VIA ELECTRONIC MAIL

May 5, 2020

Richelle Hanson, Project Manager
Voluntary Cleanup Program
Maryland Department of the Environment
Land and Materials Administration
1800 Washington Blvd., Suite 625
Baltimore, Maryland 21230

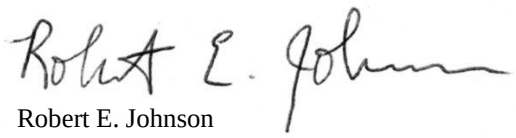
Subject: **Quarterly Status Report No. 14 - Offsite Area**
Former Kop-Flex Facility Site, Hanover, Maryland

Dear Richelle:

On behalf of EMERSUB 16 LLC, a subsidiary of Emerson Electric Co., WSP USA Inc. (WSP) is submitting this quarterly status report describing the investigation and remediation activities conducted in the First Quarter of 2020 in the offsite portion of the Former Kop-Flex Facility Site in Hanover, Maryland. The report also describes the activities planned for the Second Quarter of 2020. In addition to this electronic version, a hard copy of the status report is being submitted to the Maryland Department of Environment (MDE) under separate cover.

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

Kind regards,



Robert E. Johnson
Senior Technical Manager
Water & Environment

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Encl.

cc: Mr. John Hopkins, U.S. Environmental Protection Agency (EPA), Region III
Mr. Stephen Clarke, Emerson Electric Co.
Sheila Harvey, Esquire, Pillsbury Winthrop Shaw Pittman

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QUARTERLY STATUS REPORT NO. 14 – OFFSITE AREA

FORMER KOP-FLEX FACILITY SITE

January 2020 through March 2020

Site Name:	Former Kop-Flex Facility
Site Address:	7555 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, WSP USA
Alternate:	Lisa Kelly**,** WSP USA

1.0 OFFSITE ACTIVITIES CONDUCTED DURING JANUARY 2020 THROUGH MARCH 2020

1.1 RESIDENTIAL WELL SAMPLING

1.1.1 1227 OLD CAMP MEADE ROAD

- Pursuant to MDE's request, water samples were collected from the residential well at 1227 Old Camp Meade Road (Figure 1) on the following dates during the reporting period:
  - January 9, 2020
  - February 4, 2020
  - March 10, 2020

  Historical analytical results for samples collected before and after the whole-house water treatment system, including those for the first quarter 2020, are summarized in Table 1. Copies of the certified laboratory analytical reports for the January 2020 through March 2020 sampling events are included in Enclosure A.

- As with samples collected throughout 2019, site-related constituents of concern (COCs) were detected in both the untreated and treated water samples (Table 1). In the pre-treatment samples, concentrations of 1,1-dichloroethene (DCE) ranged from 5.0 micrograms per liter (µg/l) to 7.5 µg/l, while 1,4-dioxane was present at levels between 2.1 µg/l and 2.6 µg/l. The 1,1-DCE concentration in the February sample (7.5 µg/) was slightly above the groundwater quality standard for this compound of 7.0 µg/l. The post-treatment water samples had non-detect concentrations of 1,1-DCE, and 1,4-dioxane concentrations generally similar to the levels detected in the untreated water, although a slightly higher level (3.5 µg/l) was detected in the January sample. As shown in the data plots in Figures 2 and 3, the levels of 1,1-DCE and 1,4-dioxane in the first quarter 2020 samples were typically within the concentration range for the samples collected in 2019. Trace levels (<0.5 µg/l) of 1,1,1-trichloroethane (TCA) were also detected in both the untreated and treated samples from the February sampling event.

- In addition to the site-related COCs, constituents not associated with the deep groundwater plume were also found in the water samples from January and February 2020. For the January sampling event, acetone and 2-butanone (also referred to as methyl ethyl ketone or MEK) were detected at concentrations between 100 µg/l and 250 µg/l in the pre-treatment sample and less than 100 µg/l in the post-treatment sample. Chloromethane was also detected at a

trace concentration (0.15 µg/l) in the January pre-treatment sample. The concentrations of these constituents are below the respective MDE groundwater quality cleanup standards. The presence of these constituents is believed to be related to work conducted to repair a leaking water pipe at the residence prior to collecting the water samples. In the February sampling event, methylene chloride, was detected at trace concentrations (<1.0 µg/l) in the pre-and post-treatment water samples. The concentrations of methylene chloride present in these samples were also below the applicable federal and MDE standards. Methylene chloride is a common chemical used during the laboratory analysis of samples. Therefore, its presence is likely associated with the analytical method used in the laboratory, as opposed to actual groundwater conditions.

— EMERSUB 16 and WSP communicated the analytical results for each of the monthly water samples in writing to the homeowner.

1.1.2 1409 BITTERSWEET DRIVE

— On February 25, 2020, WSP collected pre- and post-treatment water samples from the potable well at 1409 Bittersweet Drive (Figure 1). A copy of the certified laboratory report is provided in Enclosure B. The laboratory results show that no site-related COCs were detected in these samples. EMERSUB 16 and WSP communicated the analytical results for this sampling event to the homeowner.

1.2 RESIDENTIAL WATER SERVICE CONNECTION FOR 1227 OLD CAMP MEADE ROAD

EMERSUB 16 and WSP are waiting for Anne Arundel County Department of Public Works (DPW) to tap the public water main along Reece Road, and run the line to the west side of the roadway. WSP has been in contact with the County DPW multiple times to check on the status of their work, but have not received any definitive information on the completion schedule. Once the DPW completes their work, WSP will finalize a contract with a licensed Master Plumber to complete the service connection to the dwelling at 1227 Old Camp Meade Rd.

1.3 OFFSITE GROUNDWATER MONITORING

— On February 12, 2020, WSP obtained water level measurements from the deep offsite monitoring wells. The depth to water measurements for these monitoring wells are provided in the table below. Historical field measurements and corresponding water level elevations, including the February 2020 data, are provided in Table 2.

Well ID	Hydrologic Unit	Depth to Water (ft BGS)	Well Depth (ft BGS)	Well Screen Interval (ft BGS)
MW-24D	Confined Lower Patapsco	50.10	128	118 – 128
MW-25D-130	Confined Lower Patapsco	55.55	130	120 – 130
MW-25D-192	Confined Lower Patapsco	54.78	192	182 – 192
MW-28D	Confined Lower Patapsco	85.00	210	200 – 210
MW-29D	Confined Lower Patapsco	61.28	151	141 – 151

Well ID	Hydrologic Unit	Depth to Water (ft BGS)	Well Depth (ft BGS)	Well Screen Interval (ft BGS)
MW-30D-273	Confined Lower Patapsco	93.29	273	263 – 273
MW-30D-413	Patuxent	128.12	413	403 –413
MW-31D	Confined Lower Patapsco	102.73	280	270 – 280
MW-32D	Confined Lower Patapsco	92.35	236	226 – 236
MW-33D-235	Confined Lower Patapsco	119.72	235	225 –235
MW-33D-295	Confined Lower Patapsco	119.54	295	285 – 295
MW-34D	Confined Lower Patapsco/Arundel Clay	127.75	385	375 – 385
MW-35D	Confined Lower Patapsco	119.68	298	288 – 298
MW-36D	Patuxent	132.11	360	350 – 360
MW-46D	Confined Lower Patapsco	36.13	90	80 – 90

FT BGS = feet below ground surface

- A potentiometric surface contour map for the confined portion of the Lower Patapsco aquifer south of Maryland Route 100 is shown in Figure 4 using the February 2020 water level measurements. The general direction of groundwater flow in this portion of the aquifer system is to the south-southeast from the former Kop-Flex facility.

