s) to navigation at any time shall be reported to the District Commander by telephone, postal mail, electronic mail, or facsimile in order that Notices to Mariners may be issued. A discrepancy exists whenever the private aid to navigation is not operating as described in the approved application, i.e., lack of signal, incorrect light characteristic, or improper color, shape, or position of shore structure or buoy. The correction of the discrepancy will also be reported by the same method.

10. All classes of private aids to navigation shall be maintained in proper condition. They are subject to inspection by the Coast Guard at any time and without prior notice to the maintainer.

EXAMPLE OF USE OF APPLICATION

FOR DISTRICT COMMANDERS ONLY		7. APPLICANT WILL FILL IN APPLICABLE REMAINING COLUMNS									
LIGHT LIST NUMBER	NAME OF AID	NO. OR LTR (7a)	LIGHT			POSITION (7e)	DEPTH OF WATER (7f)	CANDELA (7g)	FOCAL PLANE HEIGHT (7h)	BUOY/STRUCTURE	REMARKS *(See instructions) (7j)*
			FLASH PERIOD (7b)	FLASH LENGTH (7c)	COLOR (7d)					TYPE, COLOR, AND HEIGHT ABOVE GROUND (7i)	
		1	4s	0.4s	Green	dd°mm'ss.sss"N ddd°mm'ss.sss"W	9 Ft			5' lighted buoy, Green	
		2				dd°mm'ss.sss"N ddd°mm'ss.sss"W	8 Ft			Nun buoy, Red	
		3				dd°mm'ss.sss"N ddd°mm'ss.sss"W	7 Ft			Single Pile	2' square dayboard, Green
		4	2.5s	0.5s	Red	dd°mm'ss.sss"N ddd°mm'ss.sss"W	9 Ft		14 Ft	Multi-Pile	3' triangular dayboard, Red

An agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number.

The U.S. Coast Guard estimates the average burden for this report is 1 hour. You may submit any comments concerning the accuracy of this burden estimate or any suggestions for reducing the burden to: COMMANDANT (CG-NAV-1), U.S. COAST GUARD STOP 7418, 2703 MARTIN LUTHER KING JR AVE SE, WASHINGTON DC 20593-7418 or OFFICE OF MANAGEMENT AND BUDGET, PAPERWORK REDUCTION PROJECT (1625-0011), WASHINGTON, DC 20590-0001.

§ 66.01-1 Basic provisions.

(a) No person, public body, or instrumentality not under the control of the Commandant, exclusive of the Armed Forces, will establish and maintain, discontinue, change or transfer ownership of any aid to maritime navigation, without first obtaining permission to do so from the Commandant.

(b) For the purposes of this subpart, the term private aids to navigation includes all marine aids to navigation operated in the navigable waters of the United States other than those operated by the Federal Government (part 62 of this subchapter) or those operated in State waters for private aids to navigation (subpart 66.05).

(c) Coast Guard authorization of a private aid to navigation does not authorize any invasion of private rights, nor grant any exclusive privileges, nor does it obviate the necessity of complying with any other Federal, State or local laws or regulations.

(d) With the exception of radar beacons (racons) and shore based radar stations, operation of electronic aids to navigation as private aids will not be authorized.

§ 66.01-3 Delegation of authority to District Commanders.

(a) Under Section 888 of Pub. L. 107-296, 116 Stat. 2135, the Commandant delegates to the District Commanders within the confines of their respective districts (see Part 3 of this chapter for descriptions) the authority to grant permission to establish and maintain, discontinue, change or transfer ownership of private aids to maritime navigation, and otherwise administer the requirements of this subpart.

(b) The decisions of the District Commander may be appealed within 30 days from the date of decision. The decision of the Commandant in any case is final.

§ 66.01-5 Application procedure.

To establish and maintain, discontinue, change, or transfer ownership of a private aid to navigation, you must apply to the Commander of the Coast Guard District in which the aid is or will be located. You can find application form CG-2554 at http://www.uscg.mil/forms/cg/CG_2554.pdf. You must complete all parts of the form applicable to the aid concerned, and must forward the application to the District Commander. You must include the following information:

(a) The proposed position of the aid to navigation by two or more horizontal angles, bearings and distance from charted landmarks, or the latitude and longitude as determined by GPS or differential GPS. Attach a section of chart or sketch showing the proposed position.

(b) The name and address of the person at whose expense the aid will be maintained.

(c) The name and address of the person who will maintain the aid to navigation.

(d) The time and dates during which it is proposed to operate the aid.

(e) The necessity for the aid.

(f) For lights: The color, characteristic, range, effective intensity, height above water, and description of illuminating apparatus. Attach a copy of the manufacturer's data sheet to the application.

(g) For sound signals: Type (whistle, horn, bell, etc.) and characteristic.

(h) For buoys or daybeacons: Shape, color, number, or letter, depth of water in which located or height above water.

(i) For racons: Manufacturer and model number of racon, height above water of desired installation, and requested coding characteristic. Equipment must have FCC authorization.

§ 66.01-10 Characteristics.

The characteristics of a private aid to navigation must conform to those prescribed by the United States Aids to Navigation System set forth in subpart B of part 62 of this subchapter.

§ 66.01-11 Lights.

(a) Except for range and sector lights, each light approved as a private aid to navigation must:

(1) Have at least the effective intensity required by this subpart omnidirectionally in the horizontal plane, except at the seams of its lens-mold.

(2) Have at least 50% of the effective intensity required by this subpart within ±2° of the horizontal plane.

(3) Have a minimum effective intensity of at least 1 candela for a range of 1 nautical mile, 3 candelas for one of 2 nautical miles, 10 candelas for one of 3 nautical miles, and 54 candelas for one of 5 nautical miles. The District Commander may change the requirements for minimum intensity to account for local environmental conditions. For a flashing light this intensity is determined by the following formula:

$Ie=G/(0.2+t_2-t_1)$

Where:
Ie = Effective intensity
G = The integral of the instantaneous intensity of the flashed light with respect to time
t_1 = Time in seconds at the beginning of the flash
t_2 = Time in seconds at the end of the flash
t_2-t_1 is greater than or equal to 0.2 seconds.

(4) Unless the light is a prefocused lantern, have a means of verifying that the source of the light is at the focal point of the lens.

(5) Emit a color within the angle of 50% effective intensity with color coordinates lying within the boundaries defined by the corner coordinates in Table 66.01-11(5) of this part when plotted on the Standard Observer Diagram of the International Commission on Illumination (CIE).

Table 66.01-11(5)--Coordinates of Chromaticity

Color	Coordinates of chromaticity	
	x axis	y axis
White	0.500	0.382
	0.440	0.382
	0.285	0.264
	0.285	0.332
	0.453	0.440
	0.500	0.440
Green	0.305	0.689
	0.321	0.494
	0.228	0.351
	0.028	0.385
Red	0.735	0.265
	0.721	0.259
	0.645	0.335
	0.665	0.335
Yellow	0.618	0.382
	0.612	0.382
	0.555	0.435
	0.560	0.440

(6) Have a recommended interval for replacement of the source of light that ensures that the lantern meets the minimal required intensity stated in paragraph (a)(3) of this section in case of degradation of either the source of light or the lens.

(7) Have autonomy of at least 10 days if the light has a self-contained power system. Power production for the prospective position should exceed the load during the worst average month of insolation. The literature concerning the light must clearly state the operating limits and service intervals. Low-voltage disconnects used to protect the battery must operate so as to prevent sporadic operation at night.

(b) The manufacturer of each light approved as a private aid to navigation must certify compliance by means of an indelible plate or label affixed to the aid that meets the requirements of § 66.01-14.

§ 66.01-12 May I continue to use the private aid to navigation I am currently using?

If, after March 8, 2004, you modify, replace, or install any light that requires a new application as described in § 66.01-5, you must comply with the rules in this part.

§ 66.01-13 When must my newly manufactured equipment comply with these rules?

After March 8, 2004, equipment manufactured for use as a private aid to navigation must comply with the rules in this part.

§ 66.01-14 Label affixed by manufacturer.

(a) Each light, intended or used as a private aid to navigation authorized by this part, must bear a legible, indelible label (or labels) affixed by the manufacturer and containing the following information:

(1) Name of the manufacturer.
(2) Model number.
(3) Serial number.
(4) Words to this effect: "This equipment complies with requirements of the U.S. Coast Guard in 33 CFR part 66."

(b) This label must last the service life of the equipment.

(c) The manufacturer must provide the purchaser a data sheet containing the following information:
(1) Recommended service life based on the degradation of either the source of light or the lamp.
(2) Range in nautical miles.
(3) Effective intensity in candela.
(4) Size of lamp (incandescent only).
(5) Interval, in days or years, for replacement of dry-cell or rechargeable battery.

§ 66.01-15 Action by Coast Guard.

(a) The District Commander receiving the application will review it for completeness and will assign the aid one of the following classifications:

Class I: Aids to navigation on marine structures or other works which the owners are legally obligated to establish, maintain and operate as prescribed by the Coast Guard.

Class II: Aids to navigation exclusive of Class I located in waters used by general navigation.

Class III: Aids to navigation exclusive of Class I located in waters not ordinarily used by general navigation.

(b) Upon approval by the District Commander, a signed copy of the application will be returned to the applicant. Approval for the operation of radar beacons (racons) will be effective for an initial two year period, then subject to annual review without further submission required of the owner.

§ 66.01-20 Inspection.

All classes of private aids to navigation shall be maintained in proper operating condition. They are subject to inspection by the Coast Guard at any time and without prior notice.

§ 66.01-25 Discontinuance and removal.

(a) No person, public body or instrumentality shall change, move or discontinue any authorized private aid to navigation required by statute or regulation (Class I, § 66.01-15) without first obtaining permission to do so from the District Commander.

