



Lucas Berresford, Manager
State Voluntary Cleanup Program

Congaree River Sediment Coal Tar Site

April 2, 2019



Agenda

- Stakeholder Roles
- Brief History
- Update Progress since 2017 Public Meeting
- Discuss new Preferred Cleanup Alternative
- Discuss Path Forward
- Answer Questions

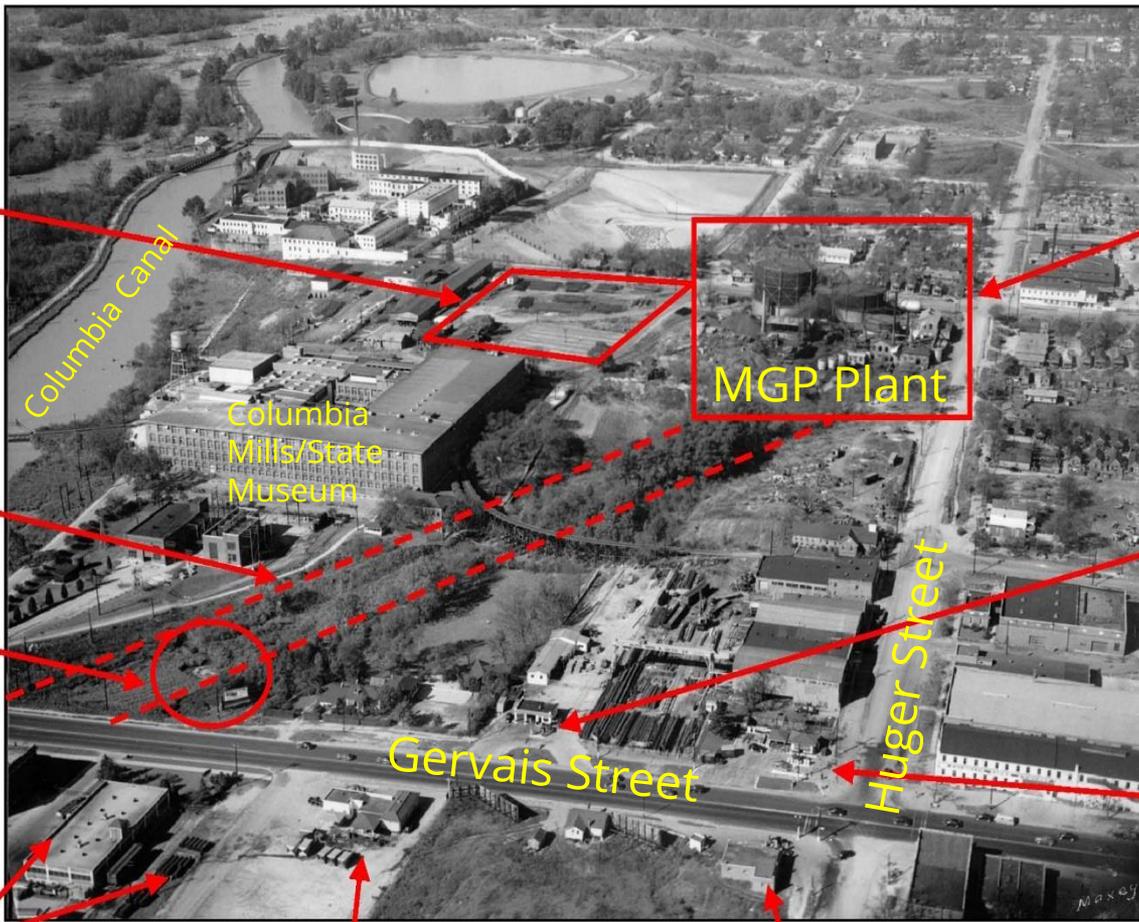
Collaborative Roles and Responsibilities

- SCDHEC
- SCE&G (now Dominion Energy South Carolina, Inc.)
- Congaree Riverkeeper
- US Army Corps of Engineers

History

- Tar like material (TLM) in the Congaree River was reported in June 2010 by a local citizen
- DHEC responded by collecting samples and looking for a source
- The source was determined to originate from a former Manufactured Gas Plant (MGP)





Parcel "C"

Former MGP Site Parcel "A"

MGP Plant

Columbia Mills/State Museum

Gervais Street

Huger Street

Columbia Canal

Approximate Location of Drainage Ditch

"Y" in Drainage Ditch



Filling Stations



Filling Stations

Standard Oil of New Jersey with Tanker Trucks and Potential Tanks

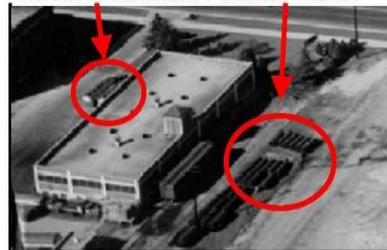
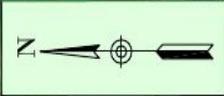


FIGURE 5	
SOUTH CAROLINA ELECTRIC & GAS COMPANY	
1935 HISTORICAL AERIAL PHOTOGRAPH	
COLUMBIA, SOUTH CAROLINA	
DATE: 5/4/09	FILE NAME: Hist. Fig.
MANAGEMENT AND TECHNICAL RESOURCES, INC.	