2.0 PLANNED OFFSITE ACTIVITIES FOR NEXT REPORTING PERIOD (APRIL 2020 THROUGH JUNE 2020)

- Collect a synoptic round of water level measurements from all offsite monitoring wells in mid-May 2020.
- Perform semi-annual sampling of the offsite groundwater monitoring wells in the unconfined and confined portions of the Lower Patapsco aquifer and Patuxent aquifer in mid-May 2020.
- Continue to conduct monthly monitoring of the untreated and treated water from the residential well at 1227 Old Camp Meade Road until connection of the home to the public water system.
- Coordinate with the county DPW concerning the tapping of the water main on Reece Road and completion of the water service connection to the home at 1227 Old Camp Meade Road.

Given the ongoing COVID-19 pandemic, it is possible that planned field activities will need be delayed or postponed to ensure conformance with government-issued directives and address potential health concerns raised by property owners. EMERSUB 16 will coordinate Site activities with MDE and EPA to the extent possible to avoid any delays or disruptions regarding completion of the field tasks.

3.0 KEY PERSONNEL CHANGES

There were no changes to either key project personnel or conditions relevant to the performance of the ongoing work in the offsite area.

FIGURES

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LEGEND

- PROPERTY LINE
- WATER MAIN
- STREAM
- WATER BODY
- CONFINED LOWER PATAPSCO AQUIFER MONITORING WELL
- CONFINED LOWER PATAPSCO AQUIFER AND PATUXENT AQUIFER MONITORING WELLS
- PROPERTY WITH POTABLE WELL FOR SAMPLING
- 1229 STREET ADDRESS NUMBER

0 250 500
SCALE IN FEET

REFERENCE:
PARCEL INFORMATION OBTAINED FROM ANNE ARUNDEL COUNTY, DEPARTMENT OF PUBLIC WORKS http://gis-world2.aacounty.org/DPWcounter/countermap.html

Drawn By: EGC
Checked: CC 4/24/2020
Approved: RD 4/24/2020
DWG Name: 314V1545.011-030

FORMER KOP-FLEX FACILITY
HANOVER, MARYLAND
PREPARED FOR
EMERSUB 16 LLC
ST. LOUIS, MISSOURI

Figure 1

PROPERTIES WITH RESIDENTIAL WELL IDENTIFIED FOR SAMPLING

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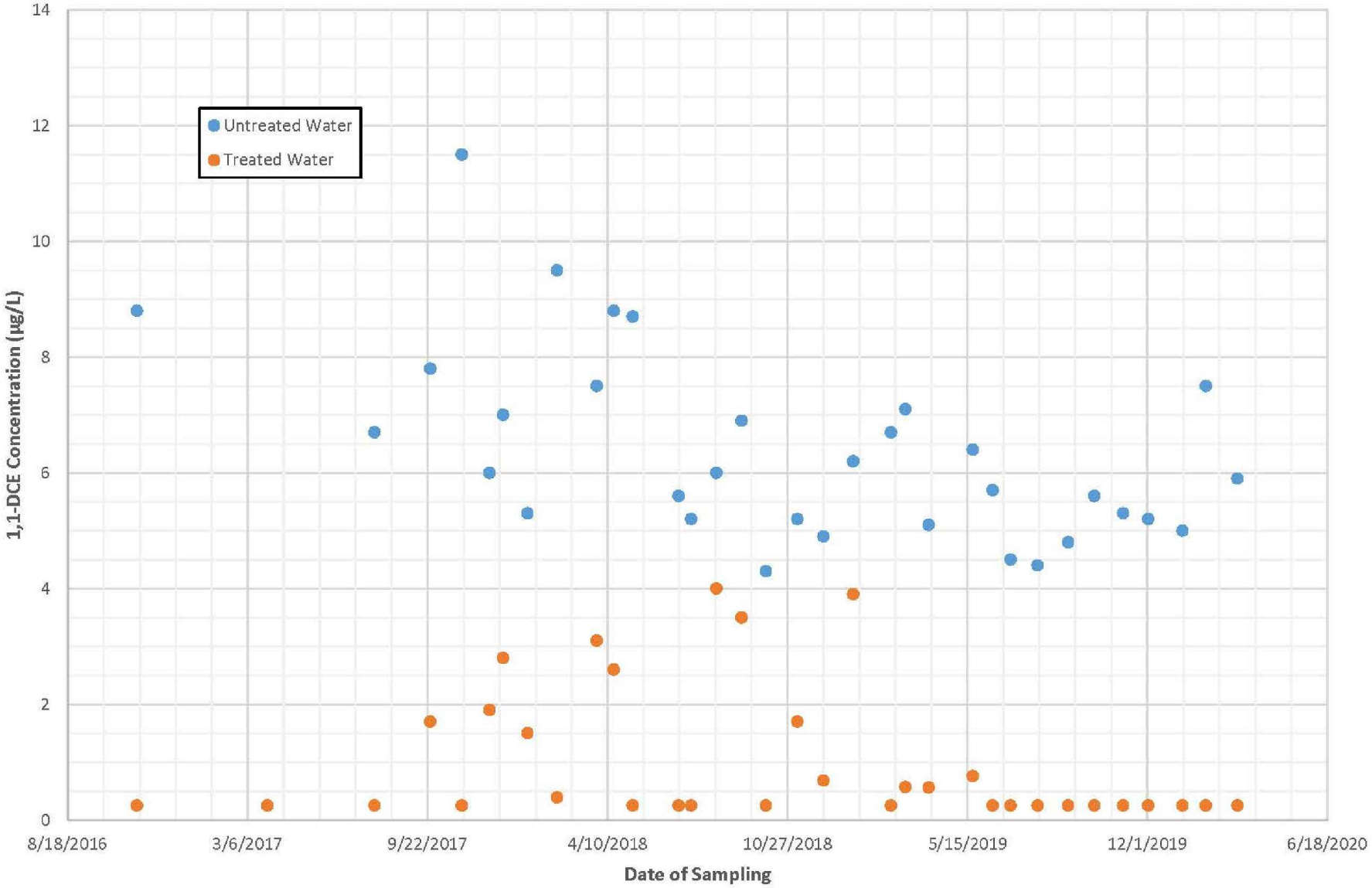