(b) Any authorized private aid to navigation not required by statute or regulation (Classes II and III, § 66.01-15) may be discontinued and removed by the owner after 30 days' notice to the District Commander to whom the original request for authorization for establishment of the aid was submitted.

(c) Private aids to navigation which have been authorized pursuant to this part shall be discontinued and removed without expense to the United States by the person, public body or instrumentality establishing or maintaining such aids when so directed by the District Commander.

§ 66.01-30 Corps of Engineers' approval.

(a) Before any private aid to navigation consisting of a fixed structure is placed in the navigable waters of the United States, authorization to erect such structure shall first be obtained from the District Engineer, U.S. Army Corps of Engineers in whose district the aid will be located.

(b) The application to establish any private aid to navigation consisting of a fixed structure shall show evidence of the required permit having been issued by the Corps of Engineers.

§ 66.01-40 Exemptions.

(a) Nothing in the preceding sections of this subpart shall be construed to interfere with or nullify the requirements of existing laws and regulations pertaining to the marking of structures, vessels and other obstructions sunken in waters subject to the jurisdiction of the United States (Part 64 of this subchapter), the marking of artificial islands and structures which are erected on or over the seabed and subsoil of the Outer Continental Shelf (Part 67 of this subchapter), or the lighting of bridges over navigable waters of the United States (Subchapter J of this subchapter).

(b) Persons marking bridges pursuant to Subchapter J of this title are exempted from the provisions of § 66.01-5.

§ 66.01-45 Penalties.

Any person, public body or instrumentality, excluding the armed forces, who shall establish, erect or maintain any aid to maritime navigation without first obtaining authority to do so from the Coast Guard, with the exception of those established in accordance with § 64.11 of this chapter, or who shall violate the regulations relative thereto issued in this part, is subject to the provisions of 14 U.S.C. 83.

§ 66.01-50 Protection of private aids to navigation.

Private aids to navigation lawfully maintained under these regulations are entitled to the same protection against interference or obstruction as is afforded by law to Coast Guard aids to navigation (Part 70 of this subchapter). If interference or obstruction occurs, a prompt report containing all the evidence available should be made to the Commander of the Coast Guard District in which the aids are located.

§ 66.01-55 Transfer of ownership.

(a) When any private aid to navigation authorized by the District Commander, or the essential real estate or facility with which the aid is associated, is sold or transferred, both parties to the transaction shall submit application (§66.01-5) to the Commander of the Coast Guard District in which the aid is located requesting authority to transfer responsibility for maintenance of the aid.

(b) The party relinquishing responsibility for maintenance of the private aid to navigation shall indicate on the application form (CG-2554) both the discontinuance and the change of ownership of the aid sold or transferred.

(c) The party accepting responsibility for maintenance of the private aid to navigation shall indicate on the application form (CG-2554) both the establishment and the change of ownership of the aid sold or transferred.

(d) In the event the new owner of the essential real estate or facility with which the aid is associated refuses to accept responsibility for maintenance of the aid, the former owner shall be required to remove the aid without expense to the United States. This requirement shall not apply in the case of any authorized private aid to navigation required by statute or regulation (Class I, § 66.01-15) which shall be maintained by the new owner until the conditions which made the aid necessary have been eliminated.

DRAFT NAVIGATION PLAN

CONGAREE RIVER MODIFIED REMOVAL ACTION
COLUMBIA, SOUTH CAROLINA

August 2020

Prepared for:

Dominion Energy South Carolina, Inc.
400 Otarre Parkway
Cayce, SC 29033

Prepared by:

Apex Companies, LLC
1600 Commerce Circle
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DRAFT NAVIGATION PLAN

CONGAREE RIVER MODIFIED REMOVAL ACTION
COLUMBIA, SOUTH CAROLINA

INTRODUCTION

Dominion Energy South Carolina, Inc. (DESC), formerly South Carolina Electric and Gas Company (DESC), plans to complete a Stakeholder-developed 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 USACE approval for this project is provided in Appendix A.

The overall objective of this project is to remove impacted sediment from the Congaree River within two areas. The plan is to construct temporary cofferdams around each area to facilitate removal of the impacted sediment. The temporary cofferdams will be constructed sequentially and the MRA will occur over several years. The construction and active remediation season will occur from approximately May through October of each year. Figure 2 illustrates the proposed cofferdam locations. After each cofferdam is constructed, the isolated area will be dewatered and the impacted sediment removed and transported off-site for disposal. Following completion of the removal activities in Area 1, the cofferdam will be removed and a cofferdam will be constructed around Area 2. After the removal activities are completed in Area 2, the cofferdam materials will be removed from the river.

DESC intends to complete the project with as minimal of an impact on navigation and recreational use of the Congaree River as possible. This Plan was developed based on the guidelines provided in the “U.S. Coast Guard Aids to Navigation System” publication and is a supplement to the U.S. Coast Guard (USCG) Private Aids to Navigation Application. DESC will consult with the USCG District Seven Aids to Navigation and Waterways Management Office as necessary, and will complete the required notifications and installation of appropriate navigational aids and safety measures as specified in this Plan or directed by the USCG during implementation of the project. The proposed Notice to Navigation Interests and example navigational aid specifications are provided in Appendix B and C, respectively.

NAVIGATION WITHIN THE PROJECT AREA

The USACE Charleston District completed a Navigability Study of the Congaree River Basin in 1977. Excerpts from this study are provided in Appendix D. This document classifies the Congaree River as “navigable waters of the U.S. from its confluence with the Wateree River (R.M. [River Mile] 125.3) to the Gervais Street Bridge, U.S. 378 (R.M. 175.9).” As a result, the MRA area is located at the extreme

upriver limit of the classified navigable waters (Figure 2). This study provides historical documentation of significant use of the Congaree River for navigation and commerce, especially during the time frame when the Columbia Canal was operational. However, the study states that use of the river for interstate commerce has not occurred since the 1950s due to the utilization of other forms of transportation.

Current conditions within the Congaree River and the project area are similar to those described in the 1977 study. The river in the vicinity of the Gervais Street Bridge is shallow and rocky with highly variable flow rates that preclude the operation of large watercraft. In fact, it was necessary to utilize multiple forms of small watercraft that ranged in size from a pontoon boat to a canoe to complete the sediment investigative activities within the project area. In some instances, areas were investigated by wading due to the shallow and rocky nature of the river bottom. In other areas, where sufficient water depth was present to allow for the small pontoon boat to operate, the flow rate of the river was too swift to permit safe operation of the watercraft.

Currently, only small personal watercraft such as inner tubes, kayaks, canoes and occasionally a small motorboat are seen operating in the vicinity of the Gervais Street Bridge and the project area. Wading for the purpose of fishing or swimming also occurs in this area.

Potential Impacts to Navigation

As seen on Figure 2, cofferdams will be constructed around Areas 1 and 2 to isolate the areas for dewatering and sediment removal. The actual project area is relatively small in comparison to the overall width of the river and more than half of the river's width will be available for continued navigation or other activities. The maximum width of the area within the river to be isolated by the cofferdams is approximately 280 feet in Area 1 and approximately 190 feet wide in Area 2, while the entire river width ranges from approximately 650 to 800 feet in the project area.

The aerial photograph in Figure 3 shows the open water area west of the proposed cofferdams, and the approximate navigation route is highlighted by the arrows. Watercraft of the type typically utilized in this area of the river will be able to continue unobstructed use of the resource during completion of the project by following this general route.

Due to safety requirements, landside support zone activities and MRA activities within the river, access by the general public to the Congaree River via the Senate Street Extension (Figure 3) must be restricted during implementation of the project. This area has been utilized as a boat launch and fishing area due to the access provided by the asphalt and gravel road (which is private property) and the gentle slope to the river's edge. Access restrictions in this area should not affect the general public access to the river since this is private property. DESC plans to secure the area with fencing to establish the landside operations.

Options for the general public to launch small watercraft and access the river include the Three Rivers Greenway located directly across the river from the project area (Figure 3) and a public boat ramp located approximately 1.8 miles downstream of the Blossom Street Bridge.

Overall, no significant impacts to navigation of small watercraft and use of the river for recreational purposes are expected during completion of the project. As Figure 3 illustrates, more than half of the river's width will be available for use by the general public at all times. Restrictions to river access at the private access point on the east side will be mitigated by the access points located directly across the

river at the Three Rivers Greenway and public boat ramp located downstream. Safety measures that will be installed and maintained to ensure safe navigation around the project area are described below.

SAFETY MEASURES (PRIVATE AIDS TO NAVIGATION)

The safety measures (private aids to navigation) and details listed below are provided to illustrate the current plan and will be modified as necessary to obtain USCG approval of the project. The three main objectives of the safety measures are:

1. Provide boaters and other users of the river with advance notice of the construction site and the need to take appropriate measures to avoid the cofferdam structure;
2. Demarcate the area to be avoided; and
3. Alert boaters and other users of the river that the cofferdam structure, isolated area (sediment removal area) and landside support zone are restricted areas and off limits to non-project related personnel.

These objectives will be accomplished by publication of a “Notice to Navigation Interests” (Notice) prior to initiation of the project. This Notice will provide specific details pertaining to the project area and the navigational requirements. A draft Notice is provided as Appendix B.

In addition, strategic placement of warning and restricted access signs, solar powered lights and regulatory buoys (Figures 4 and 5) will provide real-time notification to boaters as they enter and make their way through the project area from either direction. Table 1 provides a summary of the required quantities of aids to navigation as well as recommended manufacturer identification and model numbers. Proposed alternative aids to navigation that meet or exceed the criteria below will also be considered.

