



VIA ELECTRONIC MAIL

November 2, 2020

John Hopkins
Remedial Project Manager
U.S. Environmental Protection Agency, Region III
1650 Arch Street
Mail Code – 3LD10
Philadelphia, PA 19103-2029

**Subject: Quarterly Progress Report No. 16
Former Kop-Flex Facility Site, Hanover, Maryland
USEPA ID No. MDD043373935
Administrative Order on Consent, Docket No. RCRA-03-2016-0170 CA**

Dear John:

On behalf of EMERSUB 16, LLC, a subsidiary of Emerson Electric Co., WSP USA, Inc. (WSP) is submitting this quarterly progress report describing the remedial activities conducted in the third quarter of calendar year 2020 (July 1 through September 30) as part of the corrective measures implementation at the former Kop-Flex, Inc. facility property (Site) located at 7565 Harmans Road (Site) in Hanover, Maryland. The Site is identical to the area described as the "Facility" in the Administrative Order on Consent, Docket No. RCRA-03-2016-0170 CA (Consent Order) for the Site. The report also describes the activities planned for the fourth quarter of calendar year 2020 (October 1 through December 31).

This progress report is being submitted to the U.S. Environmental Protection Agency (EPA) pursuant to Section VI.C.3 of the Consent Order. Please note that, in addition to performing the work conducted under the Consent Order, EMERSUB 16 continues to fulfill its remedial obligations under the October 2015 Response Action Plan (RAP) approved by the Maryland Department of the Environment (MDE) Voluntary Cleanup Program, and that EMERSUB 16 copies EPA on all submittals required under that program.

If you have any questions, please do not hesitate to contact us at 703-709-6500.

Kind regards,

A handwritten signature in black ink that reads "Robert E. Johnson". The signature is fluid and cursive.

Robert E. Johnson
Senior Technical Manager
Water & Environment

MML:REJ:rlo
K:\Emerson\Kop-Flex_Reports_Progress Reports\EPA Progress Reports\CM Progress Report 16 Q3 2020\

Encl.

cc: Mr. Stephen Clarke, EMERSUB 16 LLC
Ms. Richelle Hanson, Maryland Department of the Environment

WSP USA
Suite 300
13530 Dulles Technology Drive
Herndon, VA 20171

Tel.: +1 703 709-6500
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wsp.com



CERTIFICATION

I certify that the information contained in or accompanying this quarterly progress report is true, accurate, and complete.

As to those portions of this quarterly progress report for which I cannot personally verify their accuracy, I certify under penalty of law that this quarterly report and all attachments were prepared in accordance with procedures designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, or the immediate supervisor of such person(s), the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Signature:

A handwritten signature in blue ink, appearing to read 'Stephen L. Clarke', written over a horizontal line.

Name:

Stephen L. Clarke

Title:

President of EMERSUB 16, LLC

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Suite 300
13530 Dulles Technology Drive
Herndon, VA 20171

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Quarterly Progress Report No. 16

Former Kop-Flex Facility Site

July 2020 through September 2020

Site Name: Former Kop-Flex Facility
Site Address: 7565 Harmans Road
Hanover, Maryland 21076

Consultant: WSP USA Inc.
Address: 13530 Dulles Technology Drive, Suite 300
Herndon, Virginia 20171
Phone No.: (703) 709-6500

