

Dominion Energy Southeast Services, Inc.
400 Otarre Parkway
Cayce, SC 29033



July 29, 2020

Mr. Greg Cassidy
State Voluntary Cleanup Section
Bureau of Land and Waste Management
South Carolina Department of Health and Environmental Control
2600 Bull Street
Columbia SC 29201

**Re: Congaree River Project
Surface Water Assessment Report – June 2020 Sampling Event
Columbia, South Carolina**

Dear Mr. Cassidy:

Dominion Energy South Carolina, Inc. (DESC) is submitting one hard copy and one CD of the Surface Water Assessment Report – June 2020 Sampling Event for the Congaree River Project located in Columbia, South Carolina. The sampling activities were performed consistent with the Surface Water Sampling and Analysis Plan (SW-SAP) and subsequent modifications approved by SCDHEC.

Four semi-annual events and one annual event have been conducted by DESC and the analytical results indicate no detections of constituents of interest. DESC recommends continuing the current annual sampling frequency. The next surface water sampling event will be scheduled for June 2021.

Should you have any questions or need additional information, please contact Paul Biery at (803) 217-5016.

Sincerely,

A handwritten signature in blue ink that reads "T. N. Effinger".

Thomas N. Effinger, P.E.
Director, Environmental Services

cc: P. Biery, R. Contrael (DESC)
W. Zeli (Apex)



**SURFACE WATER ASSESSMENT REPORT (SWAR)
JUNE 2020 SAMPLING EVENT**

**CONGAREE RIVER PROJECT
COLUMBIA, SOUTH CAROLINA**

July 2020

Prepared for:

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

Prepared by:

Apex Companies, LLC
1600 Commerce Circle
Trafford, Pennsylvania

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1.0 INTRODUCTION

This Surface Water Assessment Report (SWAR) has been prepared on behalf of Dominion Energy South Carolina, Inc (DESC). The SWAR documents activities completed in June 2020 during implementation of the Surface Water – Sampling and Analysis Plan (SW-SAP) submitted to the South Carolina Department of Health and Environmental Control (SCDHEC) in June 2017 and approved on July 21, 2017, including subsequent modifications approved by SCDHEC. The sampling is being completed as a component of the ongoing sediment remediation project to address a tar-like material (TLM) located in a portion of the Congaree River in Columbia, South Carolina. The areas within the river planned for remediation are shown on Figure 1.

1.1 Brief Project History/Summary

DESC and SCDHEC have been working on the Congaree River Project since the discovery of the TLM in June of 2010. Based on the delineation work previously completed and available in the project administrative record, the extent of TLM has been well defined. The TLM is commingled with sediment primarily within an area of the river just south of the Gervais Street Bridge, adjacent to the eastern shoreline, as shown on Figure 2. The TLM in the river is thought to have been the result of past operations of the former Huger Street Manufactured Gas Plant (MGP) site located at 1409 Huger Street, Columbia, South Carolina (Figure 2). The former MGP site was operated by predecessor companies to DESC from approximately 1905 thru the mid 1950's. SCDHEC's Administrative Record contains additional details on the environmental history of the site.

1.2 Regulatory Framework

The SCDHEC and DESC have executed a Responsible Party Voluntary Cleanup Contract (VCC) #02-5295-RP for the former MGP site located at 1409 Huger St. in Columbia, South Carolina. After discovery of the TLM in the river in June of 2010, the existing VCC for the Huger Street site was extended to cover the Congaree River Project area. The Huger Street VCC was executed by the Department on August 19, 2002 and all the activities documented within this SWAR are consistent with the VCC.

1.3 Overview of the SW-SAP

The SW-SAP was submitted to SCDHEC on June 30, 2017 and approved on July 21, 2017. It is, by design, intended to replicate the initial SCDHEC surface water sampling event implemented in April 2017. The initial sampling event completed by SCDHEC is now considered the "baseline" for monitoring surface water conditions in the Project area. Additional information on the SCDHEC baseline work plan is provided in the SW-SAP (Apex, June 2017). Baseline results (all virtually non-detect) are discussed in more detail in the following section.

2.0 BACKGROUND INFORMATION AND BASELINE SAMPLING EVENT

2.1 Surface Water Hydrology

The Congaree River is formed by the confluence of the Broad and Lower Saluda Rivers approximately 6,000 feet above the project area near the Timmerman/State Route 126 Bridge (Figure 1). The flow of the Lower Saluda River is largely influenced by the Saluda River Hydroelectric Dam, which is constructed on Lake Murray and located approximately 12 miles northwest of the site. The Broad River is located to the north east of the project area, with multiple dams constructed upriver from the Gervais Street Bridge. The flow of the Broad River is less regulated (or controlled) than the Lower Saluda and is more runoff dependent. The Lower Saluda is considered a South Carolina Scenic River from approximately 1 mile below the Lake Murray Dam to the confluence with the Broad River, or the beginning of the Congaree River.

Within the project area, the unnamed tributary that extends from the 72-inch culvert pipe located near the intersection of Gist and Gervais Streets (Figure 2) provides a discharge point for stormwater runoff from the City of Columbia. This stormwater conveyance services a large area northeast of the site and exhibits varying flows that are strongly dependent on recent precipitation amounts. Minimal flow is observed during extended dry periods, which suggests some groundwater infiltration into the stormwater system.

A United States Geologic Survey (USGS) river gage is located directly across the river from the project area. According to the USGS, the drainage area for the Congaree River at this gage location is 7,850 square miles and the gage height is 113.02 feet, based on NGVD '29 (or 112.25 based on NGVD '88). From the available data, the mean daily discharge rate varies from approximately 5,000 cubic feet to 16,000 cubic feet. The USGS gage height is a key component in the overall approach for this sampling program.

2.2 Findings of the Baseline Event April 2017

A total of 14 surface water samples and one duplicate sample were collected during the April 2017 SCDHEC baseline surface water sampling. The samples were analyzed for volatile organic compounds (VOC) and semi-volatile organic compounds (SVOC) via Methods 8260B and 8270D, respectively. Shealy Environmental Services, Inc. (Shealy) located in West Columbia, South Carolina performed the analyses.

The SCDHEC provided the analytical findings to SCANA in a letter dated April 7, 2017. In this letter, the SCDHEC indicated “with the exception of one detection of bis(2-ethylhexyl)phthalate, all other samples yielded no detections. This constituent is a common laboratory contaminant and is suspected to be a false detection”. SCDHEC also indicated that the analytical results for the duplicate sample collected from the same location were non-detect. The surface water sample analytical results were submitted with the SW-SAP (Apex, June 2017).

3.0 JUNE 2020 ANNUAL SURFACE WATER SAMPLING

3.1 Sampling Locations

A total of nine surface water samples were collected on June 16, 2020 along the Congaree, Saluda, and Broad Rivers, and tributaries discharging to the Congaree River. The gage height recorded at the USGS station located across from the project area averaged 4.09 feet during the sampling event. The sampling locations are described in Table 1 and shown on Figure 3. The locations include:

- **SW-01 through SW-03 and SW-08:** Monitoring surface water quality at upstream locations to establish surface water quality prior to entering the project area;
- **SW-04 and SW-05:** Monitoring surface water quality in the project area;
- **SW-06 and SW-07:** Monitoring surface water quality downstream of the project area; and
- **SW-09:** Monitoring surface water quality at a tributary to the west of the Congaree River to assess other potential contributions.

Sampling locations SW-01 and SW-04 through SW-07 are intended to be located near the SCDHEC surface water sampling locations (Table 1 and Figure 3).

Table 2 provides the list of parameters analyzed for each surface water sample, as well as the corresponding analytical methods and project reporting limits. This parameter list represents the same parameters analyzed in sediment samples collected during delineation activities. Pace Analytical Services, LLC (Pace), formerly Shealy Environmental Services, Inc. located in West Columbia, South Carolina performed the analyses.

3.2 Sampling Procedures

In general, and where possible, the interval at about 1.0 foot above the river or tributary bottom was targeted for sampling. To facilitate sampling this interval, the two different sampling procedures described below were utilized based on surface water depth encountered at the time of sampling. Where possible, samples were collected by sampling personnel wading into the river or tributary (SW-01, SW-02, SW-03, SW-08 and SW-09). Samples that were located within the Congaree River (SW-04, SW-05, SW-06 and SW-07) were collected utilizing a boat. At each sampling location, depth and color/clarity of the water as well as the sampling method (shallow or deeper) were noted. Table 3 lists the sampling locations along with the sampling method utilized and corresponding observations. Appendix A provides a photographic summary of the typical surface water sampling locations.

3.2.1 Shallow Surface Water Sampling Procedures

Shallow surface water (defined in this report as 2.5 feet or less in depth) sampling procedures were utilized at locations where collecting the sample by submerging the sample bottle, or transfer container, directly into the water column at the correct depth was feasible. The shallow surface water sample was collected by orienting the sample bottle or clean transfer container with the bottle opening facing upstream and opening the container to allow water from the correct interval to enter. As shown on Table 3, this sampling procedure was utilized at sample locations SW-01, SW-02, SW-03, SW-08 and SW-09 located within the tributaries and Broad River (Figure 3).

3.2.2 Deeper Surface Water Sampling Procedures

Deeper surface water sampling procedures were utilized at locations within the Congaree River where the surface water depth was 2 feet or more and combined with the current prohibited submerging the sample bottle, or transfer container, directly into the water column to collect the sample. This sampling procedure was utilized at sample locations SW-04, SW-05, SW-06 and SW-07 located in the Congaree River, as shown on Table 3 and Figure 3. For these deeper surface water samples, a Van Dorn sampling device was used, as described below. Similar to SCDHEC's Surface Water Sampling Plan, surface water samples in the project area were collected about 15 to 20 feet from the shoreline.

At these locations, the water column height was measured, and then the Van Dorn sampler was lowered to a distance of approximately one foot above the river or tributary bottom. A weighted "messenger" was sent down the rope supporting the sampler, triggering a mechanism that closed the gaskets sealing the water from the appropriate point in the water column inside the device. The sampler was then raised, and the contents transferred into the appropriate sample containers. A picture showing typical use of a Van Dorn sampling device is provided for reference in Appendix A.

Care was taken when collecting the sample to minimize sediment disturbance and if disturbed, sufficient time was permitted to allow the sediment to clear.

3.3 Decontamination and Materials Management

3.3.1 Decontamination

Non-dedicated equipment was decontaminated after each use. Equipment was decontaminated with a deionized water and Alconox wash followed by a deionized water rinse.

3.3.2 Materials Management

Waste materials generated through the completion of the surface water sampling activities were minimal, but included:

- Decontamination fluids;
- Spent personal protective equipment (PPE); and
- Miscellaneous field supplies (paper towels, etc.) generated from the sampling.

A minimal amount of decontamination fluid was generated and absorbed with a paper towel, bagged and staged for disposal with the remaining waste materials at the Calhoun Park Area Site in Charleston, SC.

3.4 Analytical Results

The June 2020 surface water results are discussed in this section, along with a comparison of the results to the baseline results of April 2017 and four rounds of semi-annual results for samples collected in September 2017, March 2018, October 2018, and May 2019. The June 2020 surface water analytical data report from the laboratory (Pace) is provided as Appendix B. A summary of surface water results from the past four events is included in Appendix D.

3.4.1 Data Evaluation

Following receipt of the data package from Pace, the data were evaluated in accordance with the U.S. EPA National Functional Guidelines for Organic Superfund Methods Data Review (EPA, January 2017). The analytical data were reviewed with respect to sample preservation, holding times, field duplicate, trip blanks (volatiles only) and other laboratory control samples. The data were determined to be acceptable without qualification and a memorandum discussing the data evaluation is provided in Appendix C.