The warning signs will be placed up and down river and the sign locations will be determined in the field based on existing conditions. The signs will be located in areas that are readily visible to river users. The warning signs will be relatively large (approximately 4 feet by 4 feet) and state “Warning - River Construction Zone Ahead”. The signs placed in the river will be properly secured (e.g., bolted to metal posts and attached to a weighted base and secured in-place with concrete blocks or large boulders).

The signs will be placed in the river, on the cofferdam and along the shoreline, and will be placed at an appropriate height (i.e., eye level, or approximately 3 to 5 feet above the water or land surface). For boaters, the elevation of the signs will be based on average river flows when most recreational boating activity is expected to occur. The average river elevation is approximately 116.5 feet (NGVD 29) which equates to an approximate sign elevation of 120 feet (NGVD 29). During completion of the investigative activities, it was observed that river elevations above approximately 117 feet (NGVD 29) produced flows that were not conducive to the safe operation of small watercraft within the project area. As a result, the 120 feet elevation will place the signs above the water level at flows where most recreational boating and use of the river is expected to take place. For the landside sign installations, eye level or approximately 5 feet above the surface elevation will be used to establish the correct position of the sign.

The USCG Aids to Navigation System specifies the use of an information or regulatory buoy (white with an orange band) to designate areas that should be avoided by watercraft. For this project, the buoys will also be marked with a danger symbol that specifies the presence of the dam. Example specifications of

this type of buoy and markings are provided in Appendix C. The approximate locations for buoy moorings are shown on Figures 4 and 5 for Areas 1 and 2, respectively. Generally, the buoys will be properly secured approximately 5 to 10 feet away from the outboard toe of the cofferdam slope and alert river users to the presence of the dam. The buoys will direct both downstream and upstream traffic away from the cofferdam structure. They will be relocated as necessary as the project progresses.

Marine-application lights will also be positioned slightly above the top of the cofferdam to help identify the perimeter of the structure in the unlikely event that boating traffic is in the area during nighttime or low light conditions. As part of the aids to navigation, solar powered, LED lights will be placed on each corner (or bend) and midpoint of each leg of the cofferdam. The lights will have a standard flash rate of 60 flashes per minute (FPM) and will be visible for one mile, under clear conditions. The lights will be secured on posts and positioned on the outboard side of the cofferdam with the elevation set approximately two feet above the crest elevation of the cofferdam. This height was selected to provide optimum visibility from the waterside of the cofferdam, while attempting to minimize any potential adverse impacts to the inhabitants of the residential condominiums located on Gist Street. Nine (9) lights are currently planned for the Area 1 cofferdam and six (6) lights are planned for the Area 2 cofferdam. An example of solar powered nautical lights is provided in Appendix C. The operating period for lights is between sunset and sunrise.

“Restricted Area” signs will be positioned at regular intervals along the cofferdam structure to alert river users of the need to stay away from the cofferdam. No unauthorized access to or on the cofferdam structure will be permitted.

Project personnel will conduct regular inspections of the buoys, lights and signs to ensure that they are still visible, in the correct locations, securely moored in place and operating properly. The minimum inspection frequency will be once per week or as soon as possible following high water/high river flow events. Any issues identified during the inspections will be corrected as soon as possible.

TABLES AND FIGURES

APPENDICES

TABLES AND FIGURES

TABLE 1

SUMMARY OF AIDS TO NAVIGATION

Congaree River Sediments
Columbia, South Carolina

Quantity	Description	Model No.	Manufacturer
9 - Area 1 6 - Area 2	Regulatory buoys ABS type 9" diameter or equivalent, with required anchors and mandatory restricted area symbol, "Dam"	B1147R	Roylan
6	48" x 48" flourescent/reflective signs "Warning River Construction Zone Ahead" black message on white reflective background with orange border	B2211	Roylan
9 - Area 1 6 - Area 2	Solar lights (LEDs), clear, to be positioned on each "corner" of construction area, 60 FPM (flashes per minute) mounted on 4" x 4" treated posts or equivalent	One mile #101 Series	Roylan

Notes:
1. Signs, buoys and lights will be deployed during each phase of the project.
2. Proposed alternative aids to navigation that meet or exceed criteria listed in 33 CFR 66 are acceptable.

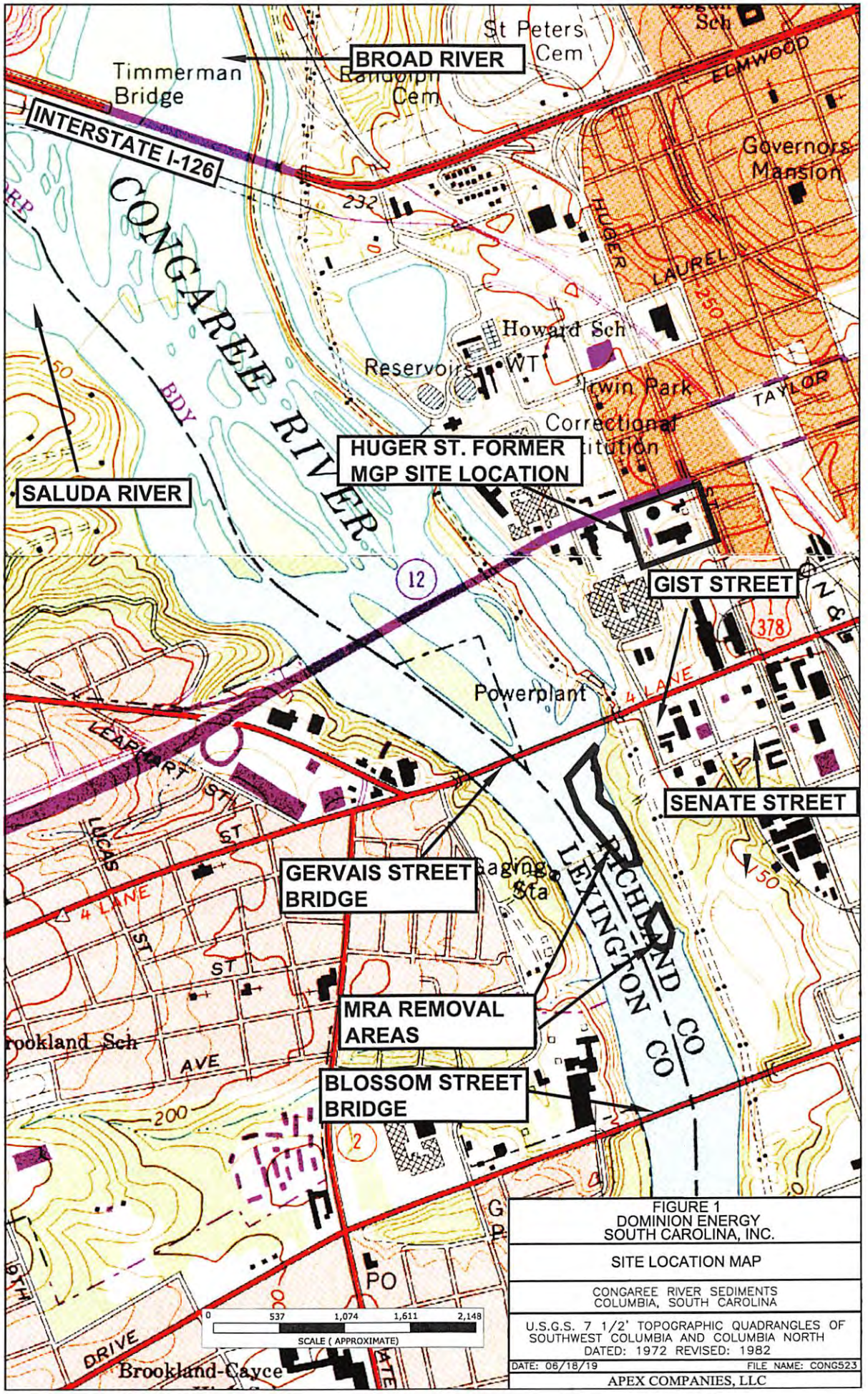


FIGURE 1
DOMINION ENERGY
SOUTH CAROLINA, INC.

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

N

GERVAIS STREET BRIDGE

GIST STREET

SENATE STREET

CONGAREE RIVER FLOW

AREA 1

USGS GAUGE
02169500

EAST BANK OF
CONGAREE RIVER

APPROXIMATE EXTENT
OF COFFERDAM BASE

WEST BANK OF
CONGAREE RIVER

AREA 2

FIGURE 2
DOMINION ENERGY
SOUTH CAROLINA, INC.

PLANNED REMOVAL AREAS AND
COFFERDAM LOCATIONS

COLUMBIA, SOUTH CAROLINA

DATE: 6/8/20 FILE NAME: CONG554

APEX COMPANIES, LLC

LEGEND

– POTENTIAL SMALL CRAFT NAVIGABLE PATHWAY

– APPROXIMATE AREA TO BE REMOVED

– APPROXIMATE COFFERDAM FOOTPRINT

NOTES:
1) DATE OF AERIAL IMAGE FLIGHT – APRIL 18, 2018.
2) CONGAREE RIVER GAGE (02169500) HEIGHT DURING FLIGHT AT 10:45 WAS 6.18' (119.20' ELEVATION).

0' 120' 240' 360'

N

UNNAMED TRIBUTARY #1

GERVAIS STREET BRIDGE

GIST STREET

SENATE STREET

COFFERDAM

RESTRICTED ACCESS ROAD (PRIVATE PROPERTY)

THREE RIVERS GREENWAY (PUBLIC RIVER ACCESS)

AREA 1

CONGAREE RIVER FLOW

UNNAMED TRIBUTARY #2

COFFERDAM

AREA 2

PUBLIC BOAT RAMP (APPROX. 1.8 MILES)

FIGURE 3
DOMINION ENERGY
SOUTH CAROLINA, INC.