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Figure 2

1227 OLD CAMP MEADE ROAD
CONCENTRATION vs TIME PLOT
1,1-DCE

FORMER KOP-FLEX FACILITY
HANOVER, MARYLAND

PREPARED FOR
EMERSUB16 LLC
ST. LOUIS, MISSOURI

Drawn By: EGC
Checked: CC 3/24/2020
Approved: RKJ
DWG Name: 314V1545.011-055

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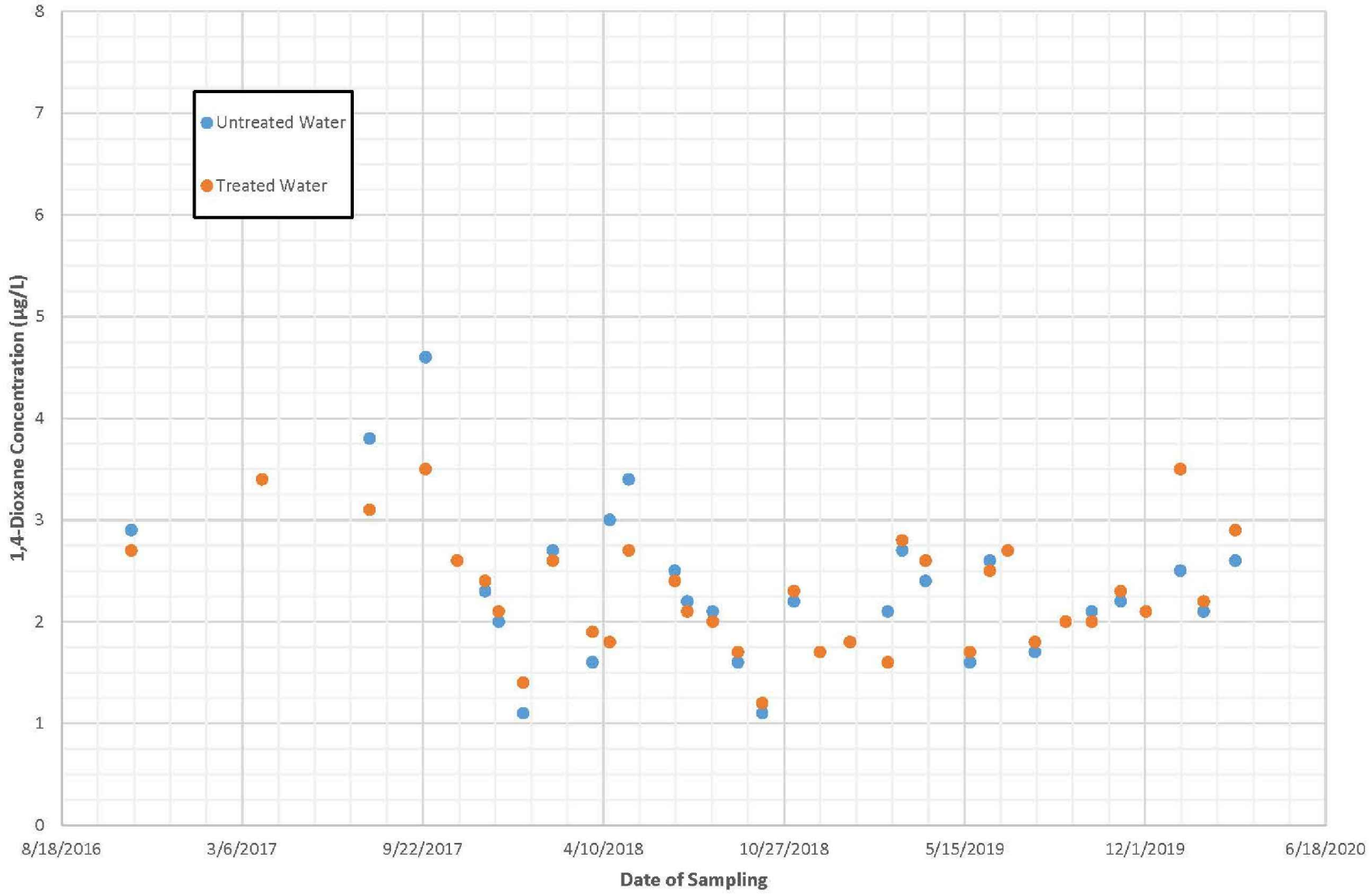

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Figure 3

1227 OLD CAMP MEADE ROAD
CONCENTRATION vs TIME PLOT
1,4-DIOXANE

FORMER KOP-FLEX FACILITY
HANOVER, MARYLAND

PREPARED FOR
EMERSUB16 LLC
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Checked: CC 3/24/2020
Approved: RKJ
DWG Name: 314V1545.011-055

LEGEND
PROPERTY LINE
STREAM
WATER BODY
MONITORING WELL
RECOVERY WELL
72.18 GROUNDWATER SURFACE ELEVATION (FEET MSL)
GROUNDWATER SURFACE CONTOUR (DASHED WHERE INFERRED)
INFERRED GROUNDWATER FLOW

MW-27D
MW-46D
MW-23D
MW-16D
MW-40D
MW-41D
RW-1D
RW-2D
MW-22D
MW-21D
MW-1D
MW-24D
MW-25D 74.95
MW-29D 70.62
MW-28D 65.50
MW-32D 63.75
MW-30D 60.21
MW-31D 59.77
MW-33D 58.88
MW-35D 58.12
MW-34D 56.15
74
72
70
68
66
64
62
60
58
WILLIAMS SCOTSMAN, INC.
ROUTE 100
PENN CENTRAL RAILROAD TRACKS
OLD ORDNANCE ROAD
RIVER ROAD
SEVERN ROAD
OLD CAMP MEADE ROAD
TELEGRAPH ROAD
ROUTE 170
SEVERN ELEMENTARY SCHOOL
SEVERN POST OFFICE
DOBSON AVENUE
OLD DOBSON AVE
TEABERRY LANE
POTTERSFIELD ROAD
MINNESOTA AVENUE
MORGAN STATION ROAD
N
0 400 800 1200
SCALE IN FEET

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D

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REVISIONS

REV	DESCRIPTION	Drwn:	Appr:
1	Revised:	Drwn:	Appr:
2	Revised:	Drwn:	Appr:
3	Revised:	Drwn:	Appr:

SEAL

DATE

DRAWN BY ECC 4/27/2020
CHECKED
APPROVED

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POTENTIOMETRIC SURFACE CONTOUR MAP CONFINED PORTION OF THE LOWER PATAPSCO AQUIFER FEBRUARY 2020

FORMER KOP-FLEX FACILITY SITE
HANOVER, MARYLAND

PREPARED FOR
EMERSUB 16 LLC
ST. LOUIS, MISSOURI

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FIGURE 4

Drawing Number
314V1545.011-059

TABLES

Table 1

Summary Table of Potable Well Sample Results
1227 Old Camp Meade Road
Severn, Maryland