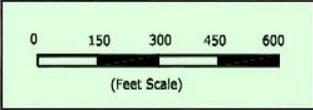
Assessment of the River

- From September 2010 through March 2012, SCE&G conducted 5 phases of sampling
- A total of 244 sediment and soil samples were collected
- The analytical results indicated the presence of some volatile organic compounds (VOCs) and polynuclear aromatic hydrocarbons (PAHs) in the samples
- The sediment layer, underlain by bedrock, contains TLM that varies from approximately 1 inch in thickness to several feet in thickness





Notes:
 1) The investigation point locations with respect to the aerial may be approximate.
 2) Aerial photograph from September 12, 2010.



HUGER STREET FORMER MGP SITE
 (TLM SOURCE AREA) PARCEL "A"

APPROXIMATE LOCATION OF FORMER
 DRAINAGE DITCH
 (TLM MIGRATION PATHWAY)

PARCEL "B"

MGP Site

WILLIAMS STREET

PARCEL "C"

Columbia Mills / State Museum

Senate Street

Gist Street

Culvert Outfall

Edventure

Area of TLM in Sediment

Unnamed Tributary #1

Unnamed Tributary #2

Congaree River

Gervais Street Bridge

LEGEND

- - TLM NOT OBSERVED
- - TLM OBSERVED
- - INACCESSIBLE OR OBSTRUCTED ANIMALS PREVALENT
- - TLM ODOR AND/OR POTENTIAL VISUAL TLM
- - OTHER WEATHERED MATERIAL (OWM)
- - TLM FRAGMENTS (HIGHLY WEATHERED)
- ▲ - SOCHEC SEDIMENT SAMPLING LOCATION
- ▲ - SCANA RECONNAISSANCE LOCATION
- APPROXIMATE SPATIAL EXTENT OF CONTINUOUS TLM
- APPROXIMATE SPATIAL EXTENT OF TRANSITION TLM

FIGURE 3
 SOUTH CAROLINA
 ELECTRIC & GAS COMPANY

CONCEPTUAL SITE MODEL

CONGAREE RIVER
 COLUMBIA, SOUTH CAROLINA

DATE: 1/14/13 FILE NAME: CONG005
 MANAGEMENT AND TECHNICAL RESOURCES, INC.

Cleanup Challenges



THE DESTRUCTION OF COLUMBIA, SOUTH CAROLINA, February 22, 1865—(Engraved by W. Wood.)

In 1865, the Union Army disposed of Confederate munitions in this portion of the Congaree River

- Potential Unexploded Ordnance
- Worker Safety Concerns
- Preserving Historical Artifacts