PROJECT AREA AND NAVIGABILITY INFORMATION

COLUMBIA, SOUTH CAROLINA

DATE: 6/8/20 FILE NAME: CONG553

APEX COMPANIES, LLC

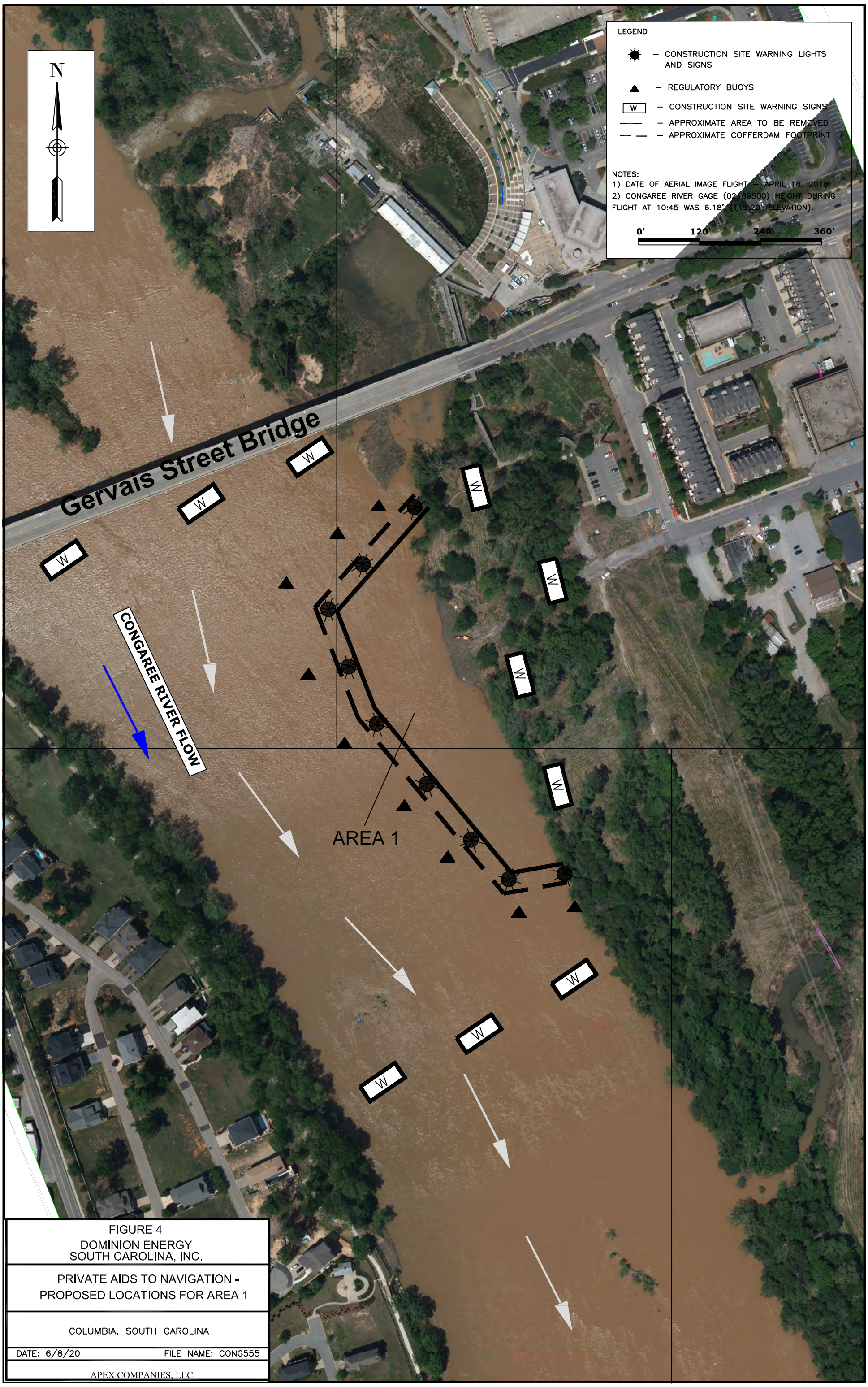


FIGURE 4

DOMINION ENERGY
SOUTH CAROLINA, INC.

PRIVATE AIDS TO NAVIGATION -
PROPOSED LOCATIONS FOR AREA 1

COLUMBIA, SOUTH CAROLINA

DATE: 6/8/20 FILE NAME: CONG555

APEX COMPANIES, LLC

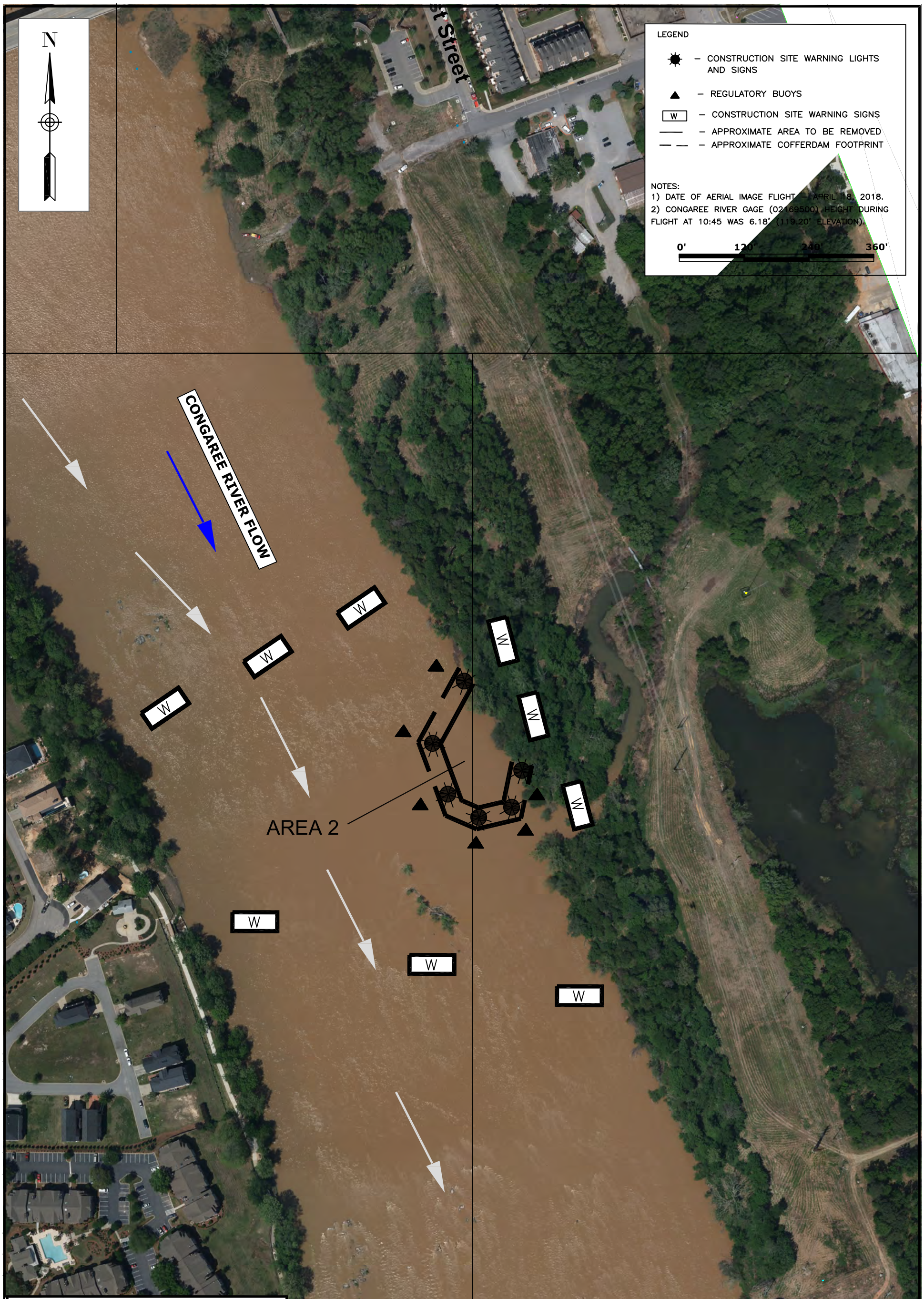


FIGURE 5

DOMINION ENERGY
SOUTH CAROLINA, INC.

PRIVATE AIDS TO NAVIGATION -
PROPOSED LOCATIONS FOR AREA 2

COLUMBIA, SOUTH CAROLINA

DATE: 6/8/20 FILE NAME: CONG556

APEX COMPANIES, LLC

APPENDIX A

USACE Project Approval (To Be Included After Receipt)

APPENDIX B

Notice to Navigation Interests

DRAFT

NOTICE TO NAVIGATION INTERESTS

CONGAREE RIVER MODIFED REMOVAL ACTION
COLUMBIA, SOUTH CAROLINA

Overview

Dominion Energy South Carolina, Inc. (DESC), formerly South Carolina Electric and Gas Company (DESC), plans to complete a Stakeholder-developed 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 impacted sediment from the Congaree River within two areas. The plan is to construct temporary cofferdams around each area to facilitate removal of the impacted sediment. The temporary cofferdams will be constructed sequentially and the MRA will occur over several years. The construction and active remediation season will occur from approximately May through October of each year. Figure 2 illustrates the proposed cofferdam locations. After each cofferdam is constructed, the isolated area will be dewatered and the impacted sediment removed and transported off-site for disposal. Following completion of the removal activities in Area 1, the cofferdam will be removed and a cofferdam will be constructed around Area 2. After removal activities are completed in Area 2, the cofferdam materials will be removed from the river.