3.4.2 Trip Blank Analytical Results

A trip blank was included with the samples and analyzed for volatiles only. The results indicate that constituents were not detected. A summary of the results is included in Table 4.

3.4.3 Surface Water Analytical Results

A summary of the analytical results for the surface water samples analyzed during the June 2020 event is provided in Table 4. Similar to the SCDHEC baseline (April 2017) and subsequent events (September 2017, March 2018, October 2018, and May 2019), all samples collected during the June 2020 event yielded no detections for the analyzed constituents.

4.0 CONCLUSIONS

June 2020 surface water analytical results for samples collected within the Congaree River and tributaries continue to yield no detections. This marks the sixth sampling event where all surface water samples were essentially non-detect.

5.0 RECOMMENDATIONS

Since the baseline event conducted by SCDHEC, four semi-annual events and one annual event have been conducted and the analytical results indicate no detections of constituents of interest. DESC recommends continuing the current annual sampling frequency. The next surface water sampling event will be scheduled for June 2021.

TABLES

TABLE 1

SURFACE WATER SAMPLING LOCATIONS

**Congaree River Project
Columbia, South Carolina**

DESC Sampling Location	SCDHEC Sampling Location (Baseline)	Description
SW-01	CR-SW-14	Location upstream of Tributary "1", located in Memorial Park and coinciding with the SCDHEC sample location
SW-02	--	Unnamed Tributary "1" outfall
SW-03	--	Just upstream of the confluence of the Broad River and Congaree River
SW-04	CR-SW-13	Just south of the Alluvial Fan and coinciding with SCDHEC sample location
SW-05	CR-SW-06	Approximately 200 feet downstream of SW-04 and coinciding with the SCDHEC sample location
SW-06	CR-SW-08	Approximately 200 feet downstream of SW-05 and coinciding with the SCDHEC sample location
SW-07	CR-SW-10	Approximately 200 feet downstream of SW-06 and coinciding with the SCDHEC sample location
SW-08	--	Just upstream of the confluence of the Saluda River and Congaree River
SW-09	--	Tributary located west of the Congaree River

TABLE 2

SURFACE WATER SAMPLING PARAMETERS AND METHODS

Congaree River Project
Columbia, South Carolina

Constituent	Analytical Method	Reporting Limit (µg/L)
<u>Volatile Organic Compounds</u>		
Benzene	8260D	5
Ethylbenzene	8260D	5
Toluene	8260D	5
Xylenes, Total	8260D	5
<u>PAH Constituents</u>		
Acenaphthene	8270E	10
Acenaphthylene	8270E	10
Anthracene	8270E	10
Benzo(a)anthracene	8270E	10
Benzo(a)pyrene	8270E	10
Benzo(b)fluoranthene	8270E	10
Benzo(g,h,i)perylene	8270E	10
Benzo(k)fluoranthene	8270E	10
Chrysene	8270E	10
Dibenzo(a,h)anthracene	8270E	10
Fluoranthene	8270E	10
Fluorene	8270E	10
Indeno(1,2,3-cd)pyrene	8270E	10
Naphthalene	8270E	10
Phenanthrene	8270E	10
Pyrene	8270E	10

Note:

1. Quality assurance/quality control (QA/QC) samples included one trip blank per sample delivery group (VOCs only) and one blind field duplicate.

TABLE 3

SUMMARY OF SAMPLING METHODS AND FIELD OBSERVATIONS

**Congaree River Project
Columbia, South Carolina**

DESC Sampling Location	Date Sampled	Water Depth (feet)	Color/Clarity	Sampling Method (Shallow/Deep)
SW-01	June 16, 2020	0.1	Clear	Shallow
SW-02	June 16, 2020	0.1	Clear	Shallow
SW-03	June 16, 2020	1.5	Clear	Shallow
SW-04	June 16, 2020	5.5	Clear	Deep
SW-05	June 16, 2020	7	Clear	Deep
SW-06	June 16, 2020	11	Clear	Deep
SW-07	June 16, 2020	2	Clear	Deep
SW-08	June 16, 2020	2.5	Clear	Shallow
SW-09	June 16, 2020	0.33	Clear	Shallow

TABLE 4

SUMMARY OF SURFACE WATER ANALYTICAL RESULTS

Congaree River Project
Columbia, South Carolina

Constituent	Unit	SW-01	SW-02	SW-03	SW-04	SW-05	SW-05 (Dup)	SW-06	SW-07	SW-08	SW-09	Trip Blank
		6/16/2020	6/16/2020	6/16/2020	6/16/2020	6/16/2020	6/16/2020	6/16/2020	6/16/2020	6/16/2020	6/16/2020	6/16/2020
<i>Volatile Organic Compounds</i>												
Benzene	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Ethylbenzene	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Toluene	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Xylenes, Total	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
<i>PAH Constituents</i>												
Acenaphthene	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
Acenaphthylene	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
Anthracene	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
Benzo(a)anthracene	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
Benzo(a)pyrene	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
Benzo(b)fluoranthene	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
Benzo(g,h,i)perylene	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
Benzo(k)fluoranthene	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
Chrysene	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
Dibenzo(a,h)anthracene	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
Fluoranthene	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
Fluorene	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
Indeno(1,2,3-cd)pyrene	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
Naphthalene	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
Phenanthrene	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
Pyrene	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA

Notes:

(1) NA - not analyzed

(2) U - represents the constituent was not detected above the limit of quantitation.

FIGURES

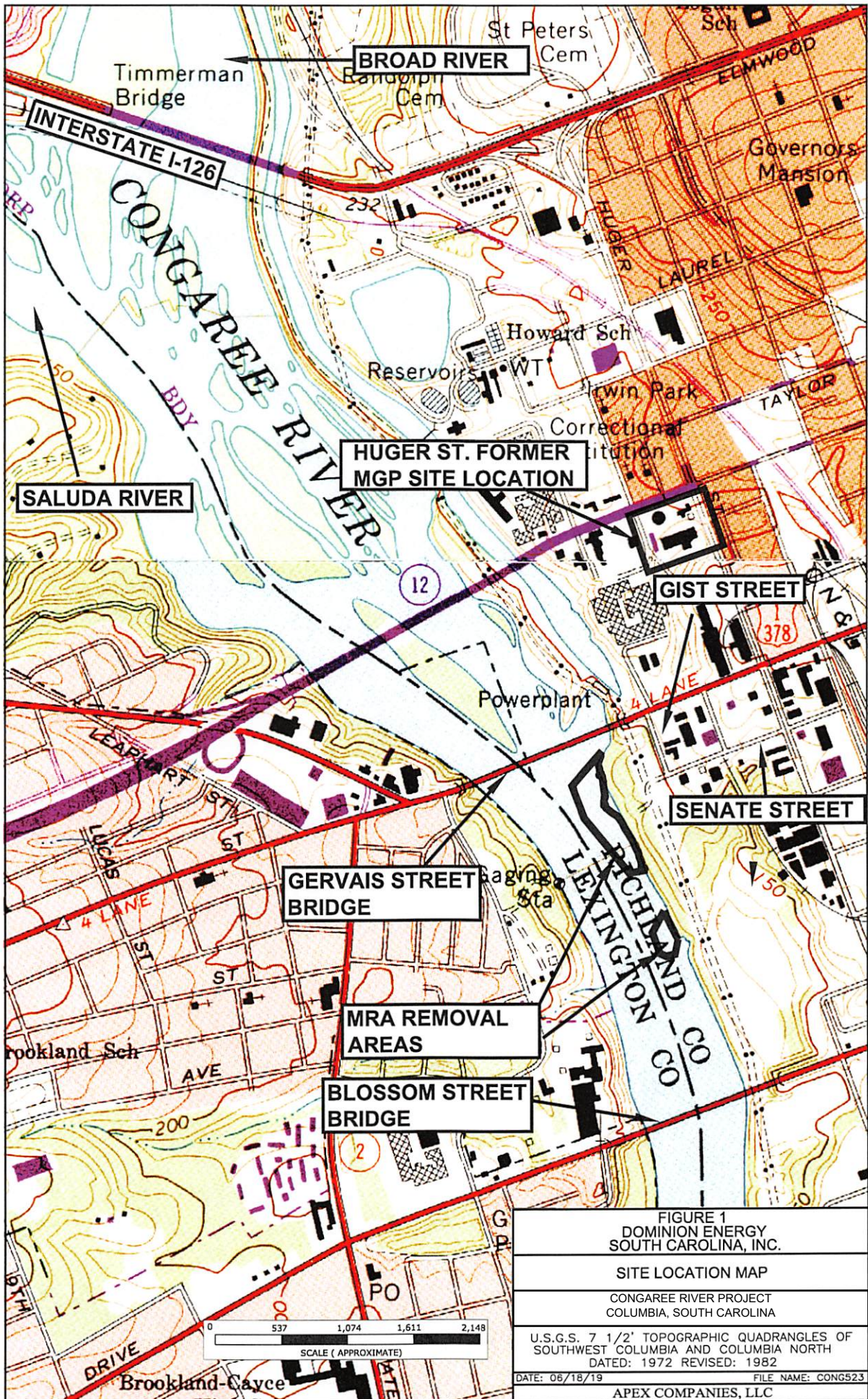


FIGURE 1
DOMINION ENERGY
SOUTH CAROLINA, INC.

SITE LOCATION MAP

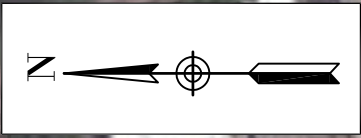
CONGAREE RIVER PROJECT
COLUMBIA, SOUTH CAROLINA

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

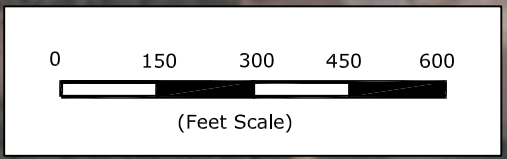
DATE: 06/18/19

FILE NAME: CONG523

APEX COMPANIES, LLC



Note:
1) 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"

WILLIAMS STREET

PARCEL "C"