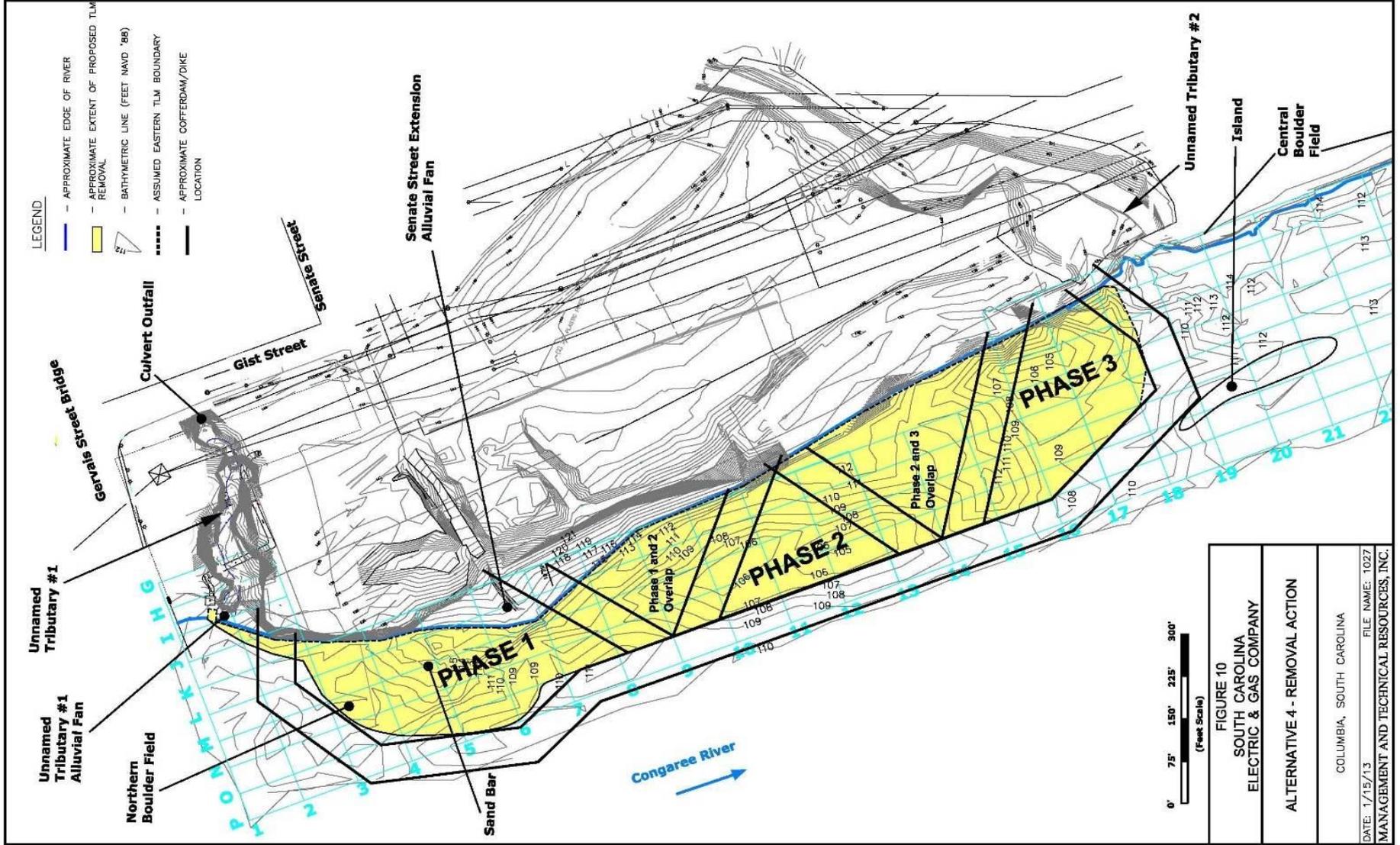
Also, the river is underlain by granite bedrock with only a few feet of sandy sediment which eliminates the ability to place a piling wall as a barrier

Congaree River Sediments Removal Action Alternatives	
1	No Action
	Retained as a baseline for comparison with other alternatives. The TLM would be left in place
2	Monitoring and Institutional Controls
	The TLM would be left in place and access restrictions would be established by the installation of signs and a chain link fence along the shoreline. Yearly monitoring of sediment conditions within and downstream of the project area in order to detect potential migration of the TLM
3	Sediment Capping and Institutional Controls
	The TLM would be left in place and an engineered cap would be installed that would include geotextile and rip rap placed over the top of the TLM. Institutional controls and monitoring similar to Alternative 2 would be included
4	Removal of the Impacted Sediment With Off-Site Disposal
	The TLM would be physically removed from the river. This would include construction of a cofferdam and dewatering of the project area in order to access the TLM and sediment.

Original Preferred Alternative from 2013

- Alternative 4 – Removal of the Impacted Sediment with Off-Site Disposal
- Construction of a series of temporary dams
- TLM would be removed under dry conditions for worker safety and to prevent TLM migration
- Excavated TLM would be disposed of properly in a landfill

Original Full-Scale Removal Footprint



Risks with Full Scale Removal from US Army Corps of Engineers

- Erosion to the shoreline on the west bank;
- Flooding on the west bank;
- Overtopping of the cofferdam;
- Catastrophic overtopping;
- Construction/Deconstruction