Project Coordinator: Eric Johnson
Alternate: Lisa Kelly

1.0 ACTIVITIES COMPLETED DURING JULY 2020 – SEPTEMBER 2020 REPORTING PERIOD

1.1 HYDRAULIC CONTAINMENT SYSTEM OPERATION

- The System operated for 58 of the 92 days during the 3rd quarter of 2020, which equates to a 63% run-time efficiency over this 3-month period. System shut-downs included a few brief (3-day) periods due to minor issues with the pH adjustment system, completion of routine operation and maintenance procedures, and boiler feedwater tank level switch malfunctions. Longer term (approximately 1-week) System shut-downs also occurred at the following times during the reporting period:
 - July 19th through July 25th: There was a problem with the resin regeneration process caused by the failure of a boiler feedwater tank level switch. The System was restarted after replacing the level switch.
 - September 5th through September 15th: There was a problem with the regeneration process caused by a steam reheater fault. The steam reheater burner was reset; however, when restarting the System on September 11th, there was a malfunction with the System control interface. The System restarted after resetting the System controls and clearing the alarms.
 - September 20th through September 24th: There was a problem triggered by a high-high differential pressure across one of the transfer pumps and failure of the RW-1D submersible pump. The System was restarted after switching out the transfer pump and trouble-shooting the RW-1D pump.

While in operation during the third quarter of 2020, a total of approximately 6.72 million gallons of impacted groundwater were extracted by the recovery wells and treated by the System. The combined average withdrawal rate from the recovery wells during full-scale operation ranged from 67-69 gallons per minute. During System operation, water samples were collected for chemical analysis in July (influent) and July through September (effluent) to monitor and evaluate concentrations of volatile organic compounds (VOCs) and 1,4-Dioxane in the untreated and treated water. The total concentration of chlorinated VOCs (CVOCs) and 1,4-Dioxane for the System influent sample was 441 micrograms per liter (µg/l), which is noticeably lower than the concentration in the second quarter (April 2020) influent sample (554 µg/l). The third quarter results (441 µg/l) are consistent with the historical influent sampling data. As of the end of September 2020, a total of 322 pounds of CVOCs and 139 pounds of 1,4-Dioxane had been recovered from the aquifer system.

- Monthly effluent samples were collected for chemical analysis in accordance with State Discharge Permit Number 15-DP-3442 and National Pollutant Discharge Elimination System (NPDES) Permit MD 0069094 issued by the MDE (Discharge Permit). Analysis of the effluent samples indicated non-detect concentrations of VOCs and non-detect to very low concentrations of 1,4-Dioxane. The detected levels of 1,4-Dioxane were below the site-specific cleanup level of 15 µg/l. The analytical results for these and the other monitoring parameters were in compliance with the effluent limitations specified in the Discharge Permit.



- On September 15, 2020, WSP submitted a renewal application for the NPDES permit associated with the System. MDE completed an administrative review of the application package and requested the submittal of additional information in support of the application. WSP plans to submit the requested information to MDE by the renewal deadline of October 31, 2020.
- During September 2020, WSP contacted Anne Arundel County Pre-treatment Program in regards to obtaining a permit to discharge small quantities of miscellaneous waters, which would exclude treated groundwater, to the sanitary sewer system on the property. WSP and an Anne Arundel County representative plan to conduct a site visit during the fourth quarter of 2020 to further discuss the permitting process.

1.2 RESIN FOULANT EVALUATION

- On July 30, 2020, samples of the extracted groundwater from the shallow and deep recovery wells, effluent from the lead resin vessel, System effluent, and condensate from the steam regeneration process were collected to further assess the levels of the natural organic carbon foulants in the System water. All samples were analyzed for total organic carbon (TOC) and dissolved organic carbon (DOC) using USEPA-approved test methods. A copy of the certified laboratory analytical report for the samples is included in Enclosure A.
- As with the previous (May 2020) samples, low concentrations of TOC and DOC, which are used as a measure of natural organic matter, were detected in all collected samples. Organic carbon concentrations in the extracted groundwater were around 1 milligram per liter (mg/L), with a slightly higher level in the water from the shallow recovery wells compared to the deep wells. The effluent from the lead treatment vessel and System effluent had noticeably lower organic carbon concentrations (approximately 0.5 mg/L), consistent with the removal of these constituents by the resin media. The regeneration condensate had the highest concentrations of TOC (9.2 mg/L) and DOC (9.0 mg/L) in the samples collected from the System. The detection of relatively high levels of organic carbon constituents in the condensate indicates the desorption and removal of some portion of the foulants during the steam regeneration process.