The actual project area is relatively small in comparison to the overall width of the river and more than half of the river's width will be available for continued navigation or other activities. Figure 2 shows the planned restricted areas and the area that will remain available for navigation during completion of project. Figures 3 and 4 provide illustrations of the planned Area 1 cofferdam and show the river portion available for continued navigation during this phase. Because Area 2 is smaller than Area 1, the cofferdam will have a similar appearance although smaller and not extending as far into the river.

Navigation Signage, Lighting and Signals

Prior to initiation of cofferdam construction activities, warning signs will be placed upriver and downriver of the cofferdam location. The final locations of the signs will be determined in the field based on existing conditions. The signs will be located in areas that are readily visible from the water. The warning signs will be approximately 4 feet by 4 feet and state "Warning - River Construction Zone Ahead". The signs will be bolted to metal posts and attached to a weighted base and secured in-place with concrete blocks or boulders.

Information buoys (white with a orange band) will be placed approximately 5 to 10 feet away from the outboard toe of the cofferdam as an aid to alert river users to the presence of the rock dam. The buoys will be marked with a danger symbol that specifies the presence of the dam. The buoys will direct both downstream and upstream traffic away from the cofferdam structure. They will be relocated as necessary

as the project progresses. Figures 3 and 4 provide illustrations of the planned cofferdam buoy and lighting scenario using Area 1 as an example.

Marine-application lights will also be positioned slightly above the top of the cofferdam to help identify the perimeter of the structure in the unlikely event that boating traffic is in the area during nighttime or low light conditions. As part of the aids to navigation, solar powered, LED lights will be placed on each corner (or bend) and midpoint of each leg of the cofferdam. The lights will have a standard flash rate of 60 flashes per minute (FPM) and will be visible for one mile, under clear conditions. The lights will be positioned on the outboard side of the cofferdam with the elevation set approximately two feet above the crest elevation of the cofferdam. Nine (9) lights are currently planned for the Area 1 cofferdam and six (6) lights are planned for the Area 2 cofferdam. The operating period for lights is between sunset and sunrise.

“Restricted Area” signs will be positioned at regular intervals along the cofferdam structure to alert river users of the need to stay away from the cofferdam. No unauthorized access to or on the cofferdam structure will be permitted. Users of the river are advised to remain a safe distance from the project area at all times and to obey all navigation aids and instructions.

List of Figures

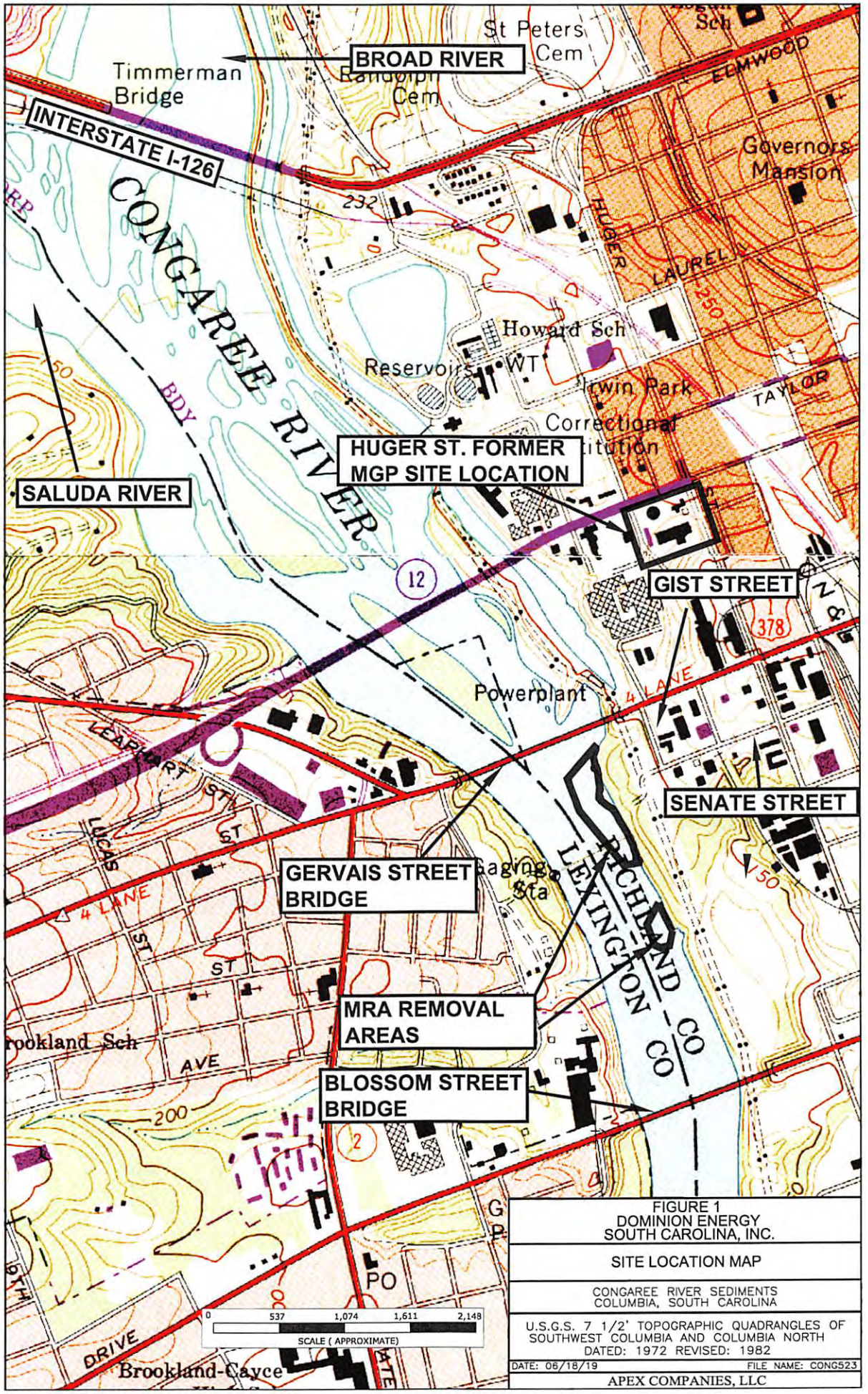


FIGURE 1
DOMINION ENERGY
SOUTH CAROLINA, INC.

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

N

GERVAIS STREET BRIDGE

GIST STREET

SENATE STREET

CONGAREE RIVER FLOW

AREA 1

USGS GAUGE
02169500

EAST BANK OF
CONGAREE RIVER

APPROXIMATE EXTENT
OF COFFERDAM BASE

WEST BANK OF
CONGAREE RIVER

AREA 2

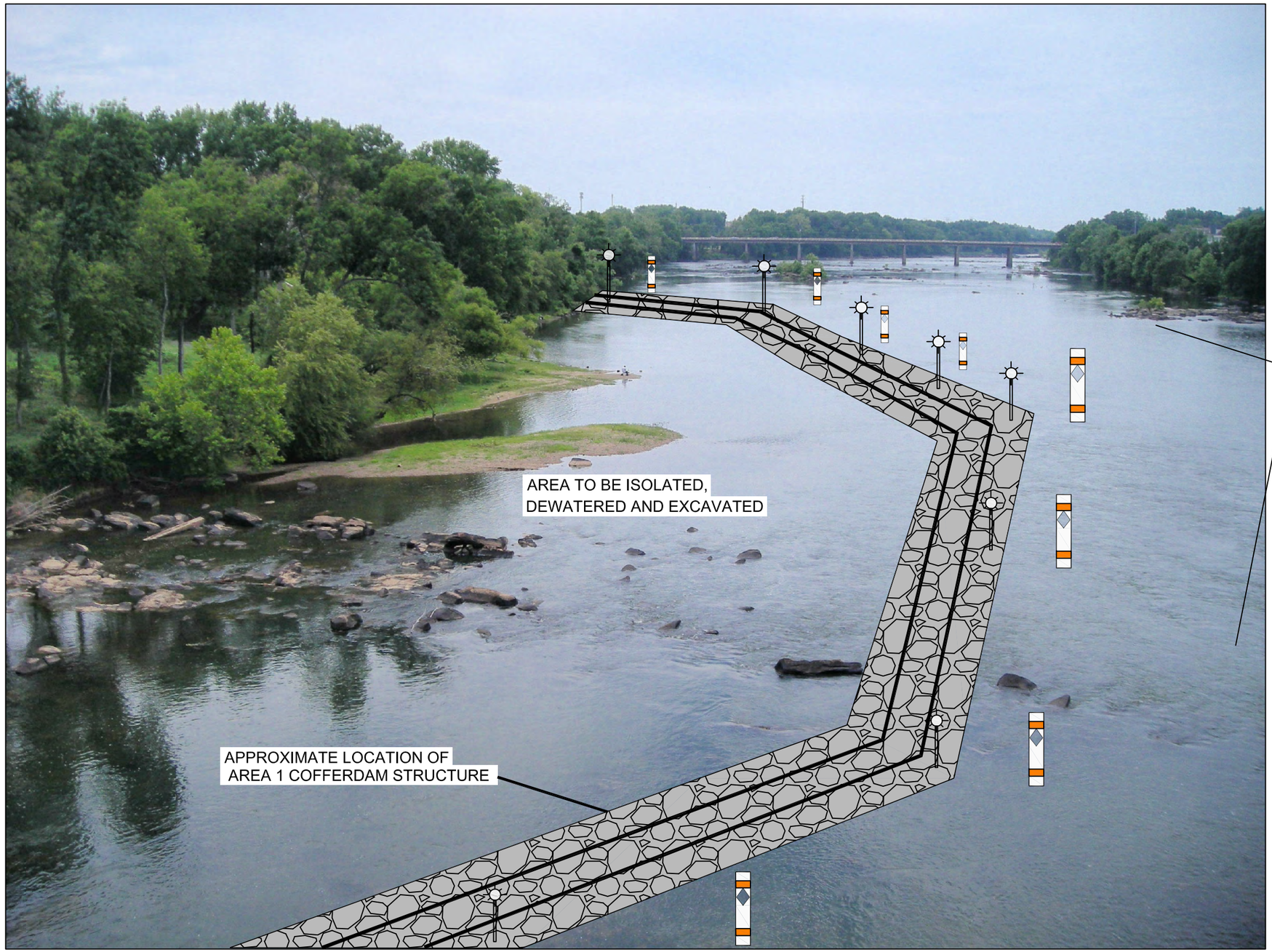
FIGURE 2
DOMINION ENERGY
SOUTH CAROLINA, INC.