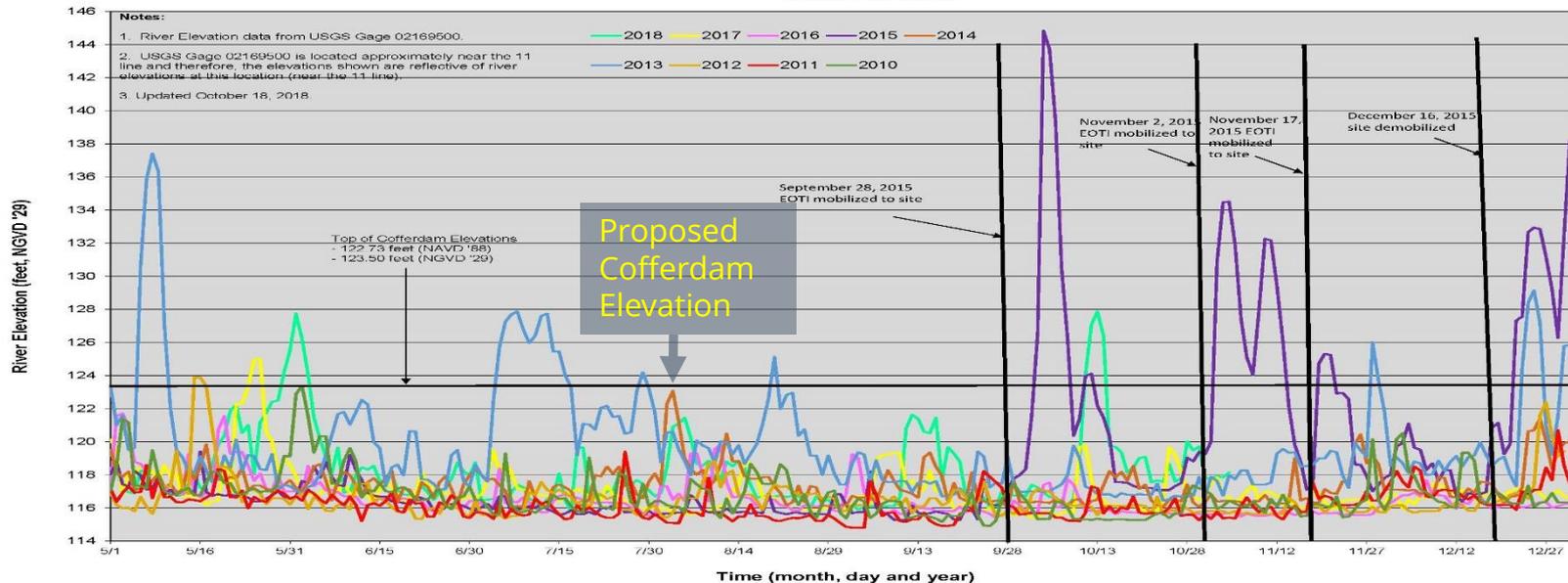
Flood of October 4, 2015



- Historic flood washed out bank in the Columbia Canal depositing up to 5 feet of sediments over areas planned for excavation

Dynamic River System

Figure D-1
Congaree River Elevations May - December
Last Nine Years



- Congaree River was already a very dynamic river system where the Broad and Saluda joined, but water levels have remained elevated since the flood
- The proposed cofferdam would have been overtopped multiple times since 2015

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Sediment Capping Evaluation

- In August 2016, DHEC requested SCE&G determine if capping will meet the US Army Corps of Engineers permitting requirements
- In February 2017, DHEC held a public meeting on the sediment capping alternative. The local community, stakeholders, and natural resource agencies had concerns with capping alternative
- Capping Alternative was given a Nationwide permit by the US Army Corps of Engineers in October 2017

2017 Public Meeting Feedback

Surface Water Data

Health of the River

Long-term impacts to the river from a cap

Long-term effectiveness of a cap

Will cap endanger the recreational user

There must be a better alternative than this

Removal of TLM preferred by the public

Assessment of the River

- To address concerns related to surface water and the health of the river, four (4) surface water sampling events have been completed since 2017. To date, no TLM-related contaminants have been detected
- In June 2017, DHEC conducted an Aquatic Macroinvertebrate Bioassessment of the Congaree River. No impact to the macroinvertebrate community was found



Collaborative Approach

- In December 2017, DHEC met with SCE&G and primary stakeholders to evaluate if there was a way to reduce the permitting challenges of a removal action
- The collaborative approach resulted in the framework for exploring a modified removal action



Primary Stakeholders

DHEC

SCE&G

Congaree Riverkeeper

Property Owners

City of Columbia

SC Governor's Office

Begin Evaluation of a Modified Removal Action

- March 2018: SCE&G requested additional information from the US Army Corps of Engineers
- May 2018: US Army Corps of Engineers indicated a permit may be achievable for a modified removal approach
- June 2018: DHEC requested SCE&G pursue a modified removal action for the site