1.3 GROUNDWATER QUALITY MONITORING

- As indicated in the Groundwater Monitoring Plan for the response action, groundwater level monitoring to evaluate the head distribution in response to remedial pumping is to be conducted on a semi-annual basis, with the next measurement event scheduled for early December 2020. No conditions occurred that warranted the collection of an additional round(s) of water level data from the unconfined or semi-confined portions of the Lower Patapsco aquifer (LPA) during the third quarter of 2020.
- Long-term groundwater monitoring to assess changes in VOC concentrations in the unconfined and semi-confined portions of the LPA during System operation is also conducted semi-annually at the Site. The next sampling event for the groundwater recovery wells and onsite monitoring wells will be performed during early December 2020.

2.0 PLANNED ONSITE ACTIVITIES FOR THE FOURTH QUARTER OF 2020

- Continue with the full-scale System operation, including the collection and assessment of System data to evaluate operational performance, and conduct regular and as needed maintenance activities to maximize System run-time.
- Continue with the evaluation of pre-treatment technologies that could remove natural organic carbon/matter from the influent, thereby preventing fouling of the resin media. This evaluation will involve the completion of bench-scale treatability studies of two technologies – granular activated carbon and ion exchange – for removing the fouling constituents.
- Conduct the required effluent monitoring and monthly reporting pursuant to the State Discharge/NPDES Permit.
- Submit the requested information to MDE as part of the renewal application for the State Discharge/NPDES Permit for the System.
- Collect a synoptic round of water level measurements from the monitoring and recovery wells and evaluate the data to assess the aquifer response to remedial pumping and capture of the VOC plumes in the unconfined and semi-confined portions of the LPA at the Site.



- Conduct semi-annual sampling of the monitoring wells and recovery well discharge in early December 2020 pursuant to the approved Groundwater Monitoring Plan.

Given the ongoing novel coronavirus pandemic, it is possible that planned field activities could be delayed and re-scheduled to ensure conformance with government-issued directives and to address potential health concerns raised by the current Site operator – Catalent. EMERSUB 16 will coordinate Site activities with EPA and MDE to the extent possible to avoid any delays or disruptions regarding the completion of these field tasks.

3.0 KEY PERSONNEL/FACILITY CHANGES

There were no changes to key project personnel during the reporting period.

ENCLOSURE A – LABORATORY ANALYTICAL REPORT, JULY 2020 FOULANT
CHARACTERIZATION SAMPLING

ANALYTICAL REPORT

Eurofins Lancaster Laboratories Env, LLC
2425 New Holland Pike
Lancaster, PA 17601
Tel: (717)656-2300

Laboratory Job ID: 410-9251-1

Client Project/Site: Former Kop-Flex Facility Site
Revision: 1

For:

WSP USA Corp.
Attn: Environmental Accounts Payable
13530 Dulles Technology Drive
Suite 300
Herndon, Virginia 20171

Attn: Eric Johnson



Authorized for release by:
9/7/2020 3:30:32 PM

Hannah Cottman, Operations Support Specialist
(717)556-7383
hannahcottman@eurofinsus.com

LINKS

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The test results in this report meet all 2003 NELAC, 2009 TNI, and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

- 1
- 2
- 3
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- 5
- 6
- 7
- 8
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- 10
- 11
- 12
- 13
- 14

Analytical test results meet all requirements of the associated regulatory program (e.g., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis. Data qualifiers are applied to note exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

* QC recoveries that exceed the upper limits and are associated with non-detect samples are qualified but no further narration is needed since the bias is high and does not change a non-detect result.

* Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD is performed, unless otherwise specified in the method.

* Surrogate recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Measurement uncertainty values, as applicable, are available upon request.

Test results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" and tested in the laboratory are not performed within 15 minutes of collection.

This report shall not be reproduced except in full, without the written approval of the laboratory.