	Parameter	Acetone	Bromoform	Carbon Disulfide	Chloroform	1,1-DCA	1,1-DCE	Methyl Tert Butyl Ether	Toluene	1,1,1-TCA	PCE	TCE	1,4-Dioxane
	Units	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
	MCL	1,400 (a)	80 (a)	81 (a)	80 (a)	2.8 (a)	7	20 (a)	1,000	200	5	5	4.6 (b)
	Sample Type	Date											
Address	Pre-Treatment	2/13/2013	5 U	0.5 U	0.18 J	0.5 U	0.5 U	0.55	0.25 J	0.18 J	0.091 J	0.5 U	0.5 U	2.0 U
1227 Old Camp	Post-Treatment	2/13/2013	5 U	0.5 U	0.5 U	0.2 J	0.5 U	0.5 U	0.5 U	0.5 U	0.081 J	0.5 U	0.5 U	2.0 U
Meade Rd	Pre-Treatment	7/9/2013	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.11 J	0.5 U	0.5 U	2.3
Well Depth: 300 ft.	Pre-Treatment	2/12/2014	5 U	0.5 U	0.5 U	0.5 U	0.15 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U
	Pre-Treatment	5/29/2014	5 U	0.5 U	0.5 U	0.5 U	0.051 J	1.3	0.5 U	0.5 U	0.15 J	0.5 U	0.5 U	2.0 U
	Post-Treatment	5/29/2014	5 U	0.5 U	0.5 U	0.1 J	0.5 U	0.5 U	0.5 U	0.5 U	0.15 J	0.5 U	0.5 U	2.0 U
	Pre-Treatment	9/12/2014	5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0	0.5 U	0.5 U	0.21 J	0.5 U	0.5 U	2.0 U
	Post-Treatment	9/12/2014	5 U	0.28 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.18 J	0.5 U	0.5 U	2.0 U
	Pre-Treatment	12/8/2014	0.99 J	0.5 U	0.5 U	0.5 U	0.5 U	0.43 J	0.5 U	0.5 U	0.20 J	0.5 U	0.5 U	2.0 U
	Post-Treatment	12/8/2014	5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.4	0.5 U	0.5 U	0.24 J	0.5 U	0.5 U	2.0 U
	Pre-Treatment	11/3/2016	5 U	0.5 U	0.5 U	0.5 U	0.19 J	8.8	0.5 U	0.5 U	0.48 J	0.5 U	0.5 U	2.9
	Post-Treatment	11/3/2016	5 U	0.5 U	0.5 U	0.095 J	0.16 J	0.5 U	0.5 U	0.5 U	0.42 J	0.5 U	0.5 U	2.7
	Post-Treatment	3/28/2017	5 U	0.5 U	0.5 U	0.5 U	0.17 J	0.5 U	0.5 U	0.5 U	0.41 J	0.5 U	0.5 U	3.4
	Pre-Treatment	7/25/2017	5 U	0.5 U	0.5 U	0.5 U	0.15 J	6.7	0.5 U	0.5 U	0.33 J	0.5 U	0.5 U	3.8
	Post-Treatment	7/25/2017	5 U	0.55	0.5 U	0.5 U	0.19 J	0.5 U	0.5 U	0.5 U	0.42 J	0.5 U	0.5 U	3.1
	Pre-Treatment	9/25/2017	5 U	0.5 U	0.5 U	0.5 U	0.18 J	7.8	0.5 U	0.5 U	0.41 J	0.5 U	0.5 U	4.6
	Post-Treatment	9/25/2017	5 U	0.5 U	0.5 U	0.5 U	0.15 J	1.7	0.5 U	0.5 U	0.37 J	0.5 U	0.5 U	3.5
	Pre-Treatment	10/30/2017	5 U	0.5 U	0.5 U	0.5 U	0.24 J	11.5	0.5 U	0.5 U	0.5	0.5 U	0.5 U	2.6
	Post-Treatment	10/30/2017	5 U	0.5 U	0.5 U	0.5 U	0.23 J	0.5 U	0.5 U	0.5 U	0.53	0.5 U	0.5 U	2.6
	Pre-Treatment	11/30/2017	5 U	0.5 U	0.5 U	0.5 U	0.16 J	6.0	0.5 U	0.5 U	0.3 J	0.5 U	0.5 U	2.3
	Post-Treatment	11/30/2017	5 U	0.5 U	0.5 U	0.5 U	0.17 J	1.9	0.5 U	0.5 U	0.34 J	0.5 U	0.5 U	2.4
	Pre-Treatment	12/15/2017	5 U	0.5 U	0.5 U	0.5 U	0.5 U	7.0	0.5 U	0.5 U	0.36 J	0.5 U	0.5 U	2.0
	Post-Treatment	12/15/2017	5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.8	0.5 U	0.5 U	0.39 J	0.5 U	0.5 U	2.1
	Pre-Treatment	1/11/2018	5 U	0.5 U	0.5 U	0.5 U	0.15 J	5.3	0.5 U	0.5 U	0.27 J	0.5 U	0.5 U	1.1
	Post-Treatment	1/11/2018	5 U	0.5 U	0.5 U	0.5 U	0.14 J	1.5	0.5 U	0.5 U	0.32 J	0.5 U	0.5 U	1.4
	Pre-Treatment	2/13/2018	5 U	0.5 U	0.5 U	0.5 U	0.16 J	9.5	0.5 U	0.5 U	0.44 J	0.5 U	0.5 U	2.7
	Post-Treatment	2/13/2018	5 U	0.5 U	0.5 U	0.5 U	0.16 J	0.39 J	0.5 U	0.5 U	0.38 J	0.5 U	0.5 U	2.6
	Pre-Treatment	3/29/2018	5 U	0.5 U	0.5 U	0.5 U	0.14 J	7.5	0.5 U	0.5 U	0.35 J	0.5 U	0.5 U	1.6
	Post-Treatment	3/29/2018	5 U	0.5 U	0.5 U	0.5 U	0.14 J	3.1	0.5 U	0.5 U	0.34 J	0.5 U	0.5 U	1.9
	Pre-Treatment	4/17/2018	5 U	0.5 U	0.5 U	0.5 U	0.18 J	8.8	0.5 U	0.5 U	0.45 J	0.5 U	0.5 U	3.0
	Post-Treatment	4/17/2018	5 U	0.5 U	0.5 U	0.5 U	0.15 J	2.6	0.5 U	0.5 U	0.37 J	0.5 U	0.5 U	1.8
	Pre-Treatment	5/8/2018	5 U	0.5 U	0.5 U	0.5 U	0.18 J	8.7	0.5 U	0.5 U	0.48 J	0.5 U	0.5 U	3.4
	Post-Treatment	5/8/2018	5 U	0.5 U	0.5 U	0.5 U	0.17 J	0.5 U	0.5 U	0.5 U	0.42 J	0.5 U	0.5 U	2.7
	Pre-Treatment	6/28/2018	1.5 J	0.5 U	0.5 U	0.5 U	0.5 U	5.6	0.5 U	0.5 U	0.28 J	0.5 U	0.5 U	2.5
	Post-Treatment	6/28/2018	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.28 J	0.5 U	0.5 U	2.4
	Pre-Treatment	7/12/2018	5 U	0.5 U	0.5 U	0.5 U	0.5 U	5.2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.2
	Post-Treatment	7/12/2018	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.1
	Pre-Treatment	8/9/2018	5 U	0.5 U	0.5 U	0.5 U	0.5 U	6.0	0.5 U	0.5 U	0.26 J	0.5 U	0.5 U	2.1
	Post-Treatment	8/9/2018	5 U	0.5 U	0.5 U	0.5 U	0.5 U	4.0	0.5 U	0.5 U	0.27 J	0.5 U	0.5 U	2.0
	Pre-Treatment	9/6/2018	5 U	0.5 U	0.5 U	0.5 U	0.5 U	6.9	0.5 U	0.5 U	0.28 J	0.5 U	0.5 U	1.6
	Post-Treatment	9/6/2018	2.8 J	0.5 U	0.5 U	0.5 U	0.5 U	3.5	0.5 U	0.5 U	0.33 J	0.5 U	0.5 U	1.7
	Pre-Treatment	10/3/2018	5 U	0.5 U	0.5 U	0.5 U	0.5 U	4.3	0.5 U	0.5 U	0.50 U	0.5 U	0.5 U	1.1
	Post-Treatment	10/3/2018	5 U	0.51	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.5 U	0.5 U	1.2
	Pre-Treatment	11/7/2018	5 U	0.5 U	0.5 U	0.5 U	0.5 U	5.2	0.5 U	0.5 U	0.24 J	0.5 U	0.5 U	2.2
	Post-Treatment	11/7/2018	5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.7	0.5 U	0.5 U	0.25 J	0.5 U	0.5 U	2.3
	Pre-Treatment	12/6/2018	5 U	0.5 U	0.5 U	0.5 U	0.5 U	4.9	0.5 U	0.5 U	0.22 J	0.5 U	0.5 U	1.7
	Post-Treatment	12/6/2018	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.68	0.5 U	0.5 U	0.27 J	0.5 U	0.5 U	1.7

Table 1

Summary Table of Potable Well Sample Results
1227 Old Camp Meade Road
Severn, Maryland