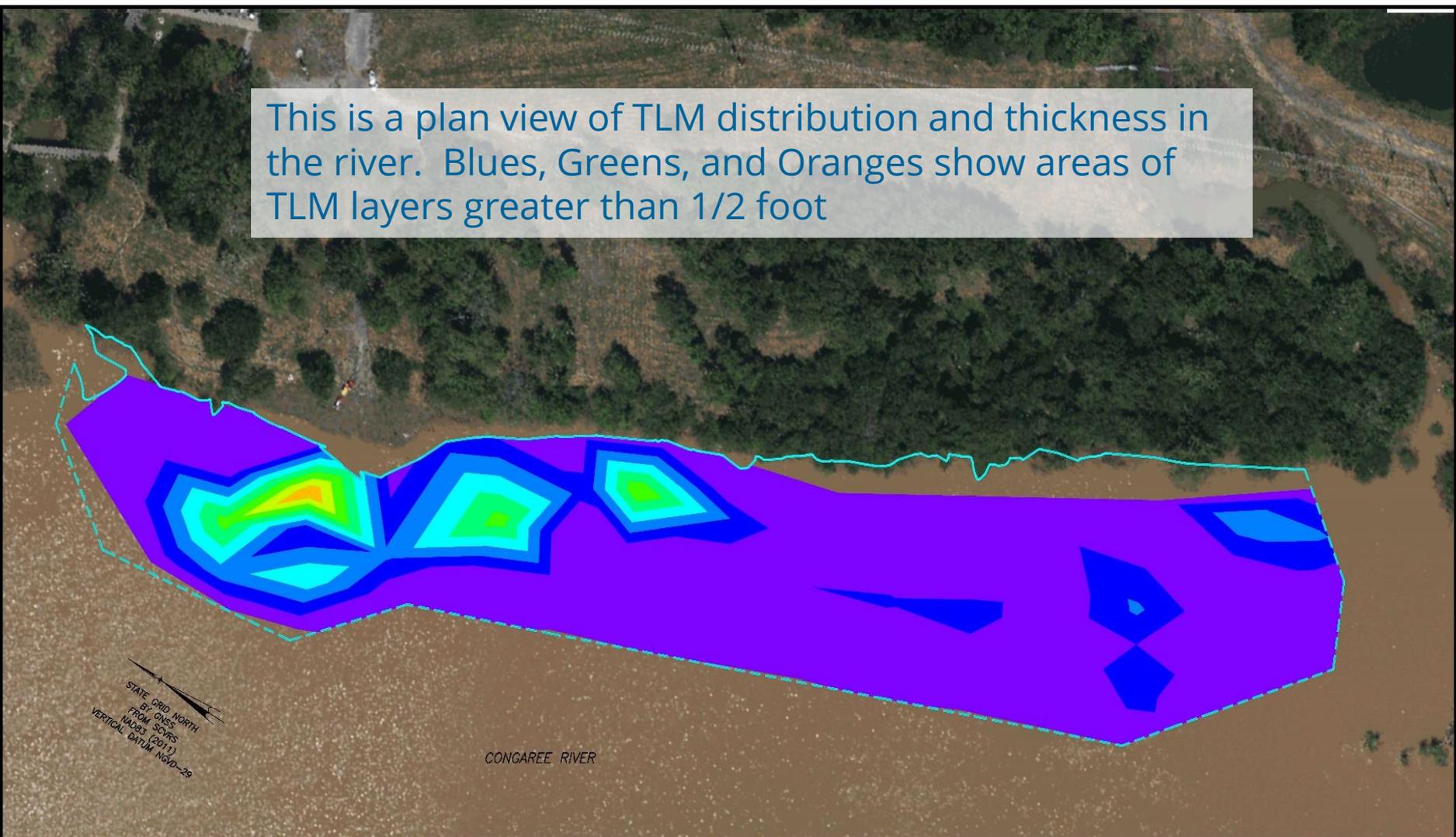
Modified Removal Action Starts To Take Shape

- In July and November 2018, DHEC met with stakeholders to review maps that incorporated newly collected data and used this information to define the boundaries of a modified removal action
- Based on the updated data and the stakeholders' input, SCE&G submitted a **Conceptual Plan for a Modified Removal Action** in December 2018

Modified Removal Action

- Modified Removal Action would remove TLM in areas of the river that are **most recreated** and where the **majority of TLM volume** exists in the river
- Two (2) separate areas would be removed, although largest area may use multi-phased approach
- Approximately 70-75% of total TLM would be removed from the Congaree River
- The impact of river rise on west bank from a cofferdam could be reduced from 8 foot with a full scale removal to under 1 foot with the Modified Removal Action

This is a plan view of TLM distribution and thickness in the river. Blues, Greens, and Oranges show areas of TLM layers greater than 1/2 foot