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Hannah Cottman
Operations Support Specialist
9/7/2020 3:30:32 PM

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Definitions/Glossary

Client: WSP USA Corp.
Project/Site: Former Kop-Flex Facility Site

Job ID: 410-9251-1

Qualifiers

General Chemistry

Qualifier	Qualifier Description
F5	Duplicate RPD exceeds limit, and one or both sample results are less than 5 times RL.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
1C	Result is from the primary column on a dual-column method.
2C	Result is from the confirmation column on a dual-column method.
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: WSP USA Corp.
Project/Site: Former Kop-Flex Facility Site

Job ID: 410-9251-1

Job ID: 410-9251-1

Laboratory: Eurofins Lancaster Laboratories Env, LLC

Narrative

Job Narrative 410-9251-1

Comments

No additional comments.

Revision

The report being provided is a revision of the original report sent on 8/11/2020. The report (revision 1) is being revised due to: Client needs MDL reporting for DOC and TOC..

Receipt

The samples were received on 7/31/2020 11:27 AM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.0° C.

General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Detection Summary

Client: WSP USA Corp.
Project/Site: Former Kop-Flex Facility Site

Job ID: 410-9251-1

Client Sample ID: VSP-1S

Lab Sample ID: 410-9251-1

Analyte	Result	Qualifier	RL	Unit	Dil Fac	D	Method	Prep Type
Total Organic Carbon	0.86	J	1.0	0.50 mg/L	1		5310C-2011	Total/NA
Dissolved Organic Carbon	1.3		1.0	0.50 mg/L	1		415.1	Dissolved

Client Sample ID: VSP-1D

Lab Sample ID: 410-9251-2

Analyte	Result	Qualifier	RL	Unit	Dil Fac	D	Method	Prep Type
Dissolved Organic Carbon	0.92	J	1.0	0.50 mg/L	1		415.1	Dissolved

Client Sample ID: VSP-4

Lab Sample ID: 410-9251-3

Analyte	Result	Qualifier	RL	Unit	Dil Fac	D	Method	Prep Type
Dissolved Organic Carbon	0.53	J	1.0	0.50 mg/L	1		415.1	Dissolved

Client Sample ID: VSP-1200

Lab Sample ID: 410-9251-4

Analyte	Result	Qualifier	RL	Unit	Dil Fac	D	Method	Prep Type
Dissolved Organic Carbon	0.53	J	1.0	0.50 mg/L	1		415.1	Dissolved

Client Sample ID: VSP-100

Lab Sample ID: 410-9251-5

Analyte	Result	Qualifier	RL	Unit	Dil Fac	D	Method	Prep Type
Dissolved Organic Carbon	0.51	J	1.0	0.50 mg/L	1		415.1	Dissolved

Client Sample ID: Condensate

Lab Sample ID: 410-9251-6

Analyte	Result	Qualifier	RL	Unit	Dil Fac	D	Method	Prep Type
Total Organic Carbon	9.2		1.0	0.50 mg/L	1		5310C-2011	Total/NA
Dissolved Organic Carbon	9.0		1.0	0.50 mg/L	1		415.1	Dissolved

This Detection Summary does not include radiochemical test results.

Eurofins Lancaster Laboratories Env, LLC

Client Sample Results

Client: WSP USA Corp.
Project/Site: Former Kop-Flex Facility Site

Job ID: 410-9251-1

Client Sample ID: VSP-1S

Date Collected: 07/30/20 10:15

Date Received: 07/31/20 11:27

Lab Sample ID: 410-9251-1

Matrix: Water

General Chemistry

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	0.86	J	1.0	0.50	mg/L			08/08/20 21:43	1

General Chemistry - Dissolved

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Organic Carbon	1.3		1.0	0.50	mg/L			08/07/20 21:56	1