	Parameter	Acetone	Bromoform	Carbon Disulfide	Chloroform	1,1-DCA	1,1-DCE	Methyl Tert Butyl Ether	Toluene	1,1,1-TCA	PCE	TCE	1,4-Dioxane
	Units	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
	MCL	1,400 (a)	80 (a)	81 (a)	80 (a)	2.8 (a)	7	20 (a)	1,000	200	5	5	4.6 (b)
Sample Type	**Date**												
Pre-Treatment	1/8/2019	--	0.5 U	0.5 U	0.5 U	0.5 U	6.2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.8
Post-Treatment	1/8/2019	--	0.5 U	0.5 U	0.5 U	0.5 U	3.9	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.8
Pre-Treatment	2/19/2019	5 U	0.5 U	0.5 U	0.5 U	0.5 U	6.7	0.5 U	0.5 U	0.28 J	0.5 U	0.5 U	2.1
Post-Treatment	2/19/2019	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.32 J	0.5 U	0.5 U	1.6
Pre-Treatment	3/7/2019	5 U	0.5 U	0.5 U	0.5 U	0.5 U	7.1	0.5 U	0.5 U	0.28 J	0.5 U	0.5 U	2.7
Post-Treatment	3/7/2019	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.57	0.5 U	0.5 U	0.30 J	0.5 U	0.5 U	2.8
Pre-Treatment	4/2/2019	5 U	0.5 U	0.5 U	0.5 U	0.5 U	5.1	0.5 U	0.5 U	0.23 J	0.5 U	0.5 U	2.4
Post-Treatment	4/2/2019	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.56	0.5 U	0.5 U	0.25 J	0.5 U	0.5 U	2.6
Pre-Treatment	5/21/2019	3.1 J	0.5 U	0.5 U	0.5 U	0.5 U	6.4	0.5 U	0.5 U	0.26 J	0.5 U	0.5 U	1.6
Post-Treatment	5/21/2019	2.5 J	0.5 U	0.5 U	0.5 U	0.5 U	0.76	0.5 U	0.5 U	0.14 J	0.5 U	0.5 U	1.7
Pre-Treatment	6/12/2019	5 U	0.5 U	0.5 U	0.5 U	0.5 U	5.7	0.5 U	0.5 U	0.23 J	0.5 U	0.5 U	2.6
Post-Treatment	6/12/2019	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.25 J	0.5 U	0.5 U	2.5
Pre-Treatment	7/2/2019	5 U	0.5 U	0.5 U	0.5 U	0.5 U	4.5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.7
Post-Treatment	7/2/2019	5 U	0.38 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.24 J	0.5 U	0.5 U	2.7
Pre-Treatment	8/1/2019	5 U	0.5 U	0.5 U	0.5 U	0.5 U	4.4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.7
Post-Treatment	8/1/2019	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.22 J	0.5 U	0.5 U	1.8
Pre-Treatment	9/4/2019	5 U	0.5 U	0.5 U	0.5 U	0.5 U	4.8	0.5 U	0.5 U	0.25 J	0.5 U	0.5 U	2.0
Post-Treatment	9/4/2019	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.27 J	0.5 U	0.5 U	2.0
Pre-Treatment	10/3/2019	5 U	0.5 U	0.5 U	0.5 U	0.5 U	5.6	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.1
Post-Treatment	10/3/2019	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.24 J	0.5 U	0.5 U	2.0
Pre-Treatment	11/4/2019	5 U	0.5 U	0.5 U	0.5 U	0.5 U	5.3	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.2
Post-Treatment	11/4/2019	5 U	0.38 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.24 J	0.5 U	0.5 U	2.3
Pre-Treatment	12/2/2019	5 U	0.5 U	0.5 U	0.5 U	0.5 U	5.2	0.5 U	0.5 U	0.22 J	0.5 U	0.5 U	2.1
Post-Treatment	12/2/2019	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.23 J	0.5 U	0.5 U	2.1
Pre-Treatment	1/9/2020	129	0.5 U	0.5 U	0.5 U	0.5 U	5.0	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.5
Post-Treatment	1/9/2020	39.8	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	3.5
Pre-Treatment	2/4/2020	5 U	0.5 U	0.5 U	0.5 U	0.5 U	7.5	0.5 U	0.5 U	0.25 J	0.5 U	0.5 U	2.1
Post-Treatment	2/4/2020	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.26 J	0.5 U	0.5 U	2.2
Pre-Treatment	3/10/2020	5 U	0.5 U	0.5 U	0.5 U	0.5 U	5.9	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.6
Post-Treatment	3/10/2020	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.9

(a) October 2018 MDE Generic Groundwater Cleanup Standard for Type I and II Aquifers
(b) MDE Risk Based Action Level

Notes:
MCL = US Environmental Protection Agency Maximum Contaminant Level
U = Undetected, value reported is the laboratory reporting limit
J = Indicates an estimated value between method detection limit and reporting limit
-- = Not analyzed

DCA = Dichloroethane
DCE = Dichloroethene
TCA = Trichloroethane
PCE = Tetrachloroethene
TCE = Trichloroethene

Table 2

Historical Groundwater Elevation Data - Offsite Monitoring Wells
Former Kop-Flex Facility Site
Hanover, Maryland

Well ID	Aquifer/Zone	TOC elevation	3/17/2015		6/15/2015		9/21/2015		1/4/2016		3/21/2016		12/7/2016	
			Depth to Water	*Groundwater Elevation*	*Depth to Water*	*Groundwater Elevation*	*Depth to Water*	*Groundwater Elevation*	*Depth to Water*	*Groundwater Elevation*	*Depth to Water*	*Groundwater Elevation*	*Depth to Water*	*Groundwater Elevation*
MW-25S *	Uinconfined LPA	130.6	12.84	117.76	12.46	118.14	14.33	116.27	13.48	117.12	12.75	117.85	14.61	115.99
MW-28S *	Uinconfined LPA	150.5	25.56	124.94	25.24	125.26	25.88	124.62	25.35	125.15	25.34	125.16	26.8	123.70
MW-45	Uinconfined LPA	126.7	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-
MW-24D	Confined LPA	129.1	50.9	78.20	49.29	79.81	NM	-	NM	-	44.38	84.72	46.3	82.80
MW-25-130	Confined LPA	130.5	58.7	71.80	57.59	72.91	58.26	72.24	53.95	76.55	51.01	79.49	50.27	80.23
MW-25-192	Confined LPA	130.5	59.99	70.51	56.4	74.10	57.23	73.27	53.05	77.45	50.27	80.23	52.4	78.10
MW-28D	Confined LPA	150.5	93.06	57.44	89.36	61.14	90.34	60.16	84.62	65.88	80.72	69.78	83.35	67.15
MW-29D	Confined LPA	131.9	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-
MW-30D-273	Confined LPA	153.5	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-
MW-31D	Confined LPA	162.5	114.02	48.48	108.58	53.92	109.51	52.99	102.44	60.06	98.41	64.09	114.20	48.30
MW-32D	Confined LPA	156.1	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-
MW-33D-235	Confined LPA	178.6	131.83	46.77	125.66	52.94	127.11	51.49	119.14	59.46	115.25	63.35	114.2	64.40
MW-33D-295	Confined LPA	178.3	131.52	46.78	125.42	52.88	126.91	51.39	118.90	59.40	114.96	63.34	131.50	46.80
MW-34D	Confined LPA	183.9	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-
MW-35D	Confined LPA	177.8	132.01	45.79	126.28	51.52	127.89	49.91	118.96	58.84	114.34	63.46	131.91	45.89
MW-46D	Confined LPA	124.8	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-
MW-30D-413	Patuxent	153.1	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-
MW-36D	Patuxent	158.7	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-

Notes:
LPA = Lower Patapsco Aquifer
NM = Not Measured
TOC = Top of Casing
* Well abandoned in August 2019

Table 2

Historical Groundwater Elevation Data - Offsite Monitoring Wells
Former Kop-Flex Facility Site
Hanover, Maryland