Senate Street

Gist Street

Gervais Street Bridge

Culvert Outfall

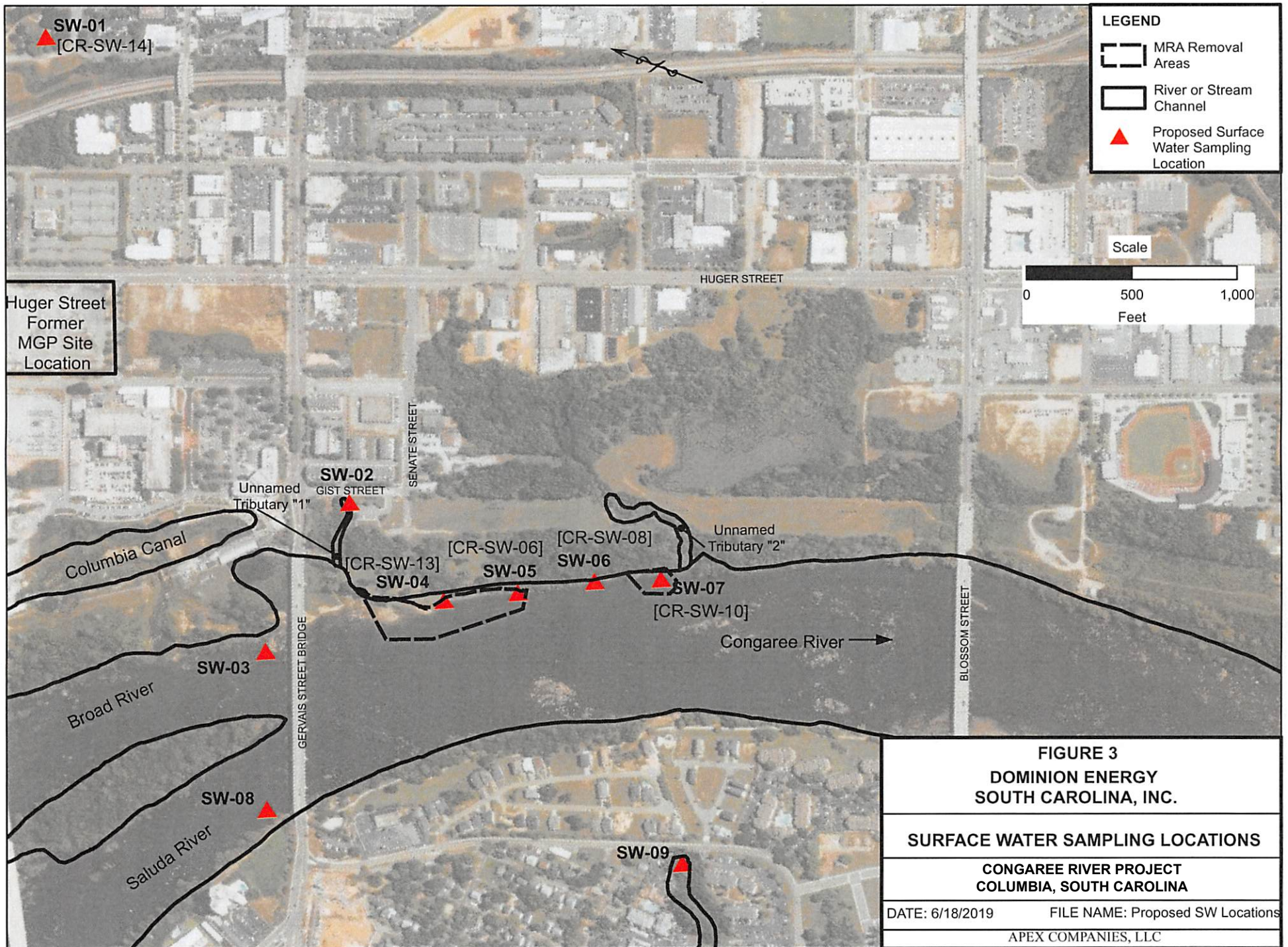
Unnamed Tributary #1

Unnamed Tributary #2

Congaree River

LEGEND	
	MRA REMOVAL AREAS
	BOULDER FIELD
	SANDBAR

FIGURE 2 DOMINION ENERGY SOUTH CAROLINA, INC.	
CONCEPTUAL SITE MODEL	
CONGAREE RIVER PROJECT COLUMBIA, SOUTH CAROLINA	
DATE: 6/18/19	FILE NAME: CONG533
APEX COMPANIES, LLC	

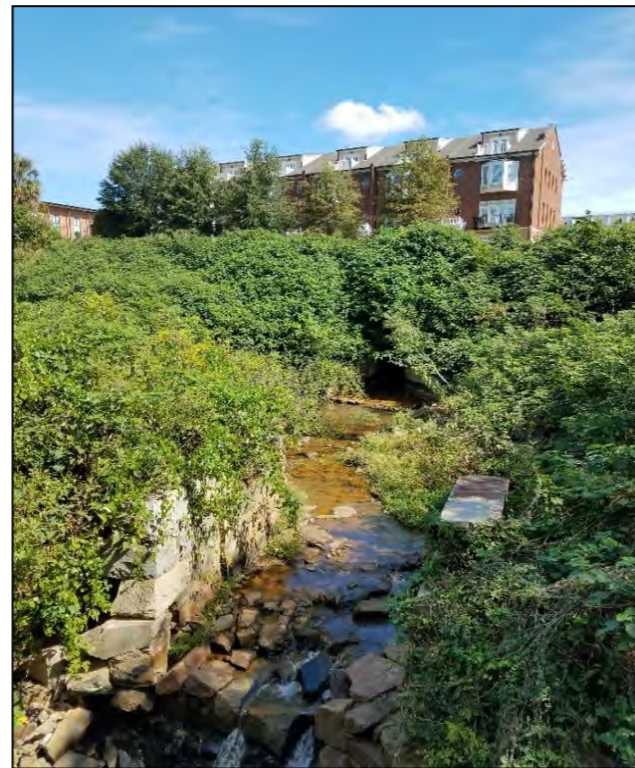


APPENDIX A

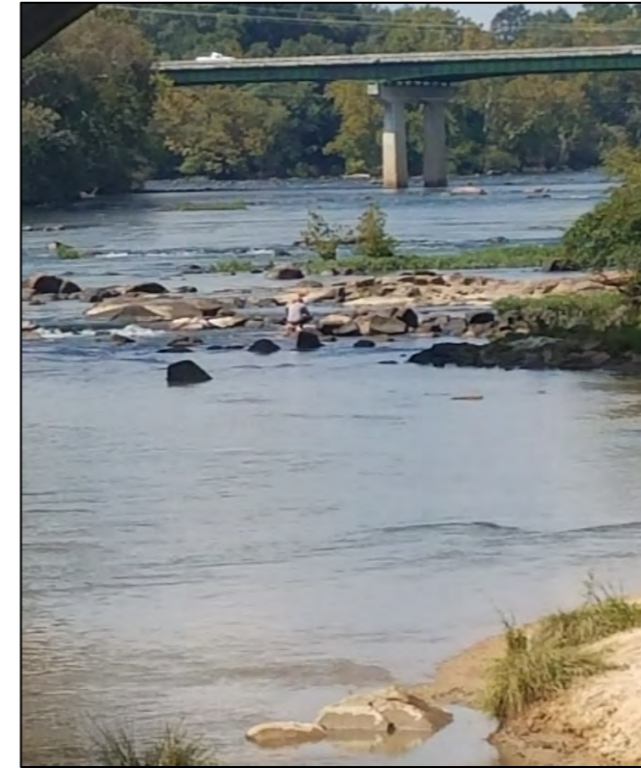
PHOTOGRAPHIC SUMMARY OF SURFACE WATER SAMPLING



Memorial Park Outfall - SW-01 (Typical)



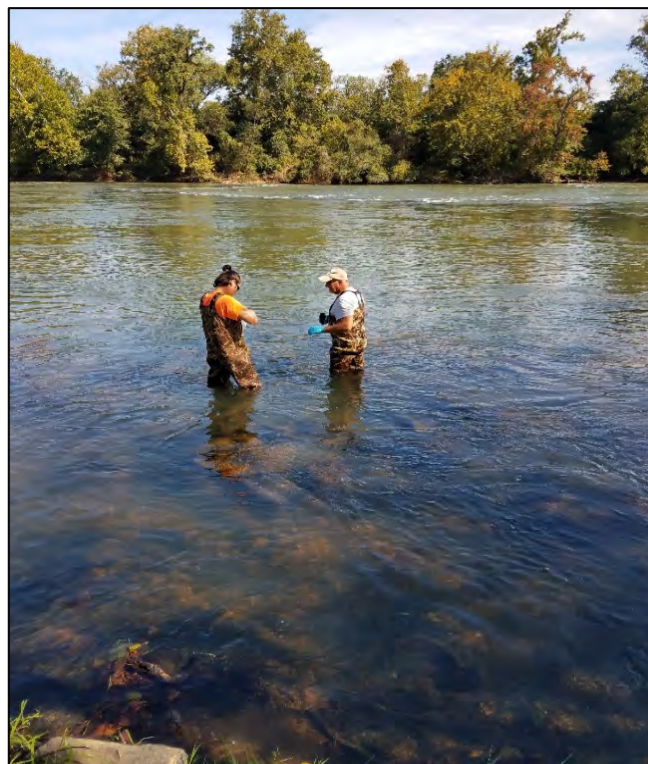
SW-02 - Unnamed Tributary Outfall (Typical)



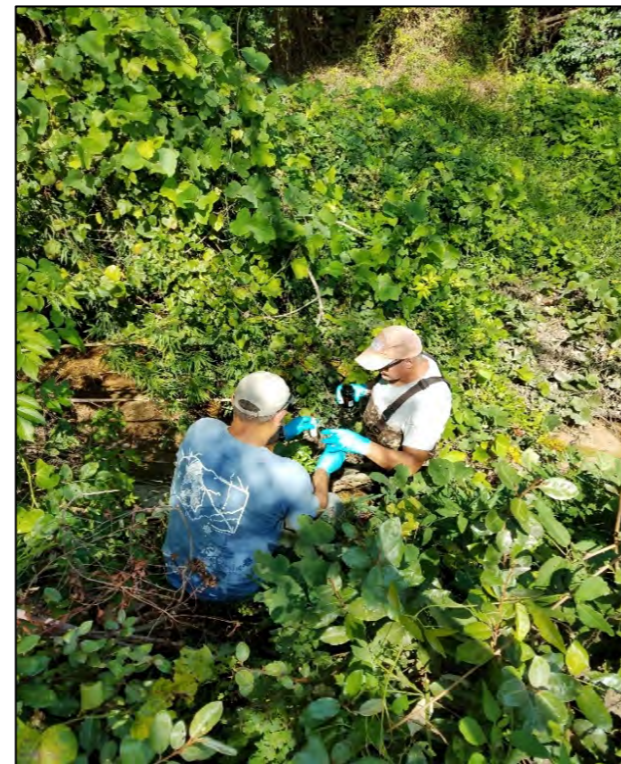
SW-03 - Broad River (Typical)



Collecting Samples in Congaree River - Typical of SW-04, SW-05, SW-06 and SW-07



SW-08 - Saluda River (Typical)



SW-09 - West Side of Congaree River (Typical)



Use of Van Dorn Sampling Device (Typical)

FIGURE A-1	
DOMINION ENERGY SOUTH CAROLINA, INC.	
PHOTOGRAPHIC SUMMARY OF SURFACE WATER SAMPLING LOCATIONS	
CONGAREE RIVER PROJECT	
COLUMBIA, SOUTH CAROLINA	
DATE: 06/13/2019	FILENAME: 052019 SW
APEX COMPANIES, LLC	

APPENDIX B

LABORATORY ANALYTICAL RESULTS



Report of Analysis

Apex Companies, LLC
1600 Commerce Circle
Trafford, PA 15085
Attention: Kayla Jones

Project Name: Congaree River SWS 2020

Project Number: 87500614-05

Lot Number: **VF16086**

Date Completed: 06/25/2020

N. Saikaly

06/30/2020 4:50 PM

Approved and released by:
Project Manager: **Nisreen Saikaly**



The electronic signature above is the equivalent of a handwritten signature.
This report shall not be reproduced, except in its entirety, without the written approval of Pace Analytical Services, LLC.

PACE ANALYTICAL SERVICES, LLC

SC DHEC No: 32010001

NELAC No: E87653

NC DENR No: 329

NC Field Parameters No: 5639

Case Narrative Apex Companies, LLC Lot Number: VF16086

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the most current approved NELAC standards, the Pace Analytical Services, LLC ("Pace") Quality Assurance Management Plan (QAMP), standard operating procedures (SOPs), and Pace policies. Any exceptions to the NELAC standards, the QAMP, SOPs or policies are qualified on the results page or discussed below.

If you have any questions regarding this report please contact the Pace Project Manager listed on the cover page.