Client Sample Results

Client: WSP USA Corp.
Project/Site: Former Kop-Flex Facility Site

Job ID: 410-9251-1

Client Sample ID: VSP-1D

Date Collected: 07/30/20 10:20

Date Received: 07/31/20 11:27

Lab Sample ID: 410-9251-2

Matrix: Water

General Chemistry

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	<0.50		1.0	0.50 mg/L			08/08/20 22:29	1

General Chemistry - Dissolved

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Organic Carbon	0.92	J	1.0	0.50 mg/L			08/07/20 23:13	1

Client Sample Results

Client: WSP USA Corp.
Project/Site: Former Kop-Flex Facility Site

Job ID: 410-9251-1

Client Sample ID: VSP-4

Date Collected: 07/30/20 10:25

Date Received: 07/31/20 11:27

Lab Sample ID: 410-9251-3

Matrix: Water

General Chemistry

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	<0.50		1.0	0.50 mg/L			08/08/20 22:45	1

General Chemistry - Dissolved

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Organic Carbon	0.53	J	1.0	0.50 mg/L			08/07/20 23:28	1

Client Sample Results

Client: WSP USA Corp.
Project/Site: Former Kop-Flex Facility Site

Job ID: 410-9251-1

Client Sample ID: VSP-1200

Lab Sample ID: 410-9251-4

Date Collected: 07/30/20 10:30

Matrix: Water

Date Received: 07/31/20 11:27

General Chemistry

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	<0.50		1.0	0.50 mg/L			08/08/20 23:00	1

General Chemistry - Dissolved

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Organic Carbon	0.53	J	1.0	0.50 mg/L			08/07/20 23:44	1

Client Sample Results

Client: WSP USA Corp.
Project/Site: Former Kop-Flex Facility Site

Job ID: 410-9251-1

Client Sample ID: VSP-100

Date Collected: 07/30/20 10:35

Date Received: 07/31/20 11:27

Lab Sample ID: 410-9251-5

Matrix: Water

General Chemistry

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	<0.50		1.0	0.50 mg/L			08/08/20 23:15	1

General Chemistry - Dissolved

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Organic Carbon	0.51	J	1.0	0.50 mg/L			08/07/20 23:59	1

Client Sample Results

Client: WSP USA Corp.
Project/Site: Former Kop-Flex Facility Site

Job ID: 410-9251-1

Client Sample ID: Condensate

Lab Sample ID: 410-9251-6

Date Collected: 07/30/20 10:40

Matrix: Water

Date Received: 07/31/20 11:27

General Chemistry

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	9.2		1.0	0.50 mg/L			08/08/20 23:31	1

General Chemistry - Dissolved

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Organic Carbon	9.0		1.0	0.50 mg/L			08/08/20 00:15	1

QC Sample Results

Client: WSP USA Corp.
Project/Site: Former Kop-Flex Facility Site

Job ID: 410-9251-1

Method: 415.1 - DOC

Lab Sample ID: MB 410-31003/33

Matrix: Water

Analysis Batch: 31003

Client Sample ID: Method Blank

Prep Type: Dissolved

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Organic Carbon	<0.50		1.0	0.50 mg/L			08/07/20 21:41	1

Lab Sample ID: LCS 410-31003/32

Matrix: Water

Analysis Batch: 31003

Client Sample ID: Lab Control Sample

Prep Type: Dissolved

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Dissolved Organic Carbon	25.0	25.2		mg/L		101	86 - 114

Lab Sample ID: 410-9251-1 MS

Matrix: Water

Analysis Batch: 31003

Client Sample ID: VSP-1S

Prep Type: Dissolved

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Dissolved Organic Carbon	1.3		10.0	11.7		mg/L		103	86 - 114

Lab Sample ID: 410-9251-1 DU

Matrix: Water

Analysis Batch: 31003

Client Sample ID: VSP-1S

Prep Type: Dissolved

Analyte	Sample Result	Sample Qualifier	Spike Added	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Dissolved Organic Carbon	1.3			1.55	F5	mg/L		15	2