Well ID	Aquifer/Zone	TOC elevation	5/1/2017		8/31/2017		11/14/2017		2/13/2018		5/31/2018		8/23/2018	
			Depth to Water	*Groundwater Elevation*	*Depth to Water*	*Groundwater Elevation*	*Depth to Water*	*Groundwater Elevation*	*Depth to Water*	*Groundwater Elevation*	*Depth to Water*	*Groundwater Elevation*	*Depth to Water*	*Groundwater Elevation*
MW-25S *	Uinconfined LPA	130.6	14.02	116.58	14.09	116.51	14.6	116.00	14.56	116.04	13.10	117.50	NM	-
MW-28S *	Uinconfined LPA	150.5	27.4	123.10	27.2	123.30	27.22	123.28	27.48	123.02	27.42	123.08	NM	-
MW-45	Uinconfined LPA	126.7	13.67	113.05	NM	-	NM	-	NM	-	12.98	113.74	NM	-
MW-24D	Confined LPA	129.1	48.35	80.75	48.35	80.75	51.99	77.11	NM		50.94	78.16	NM	-
MW-25-130	Confined LPA	130.5	53.80	76.70	61.38	69.12	58.46	72.04	58.31	72.19	58.23	72.27	59.53	70.97
MW-25-192	Confined LPA	130.5	53.11	77.39	60.36	70.14	58.71	71.79	57.49	73.01	57.40	73.10	58.69	71.81
MW-28D	Confined LPA	150.5	82.72	67.78	94.55	55.95	89.03	61.47	67.37	83.13	88.75	61.75	90.98	59.52
MW-29D	Confined LPA	131.9	NM	-	NM	-	NM	-	NM	-	64.94	66.98	66.56	65.36
MW-30D-273	Confined LPA	153.5	NM	-	NM	-	NM	-	NM	-	98.66	54.88	100.70	52.84
MW-31D	Confined LPA	162.5	100.24	62.26	115.67	46.83	107.21	55.29	106.29	56.21	106.80	55.70	109.95	52.55
MW-32D	Confined LPA	156.1	NM	-	NM	-	NM	-	NM	-	97.90	58.24	100.65	55.49
MW-33D-235	Confined LPA	178.6	117.26	61.34	133.39	45.21	124.55	54.05	123.79	54.81	124.00	54.60	127.52	51.08
MW-33D-295	Confined LPA	178.3	117.03	61.27	133.14	45.16	124.36	53.94	123.60	54.70	123.83	54.47	127.34	50.96
MW-34D	Confined LPA	183.9	NM	-	NM	-	NM	-	NM	-	132.70	51.21	136.42	47.49
MW-35D	Confined LPA	177.8	117.28	60.52	133.55	44.25	125.59	52.21	124.02	53.78	124.27	53.53	128.19	49.61
MW-46D	Confined LPA	124.8	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-
MW-30D-413	Patuxent	153.1	NM	-	NM	-	NM	-	NM	-	138.10	15.03	143.75	9.38
MW-36D	Patuxent	158.7	NM	-	NM	-	NM	-	NM	-	141.75	16.96	146.32	12.39

Notes:
LPA = Lower Patapsco Aquifer
NM = Not Measured
TOC = Top of Casing
* Well abandoned in August 2019

Table 2

Historical Groundwater Elevation Data - Offsite Monitoring Wells
Former Kop-Flex Facility Site
Hanover, Maryland

Well ID	Aquifer/Zone	TOC elevation	11/8/2018		2/19/2019		5/22/2019		8/6/2019		11/20/2019		2/12/2020	
			Depth to Water	*Groundwater Elevation*	*Depth to Water*	*Groundwater Elevation*	*Depth to Water*	*Groundwater Elevation*	*Depth to Water*	*Groundwater Elevation*	*Depth to Water*	*Groundwater Elevation*	*Depth to Water*	*Groundwater Elevation*
MW-25S *	Uinconfined LPA	130.6	11.84	118.76	11.75	118.85	NM	-	NM	-	NM	-	NM	-
MW-28S *	Uinconfined LPA	150.5	24.33	126.17	23.30	127.20	NM	-	NM	-	NM	-	NM	-
MW-45	Uinconfined LPA	126.7	NM	-	11.98	114.74	11.75	114.97	NM	-	14.55	112.17	NM	-
MW-24D	Confined LPA	129.1	NM	-	48.92	80.18	49.67	79.43	52.37	76.73	51.12	77.98	50.10	79.00
MW-25-130	Confined LPA	130.5	58.75	71.75	54.96	75.54	56.23	74.27	60.79	69.71	59.94	70.56	55.55	74.95
MW-25-192	Confined LPA	130.5	57.63	72.87	54.20	76.30	55.45	75.05	60.37	70.13	59.02	71.48	54.70	75.80
MW-28D	Confined LPA	150.5	88.30	62.20	84.78	65.72	86.96	63.54	94.24	56.26	91.37	59.13	85.00	65.50
MW-29D	Confined LPA	131.9	65.03	66.89	60.64	71.28	62.36	69.56	67.20	64.72	67.10	64.82	61.28	70.64
MW-30D-273	Confined LPA	153.5	98.14	55.40	93.10	60.44	95.74	57.80	104.75	48.79	101.12	52.42	93.29	60.25
MW-31D	Confined LPA	162.5	106.27	56.23	102.47	60.03	104.91	57.59	113.35	49.15	110.14	52.36	102.73	59.77
MW-32D	Confined LPA	156.1	98.97	57.17	93.79	62.35	97.02	59.12	99.43	56.71	101.56	54.58	92.35	63.79
MW-33D-235	Confined LPA	178.6	125.14	53.46	119.35	59.25	121.72	56.88	132.76	45.84	127.87	50.73	119.72	58.88
MW-33D-295	Confined LPA	178.3	125.69	52.61	119.10	59.20	NM	NA	131.14	47.16	127.65	50.65	119.54	58.76
MW-34D	Confined LPA	183.9	131.76	52.15	127.40	56.51	129.93	53.98	141.48	42.43	136.62	47.29	127.75	56.16
MW-35D	Confined LPA	177.8	123.64	54.16	119.18	58.62	121.65	56.15	127.51	50.29	129.89	47.91	119.68	58.12
MW-46D	Confined LPA	124.8	NM	-	NM	-	35.47	89.30	38.40	86.37	37.90	86.87	36.13	88.64
MW-30D-413	Patuxent	153.1	140.62	12.51	130.73	22.40	137.25	15.88	145.27	7.86	143.64	9.49	128.12	25.01
MW-36D	Patuxent	158.7	143.85	14.86	134.83	23.88	141.30	17.41	147.65	11.06	146.75	11.96	132.11	26.60

Notes:
LPA = Lower Patapsco Aquifer
NM = Not Measured
TOC = Top of Casing
* Well abandoned in August 2019

ENCLOSURE A – LABORATORY ANALYTICAL REPORTS FOR RESIDENTIAL WELL SAMPLES (1227 OLD CAMP MEADE ROAD)

JANUARY 2020

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

WSP Environment & Energy

Kop-Flex, Hanover, VA

31401545.011-02

SGS Job Number: JD1504

Sampling Date: 01/09/20

Report to:

WSP
11190 Sunrise Valley Drive Suite 300
Reston, VA 20190
eric.johnson@wspgroup.com; Chris.Cresci@wspgroup.com

ATTN: Eric Johnson

Total number of pages in report: 42

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Laura Degenhardt
General Manager

Client Service contact: Tammy McCloskey 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, FL, IL, IN, KS, KY, LA, MA, MD, ME, MN, NC, OH VAP (CL0056), AK (UST-103), AZ (AZ0786), PA, RI, SC, TX, UT, VA, WV, DoD ELAP (ANAB L2248)

Sections: 1 2 3 4 5

Table of Contents

SGS North America Inc.

Sample Summary

WSP Environment & Energy

Job No: JD1504

Kop-Flex, Hanover, VA
Project No: 31401545.011-02

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
This report contains results reported as ND = Not detected. The following applies: Organics ND = Not detected above the MDL							
JD1504-1	01/09/20	12:45	CC	01/10/20	AQ	Water	RW-1227OCM-010920
JD1504-2	01/09/20	12:40	CC	01/10/20	AQ	Water	RW-1227OCM-010920-F
JD1504-3	01/09/20	12:45	CC	01/10/20	AQ	Trip Blank Water	TB-010920

Summary of Hits

Job Number: JD1504
Account: WSP Environment & Energy
Project: Kop-Flex, Hanover, VA
Collected: 01/09/20

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JD1504-1	**RW-1227OCM-010920**					
Acetone [a]		129	5.0	2.5	ug/l	EPA 524.2 REV 4.1
2-Butanone [a]		240	5.0	0.43	ug/l	EPA 524.2 REV 4.1
Chloromethane [a]		0.15 J	0.50	0.13	ug/l	EPA 524.2 REV 4.1
1,1-Dichloroethylene [a]		5.0	0.50	0.19	ug/l	EPA 524.2 REV 4.1
1,4-Dioxane		2.5	0.40	0.095	ug/l	SW846 8260C BY SIM
JD1504-2	**RW-1227OCM-010920-F**					
Acetone [a]		39.8	5.0	2.5	ug/l	EPA 524.2 REV 4.1
2-Butanone [a]		70.0	5.0	0.43	ug/l	EPA 524.2 REV 4.1
1,4-Dioxane		3.5	0.40	0.095	ug/l	SW846 8260C BY SIM
JD1504-3	**TB-010920**					
Methylene chloride [a]		0.43 J	0.50	0.37	ug/l	EPA 524.2 REV 4.1