PACE ANALYTICAL SERVICES, LLC

Sample Summary Apex Companies, LLC Lot Number: VF16086

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	Trip Blank	Aqueous	06/16/2020	06/16/2020
002	SW-1	Aqueous	06/16/2020 1235	06/16/2020
003	SW-2	Aqueous	06/16/2020 1120	06/16/2020
004	SW-3	Aqueous	06/16/2020 1100	06/16/2020
005	SW-4	Aqueous	06/16/2020 0940	06/16/2020
006	SW-5	Aqueous	06/16/2020 1000	06/16/2020
007	SW-6	Aqueous	06/16/2020 1020	06/16/2020
008	SW-7	Aqueous	06/16/2020 1040	06/16/2020
009	SW-8	Aqueous	06/16/2020 1135	06/16/2020
010	SW-9	Aqueous	06/16/2020 1150	06/16/2020
011	FD061620	Aqueous	06/16/2020 1000	06/16/2020

(11 samples)

PACE ANALYTICAL SERVICES, LLC

Detection Summary Apex Companies, LLC Lot Number: VF16086

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
--------	-----------	--------	-----------	--------	--------	---	-------	------

(0 detections)

Volatile Organic Compounds by GC/MS

Client: Apex Companies, LLC	Laboratory ID: VF16086-001
Description: Trip Blank	Matrix: Aqueous
Date Sampled: 06/16/2020	
Date Received: 06/16/2020	

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260D	1	06/24/2020 1332	JAN		57934

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Benzene	71-43-2	8260D	ND		5.0	ug/L	1
Ethylbenzene	100-41-4	8260D	ND		5.0	ug/L	1
Toluene	108-88-3	8260D	ND		5.0	ug/L	1
Xylenes (total)	1330-20-7	8260D	ND		5.0	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		110	70-130
Toluene-d8		107	70-130
Bromofluorobenzene		104	70-130

LOQ = Limit of Quantitation B = Detected in the method blank E = Quantitation of compound exceeded the calibration range
 ND = Not detected at or above the LOQ N = Recovery is out of criteria P = The RPD between two GC columns exceeds 40%
 H = Out of holding time W = Reported on wet weight basis

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Volatile Organic Compounds by GC/MS

Client: Apex Companies, LLC	Laboratory ID: VF16086-002
Description: SW-1	Matrix: Aqueous
Date Sampled: 06/16/2020 1235	
Date Received: 06/16/2020	

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260D	1	06/24/2020 1355	JAN		57934

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Benzene	71-43-2	8260D	ND		5.0	ug/L	1
Ethylbenzene	100-41-4	8260D	ND		5.0	ug/L	1
Toluene	108-88-3	8260D	ND		5.0	ug/L	1
Xylenes (total)	1330-20-7	8260D	ND		5.0	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		108	70-130
Toluene-d8		104	70-130
Bromofluorobenzene		107	70-130

LOQ = Limit of Quantitation B = Detected in the method blank E = Quantitation of compound exceeded the calibration range
 ND = Not detected at or above the LOQ N = Recovery is out of criteria P = The RPD between two GC columns exceeds 40%
 H = Out of holding time W = Reported on wet weight basis

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Semivolatile Organic Compounds by GC/MS

Client: Apex Companies, LLC	Laboratory ID: VF16086-002
Description: SW-1	Matrix: Aqueous
Date Sampled: 06/16/2020 1235	
Date Received: 06/16/2020	

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270E	1	06/19/2020 1903	SCD	06/17/2020 1030	57268

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Acenaphthene	83-32-9	8270E	ND		10	ug/L	1
Acenaphthylene	208-96-8	8270E	ND		10	ug/L	1
Anthracene	120-12-7	8270E	ND		10	ug/L	1
Benzo(a)anthracene	56-55-3	8270E	ND		10	ug/L	1
Benzo(a)pyrene	50-32-8	8270E	ND		10	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270E	ND		10	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270E	ND		10	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270E	ND		10	ug/L	1
Chrysene	218-01-9	8270E	ND		10	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270E	ND		10	ug/L	1
Fluoranthene	206-44-0	8270E	ND		10	ug/L	1
Fluorene	86-73-7	8270E	ND		10	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270E	ND		10	ug/L	1
Naphthalene	91-20-3	8270E	ND		10	ug/L	1
Phenanthrene	85-01-8	8270E	ND		10	ug/L	1
Pyrene	129-00-0	8270E	ND		10	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Fluorobiphenyl		80	37-129
Nitrobenzene-d5		77	38-127
Terphenyl-d14		94	10-148

LOQ = Limit of Quantitation B = Detected in the method blank E = Quantitation of compound exceeded the calibration range
 ND = Not detected at or above the LOQ N = Recovery is out of criteria P = The RPD between two GC columns exceeds 40%
 H = Out of holding time W = Reported on wet weight basis

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Volatile Organic Compounds by GC/MS

Client: Apex Companies, LLC	Laboratory ID: VF16086-003
Description: SW-2	Matrix: Aqueous
Date Sampled: 06/16/2020 1120	
Date Received: 06/16/2020	

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260D	1	06/24/2020 1417	JAN		57934

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Benzene	71-43-2	8260D	ND		5.0	ug/L	1
Ethylbenzene	100-41-4	8260D	ND		5.0	ug/L	1
Toluene	108-88-3	8260D	ND		5.0	ug/L	1
Xylenes (total)	1330-20-7	8260D	ND		5.0	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		106	70-130
Toluene-d8		106	70-130
Bromofluorobenzene		102	70-130

LOQ = Limit of Quantitation B = Detected in the method blank E = Quantitation of compound exceeded the calibration range
 ND = Not detected at or above the LOQ N = Recovery is out of criteria P = The RPD between two GC columns exceeds 40%
 H = Out of holding time W = Reported on wet weight basis

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Semivolatile Organic Compounds by GC/MS

Client: **Apex Companies, LLC**

Laboratory ID: **VF16086-003**

Description: **SW-2**

Matrix: **Aqueous**

Date Sampled: **06/16/2020 1120**

Date Received: **06/16/2020**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270E	1	06/22/2020 1924	JCG	06/19/2020 1700	57530

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Acenaphthene	83-32-9	8270E	ND		10	ug/L	1
Acenaphthylene	208-96-8	8270E	ND		10	ug/L	1
Anthracene	120-12-7	8270E	ND		10	ug/L	1
Benzo(a)anthracene	56-55-3	8270E	ND		10	ug/L	1
Benzo(a)pyrene	50-32-8	8270E	ND		10	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270E	ND		10	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270E	ND		10	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270E	ND		10	ug/L	1
Chrysene	218-01-9	8270E	ND		10	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270E	ND		10	ug/L	1
Fluoranthene	206-44-0	8270E	ND		10	ug/L	1
Fluorene	86-73-7	8270E	ND		10	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270E	ND		10	ug/L	1
Naphthalene	91-20-3	8270E	ND		10	ug/L	1
Phenanthrene	85-01-8	8270E	ND		10	ug/L	1
Pyrene	129-00-0	8270E	ND		10	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Fluorobiphenyl		79	37-129
Nitrobenzene-d5		71	38-127
Terphenyl-d14		98	10-148

LOQ = Limit of Quantitation B = Detected in the method blank E = Quantitation of compound exceeded the calibration range
 ND = Not detected at or above the LOQ N = Recovery is out of criteria P = The RPD between two GC columns exceeds 40%
 H = Out of holding time W = Reported on wet weight basis

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Volatile Organic Compounds by GC/MS

Client: Apex Companies, LLC	Laboratory ID: VF16086-004
Description: SW-3	Matrix: Aqueous
Date Sampled: 06/16/2020 1100	
Date Received: 06/16/2020	

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260D	1	06/24/2020 1440	JAN		57934

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Benzene	71-43-2	8260D	ND		5.0	ug/L	1
Ethylbenzene	100-41-4	8260D	ND		5.0	ug/L	1
Toluene	108-88-3	8260D	ND		5.0	ug/L	1
Xylenes (total)	1330-20-7	8260D	ND		5.0	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		107	70-130
Toluene-d8		107	70-130
Bromofluorobenzene		104	70-130

LOQ = Limit of Quantitation B = Detected in the method blank E = Quantitation of compound exceeded the calibration range
 ND = Not detected at or above the LOQ N = Recovery is out of criteria P = The RPD between two GC columns exceeds 40%
 H = Out of holding time W = Reported on wet weight basis

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Semivolatile Organic Compounds by GC/MS

Client: Apex Companies, LLC	Laboratory ID: VF16086-004
Description: SW-3	Matrix: Aqueous
Date Sampled: 06/16/2020 1100	
Date Received: 06/16/2020	

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270E	1	06/22/2020 1949	JCG	06/19/2020 1700	57530

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Acenaphthene	83-32-9	8270E	ND		10	ug/L	1
Acenaphthylene	208-96-8	8270E	ND		10	ug/L	1
Anthracene	120-12-7	8270E	ND		10	ug/L	1
Benzo(a)anthracene	56-55-3	8270E	ND		10	ug/L	1
Benzo(a)pyrene	50-32-8	8270E	ND		10	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270E	ND		10	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270E	ND		10	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270E	ND		10	ug/L	1
Chrysene	218-01-9	8270E	ND		10	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270E	ND		10	ug/L	1
Fluoranthene	206-44-0	8270E	ND		10	ug/L	1
Fluorene	86-73-7	8270E	ND		10	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270E	ND		10	ug/L	1
Naphthalene	91-20-3	8270E	ND		10	ug/L	1
Phenanthrene	85-01-8	8270E	ND		10	ug/L	1
Pyrene	129-00-0	8270E	ND		10	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Fluorobiphenyl		75	37-129
Nitrobenzene-d5		70	38-127
Terphenyl-d14		88	10-148

LOQ = Limit of Quantitation B = Detected in the method blank E = Quantitation of compound exceeded the calibration range
 ND = Not detected at or above the LOQ N = Recovery is out of criteria P = The RPD between two GC columns exceeds 40%
 H = Out of holding time W = Reported on wet weight basis

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Volatile Organic Compounds by GC/MS

Client: Apex Companies, LLC	Laboratory ID: VF16086-005
Description: SW-4	Matrix: Aqueous
Date Sampled: 06/16/2020 0940	
Date Received: 06/16/2020	

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260D	1	06/24/2020 1502	JAN		57934

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Benzene	71-43-2	8260D	ND		5.0	ug/L	1
Ethylbenzene	100-41-4	8260D	ND		5.0	ug/L	1
Toluene	108-88-3	8260D	ND		5.0	ug/L	1
Xylenes (total)	1330-20-7	8260D	ND		5.0	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		109	70-130
Toluene-d8		108	70-130
Bromofluorobenzene		106	70-130

LOQ = Limit of Quantitation B = Detected in the method blank E = Quantitation of compound exceeded the calibration range
 ND = Not detected at or above the LOQ N = Recovery is out of criteria P = The RPD between two GC columns exceeds 40%
 H = Out of holding time W = Reported on wet weight basis

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Semivolatile Organic Compounds by GC/MS

Client: Apex Companies, LLC	Laboratory ID: VF16086-005
Description: SW-4	Matrix: Aqueous
Date Sampled: 06/16/2020 0940	
Date Received: 06/16/2020	

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270E	1	06/22/2020 2014	JCG	06/19/2020 1700	57530

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Acenaphthene	83-32-9	8270E	ND		10	ug/L	1
Acenaphthylene	208-96-8	8270E	ND		10	ug/L	1
Anthracene	120-12-7	8270E	ND		10	ug/L	1
Benzo(a)anthracene	56-55-3	8270E	ND		10	ug/L	1
Benzo(a)pyrene	50-32-8	8270E	ND		10	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270E	ND		10	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270E	ND		10	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270E	ND		10	ug/L	1
Chrysene	218-01-9	8270E	ND		10	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270E	ND		10	ug/L	1
Fluoranthene	206-44-0	8270E	ND		10	ug/L	1
Fluorene	86-73-7	8270E	ND		10	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270E	ND		10	ug/L	1
Naphthalene	91-20-3	8270E	ND		10	ug/L	1
Phenanthrene	85-01-8	8270E	ND		10	ug/L	1
Pyrene	129-00-0	8270E	ND		10	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Fluorobiphenyl		74	37-129
Nitrobenzene-d5		68	38-127
Terphenyl-d14		88	10-148