CONGAREE RIVER

STATE GRID NORTH
BY GCS
FROM SCVS
NAD83 (2011)
VERTICAL DATUM NAVD-29

SURFACE COMPARISON: TLM TOP COMPARED TO TLM BOTTOM
VOLUME = 5,745 yd³

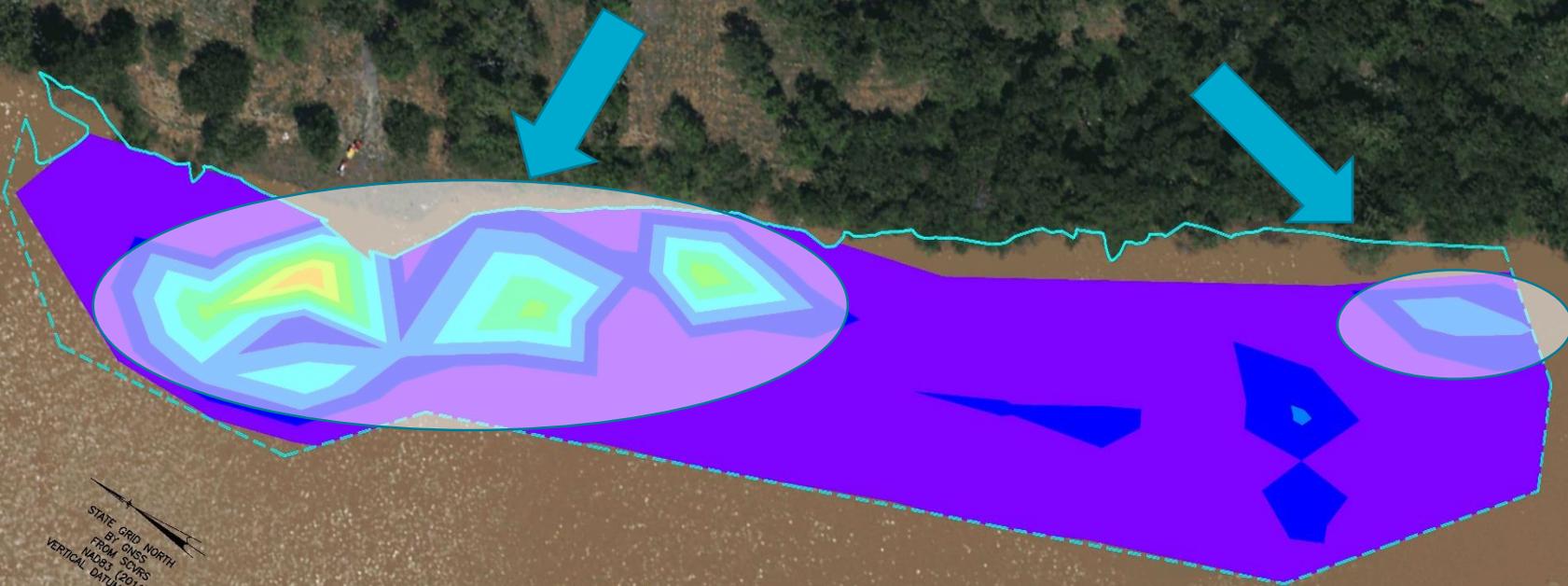
NOTE: THE VOLUME WAS CALCULATED USING AUTOCAD CIVIL 3D 2018 TO CREATE A TIN VOLUME SURFACE.
A SURFACE WAS CREATED FOR TOP OF TLM AND THEN COMPARED TO A SURFACE CREATED FOR BOTTOM OF TLM.
THE TLM DATA USED TO CREATE THESE SURFACES WAS PROVIDED BY APEX ON 8/20/18.

Elevations Table				
Number	Minimum Elevation	Maximum Elevation	Area (sqft)	Color
1	-5.00	-4.50	0.00	Red
2	-4.50	-4.00	0.53	Red
3	-4.00	-3.50	51,948	Orange
4	-3.50	-3.00	1,488.65	Yellow
5	-3.00	-2.50	3,003.48	Light Green
6	-2.50	-2.00	9,283.48	Green
7	-2.00	-1.50	15,148.78	Cyan
8	-1.50	-1.00	25,679.92	Blue
9	-1.00	-0.50	45,356.56	Dark Blue
10	-0.50	0.00	252,787.99	Purple