PLANNED REMOVAL AREAS AND
COFFERDAM LOCATIONS

COLUMBIA, SOUTH CAROLINA

DATE: 6/8/20 FILE NAME: CONG554

APEX COMPANIES, LLC



- INFORMATION BUOY WITH DANGER OR OTHER SYMBOL TO ALERT BOATERS OF COFFERDAM

- OBSTRUCTION LIGHTS WILL BE PLACED IN ACCORDANCE WITH 33 C.F.R. 67.05-1.

REMAINDER OF RIVER AVAILABLE FOR NAVIGATION

NOTES:
- DRAWING NOT TO SCALE AND IS FOR ILLUSTRATIVE PURPOSES ONLY.
- COFFERDAM STRUCTURE LOCATION AND CONFIGURATION IS APPROXIMATE.
- PHOTOGRAPH TAKEN FROM THE GERVAIS ST. BRIDGE LOOKING SOUTH.

FIGURE 3
DOMINION ENERGY SOUTH CAROLINA, INC.

AREA 1 COFFERDAM ILLUSTRATION (1 OF 2)

CONGAREE RIVER SEDIMENTS
COLUMBIA, SOUTH CAROLINA

DATE: 7/6/20 FILE NAME: CONG557

APEX COMPANIES, LLC

- INFORMATION BUOY WITH DANGER OR OTHER SYMBOL TO ALERT BOATERS OF COFFERDAM

- OBSTRUCTION LIGHTS WILL BE PLACED IN ACCORDANCE WITH 33 C.F.R. 67.05-1.

NOTES:
- DRAWING NOT TO SCALE AND IS FOR ILLUSTRATIVE PURPOSES ONLY.
- COFFERDAM STRUCTURE LOCATION AND CONFIGURATION IS APPROXIMATE.
- PHOTOGRAPH TAKEN FROM THE WEST BANK OF THE RIVER LOOKING EAST.

FIGURE 4
DOMINION ENERGY SOUTH CAROLINA, INC.

AREA 1 COFFERDAM ILLUSTRATION (2 OF 2)

CONGAREE RIVER SEDIMENTS
COLUMBIA, SOUTH CAROLINA

DATE: 7/6/20 FILE NAME: CONG558

APEX COMPANIES, LLC

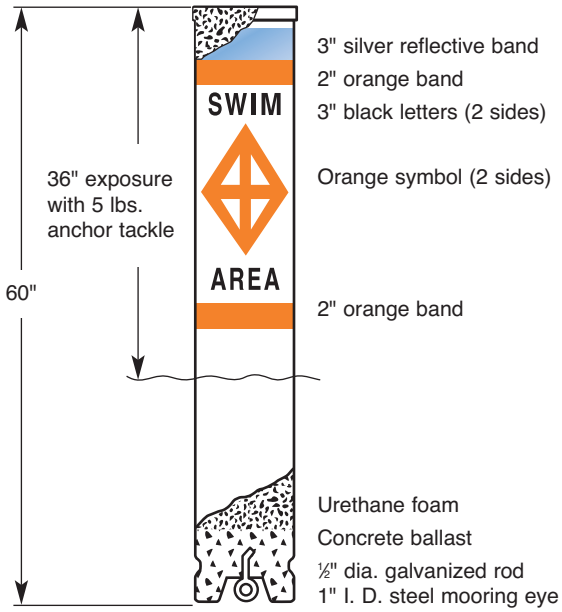
APPENDIX C

Example Navigational Aid Specifications

Regulatory Buoys • ABS type – 9" Dia.

Approved and universally used by local, state and federal agencies to ensure water safety. Ideal for private applications.

UNSINKABLE — filled with urethane foam



Specify desired symbols and messages when ordering.

Submerged buoyancy	84 lbs.
Net weight	49 lbs.
Shipping weight	56 lbs.

Refer to installation suggestions on page 21.
See warranty information on back cover.

Model B1147R

Features

- Easy reconditioning of weather-worn buoys with excellent adhesion of restoration materials. See page 18.
- 9" diameter, white, ABS plastic exterior. Will not rust, chip or peel. Ultraviolet inhibited.
- Completely urethane foam filled. Virtually unsinkable.
- 3"-wide reflective band at top provides excellent nighttime visibility.
- Self-righting without tackle.
- Recessed cap allows buoy to stand upright.
- Heavy steel galvanized anchoring eye cast in an internal concrete ballast.
- Includes choice of standard symbols and messages.

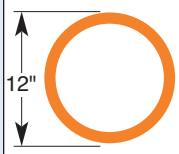
Available Options

- Pickup eye built into top.
- Stainless steel anchoring eye for salt water applications.
- Agency or name identification.
- Cone cap top.
- Special non-standard messages.
- Solar lights (see page 11).
- Available in yellow.
- Side mooring eyes for swim areas, float lines.

STANDARD INLAND WATERWAY SYMBOLS AND MESSAGES

Special messages are available. Request a quotation.

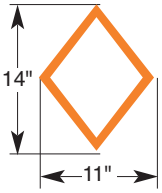
CONTROLLED AREA SYMBOL



2" band width

STANDARD MESSAGES
SLOW 5 MPH
SLOW NO WAKE
SKI AREA
NO SKI
SLOW 10 MPH
SPEED ZONE
NO WAKE IDLE SPEED

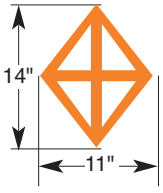
HAZARD WARNING SYMBOL



2" band width

STANDARD MESSAGES
ROCK
DANGER
RAPIDS
SHOAL
STUMP
SHALLOW AREA
HAZARD AREA
DANGER DAM

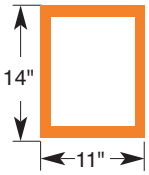
RESTRICTED AREA SYMBOL



2" band width

STANDARD MESSAGES
SWIM AREA
KEEP OUT
NO BOATS
BOATS KEEP OUT
CLOSED AREA
NO BOATING
DANGER DAM

INFORMATION SYMBOL



2" band width

STANDARD MESSAGES
REST ROOM 1 MILE
STATE PARK AHEAD
MARINA ENTRANCE
FISH ATTRACTOR

PERMAFLEX® CABLE

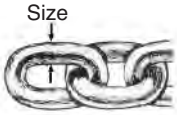
Lightweight
High strength
Safe to handle
Tough, durable, bright yellow, waterproof plastic covering is highly resistant to alkalis and salt

Covering O.D.	Part No.	Cable Dia.	Construction ①	Weight Lb./Ft.	Breaking Strength Lbs.	Standard Reel Size②	Reel Wt. Lbs.
5/32"	B1934	1/8"	7 x 7	.028	920	1000'	28
1/4"	B1936	3/16"	7 x 7	.065	3700	500'	37
5/16"	B1931	1/4"	7 x 7	.12	6100	500'	60
15/32"	B1933	3/8"	7 x 19	.28	14400	500'	180

Permaflex Cable – Galvanized steel wire rope coated & Impregnated with yellow polypropylene plastic.

CHAIN

Size



	Size	Part No.	Weight Lb./Ft.	Working Load Limit Lbs.	Standard Drum Size①
Proof Coil Heavy Duty	1/4"	B1828	.42	1300	400'
Steel Chain	3/8"	B1829	1.36	2650	200'
Hot Dipped Galv.	1/2"	B18210	2.3	4500	100'

NOTES: ① Chain may also be purchased by the foot. Subject to cut charge.

GALVANIZED HARDWARE

CABLE THIMBLES
Standard
Electro Galvanized

Heavy Duty
Hot Dipped Galvanized

Size	Part No.	Weight Lb./Ft.
3/16"	B2311	.03
1/4"	B2312	.04
5/16"	B2313	.05
1/2"	B2316	.15
1/4"	B2324	.08
5/16"	B2321	.11
1/2"	B2323	.47

CABLE CLAMPS
Standard
Electro Galvanized

Heavy Duty
Hot Dipped Galvanized

3/16"	B1831	.2
1/4"	B1832	.3
5/16"	B1833	.4
1/2"	B1835	.5
3/16"	B2331	.11
1/4"	B2332	.16
5/16"	B2333	.28
1/2"	B2335	.82

CONNECTING LINKS
Electro Galvanized

1/4"	B1891	.10
3/8"	B1892	.25
1/2"	B1893	.54

QUICK LINKS
Electro Galvanized

1/4"	B1801	.10
3/8"	B1803	.19
1/2"	B1804	.38

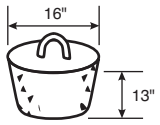
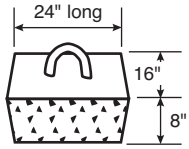
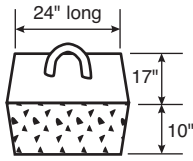
ANCHOR SHACKLES
Hot Dipped Galvanized

5/16"	B1900	.25
3/8"	B1901	.30
1/2"	B1902	.75

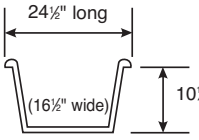
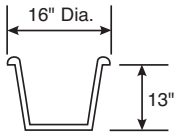
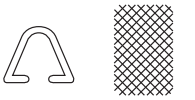
SWIVELS
Hot Dipped Galvanized

1/4"	B1921	.21
3/8"	B1922	.61
1/2"	B1923	.93

ANCHORS

ANCHORS CONCRETE		Avg. Wt. Lbs.	Under-water Wt. Lbs.
	B1842 ½" Round Steel Eye Hot Dipped Galvanized	90	54
	B21620 ½" Round Steel Eye Hot Dipped Galvanized	200	164
	B2152 ½" Round Steel Eye Hot Dipped Galvanized	300	180

ANCHOR KITS

	**B2161** Tough, high-density polyethylene anchor form. Cast up to 300 lb. concrete anchors.
	**B2163** Plastic anchor form for 90 lb. concrete anchors.
	**B2162** 1/2" Steel anchor eye and steel wire mesh.