LOQ = Limit of Quantitation B = Detected in the method blank E = Quantitation of compound exceeded the calibration range
 ND = Not detected at or above the LOQ N = Recovery is out of criteria P = The RPD between two GC columns exceeds 40%
 H = Out of holding time W = Reported on wet weight basis

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Volatile Organic Compounds by GC/MS

Client: Apex Companies, LLC	Laboratory ID: VF16086-006
Description: SW-5	Matrix: Aqueous
Date Sampled: 06/16/2020 1000	
Date Received: 06/16/2020	

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260D	1	06/24/2020 1524	JAN		57934

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Benzene	71-43-2	8260D	ND		5.0	ug/L	1
Ethylbenzene	100-41-4	8260D	ND		5.0	ug/L	1
Toluene	108-88-3	8260D	ND		5.0	ug/L	1
Xylenes (total)	1330-20-7	8260D	ND		5.0	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		111	70-130
Toluene-d8		107	70-130
Bromofluorobenzene		108	70-130

LOQ = Limit of Quantitation B = Detected in the method blank E = Quantitation of compound exceeded the calibration range
 ND = Not detected at or above the LOQ N = Recovery is out of criteria P = The RPD between two GC columns exceeds 40%
 H = Out of holding time W = Reported on wet weight basis

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Semivolatile Organic Compounds by GC/MS

Client: Apex Companies, LLC	Laboratory ID: VF16086-006
Description: SW-5	Matrix: Aqueous
Date Sampled: 06/16/2020 1000	
Date Received: 06/16/2020	

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270E	1	06/22/2020 2039	JCG	06/19/2020 1700	57530

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Acenaphthene	83-32-9	8270E	ND		10	ug/L	1
Acenaphthylene	208-96-8	8270E	ND		10	ug/L	1
Anthracene	120-12-7	8270E	ND		10	ug/L	1
Benzo(a)anthracene	56-55-3	8270E	ND		10	ug/L	1
Benzo(a)pyrene	50-32-8	8270E	ND		10	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270E	ND		10	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270E	ND		10	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270E	ND		10	ug/L	1
Chrysene	218-01-9	8270E	ND		10	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270E	ND		10	ug/L	1
Fluoranthene	206-44-0	8270E	ND		10	ug/L	1
Fluorene	86-73-7	8270E	ND		10	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270E	ND		10	ug/L	1
Naphthalene	91-20-3	8270E	ND		10	ug/L	1
Phenanthrene	85-01-8	8270E	ND		10	ug/L	1
Pyrene	129-00-0	8270E	ND		10	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Fluorobiphenyl		72	37-129
Nitrobenzene-d5		66	38-127
Terphenyl-d14		92	10-148

LOQ = Limit of Quantitation B = Detected in the method blank E = Quantitation of compound exceeded the calibration range
 ND = Not detected at or above the LOQ N = Recovery is out of criteria P = The RPD between two GC columns exceeds 40%
 H = Out of holding time W = Reported on wet weight basis

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Volatile Organic Compounds by GC/MS

Client: Apex Companies, LLC	Laboratory ID: VF16086-007
Description: SW-6	Matrix: Aqueous
Date Sampled: 06/16/2020 1020	
Date Received: 06/16/2020	

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260D	1	06/24/2020 1547	JAN		57934

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Benzene	71-43-2	8260D	ND		5.0	ug/L	1
Ethylbenzene	100-41-4	8260D	ND		5.0	ug/L	1
Toluene	108-88-3	8260D	ND		5.0	ug/L	1
Xylenes (total)	1330-20-7	8260D	ND		5.0	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		109	70-130
Toluene-d8		106	70-130
Bromofluorobenzene		104	70-130

LOQ = Limit of Quantitation B = Detected in the method blank E = Quantitation of compound exceeded the calibration range
 ND = Not detected at or above the LOQ N = Recovery is out of criteria P = The RPD between two GC columns exceeds 40%
 H = Out of holding time W = Reported on wet weight basis

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Semivolatile Organic Compounds by GC/MS

Client: **Apex Companies, LLC**

Laboratory ID: **VF16086-007**

Description: **SW-6**

Matrix: **Aqueous**

Date Sampled: **06/16/2020 1020**

Date Received: **06/16/2020**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270E	1	06/24/2020 1848	JCG	06/22/2020 1542	57709

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Acenaphthene	83-32-9	8270E	ND		10	ug/L	1
Acenaphthylene	208-96-8	8270E	ND		10	ug/L	1
Anthracene	120-12-7	8270E	ND		10	ug/L	1
Benzo(a)anthracene	56-55-3	8270E	ND		10	ug/L	1
Benzo(a)pyrene	50-32-8	8270E	ND		10	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270E	ND		10	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270E	ND		10	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270E	ND		10	ug/L	1
Chrysene	218-01-9	8270E	ND		10	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270E	ND		10	ug/L	1
Fluoranthene	206-44-0	8270E	ND		10	ug/L	1
Fluorene	86-73-7	8270E	ND		10	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270E	ND		10	ug/L	1
Naphthalene	91-20-3	8270E	ND		10	ug/L	1
Phenanthrene	85-01-8	8270E	ND		10	ug/L	1
Pyrene	129-00-0	8270E	ND		10	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Fluorobiphenyl		64	37-129
Nitrobenzene-d5		70	38-127
Terphenyl-d14		67	10-148

LOQ = Limit of Quantitation B = Detected in the method blank E = Quantitation of compound exceeded the calibration range
 ND = Not detected at or above the LOQ N = Recovery is out of criteria P = The RPD between two GC columns exceeds 40%
 H = Out of holding time W = Reported on wet weight basis

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Volatile Organic Compounds by GC/MS

Client: Apex Companies, LLC	Laboratory ID: VF16086-008
Description: SW-7	Matrix: Aqueous
Date Sampled: 06/16/2020 1040	
Date Received: 06/16/2020	

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260D	1	06/24/2020 1609	JAN		57934

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Benzene	71-43-2	8260D	ND		5.0	ug/L	1
Ethylbenzene	100-41-4	8260D	ND		5.0	ug/L	1
Toluene	108-88-3	8260D	ND		5.0	ug/L	1
Xylenes (total)	1330-20-7	8260D	ND		5.0	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		109	70-130
Toluene-d8		105	70-130
Bromofluorobenzene		106	70-130

LOQ = Limit of Quantitation B = Detected in the method blank E = Quantitation of compound exceeded the calibration range
 ND = Not detected at or above the LOQ N = Recovery is out of criteria P = The RPD between two GC columns exceeds 40%
 H = Out of holding time W = Reported on wet weight basis

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Semivolatile Organic Compounds by GC/MS

Client: Apex Companies, LLC	Laboratory ID: VF16086-008
Description: SW-7	Matrix: Aqueous
Date Sampled: 06/16/2020 1040	
Date Received: 06/16/2020	

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270E	1	06/24/2020 1912	JCG	06/22/2020 1542	57709

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Acenaphthene	83-32-9	8270E	ND		10	ug/L	1
Acenaphthylene	208-96-8	8270E	ND		10	ug/L	1
Anthracene	120-12-7	8270E	ND		10	ug/L	1
Benzo(a)anthracene	56-55-3	8270E	ND		10	ug/L	1
Benzo(a)pyrene	50-32-8	8270E	ND		10	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270E	ND		10	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270E	ND		10	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270E	ND		10	ug/L	1
Chrysene	218-01-9	8270E	ND		10	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270E	ND		10	ug/L	1
Fluoranthene	206-44-0	8270E	ND		10	ug/L	1
Fluorene	86-73-7	8270E	ND		10	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270E	ND		10	ug/L	1
Naphthalene	91-20-3	8270E	ND		10	ug/L	1
Phenanthrene	85-01-8	8270E	ND		10	ug/L	1
Pyrene	129-00-0	8270E	ND		10	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Fluorobiphenyl		83	37-129
Nitrobenzene-d5		70	38-127
Terphenyl-d14		82	10-148

LOQ = Limit of Quantitation B = Detected in the method blank E = Quantitation of compound exceeded the calibration range
 ND = Not detected at or above the LOQ N = Recovery is out of criteria P = The RPD between two GC columns exceeds 40%
 H = Out of holding time W = Reported on wet weight basis

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Volatile Organic Compounds by GC/MS

Client: Apex Companies, LLC	Laboratory ID: VF16086-009
Description: SW-8	Matrix: Aqueous
Date Sampled: 06/16/2020 1135	
Date Received: 06/16/2020	

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260D	1	06/24/2020 1631	JAN		57934

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Benzene	71-43-2	8260D	ND		5.0	ug/L	1
Ethylbenzene	100-41-4	8260D	ND		5.0	ug/L	1
Toluene	108-88-3	8260D	ND		5.0	ug/L	1
Xylenes (total)	1330-20-7	8260D	ND		5.0	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		113	70-130
Toluene-d8		108	70-130
Bromofluorobenzene		106	70-130

LOQ = Limit of Quantitation B = Detected in the method blank E = Quantitation of compound exceeded the calibration range
 ND = Not detected at or above the LOQ N = Recovery is out of criteria P = The RPD between two GC columns exceeds 40%
 H = Out of holding time W = Reported on wet weight basis

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Semivolatile Organic Compounds by GC/MS

Client: **Apex Companies, LLC**

Laboratory ID: **VF16086-009**

Description: **SW-8**

Matrix: **Aqueous**

Date Sampled: **06/16/2020 1135**

Date Received: **06/16/2020**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270E	1	06/24/2020 2222	JCG	06/22/2020 1542	57709

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Acenaphthene	83-32-9	8270E	ND		10	ug/L	1
Acenaphthylene	208-96-8	8270E	ND		10	ug/L	1
Anthracene	120-12-7	8270E	ND		10	ug/L	1
Benzo(a)anthracene	56-55-3	8270E	ND		10	ug/L	1
Benzo(a)pyrene	50-32-8	8270E	ND		10	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270E	ND		10	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270E	ND		10	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270E	ND		10	ug/L	1
Chrysene	218-01-9	8270E	ND		10	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270E	ND		10	ug/L	1
Fluoranthene	206-44-0	8270E	ND		10	ug/L	1
Fluorene	86-73-7	8270E	ND		10	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270E	ND		10	ug/L	1
Naphthalene	91-20-3	8270E	ND		10	ug/L	1
Phenanthrene	85-01-8	8270E	ND		10	ug/L	1
Pyrene	129-00-0	8270E	ND		10	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Fluorobiphenyl		74	37-129
Nitrobenzene-d5		64	38-127
Terphenyl-d14		81	10-148

LOQ = Limit of Quantitation B = Detected in the method blank E = Quantitation of compound exceeded the calibration range
 ND = Not detected at or above the LOQ N = Recovery is out of criteria P = The RPD between two GC columns exceeds 40%
 H = Out of holding time W = Reported on wet weight basis

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Volatile Organic Compounds by GC/MS

Client: Apex Companies, LLC	Laboratory ID: VF16086-010
Description: SW-9	Matrix: Aqueous
Date Sampled: 06/16/2020 1150	
Date Received: 06/16/2020	

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260D	1	06/24/2020 1654	JAN		57934

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Benzene	71-43-2	8260D	ND		5.0	ug/L	1
Ethylbenzene	100-41-4	8260D	ND		5.0	ug/L	1
Toluene	108-88-3	8260D	ND		5.0	ug/L	1
Xylenes (total)	1330-20-7	8260D	ND		5.0	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		110	70-130
Toluene-d8		106	70-130
Bromofluorobenzene		104	70-130

LOQ = Limit of Quantitation B = Detected in the method blank E = Quantitation of compound exceeded the calibration range
 ND = Not detected at or above the LOQ N = Recovery is out of criteria P = The RPD between two GC columns exceeds 40%
 H = Out of holding time W = Reported on wet weight basis