Method: 5310C-2011 - Total Organic Carbon/Persulfate - Ultrav

Lab Sample ID: MB 410-31768/37

Matrix: Water

Analysis Batch: 31768

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	<0.50		1.0	0.50 mg/L			08/08/20 21:28	1

Lab Sample ID: LCS 410-31768/36

Matrix: Water

Analysis Batch: 31768

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	25.0	26.0		mg/L		104	91 - 113

Lab Sample ID: 410-9251-1 MS

Matrix: Water

Analysis Batch: 31768

Client Sample ID: VSP-1S

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	0.86	J	10.0	11.4		mg/L		105	91 - 113

QC Sample Results

Client: WSP USA Corp.
Project/Site: Former Kop-Flex Facility Site

Job ID: 410-9251-1

Method: 5310C-2011 - Total Organic Carbon/Persulfate - Ultrav (Continued)

Lab Sample ID: 410-9251-1 DU

Matrix: Water

Analysis Batch: 31768

Client Sample ID: VSP-1S

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Organic Carbon	0.86	J	0.836	J	mg/L		3	3

QC Association Summary

Client: WSP USA Corp.
Project/Site: Former Kop-Flex Facility Site

Job ID: 410-9251-1

General Chemistry

Analysis Batch: 31003

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-9251-1	VSP-1S	Dissolved	Water	415.1	
410-9251-2	VSP-1D	Dissolved	Water	415.1	
410-9251-3	VSP-4	Dissolved	Water	415.1	
410-9251-4	VSP-1200	Dissolved	Water	415.1	
410-9251-5	VSP-100	Dissolved	Water	415.1	
410-9251-6	Condensate	Dissolved	Water	415.1	
MB 410-31003/33	Method Blank	Dissolved	Water	415.1	
LCS 410-31003/32	Lab Control Sample	Dissolved	Water	415.1	
410-9251-1 MS	VSP-1S	Dissolved	Water	415.1	
410-9251-1 DU	VSP-1S	Dissolved	Water	415.1	

Analysis Batch: 31768

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-9251-1	VSP-1S	Total/NA	Water	5310C-2011	
410-9251-2	VSP-1D	Total/NA	Water	5310C-2011	
410-9251-3	VSP-4	Total/NA	Water	5310C-2011	
410-9251-4	VSP-1200	Total/NA	Water	5310C-2011	
410-9251-5	VSP-100	Total/NA	Water	5310C-2011	
410-9251-6	Condensate	Total/NA	Water	5310C-2011	
MB 410-31768/37	Method Blank	Total/NA	Water	5310C-2011	
LCS 410-31768/36	Lab Control Sample	Total/NA	Water	5310C-2011	
410-9251-1 MS	VSP-1S	Total/NA	Water	5310C-2011	
410-9251-1 DU	VSP-1S	Total/NA	Water	5310C-2011	

Lab Chronicle

Client: WSP USA Corp.
Project/Site: Former Kop-Flex Facility Site

Job ID: 410-9251-1

Client Sample ID: VSP-1S

Date Collected: 07/30/20 10:15

Date Received: 07/31/20 11:27

Lab Sample ID: 410-9251-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Analysis	415.1		1	31003	08/07/20 21:56	KGQ6	ELLE
Total/NA	Analysis	5310C-2011		1	31768	08/08/20 21:43	KGQ6	ELLE

Client Sample ID: VSP-1D

Date Collected: 07/30/20 10:20

Date Received: 07/31/20 11:27

Lab Sample ID: 410-9251-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Analysis	415.1		1	31003	08/07/20 23:13	KGQ6	ELLE
Total/NA	Analysis	5310C-2011		1	31768	08/08/20 22:29	KGQ6	ELLE

Client Sample ID: VSP-4

Date Collected: 07/30/20 10:25

Date Received: 07/31/20 11:27

Lab Sample ID: 410-9251-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Analysis	415.1		1	31003	08/07/20 23:28	KGQ6	ELLE
Total/NA	Analysis	5310C-2011		1	31768	08/08/20 22:45	KGQ6	ELLE