(a) EPA 524.2 is not a certified method for non-potable water samples.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	RW-1227OCM-010920		
Lab Sample ID:	JD1504-1	**Date Sampled:**	01/09/20
Matrix:	AQ - Water	**Date Received:**	01/10/20
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1B122207.D	1	01/13/20 13:32	BK	n/a	n/a	V1B5912
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	129	5.0	2.5	ug/l	
78-93-3	2-Butanone	240	5.0	0.43	ug/l	
71-43-2	Benzene	ND	0.50	0.16	ug/l	
108-86-1	Bromobenzene	ND	0.50	0.12	ug/l	
74-97-5	Bromochloromethane	ND	0.50	0.17	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.13	ug/l	
75-25-2	Bromoform	ND	0.50	0.27	ug/l	
74-83-9	Bromomethane	ND	0.50	0.18	ug/l	
104-51-8	n-Butylbenzene	ND	0.50	0.068	ug/l	
135-98-8	sec-Butylbenzene	ND	0.50	0.43	ug/l	
98-06-6	tert-Butylbenzene	ND	0.50	0.057	ug/l	
75-15-0	Carbon disulfide	ND	0.50	0.18	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.093	ug/l	
75-00-3	Chloroethane	ND	0.50	0.080	ug/l	
67-66-3	Chloroform	ND	0.50	0.17	ug/l	
74-87-3	Chloromethane	0.15	0.50	0.13	ug/l	J
95-49-8	o-Chlorotoluene	ND	0.50	0.098	ug/l	
106-43-4	p-Chlorotoluene	ND	0.50	0.075	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.24	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.22	ug/l	
75-35-4	1,1-Dichloroethylene	5.0	0.50	0.19	ug/l	
563-58-6	1,1-Dichloropropene	ND	0.50	0.14	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	1.0	0.14	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.50	0.15	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.18	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.19	ug/l	
142-28-9	1,3-Dichloropropane	ND	0.50	0.17	ug/l	
594-20-7	2,2-Dichloropropane	ND	0.50	0.31	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.14	ug/l	
74-95-3	Dibromomethane	ND	0.50	0.23	ug/l	
75-71-8	Dichlorodifluoromethane	ND	0.50	0.40	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.14	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	RW-1227OCM-010920		
Lab Sample ID:	JD1504-1	**Date Sampled:**	01/09/20
Matrix:	AQ - Water	**Date Received:**	01/10/20
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-50-1	o-Dichlorobenzene	ND	0.50	0.14	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.10	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.21	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.14	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.18	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.16	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.076	ug/l	
87-68-3	Hexachlorobutadiene	ND	0.50	0.13	ug/l	
591-78-6	2-Hexanone	ND	2.0	0.24	ug/l	
98-82-8	Isopropylbenzene	ND	0.50	0.054	ug/l	
99-87-6	p-Isopropyltoluene	ND	0.50	0.43	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.37	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	0.50	0.11	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	0.22	ug/l	
91-20-3	Naphthalene	ND	0.50	0.28	ug/l	
103-65-1	n-Propylbenzene	ND	0.50	0.066	ug/l	
100-42-5	Styrene	ND	0.50	0.069	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.50	0.20	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.13	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.19	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	0.50	0.091	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	0.50	0.13	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	0.055	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	0.40	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	0.057	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.23	ug/l	
108-88-3	Toluene	ND	0.50	0.11	ug/l	
79-01-6	Trichloroethylene	ND	0.50	0.20	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.19	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.15	ug/l	
	m,p-Xylene	ND	0.50	0.14	ug/l	
95-47-6	o-Xylene	ND	0.50	0.076	ug/l	
1330-20-7	Xylenes (total)	ND	0.50	0.076	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	85%		70-130%
460-00-4	4-Bromofluorobenzene	99%		70-130%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	RW-1227OCM-010920		
Lab Sample ID:	JD1504-1	**Date Sampled:**	01/09/20
Matrix:	AQ - Water	**Date Received:**	01/10/20
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	RL	MDL	Units	Q

(a) EPA 524.2 is not a certified method for non-potable water samples.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	RW-1227OCM-010920		
Lab Sample ID:	JD1504-1	**Date Sampled:**	01/09/20
Matrix:	AQ - Water	**Date Received:**	01/10/20
Method:	SW846 8260C BY SIM	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3A163655.D	1	01/20/20 12:00	RS	n/a	n/a	V3A7093
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	2.5	0.40	0.095	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17647-74-4	1,4-Dioxane-d8	108%		25-195%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	RW-1227OCM-010920-F		
Lab Sample ID:	JD1504-2	**Date Sampled:**	01/09/20
Matrix:	AQ - Water	**Date Received:**	01/10/20
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1B122208.D	1	01/13/20 14:05	BK	n/a	n/a	V1B5912
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	39.8	5.0	2.5	ug/l	
78-93-3	2-Butanone	70.0	5.0	0.43	ug/l	
71-43-2	Benzene	ND	0.50	0.16	ug/l	
108-86-1	Bromobenzene	ND	0.50	0.12	ug/l	
74-97-5	Bromochloromethane	ND	0.50	0.17	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.13	ug/l	
75-25-2	Bromoform	ND	0.50	0.27	ug/l	
74-83-9	Bromomethane	ND	0.50	0.18	ug/l	
104-51-8	n-Butylbenzene	ND	0.50	0.068	ug/l	
135-98-8	sec-Butylbenzene	ND	0.50	0.43	ug/l	
98-06-6	tert-Butylbenzene	ND	0.50	0.057	ug/l	
75-15-0	Carbon disulfide	ND	0.50	0.18	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.093	ug/l	
75-00-3	Chloroethane	ND	0.50	0.080	ug/l	
67-66-3	Chloroform	ND	0.50	0.17	ug/l	
74-87-3	Chloromethane	ND	0.50	0.13	ug/l	
95-49-8	o-Chlorotoluene	ND	0.50	0.098	ug/l	
106-43-4	p-Chlorotoluene	ND	0.50	0.075	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.24	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.22	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.19	ug/l	
563-58-6	1,1-Dichloropropene	ND	0.50	0.14	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	1.0	0.14	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.50	0.15	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.18	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.19	ug/l	
142-28-9	1,3-Dichloropropane	ND	0.50	0.17	ug/l	
594-20-7	2,2-Dichloropropane	ND	0.50	0.31	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.14	ug/l	
74-95-3	Dibromomethane	ND	0.50	0.23	ug/l	
75-71-8	Dichlorodifluoromethane	ND	0.50	0.40	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.14	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	RW-1227OCM-010920-F		
Lab Sample ID:	JD1504-2	**Date Sampled:**	01/09/20
Matrix:	AQ - Water	**Date Received:**	01/10/20
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-50-1	o-Dichlorobenzene	ND	0.50	0.14	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.10	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.21	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.14	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.18	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.16	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.076	ug/l	
87-68-3	Hexachlorobutadiene	ND	0.50	0.13	ug/l	
591-78-6	2-Hexanone	ND	2.0	0.24	ug/l	
98-82-8	Isopropylbenzene	ND	0.50	0.054	ug/l	
99-87-6	p-Isopropyltoluene	ND	0.50	0.43	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.37	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	0.50	0.11	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	0.22	ug/l	
91-20-3	Naphthalene	ND	0.50	0.28	ug/l	
103-65-1	n-Propylbenzene	ND	0.50	0.066	ug/l	
100-42-5	Styrene	ND	0.50	0.069	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.50	0.20	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.13	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.19	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	0.50	0.091	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	0.50	0.13	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	0.055	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	0.40	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	0.057	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.23	ug/l	
108-88-3	Toluene	ND	0.50	0.11	ug/l	
79-01-6	Trichloroethylene	ND	0.50	0.20	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.19	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.15	ug/l	
	m,p-Xylene	ND	0.50	0.14	ug/l	
95-47-6	o-Xylene	ND	0.50	0.076	ug/l	
1330-20-7	Xylenes (total)	ND	0.50	0.076	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	84%		70-130%
460-00-4	4-Bromofluorobenzene	93%		70-130%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	RW-1227OCM-010920-F		
Lab Sample ID:	JD1504-2	**Date Sampled:**	01/09/20
Matrix:	AQ - Water	**Date Received:**	01/10/20
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	RL	MDL	Units	Q