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Semivolatile Organic Compounds by GC/MS

Client: **Apex Companies, LLC**

Laboratory ID: **VF16086-010**

Description: **SW-9**

Matrix: **Aqueous**

Date Sampled: **06/16/2020 1150**

Date Received: **06/16/2020**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270E	1	06/24/2020 1936	JCG	06/22/2020 1542	57709

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Acenaphthene	83-32-9	8270E	ND		10	ug/L	1
Acenaphthylene	208-96-8	8270E	ND		10	ug/L	1
Anthracene	120-12-7	8270E	ND		10	ug/L	1
Benzo(a)anthracene	56-55-3	8270E	ND		10	ug/L	1
Benzo(a)pyrene	50-32-8	8270E	ND		10	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270E	ND		10	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270E	ND		10	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270E	ND		10	ug/L	1
Chrysene	218-01-9	8270E	ND		10	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270E	ND		10	ug/L	1
Fluoranthene	206-44-0	8270E	ND		10	ug/L	1
Fluorene	86-73-7	8270E	ND		10	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270E	ND		10	ug/L	1
Naphthalene	91-20-3	8270E	ND		10	ug/L	1
Phenanthrene	85-01-8	8270E	ND		10	ug/L	1
Pyrene	129-00-0	8270E	ND		10	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Fluorobiphenyl		82	37-129
Nitrobenzene-d5		69	38-127
Terphenyl-d14		75	10-148

LOQ = Limit of Quantitation B = Detected in the method blank E = Quantitation of compound exceeded the calibration range
 ND = Not detected at or above the LOQ N = Recovery is out of criteria P = The RPD between two GC columns exceeds 40%
 H = Out of holding time W = Reported on wet weight basis

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Volatile Organic Compounds by GC/MS

Client: Apex Companies, LLC	Laboratory ID: VF16086-011
Description: FD061620	Matrix: Aqueous
Date Sampled: 06/16/2020 1000	
Date Received: 06/16/2020	

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260D	1	06/24/2020 1716	JAN		57934

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Benzene	71-43-2	8260D	ND		5.0	ug/L	1
Ethylbenzene	100-41-4	8260D	ND		5.0	ug/L	1
Toluene	108-88-3	8260D	ND		5.0	ug/L	1
Xylenes (total)	1330-20-7	8260D	ND		5.0	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		113	70-130
Toluene-d8		106	70-130
Bromofluorobenzene		106	70-130

LOQ = Limit of Quantitation B = Detected in the method blank E = Quantitation of compound exceeded the calibration range
 ND = Not detected at or above the LOQ N = Recovery is out of criteria P = The RPD between two GC columns exceeds 40%
 H = Out of holding time W = Reported on wet weight basis

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Semivolatile Organic Compounds by GC/MS

Client: Apex Companies, LLC	Laboratory ID: VF16086-011
Description: FD061620	Matrix: Aqueous
Date Sampled: 06/16/2020 1000	
Date Received: 06/16/2020	

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270E	1	06/24/2020 2000	JCG	06/22/2020 1542	57709

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Acenaphthene	83-32-9	8270E	ND		10	ug/L	1
Acenaphthylene	208-96-8	8270E	ND		10	ug/L	1
Anthracene	120-12-7	8270E	ND		10	ug/L	1
Benzo(a)anthracene	56-55-3	8270E	ND		10	ug/L	1
Benzo(a)pyrene	50-32-8	8270E	ND		10	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270E	ND		10	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270E	ND		10	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270E	ND		10	ug/L	1
Chrysene	218-01-9	8270E	ND		10	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270E	ND		10	ug/L	1
Fluoranthene	206-44-0	8270E	ND		10	ug/L	1
Fluorene	86-73-7	8270E	ND		10	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270E	ND		10	ug/L	1
Naphthalene	91-20-3	8270E	ND		10	ug/L	1
Phenanthrene	85-01-8	8270E	ND		10	ug/L	1
Pyrene	129-00-0	8270E	ND		10	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Fluorobiphenyl		82	37-129
Nitrobenzene-d5		71	38-127
Terphenyl-d14		76	10-148

LOQ = Limit of Quantitation B = Detected in the method blank E = Quantitation of compound exceeded the calibration range
 ND = Not detected at or above the LOQ N = Recovery is out of criteria P = The RPD between two GC columns exceeds 40%
 H = Out of holding time W = Reported on wet weight basis

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QC Summary

Volatile Organic Compounds by GC/MS - MB

Sample ID: VQ57934-001

Matrix: Aqueous

Batch: 57934

Prep Method: 5030B

Analytical Method: 8260D

Parameter	Result	Q	Dil	LOQ	Units	Analysis Date
Benzene	ND		1	5.0	ug/L	06/24/2020 1019
Ethylbenzene	ND		1	5.0	ug/L	06/24/2020 1019
Toluene	ND		1	5.0	ug/L	06/24/2020 1019
Xylenes (total)	ND		1	5.0	ug/L	06/24/2020 1019
Surrogate	Q	% Rec	Acceptance Limit			
1,2-Dichloroethane-d4		106	70-130			
Toluene-d8		108	70-130			
Bromofluorobenzene		102	70-130			

LOQ = Limit of Quantitation

P = The RPD between two GC columns exceeds 40%

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

+ = RPD is out of criteria

LOD = Limit of Detection

ND = Not detected at or above the LOQ

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

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Volatile Organic Compounds by GC/MS - LCS

Sample ID: VQ57934-002

Matrix: Aqueous

Batch: 57934

Prep Method: 5030B

Analytical Method: 8260D

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Benzene	50	50		1	99	70-130	06/24/2020 0858
Ethylbenzene	50	53		1	106	70-130	06/24/2020 0858
Toluene	50	52		1	103	70-130	06/24/2020 0858
Xylenes (total)	100	100		1	104	70-130	06/24/2020 0858
Surrogate	Q	% Rec			Acceptance Limit		
1,2-Dichloroethane-d4		102			70-130		
Toluene-d8		101			70-130		
Bromofluorobenzene		99			70-130		

LOQ = Limit of Quantitation

P = The RPD between two GC columns exceeds 40%

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and \geq DL

+ = RPD is out of criteria

LOD = Limit of Detection

ND = Not detected at or above the LOQ

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

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Semivolatile Organic Compounds by GC/MS - MB

Sample ID: VQ57268-001

Matrix: Aqueous

Batch: 57268

Prep Method: 3520C

Analytical Method: 8270E

Prep Date: 06/17/2020 1030

Parameter	Result	Q	Dil	LOQ	Units	Analysis Date
Acenaphthene	ND		1	10	ug/L	06/19/2020 1040
Acenaphthylene	ND		1	10	ug/L	06/19/2020 1040
Anthracene	ND		1	10	ug/L	06/19/2020 1040
Benzo(a)anthracene	ND		1	10	ug/L	06/19/2020 1040
Benzo(a)pyrene	ND		1	10	ug/L	06/19/2020 1040
Benzo(b)fluoranthene	ND		1	10	ug/L	06/19/2020 1040
Benzo(g,h,i)perylene	ND		1	10	ug/L	06/19/2020 1040
Benzo(k)fluoranthene	ND		1	10	ug/L	06/19/2020 1040
Chrysene	ND		1	10	ug/L	06/19/2020 1040
Dibenzo(a,h)anthracene	ND		1	10	ug/L	06/19/2020 1040
Fluoranthene	ND		1	10	ug/L	06/19/2020 1040
Fluorene	ND		1	10	ug/L	06/19/2020 1040
Indeno(1,2,3-c,d)pyrene	ND		1	10	ug/L	06/19/2020 1040
Naphthalene	ND		1	10	ug/L	06/19/2020 1040
Phenanthrene	ND		1	10	ug/L	06/19/2020 1040
Pyrene	ND		1	10	ug/L	06/19/2020 1040
Surrogate	Q	% Rec	Acceptance Limit			
2-Fluorobiphenyl		84	37-129			
Nitrobenzene-d5		76	38-127			
Terphenyl-d14		97	10-148			

LOQ = Limit of Quantitation

P = The RPD between two GC columns exceeds 40%

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

+ = RPD is out of criteria

LOD = Limit of Detection

ND = Not detected at or above the LOQ

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

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Semivolatile Organic Compounds by GC/MS - LCS

Sample ID: VQ57268-002

Matrix: Aqueous

Batch: 57268

Prep Method: 3520C

Analytical Method: 8270E

Prep Date: 06/17/2020 1030

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Acenaphthene	40	30		1	75	30-122	06/19/2020 1105
Acenaphthylene	40	36		1	89	30-130	06/19/2020 1105
Anthracene	40	33		1	82	30-123	06/19/2020 1105
Benzo(a)anthracene	40	34		1	84	40-125	06/19/2020 1105
Benzo(a)pyrene	40	32		1	81	40-128	06/19/2020 1105
Benzo(b)fluoranthene	40	34		1	85	30-130	06/19/2020 1105
Benzo(g,h,i)perylene	40	36		1	91	30-130	06/19/2020 1105
Benzo(k)fluoranthene	40	36		1	91	30-130	06/19/2020 1105
Chrysene	40	37		1	91	30-130	06/19/2020 1105
Dibenzo(a,h)anthracene	40	35		1	88	30-130	06/19/2020 1105
Fluoranthene	40	34		1	84	40-128	06/19/2020 1105
Fluorene	40	31		1	77	30-124	06/19/2020 1105
Indeno(1,2,3-c,d)pyrene	40	35		1	87	30-130	06/19/2020 1105
Naphthalene	40	29		1	72	30-130	06/19/2020 1105
Phenanthrene	40	30		1	76	40-123	06/19/2020 1105
Pyrene	40	36		1	91	40-126	06/19/2020 1105
Surrogate	Q	% Rec	Acceptance Limit				
2-Fluorobiphenyl		81	37-129				
Nitrobenzene-d5		73	38-127				
Terphenyl-d14		93	10-148				

LOQ = Limit of Quantitation

P = The RPD between two GC columns exceeds 40%

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

+ = RPD is out of criteria

LOD = Limit of Detection

ND = Not detected at or above the LOQ

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

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Semivolatile Organic Compounds by GC/MS - MB

Sample ID: VQ57530-001

Matrix: Aqueous

Batch: 57530

Prep Method: 3520C

Analytical Method: 8270E

Prep Date: 06/19/2020 1700

Parameter	Result	Q	Dil	LOQ	Units	Analysis Date
Acenaphthene	ND		1	10	ug/L	06/22/2020 1123
Acenaphthylene	ND		1	10	ug/L	06/22/2020 1123
Anthracene	ND		1	10	ug/L	06/22/2020 1123
Benzo(a)anthracene	ND		1	10	ug/L	06/22/2020 1123
Benzo(a)pyrene	ND		1	10	ug/L	06/22/2020 1123
Benzo(b)fluoranthene	ND		1	10	ug/L	06/22/2020 1123
Benzo(g,h,i)perylene	ND		1	10	ug/L	06/22/2020 1123
Benzo(k)fluoranthene	ND		1	10	ug/L	06/22/2020 1123
Chrysene	ND		1	10	ug/L	06/22/2020 1123
Dibenzo(a,h)anthracene	ND		1	10	ug/L	06/22/2020 1123
Fluoranthene	ND		1	10	ug/L	06/22/2020 1123
Fluorene	ND		1	10	ug/L	06/22/2020 1123
Indeno(1,2,3-c,d)pyrene	ND		1	10	ug/L	06/22/2020 1123
Naphthalene	ND		1	10	ug/L	06/22/2020 1123
Phenanthrene	ND		1	10	ug/L	06/22/2020 1123
Pyrene	ND		1	10	ug/L	06/22/2020 1123
Surrogate	Q	% Rec	Acceptance Limit			
2-Fluorobiphenyl		84	37-129			
Nitrobenzene-d5		77	38-127			
Terphenyl-d14		101	10-148			