Stainless steel hardware available.
Call for pricing.

Warning and Portage Signs

Bold black message on white reflective background with orange border. .080" aluminum base material. Excellent visibility, day and night.

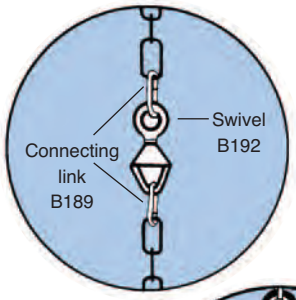
DAM	
SIZE (IN.)	PART NO.
24 x 24	B2011
30 x 30	B2021
36 x 36	B2031
48 x 48	B2211

THIN ICE	
24 x 24	B2013
30 x 30	B2023
36 x 36	B2033
48 x 48	B2213

SLOW NO WAKE	
SIZE (IN.)	PART NO.
24	B22258
30	B22259
36	B22260

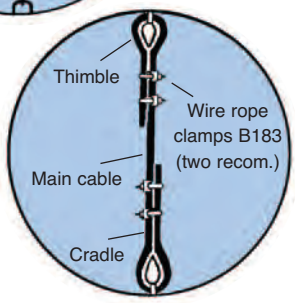
TAKE OUT		
SIZE (IN.)	PART NO.	RIGHT ARROW
24 x 24	B2012L	B2012R
30 x 30	B2022L	B2022R
36 x 36	B2032L	B2032R
48 x 48	B2212L	B2212R

Mooring Suggestions



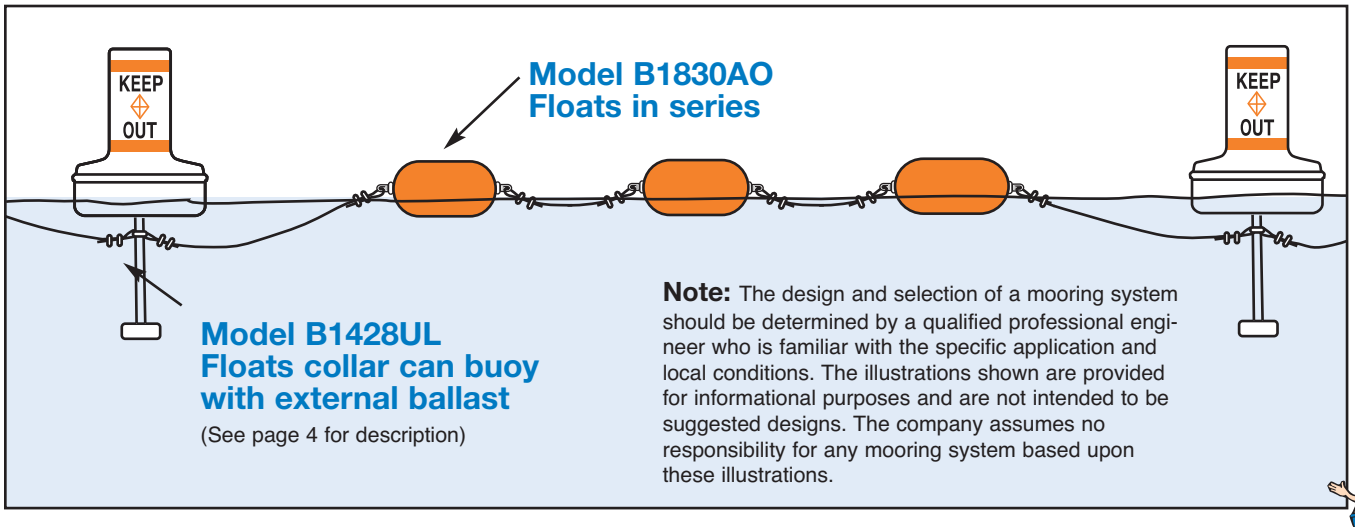
Use swivels to cut chain wear and increase buoy performance. Wind, wave, and current action causes buoys to rotate. This rotation, if severe, can cause chain or cable to twist, which will eventually submerge the buoy, increase chain wear, and increase the load on the anchor.

NOTE - The design and selection of a mooring system should be determined by a qualified professional engineer who is familiar with the specific application and local conditions. The illustrations shown are provided for informational purposes and are not intended to be suggested designs. The company assumes no responsibility for any mooring system based upon these illustrations.



Correct cable clamp assembly. Note from the sketch that the cradle is tightened against main cable. This is the correct assembly method to insure against the clamps, slipping while in service. Be sure to tighten nuts down, alternating from side to side frequently. Thimbles should be assembled so they are firmly trapped within the cable loop.

Typical Barrier Float System



Note: The design and selection of a mooring system should be determined by a qualified professional engineer who is familiar with the specific application and local conditions. The illustrations shown are provided for informational purposes and are not intended to be suggested designs. The company assumes no responsibility for any mooring system based upon these illustrations.

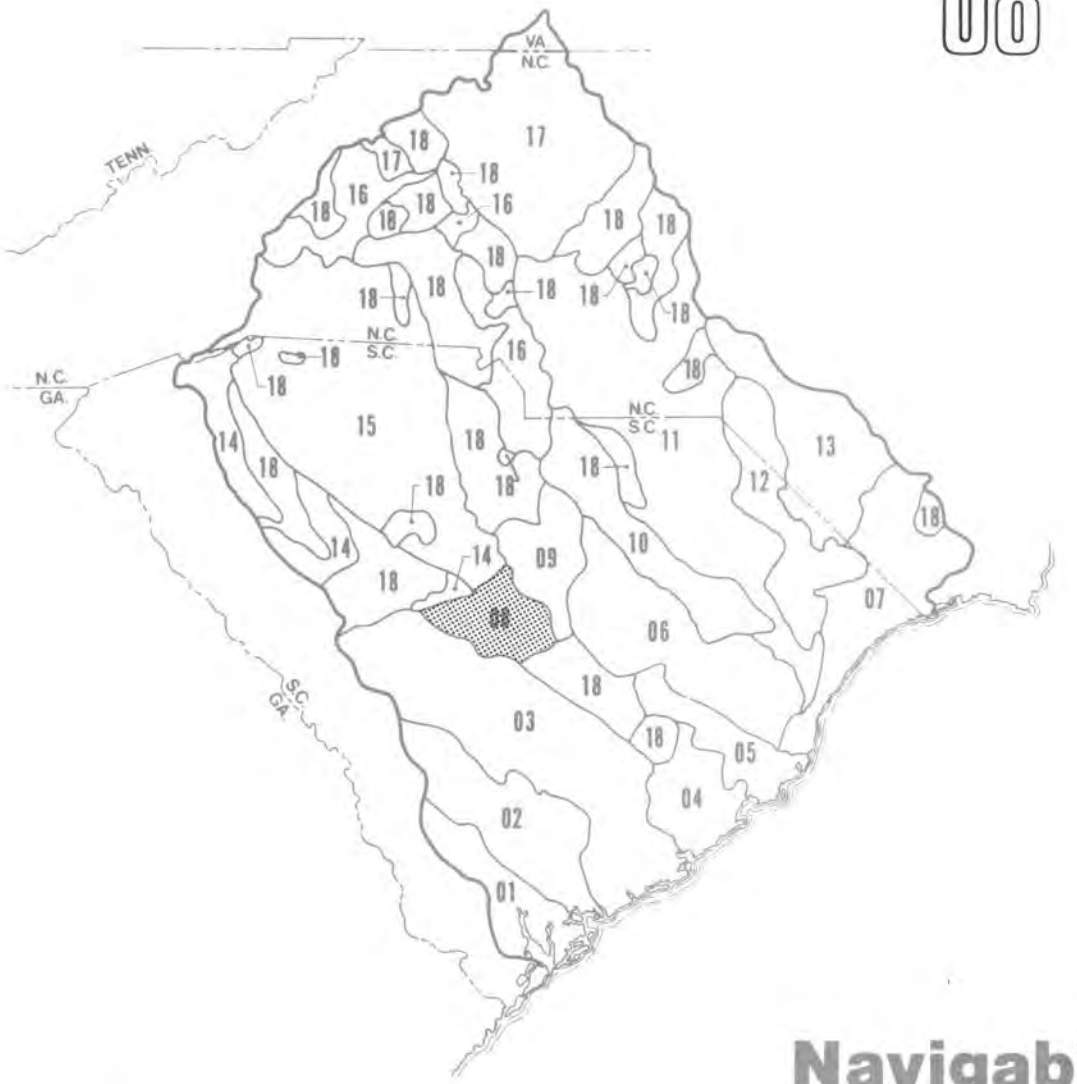
APPENDIX D

Excerpts from the 1977 Navigability Study of the Congaree River Basin

U.S. ARMY CORPS OF ENGINEERS
CHARLESTON DISTRICT
Charleston, South Carolina

CONGAREE RIVER BASIN

Report No. 08



Navigability Study 1977

STANLEY CONSULTANTS

Navigation Classification Categories

This study classifies streams into several different categories, each of which is discussed subsequently:

1. Present "navigable waters of the U. S." (by regulatory procedures).
2. Historically navigable waters (based on literature review).
3. Recommended "navigable waters of the U. S." (based upon data developed as a part of this investigation).
4. Recommended waters for practical navigation (within "navigable waters of the U. S.").
5. Headwaters for all waterbodies (five cfs points).