FIGURE 4
PLAN VIEW OF TLM DISTRIBUTION AND THICKNESS OVER THE PROJECT AREA
AUGUST 29, 2018



Modified Removal Action would Target Areas with the most TLM



STATE GRID NORTH
BY GNSS
FROM SCRS
NO83 (2011)
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CONGAREE RIVER

SURFACE COMPARISON: TLM TOP COMPARED TO TLM BOTTOM
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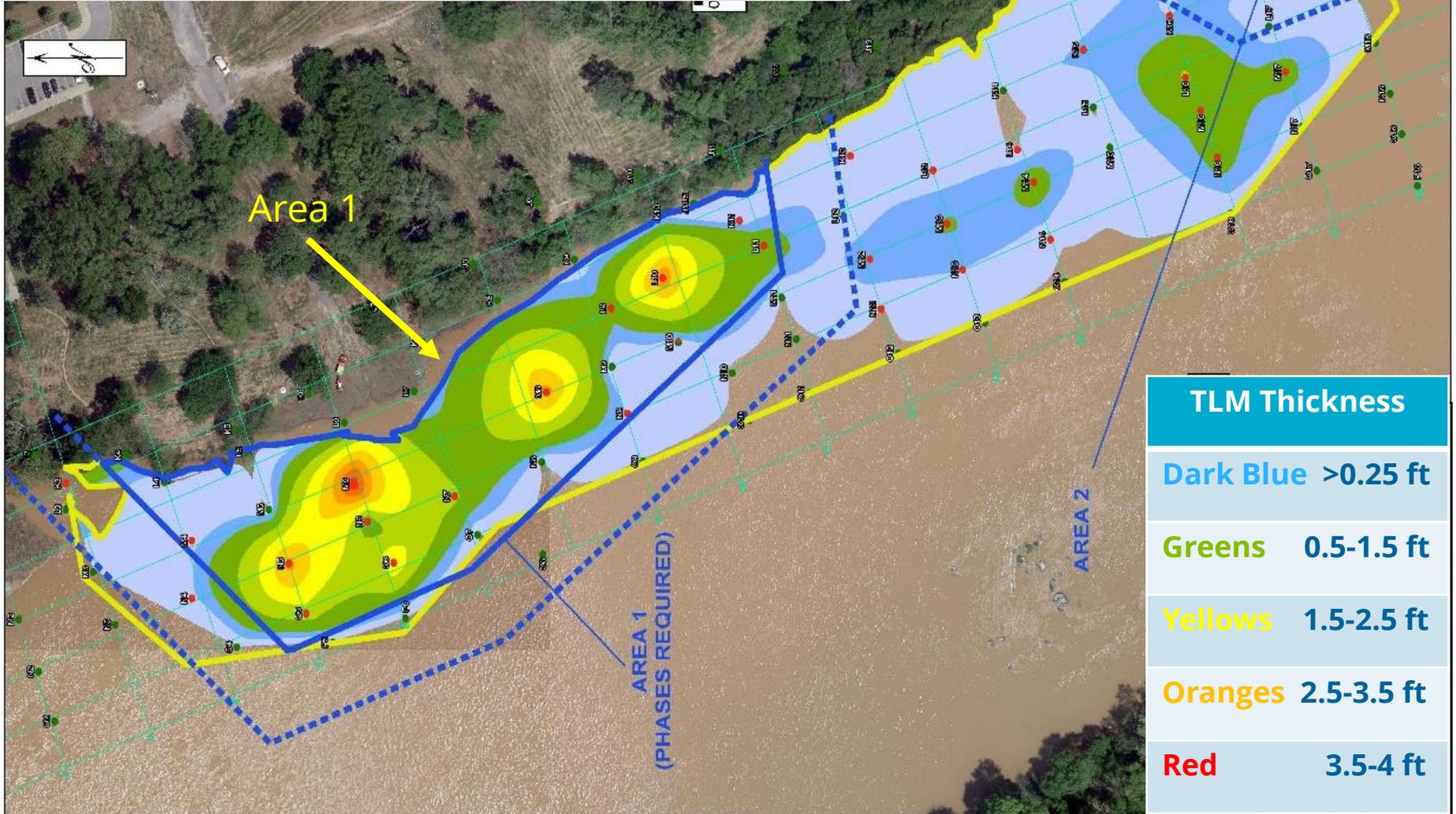


What TLM will be left?

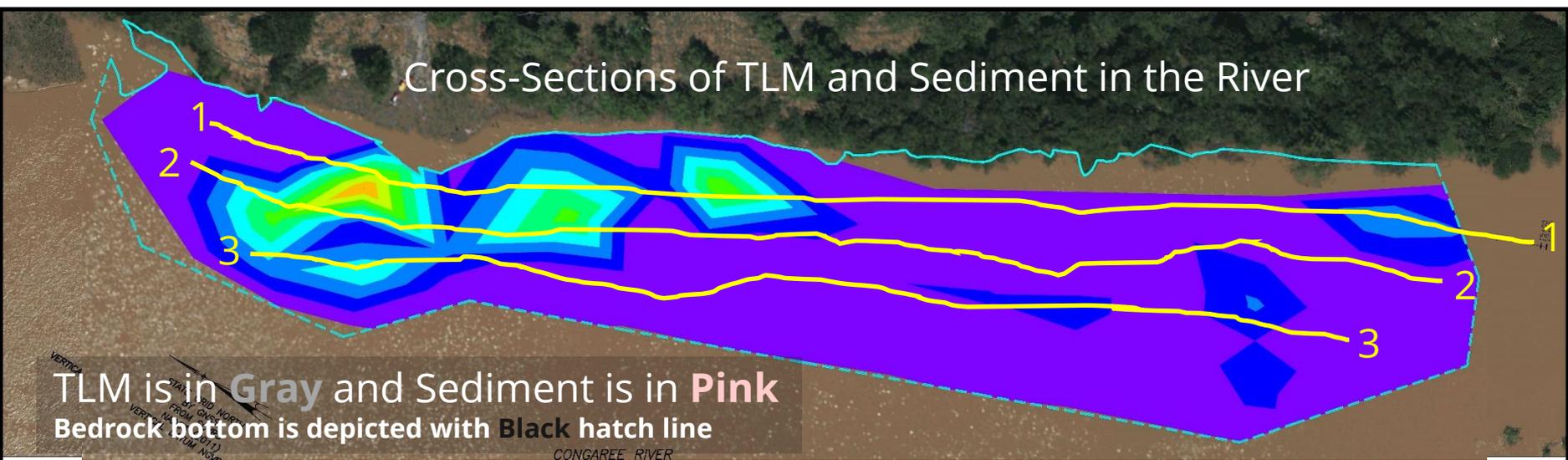
Sediments left in the “other areas” that will not be removed consist of either:

- Relatively minor thicknesses of TLM
- TLM that is now covered by additional sediment resulting from the flood of 2015
- TLM that is far enough away from the shoreline and in deeper water where the risk of dermal contact is minimal