LOQ = Limit of Quantitation

P = The RPD between two GC columns exceeds 40%

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

+ = RPD is out of criteria

LOD = Limit of Detection

ND = Not detected at or above the LOQ

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

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Semivolatile Organic Compounds by GC/MS - LCS

Sample ID: VQ57530-002

Matrix: Aqueous

Batch: 57530

Prep Method: 3520C

Analytical Method: 8270E

Prep Date: 06/19/2020 1700

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Acenaphthene	40	29		1	74	30-122	06/22/2020 1148
Acenaphthylene	40	35		1	87	30-130	06/22/2020 1148
Anthracene	40	31		1	77	30-123	06/22/2020 1148
Benzo(a)anthracene	40	32		1	80	40-125	06/22/2020 1148
Benzo(a)pyrene	40	31		1	76	40-128	06/22/2020 1148
Benzo(b)fluoranthene	40	32		1	80	30-130	06/22/2020 1148
Benzo(g,h,i)perylene	40	37		1	91	30-130	06/22/2020 1148
Benzo(k)fluoranthene	40	34		1	85	30-130	06/22/2020 1148
Chrysene	40	35		1	87	30-130	06/22/2020 1148
Dibenzo(a,h)anthracene	40	35		1	88	30-130	06/22/2020 1148
Fluoranthene	40	33		1	81	40-128	06/22/2020 1148
Fluorene	40	29		1	73	30-124	06/22/2020 1148
Indeno(1,2,3-c,d)pyrene	40	35		1	89	30-130	06/22/2020 1148
Naphthalene	40	28		1	70	30-130	06/22/2020 1148
Phenanthrene	40	30		1	75	40-123	06/22/2020 1148
Pyrene	40	35		1	89	40-126	06/22/2020 1148
Surrogate	Q	% Rec	Acceptance Limit				
2-Fluorobiphenyl		80	37-129				
Nitrobenzene-d5		69	38-127				
Terphenyl-d14		92	10-148				

LOQ = Limit of Quantitation

P = The RPD between two GC columns exceeds 40%

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

+ = RPD is out of criteria

LOD = Limit of Detection

ND = Not detected at or above the LOQ

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

Semivolatile Organic Compounds by GC/MS - MB

Sample ID: VQ57709-001

Matrix: Aqueous

Batch: 57709

Prep Method: 3520C

Analytical Method: 8270E

Prep Date: 06/22/2020 1542

Parameter	Result	Q	Dil	LOQ	Units	Analysis Date
Acenaphthene	ND		1	10	ug/L	06/24/2020 1425
Acenaphthylene	ND		1	10	ug/L	06/24/2020 1425
Anthracene	ND		1	10	ug/L	06/24/2020 1425
Benzo(a)anthracene	ND		1	10	ug/L	06/24/2020 1425
Benzo(a)pyrene	ND		1	10	ug/L	06/24/2020 1425
Benzo(b)fluoranthene	ND		1	10	ug/L	06/24/2020 1425
Benzo(g,h,i)perylene	ND		1	10	ug/L	06/24/2020 1425
Benzo(k)fluoranthene	ND		1	10	ug/L	06/24/2020 1425
Chrysene	ND		1	10	ug/L	06/24/2020 1425
Dibenzo(a,h)anthracene	ND		1	10	ug/L	06/24/2020 1425
Fluoranthene	ND		1	10	ug/L	06/24/2020 1425
Fluorene	ND		1	10	ug/L	06/24/2020 1425
Indeno(1,2,3-c,d)pyrene	ND		1	10	ug/L	06/24/2020 1425
Naphthalene	ND		1	10	ug/L	06/24/2020 1425
Phenanthrene	ND		1	10	ug/L	06/24/2020 1425
Pyrene	ND		1	10	ug/L	06/24/2020 1425
Surrogate	Q	% Rec	Acceptance Limit			
2-Fluorobiphenyl		67	37-129			
Nitrobenzene-d5		66	38-127			
Terphenyl-d14		80	10-148			

LOQ = Limit of Quantitation

P = The RPD between two GC columns exceeds 40%

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

+ = RPD is out of criteria

LOD = Limit of Detection

ND = Not detected at or above the LOQ

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

Semivolatile Organic Compounds by GC/MS - LCS

Sample ID: VQ57709-002

Matrix: Aqueous

Batch: 57709

Prep Method: 3520C

Analytical Method: 8270E

Prep Date: 06/22/2020 1542

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Acenaphthene	40	31		1	77	30-122	06/24/2020 1449
Acenaphthylene	40	27		1	68	30-130	06/24/2020 1449
Anthracene	40	27		1	68	30-123	06/24/2020 1449
Benzo(a)anthracene	40	32		1	80	40-125	06/24/2020 1449
Benzo(a)pyrene	40	28		1	71	40-128	06/24/2020 1449
Benzo(b)fluoranthene	40	30		1	74	30-130	06/24/2020 1449
Benzo(g,h,i)perylene	40	32		1	80	30-130	06/24/2020 1449
Benzo(k)fluoranthene	40	29		1	73	30-130	06/24/2020 1449
Chrysene	40	32		1	79	30-130	06/24/2020 1449
Dibenzo(a,h)anthracene	40	32		1	81	30-130	06/24/2020 1449
Fluoranthene	40	27		1	67	40-128	06/24/2020 1449
Fluorene	40	25		1	64	30-124	06/24/2020 1449
Indeno(1,2,3-c,d)pyrene	40	30		1	75	30-130	06/24/2020 1449
Naphthalene	40	32		1	79	30-130	06/24/2020 1449
Phenanthrene	40	27		1	68	40-123	06/24/2020 1449
Pyrene	40	32		1	81	40-126	06/24/2020 1449
Surrogate	Q	% Rec	Acceptance Limit				
2-Fluorobiphenyl		70	37-129				
Nitrobenzene-d5		80	38-127				
Terphenyl-d14		75	10-148				

LOQ = Limit of Quantitation

P = The RPD between two GC columns exceeds 40%

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

+ = RPD is out of criteria

LOD = Limit of Detection

ND = Not detected at or above the LOQ

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

Semivolatile Organic Compounds by GC/MS - MS

Sample ID: VF16086-009MS

Matrix: Aqueous

Batch: 57709

Prep Method: 3520C

Analytical Method: 8270E

Prep Date: 06/22/2020 1542

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Acenaphthene	ND	80	75		1	93	30-122	06/24/2020 2246
Acenaphthylene	ND	80	67		1	83	30-130	06/24/2020 2246
Anthracene	ND	80	67		1	83	30-123	06/24/2020 2246
Benzo(a)anthracene	ND	80	70		1	88	40-125	06/24/2020 2246
Benzo(a)pyrene	ND	80	56		1	70	40-128	06/24/2020 2246
Benzo(b)fluoranthene	ND	80	59		1	74	30-130	06/24/2020 2246
Benzo(g,h,i)perylene	ND	80	70		1	88	30-130	06/24/2020 2246
Benzo(k)fluoranthene	ND	80	63		1	78	30-130	06/24/2020 2246
Chrysene	ND	80	74		1	92	30-130	06/24/2020 2246
Dibenzo(a,h)anthracene	ND	80	64		1	81	30-130	06/24/2020 2246
Fluoranthene	ND	80	68		1	85	40-128	06/24/2020 2246
Fluorene	ND	80	64		1	80	30-124	06/24/2020 2246
Indeno(1,2,3-c,d)pyrene	ND	80	61		1	76	30-130	06/24/2020 2246
Naphthalene	ND	80	66		1	83	30-130	06/24/2020 2246
Phenanthrene	ND	80	61		1	76	40-123	06/24/2020 2246
Pyrene	ND	80	77		1	96	40-126	06/24/2020 2246
Surrogate	Q	% Rec	Acceptance Limit					
2-Fluorobiphenyl		76	37-129					
Nitrobenzene-d5		63	38-127					
Terphenyl-d14		80	10-148					

LOQ = Limit of Quantitation

P = The RPD between two GC columns exceeds 40%

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

+ = RPD is out of criteria

LOD = Limit of Detection

ND = Not detected at or above the LOQ

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

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Semivolatile Organic Compounds by GC/MS - MSD

Sample ID: VF16086-009MD

Matrix: Aqueous

Batch: 57709

Prep Method: 3520C

Analytical Method: 8270E

Prep Date: 06/22/2020 1542

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	% Rec Limit	% RPD Limit	Analysis Date
Acenaphthene	ND	80	72	1		91	2.8	30-122	40	06/24/2020 2310
Acenaphthylene	ND	80	68	1		85	2.5	30-130	40	06/24/2020 2310
Anthracene	ND	80	68	1		85	1.3	30-123	40	06/24/2020 2310
Benzo(a)anthracene	ND	80	69	1		87	1.4	40-125	40	06/24/2020 2310
Benzo(a)pyrene	ND	80	61	1		76	7.3	40-128	40	06/24/2020 2310
Benzo(b)fluoranthene	ND	80	63	1		79	5.7	30-130	40	06/24/2020 2310
Benzo(g,h,i)perylene	ND	80	75	1		93	6.0	30-130	40	06/24/2020 2310
Benzo(k)fluoranthene	ND	80	66	1		83	5.1	30-130	40	06/24/2020 2310
Chrysene	ND	80	73	1		92	0.33	30-130	40	06/24/2020 2310
Dibenzo(a,h)anthracene	ND	80	68	1		85	4.9	30-130	40	06/24/2020 2310
Fluoranthene	ND	80	66	1		83	2.1	40-128	40	06/24/2020 2310
Fluorene	ND	80	63	1		79	1.9	30-124	40	06/24/2020 2310
Indeno(1,2,3-c,d)pyrene	ND	80	66	1		83	8.6	30-130	40	06/24/2020 2310
Naphthalene	ND	80	69	1		86	4.2	30-130	40	06/24/2020 2310
Phenanthrene	ND	80	62	1		78	2.4	40-123	40	06/24/2020 2310
Pyrene	ND	80	75	1		94	2.7	40-126	40	06/24/2020 2310
Surrogate	Q	% Rec	Acceptance Limit							
2-Fluorobiphenyl		79	37-129							
Nitrobenzene-d5		65	38-127							
Terphenyl-d14		80	10-148							

LOQ = Limit of Quantitation

P = The RPD between two GC columns exceeds 40%

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

+ = RPD is out of criteria

LOD = Limit of Detection

ND = Not detected at or above the LOQ

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

**Chain of Custody
and
Miscellaneous Documents**

PACE ANALYTICAL SERVICES, LLC



PACE ANALYTICAL SERVICES, LLC
 106 Vantage Point Drive • West Columbia, SC 29172
 Telephone No. 803-791-9700 Fax No. 803-791-9111
 www.pacelabs.com