The first four navigation classifications are displayed on the plates presented later in this report. The headwater limits are summarized in Appendix A.

Present Navigable Waters of the U. S.

Currently, the Congaree River is classified as "navigable waters of the U. S." from its confluence with the Wateree River (R.M. 125.3) to the Gervais Street bridge, U. S. 378, (R.M. 175.9). (3)(4)(20) This classification is based on the limits of the Federally authorized project, as discussed in Section 3, as well as Federal and state court decisions, as discussed in Section 5. (See plate 08-2 for map location.)

Historically Navigable Waters

The Congaree River was extensively used for navigation throughout the earlier development of the state. After the construction of the Columbia Canal, as referred to in Section 4, navigation extended over the entire length of the Congaree River (R.M. 176.9), and continued up the Broad River (see Report 15).

Recommended and Practical Navigable Waters of the U. S.

The recommended and practical limit of "navigable waters of the U. S." is at the Gervais Street bridge (R.M. 175.9). This is the same limit as the present classification, and is based on the Federal court

decisions and authorized project limits that established the present classification, as well as observations and calculations, which establish the practicality of navigation at all six bridges crossing the river. Analysis at each of the locations resulted in an approximate mean water depth of at least 7 feet, approximate channel width of at least 50 feet, and an average slope within the ranges for practical navigation. The river extends upstream for about one mile beyond R.M. 175.9; however, it becomes shallower and spotted with sandbars as it nears the confluence of the Broad and Saluda Rivers and would require extensive improvements to be navigable. In addition, entrance to the Columbia Canal, used at one time to by-pass this shallow area, is no longer operational due to installation of electric generating turbines and would also require extensive renovation to become functional.

These conclusions on the navigation limit meet the criteria established for the Federal test of navigability that the body of water is used, or is capable of being used, in conjunction with other bodies of water to form a continuous highway upon which commerce with other states or countries might be conducted.

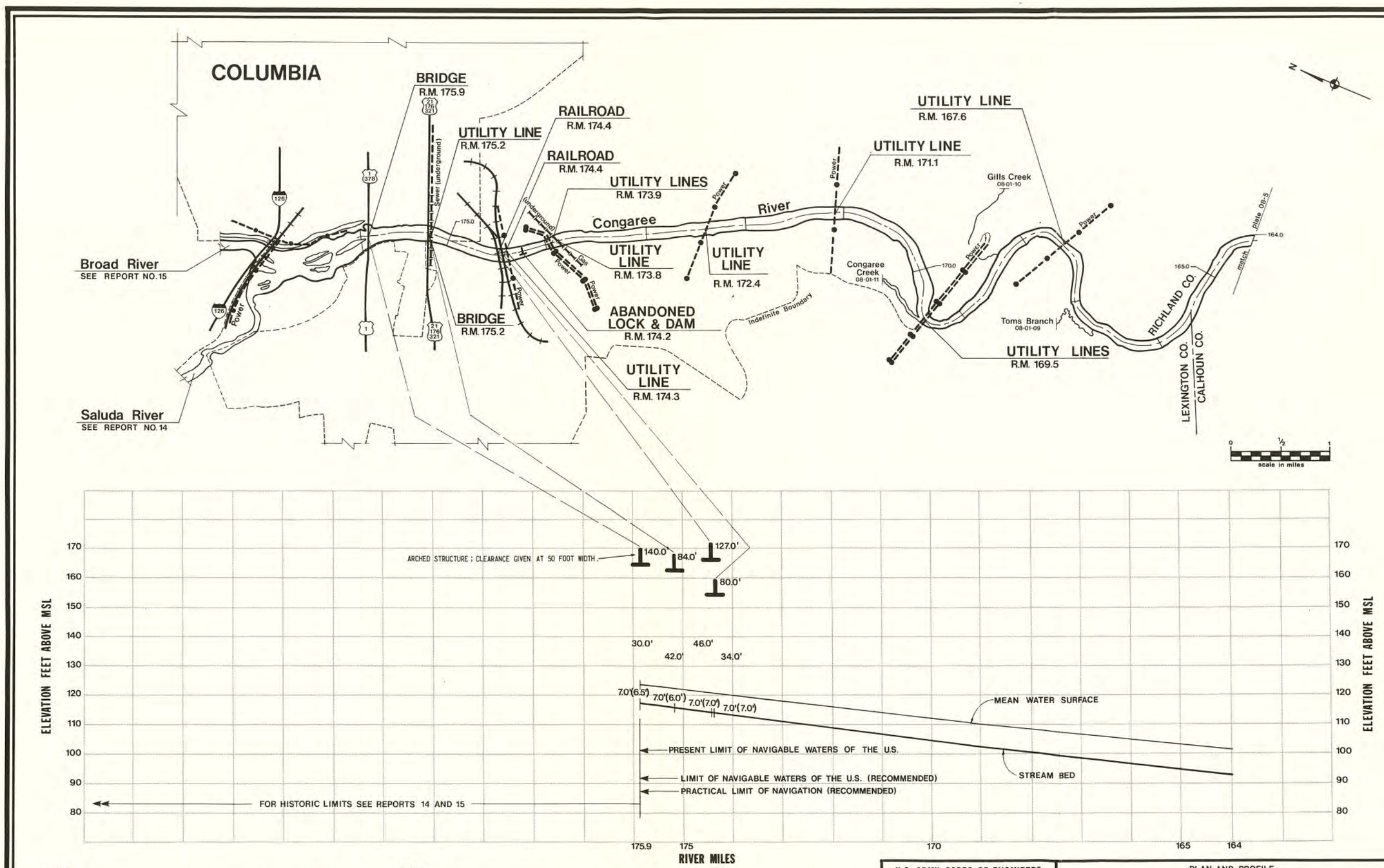
There are no significant tributaries to the Congaree River capable of supporting navigation.

Plates 08-4 through 08-6 are plan and profiles of the recommended "navigable waters of the U. S." The plan and profile plates show mean water surface as determined from USGS maps, stream bed depth, 50 feet wide navigable channel depth, pier spacing for bridges crossing the river, and vertical clearances at structures. Approximate vertical clearances for overhead utilities are shown later in this Section in Table 4. It is emphasized that all references to elevation are approximate since vertical control was established from USGS contour maps and not field instrument surveys. Water depth and structure vertical clearance measurements are also approximate due to the accuracy inherent in the field techniques. (See the Summary Report for a detailed description of field procedures and the methodology used to calculate water depth at mean flow.)

SECTION 7 - CONCLUSIONS AND RECOMMENDATIONS

Five classifications of navigation on streams in the Congaree River basin have been determined and are presented below. The first two are classifications developed from historical evidence and current Federal stream classifications. Classification 3 is based on field measurements, observations, and data analysis for the river. Classification 4 is based on review of all previously determined limits with a recommendation of the most upstream location with supporting evidence of navigability. The fifth classification accounts for all streams not otherwise classified and was determined based on the drainage area and hydrological aspects of the stream.

1. The Congaree River is presently classified "navigable waters of the U. S." between its mouth at the confluence with the Wateree River (R.M. 125.3) to the Gervais Street bridge in Columbia (R.M. 175.9).
2. The historical limit of navigation on the Congaree River is, with the use of the Columbia Canal, to R.M. 177. The classification extends beyond the Congaree basin boundary to the Broad River (see Report 15).
3. The recommended practical limit of navigation is at the Gervais Street bridge (R.M. 175.9). Reasonable channel improvements will be necessary for commercial river traffic to actually use the river up to this point.
4. It is recommended that the Congaree River be classified "navigable waters of the U. S." between its mouth at the confluence with the Wateree River (R.M. 125.3) to the Gervais Street bridge, U. S. 378 (R.M. 175.9) based on the analytical procedures and tests of navigability used in this study effort.
5. All streams not recommended for classification as "navigable waters of the U. S." are recommended for classification as "waters of the U. S." throughout their entire length.



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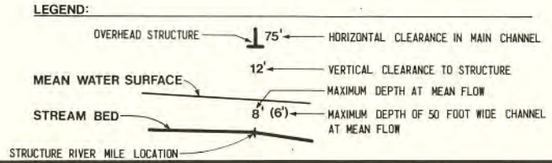

NOTES:

1. ELEVATION AND SLOPE OF MEAN WATER SURFACE ARE BASED ON USGS TOPOGRAPHIC MAPS AND ARE THEREFORE ONLY APPROXIMATIONS. VERTICAL DIMENSIONS FROM STREAM BED TO OVERHEAD STRUCTURES ARE FIELD MEASUREMENTS. RELATIVE LOCATION OF MEAN WATER SURFACE IS APPROXIMATED FROM CONTOUR MAPS, MEASURED CROSS SECTIONS AND VELOCITIES, STREAM FLOW RECORDS, THE MANNING EQUATION, AND FIELD OBSERVATIONS. SEE SUMMARY REPORT FOR COMPLETE EXPLANATION.

1977

U.S. ARMY CORPS OF ENGINEERS
CHARLESTON DISTRICT
Charleston, South Carolina

STANLEY CONSULTANTS

PLAN AND PROFILE

CONGAREE RIVER

Congaree River Basin

CALHOUN-LEXINGTON-RICHLAND CO., S.C.

NAVIGABILITY STUDY

Miles 164.0-175.9 Plate 08-6