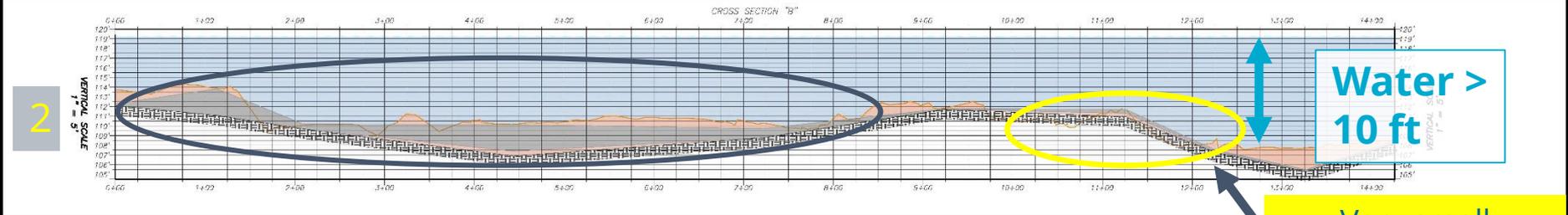
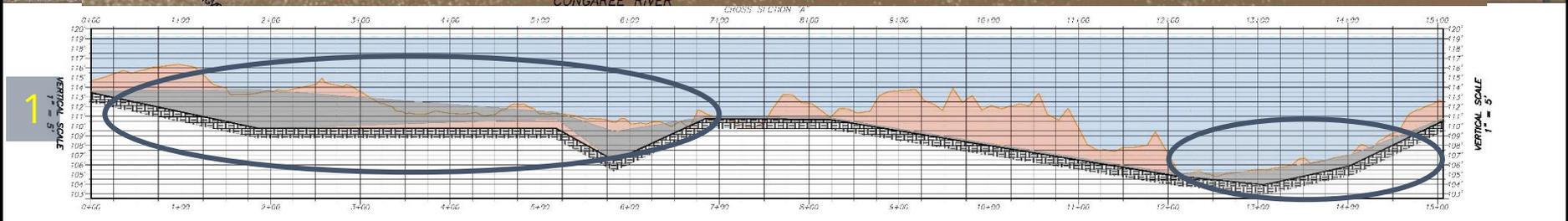
This figure shows the average TLM thickness in the Congaree River. Areas 1 and 2 would be removed.



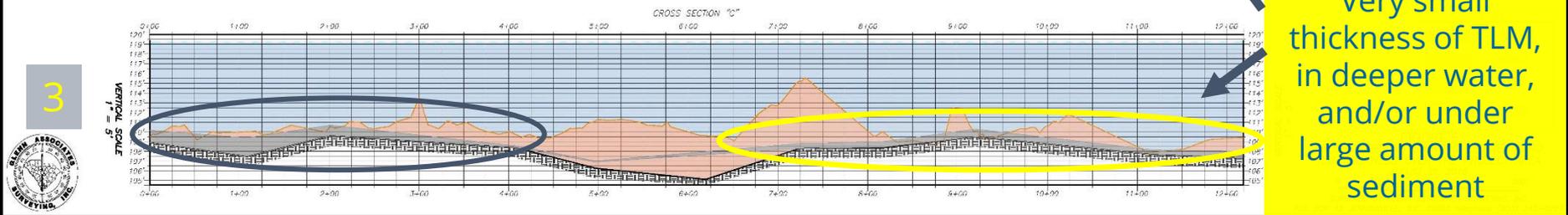
Cross-Sections of TLM and Sediment in the River



TLM is in Gray and Sediment is in Pink
 Bedrock bottom is depicted with Black hatch line



Water > 10 ft



Very small thickness of TLM, in deeper water, and/or under large amount of sediment



Permitting Challenges of Modified Removal Action

- Regulatory Permits and approvals are required from the US Army Corps of Engineers, various sections of DHEC, SC Department of Natural Resources, the Federal Emergency Management Agency local floodplain coordinators, the City of Columbia, and other state and local authorities to conduct the Modified Removal Action
- Permit process may take extended period of time



**US Army Corps
of Engineers.**





- SCE&G (Dominion Energy South Carolina) is already working with the US Army Corps of Engineers to get the proper submittals ready for a permit application. SCE&G will formally apply for a permit in the fall
- Once a US Army Corps of Engineers' permit decision is made, DHEC will hold another public meeting to present the preferred alternative

Congaree River Remedial Action Alternatives	
1	Modified Removal Action
	Targeted areas of TLM would be physically removed from the river. This would include construction of a cofferdam and dewatering of the project area in order to access the TLM and sediments. Removal would be completed in the dry and TLM would be disposed of properly in a landfill.
2	Sediment Capping and Monitoring
	The TLM would be left in place and an engineered cap would be installed that would include geotextile and rip rap placed over the top of the TLM. Yearly monitoring of sediment conditions within and downstream of the project area would take place in order to detect potential migration of the TLM.

Questions?



<http://www.scdhec.gov/CongareeRiver>