Number 108283

Client: Apex Gas Address: 100 Commerce Circle City: Trafford State: PA Zip Code: 15085	Project Name: Catawbee River SWS 2020 Project No.: 87500614-05 P.O. No.:	Received by Contract: Kayla Jones Sampler's Signature: <i>[Signature]</i> Printed Name: Gordon O'Toole	Telephone No. / Email: 412-829-9650 Analyst (Attach list if more space is needed):	Quote No.: Page: 1 of 2 Date:
Matrix: Gordon O'Toole		No. of Containers by Parameter Type:		
Sample ID / Description (Reference for each sample may be substituted on one line)	Collection Date (YYYY-MM-DD)	Collection Time (Military)	Matrix	No. of Containers by Parameter Type
Trip Blank	6-16-20		G	Lead <input type="checkbox"/> Cad <input type="checkbox"/> Cu <input type="checkbox"/> Fe <input type="checkbox"/> Ni <input type="checkbox"/> Pb <input type="checkbox"/> Se <input type="checkbox"/> Zn <input type="checkbox"/>
SW-1	6-16-20	12:35	G	Lead <input checked="" type="checkbox"/> Cad <input checked="" type="checkbox"/> Cu <input checked="" type="checkbox"/> Fe <input checked="" type="checkbox"/> Ni <input checked="" type="checkbox"/> Pb <input checked="" type="checkbox"/> Se <input checked="" type="checkbox"/> Zn <input checked="" type="checkbox"/>
SW-2	6-16-20	11:20	G	Lead <input checked="" type="checkbox"/> Cad <input checked="" type="checkbox"/> Cu <input checked="" type="checkbox"/> Fe <input checked="" type="checkbox"/> Ni <input checked="" type="checkbox"/> Pb <input checked="" type="checkbox"/> Se <input checked="" type="checkbox"/> Zn <input checked="" type="checkbox"/>
SW-3	6-16-20	11:00	G	Lead <input checked="" type="checkbox"/> Cad <input checked="" type="checkbox"/> Cu <input checked="" type="checkbox"/> Fe <input checked="" type="checkbox"/> Ni <input checked="" type="checkbox"/> Pb <input checked="" type="checkbox"/> Se <input checked="" type="checkbox"/> Zn <input checked="" type="checkbox"/>
SW-4	6-16-20	09:40	G	Lead <input checked="" type="checkbox"/> Cad <input checked="" type="checkbox"/> Cu <input checked="" type="checkbox"/> Fe <input checked="" type="checkbox"/> Ni <input checked="" type="checkbox"/> Pb <input checked="" type="checkbox"/> Se <input checked="" type="checkbox"/> Zn <input checked="" type="checkbox"/>
SW-5	6-16-20	10:00	G	Lead <input checked="" type="checkbox"/> Cad <input checked="" type="checkbox"/> Cu <input checked="" type="checkbox"/> Fe <input checked="" type="checkbox"/> Ni <input checked="" type="checkbox"/> Pb <input checked="" type="checkbox"/> Se <input checked="" type="checkbox"/> Zn <input checked="" type="checkbox"/>
SW-6	6-16-20	10:20	G	Lead <input checked="" type="checkbox"/> Cad <input checked="" type="checkbox"/> Cu <input checked="" type="checkbox"/> Fe <input checked="" type="checkbox"/> Ni <input checked="" type="checkbox"/> Pb <input checked="" type="checkbox"/> Se <input checked="" type="checkbox"/> Zn <input checked="" type="checkbox"/>
SW-7	6-16-20	10:40	G	Lead <input checked="" type="checkbox"/> Cad <input checked="" type="checkbox"/> Cu <input checked="" type="checkbox"/> Fe <input checked="" type="checkbox"/> Ni <input checked="" type="checkbox"/> Pb <input checked="" type="checkbox"/> Se <input checked="" type="checkbox"/> Zn <input checked="" type="checkbox"/>
SW-8	6-16-20	11:35	G	Lead <input checked="" type="checkbox"/> Cad <input checked="" type="checkbox"/> Cu <input checked="" type="checkbox"/> Fe <input checked="" type="checkbox"/> Ni <input checked="" type="checkbox"/> Pb <input checked="" type="checkbox"/> Se <input checked="" type="checkbox"/> Zn <input checked="" type="checkbox"/>
SW-9	6-16-20	11:50	G	Lead <input checked="" type="checkbox"/> Cad <input checked="" type="checkbox"/> Cu <input checked="" type="checkbox"/> Fe <input checked="" type="checkbox"/> Ni <input checked="" type="checkbox"/> Pb <input checked="" type="checkbox"/> Se <input checked="" type="checkbox"/> Zn <input checked="" type="checkbox"/>



Remarks / Copies: **See Table 2 enclosed**

Turn Around Time Required (Prior lab approval required for expedited RTL): <input type="checkbox"/> Standard <input type="checkbox"/> Rush (Specify)	Sample Disposal: <input type="checkbox"/> Return to Client <input type="checkbox"/> Dispose by Lab	Possible Hazard Identification: <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison <input type="checkbox"/> Ink / Wax	CC Requirements (Specify):
1. Refrigerated by: Gordon O'Toole Date: 6-16-20 Time: 15:05	1. Received by: M Center Date:	1. Received by:	Date:
2. Refrigerated by:	2. Received by:	2. Received by:	Date:
3. Refrigerated by:	3. Received by:	3. Received by:	Date:
4. Refrigerated by:	4. Laboratory received by: <i>[Signature]</i> Date:	4. Laboratory received by:	Date: 6/16/20 Time: 1505 Temp Blank: NY <input type="checkbox"/> N
Note: All samples are retained for four weeks from receipt unless other arrangements are made.		Received on ice (Circle): Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Receptl Temp: 30 °C

Document Number: ME005M2-01

DISTRIBUTION: WHITE = Return to laboratory with Sample(s); PINK = Field Client Copy

PACE ANALYTICAL SERVICES, LLC

Shealy Environmental Services, Inc.
Document Number: MEK018C-14

Page 1 of 1
Effective Date: 8/22/18

Sample Receipt Checklist (SRC)

Client: Apex

Cooler Inspected by/date: MLH2 / 06/16/2020

Lot #: VP1608

Means of receipt: <input type="checkbox"/> SESI <input checked="" type="checkbox"/> Client <input type="checkbox"/> UPS <input type="checkbox"/> FedEx <input type="checkbox"/> Other:	
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	1. Were custody seals present on the cooler? 6
<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA	2. If custody seals were present, were they intact and unbroken?
pH Strip ID: NA	Chlorine Strip ID: NA
Original temperature upon receipt / Derived (Corrected) temperature upon receipt %Solid Snap-Cup ID: NA	
3.0 / 3.0 °C NA / NA °C NA / NA °C NA / NA °C	
Method: <input checked="" type="checkbox"/> Temperature Blank <input type="checkbox"/> Against Bottles IR Gun ID: 5 IR Gun Correction Factor: 0 °C	
Method of coolant: <input checked="" type="checkbox"/> Wet Ice <input type="checkbox"/> Ice Packs <input type="checkbox"/> Dry Ice <input type="checkbox"/> None	
<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA	3. If temperature of any cooler exceeded 6.0°C, was Project Manager Notified? PM was Notified by: phone / email / face-to-face (circle one)
<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA	4. Is the commercial courier's packing slip attached to this form?
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5. Were proper custody procedures (relinquished/received) followed?
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	6. Were sample IDs listed on the COC?
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	7. Were sample IDs listed on all sample containers?
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	8. Was collection date & time listed on the COC?
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9. Was collection date & time listed on all sample containers?
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10. Did all container label information (ID, date, time) agree with the COC?
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	11. Were tests to be performed listed on the COC?
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	12. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	13. Was adequate sample volume available?
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	14. Were all samples received within 1/2 the holding time or 48 hours, whichever comes first?
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	15. Were any samples containers missing/excess (circle one) samples Not listed on COC?
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA	16. For VOA and RSK-175 samples, were bubbles present >"pea-size" (1/4" or 6mm in diameter) in any of the VOA vials?
<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA	17. Were all DRO/metals/nutrient samples received at a pH of < 2?
<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA	18. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA	19. Were all applicable NH ₃ /TKN/cyanide/phenol/625 (< 0.5mg/L) samples free of residual chlorine?
<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA	20. Were client remarks/requests (i.e. requested dilutions, MS/MSD designations, etc...) correctly transcribed from the COC into the comment section in LIMS?
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	21. Was the quote number listed on the container label? If yes, Quote # NA
Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)	
Sample(s) NA were received incorrectly preserved and were adjusted accordingly in sample receiving with NA mL of circle one: H2SO4, HNO3, HCl, NaOH using SR # NA	
Time of preservation NA. If more than one preservative is needed, please note in the comments below.	
Sample(s) NA were received with bubbles >6 mm in diameter.	
Sample(s) NA were received with TRC > 0.5 mg/L (If #19 is <i>no</i>) and were adjusted accordingly in sample receiving with sodium thiosulfate (Na ₂ S ₂ O ₃) with Shealy ID: NA	
SR barcode labels applied by: MLH2/BMG Date: 06/16/2020	

Comments:

APPENDIX C

DATA EVALUATION MEMORANDUM

Memo

To: Bill Zeli

From: James Dunmyre

Date: July 6, 2020

Re: Evaluation of Analytical Data for Surface Water Samples Collected in June 2020
Congaree River, Columbia, South Carolina

Sample Identification

SW-01	SW-04	SW-07
SW-02	SW-05	SW-08
SW-03	SW-06	SW-09

Overview

Nine surface water samples were collected during the week of June 15, 2020.

The samples collected during the June 2020 surface water sampling event were submitted to Pace Analytical Services, LLC (Pace) located in West Columbia, South Carolina for the analyses of polynuclear aromatic hydrocarbons (PAHs) by EPA Method 8270E and BTEX via EPA Method 8260D. The analytical results were reported in one sample delivery group (SDG) – VF16086. A Level II data package was provided for the SDG.

Two quality assurance/quality control (QA/QC) samples were also collected. The QA/QC samples collected included one blind field duplicate (FD061620 duplicate of SW-05) and one trip blank.

Summary

Quality control (QC) measures associated with the analytical data were reviewed following the U.S. EPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017) to determine the accuracy and precision of the data reported. These QC measures included sample preservation, holding times, surrogate recoveries, laboratory and trip blank results, field duplicate results, MS/MSD results, and laboratory control sample (LCS) results.

Recommendations for Data Usability

The reviewed QC results did not indicate that any significant problems existed with data precision and accuracy, as reported. All BTEX and PAH data should be considered usable for intended data uses.

APPENDIX D

SUMMARY OF SURFACE WATER QUALITY

TABLE D-1

SUMMARY OF SURFACE WATER QUALITY

**Congaree River Project
Columbia, South Carolina**

Date Sampled	Entity	Parameters	Sample Locations									
			CR-SW-14	--	--	CR-SW-13	CR-SW-06	CR-SW-08	CR-SW-10	--	--	
3/21/2017	DHEC	BTEX PAH	ND ND	--	--	ND ND	ND ND	ND ND	ND ND	--	--	
9/21/2017	SCE&G	BTEX PAH	SW-01 ND ND	SW-02 ND ND	SW-03 ND ND	SW-04 ND ND	SW-05 ND ND	SW-06 ND ND	SW-07 ND ND	SW-08 ND ND	SW-09 ND ND	
3/20/2018	SCE&G	BTEX PAH	SW-01 ND ND	SW-02 ND ND	SW-03 ND ND	SW-04 ND ND	SW-05 ND ND	SW-06 ND ND	SW-07 ND ND	SW-08 ND ND	SW-09 ND ND	
10/2/2018	SCE&G	BTEX PAH	SW-01 ND ND	SW-02 ND ND	SW-03 ND ND	SW-04 ND ND	SW-05 ND ND	SW-06 ND ND	SW-07 ND ND	SW-08 ND ND	SW-09 ND ND	
5/3/2019	DESC	BTEX PAH	SW-01 ND ND	SW-02 ND ND	SW-03 ND ND	SW-04 ND ND	SW-05 ND ND	SW-06 ND ND	SW-07 ND ND	SW-08 ND ND	SW-09 ND ND	
6/16/2020	DESC	BTEX PAH	SW-01 ND ND	SW-02 ND ND	SW-03 ND ND	SW-04 ND ND	SW-05 ND ND	SW-06 ND ND	SW-07 ND ND	SW-08 ND ND	SW-09 ND ND	

Notes:

1. ND - constituents were not detected above the reporting limit.