Client Sample ID: VSP-1200

Date Collected: 07/30/20 10:30

Date Received: 07/31/20 11:27

Lab Sample ID: 410-9251-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Analysis	415.1		1	31003	08/07/20 23:44	KGQ6	ELLE
Total/NA	Analysis	5310C-2011		1	31768	08/08/20 23:00	KGQ6	ELLE

Client Sample ID: VSP-100

Date Collected: 07/30/20 10:35

Date Received: 07/31/20 11:27

Lab Sample ID: 410-9251-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Analysis	415.1		1	31003	08/07/20 23:59	KGQ6	ELLE
Total/NA	Analysis	5310C-2011		1	31768	08/08/20 23:15	KGQ6	ELLE

Client Sample ID: Condensate

Date Collected: 07/30/20 10:40

Date Received: 07/31/20 11:27

Lab Sample ID: 410-9251-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Analysis	415.1		1	31003	08/08/20 00:15	KGQ6	ELLE
Total/NA	Analysis	5310C-2011		1	31768	08/08/20 23:31	KGQ6	ELLE

Laboratory References:

ELLE = Eurofins Lancaster Laboratories Env, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

Eurofins Lancaster Laboratories Env, LLC

Accreditation/Certification Summary

Client: WSP USA Corp.
Project/Site: Former Kop-Flex Facility Site

Job ID: 410-9251-1

Laboratory: Eurofins Lancaster Laboratories Env, LLC

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Maryland	State	100	09-30-20

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
415.1		Water	Dissolved Organic Carbon
5310C-2011		Water	Total Organic Carbon

Method Summary

Client: WSP USA Corp.
Project/Site: Former Kop-Flex Facility Site

Job ID: 410-9251-1

Method	Method Description	Protocol	Laboratory
415.1	DOC	MCAWW	ELLE
5310C-2011	Total Organic Carbon/Persulfate - Ultrav	SM	ELLE

Protocol References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.
SM = "Standard Methods For The Examination Of Water And Wastewater"

Laboratory References:

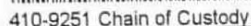
ELLE = Eurofins Lancaster Laboratories Env, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

Sample Summary

Client: WSP USA Corp.
Project/Site: Former Kop-Flex Facility Site

Job ID: 410-9251-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
410-9251-1	VSP-1S	Water	07/30/20 10:15	07/31/20 11:27	
410-9251-2	VSP-1D	Water	07/30/20 10:20	07/31/20 11:27	
410-9251-3	VSP-4	Water	07/30/20 10:25	07/31/20 11:27	
410-9251-4	VSP-1200	Water	07/30/20 10:30	07/31/20 11:27	
410-9251-5	VSP-100	Water	07/30/20 10:35	07/31/20 11:27	
410-9251-6	Condensate	Water	07/30/20 10:40	07/31/20 11:27	

Page 1 of 1

*Use stop time/date for composite and/or air samples; use only start time/date for all other samples.

Matrix: AQ = Aqueous, S = Soil, SE = Sediment, A = Air, W = Wipe, B = Bulk, O = Other (detail in comments)

Login Sample Receipt Checklist

Client: WSP USA Corp.

Job Number: 410-9251-1

Login Number: 9251

List Source: Eurofins Lancaster Laboratories Env

List Number: 1

Creator: Rivera, Tatiana

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ background as measured by a survey meter.	N/A	
The cooler's custody seal is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable ($\leq 6^{\circ}\text{C}$, not frozen).	True	
Cooler Temperature is recorded.	True	
WV: Container Temperature is acceptable ($\leq 6^{\circ}\text{C}$, not frozen).	N/A	
WV: Container Temperature is recorded.	N/A	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses.	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	N/A	
Is the Field Sampler's name present on COC?	True	
Sample Preservation Verified.	N/A	
Residual Chlorine Checked.	N/A	
Sample custody seals are intact.	N/A	