(a) EPA 524.2 is not a certified method for non-potable water samples.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	RW-1227OCM-010920-F		
Lab Sample ID:	JD1504-2	**Date Sampled:**	01/09/20
Matrix:	AQ - Water	**Date Received:**	01/10/20
Method:	SW846 8260C BY SIM	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3A163656.D	1	01/20/20 12:28	RS	n/a	n/a	V3A7093
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	3.5	0.40	0.095	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17647-74-4	1,4-Dioxane-d8	136%		25-195%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TB-010920		
Lab Sample ID:	JD1504-3	**Date Sampled:**	01/09/20
Matrix:	AQ - Trip Blank Water	**Date Received:**	01/10/20
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1B122212.D	1	01/13/20 16:10	BK	n/a	n/a	V1B5912
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	2.5	ug/l	
78-93-3	2-Butanone	ND	5.0	0.43	ug/l	
71-43-2	Benzene	ND	0.50	0.16	ug/l	
108-86-1	Bromobenzene	ND	0.50	0.12	ug/l	
74-97-5	Bromochloromethane	ND	0.50	0.17	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.13	ug/l	
75-25-2	Bromoform	ND	0.50	0.27	ug/l	
74-83-9	Bromomethane	ND	0.50	0.18	ug/l	
104-51-8	n-Butylbenzene	ND	0.50	0.068	ug/l	
135-98-8	sec-Butylbenzene	ND	0.50	0.43	ug/l	
98-06-6	tert-Butylbenzene	ND	0.50	0.057	ug/l	
75-15-0	Carbon disulfide	ND	0.50	0.18	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.093	ug/l	
75-00-3	Chloroethane	ND	0.50	0.080	ug/l	
67-66-3	Chloroform	ND	0.50	0.17	ug/l	
74-87-3	Chloromethane	ND	0.50	0.13	ug/l	
95-49-8	o-Chlorotoluene	ND	0.50	0.098	ug/l	
106-43-4	p-Chlorotoluene	ND	0.50	0.075	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.24	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.22	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.19	ug/l	
563-58-6	1,1-Dichloropropene	ND	0.50	0.14	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	1.0	0.14	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.50	0.15	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.18	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.19	ug/l	
142-28-9	1,3-Dichloropropane	ND	0.50	0.17	ug/l	
594-20-7	2,2-Dichloropropane	ND	0.50	0.31	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.14	ug/l	
74-95-3	Dibromomethane	ND	0.50	0.23	ug/l	
75-71-8	Dichlorodifluoromethane	ND	0.50	0.40	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.14	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TB-010920		
Lab Sample ID:	JD1504-3	**Date Sampled:**	01/09/20
Matrix:	AQ - Trip Blank Water	**Date Received:**	01/10/20
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-50-1	o-Dichlorobenzene	ND	0.50	0.14	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.10	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.21	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.14	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.18	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.16	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.076	ug/l	
87-68-3	Hexachlorobutadiene	ND	0.50	0.13	ug/l	
591-78-6	2-Hexanone	ND	2.0	0.24	ug/l	
98-82-8	Isopropylbenzene	ND	0.50	0.054	ug/l	
99-87-6	p-Isopropyltoluene	ND	0.50	0.43	ug/l	
75-09-2	Methylene chloride	0.43	0.50	0.37	ug/l	J
1634-04-4	Methyl Tert Butyl Ether	ND	0.50	0.11	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	0.22	ug/l	
91-20-3	Naphthalene	ND	0.50	0.28	ug/l	
103-65-1	n-Propylbenzene	ND	0.50	0.066	ug/l	
100-42-5	Styrene	ND	0.50	0.069	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.50	0.20	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.13	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.19	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	0.50	0.091	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	0.50	0.13	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	0.055	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	0.40	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	0.057	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.23	ug/l	
108-88-3	Toluene	ND	0.50	0.11	ug/l	
79-01-6	Trichloroethylene	ND	0.50	0.20	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.19	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.15	ug/l	
	m,p-Xylene	ND	0.50	0.14	ug/l	
95-47-6	o-Xylene	ND	0.50	0.076	ug/l	
1330-20-7	Xylenes (total)	ND	0.50	0.076	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	87%		70-130%
460-00-4	4-Bromofluorobenzene	92%		70-130%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TB-010920		
Lab Sample ID:	JD1504-3	**Date Sampled:**	01/09/20
Matrix:	AQ - Trip Blank Water	**Date Received:**	01/10/20
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	RL	MDL	Units	Q

(a) EPA 524.2 is not a certified method for non-potable water samples.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TB-010920		
Lab Sample ID:	JD1504-3	**Date Sampled:**	01/09/20
Matrix:	AQ - Trip Blank Water	**Date Received:**	01/10/20
Method:	SW846 8260C BY SIM	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3A163654.D	1	01/20/20 11:30	RS	n/a	n/a	V3A7093
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.40	0.095	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17647-74-4	1,4-Dioxane-d8	109%		25-195%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

WW, WTB

CHAIN-OF-CUSTODY RECORD 7795 3037 3645

JD1504 Page 1 of 1

WSP | Parsons Brinckerhoff Office Address: 13530 Dulles Technology Dr. Suite 300 Herndon, VA

No. 004544 WSP | PARSONS BRINCKERHOFF

Project Name	Kop-Flex OFFSite
Project Location	Hanover, MD
Project Number & Task	314015Y5/02
Sampler(s) Name(s)	Chris Cresci, Shannon Burke
WSP | Parsons Brinckerhoff Contact Name	Eric Johnson
WSP | Parsons Brinckerhoff Contact E-mail	Eric.Johnson@wspgroup.com
WSP | Parsons Brinckerhoff Contact Phone	703-709-6500
Sampler(s) Signature(s)	
Laboratory Name & Location	SGS Accutest Dayton, NJ
Laboratory Project Manager	Tammy Ackerson
Requested Turn-Around-Time	[X] Standard [ ] 24 HR [ ] 48 HR [ ] 72 HR [ ] ___ HR

Requested Analyses & Preservatives: Number of Containers; VOCs G24; 1,4-Dioxane (8260 SIM)

	Sample Identification	Matrix	Collection Start* Date	Collection Start* Time	Collection Stop* Date	Collection Stop* Time	Number of Containers	VOCs G24	1,4-Dioxane (8260 SIM)	Sample Comments
1	RW-D270CM-010920	AQ	1/9/20		1248		6	X	X	
2	RW-D270CM-010920-F	AQ	1/9/20		1240		6	X	X	
3	TB-010920						4	X	X	VT80

2 Amb

Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Shipment Method	Tracking Number(s)
	1/9/20		FED EX				5W-113018-144 on ice
Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Number of Packages	Custody Seal Number(s)
Fed Ex	1/10/20	1035		1/10/20	1035		IR-7 1.8°C

*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)

4.1 4

JD1504: Chain of Custody
Page 1 of 2

SGS Sample Receipt Summary

Job Number: JD1504 **Client:** _____ **Project:** _____

Date / Time Received: 1/10/2020 10:35:00 AM **Delivery Method:** _____ **Airbill #'s:** _____

Cooler Temps (Raw Measured) °C: Cooler 1: (1.8);

Cooler Temps (Corrected) °C: Cooler 1: (1.6);

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Cooler temp verification:	IR Gun		
3. Cooler media:	Ice (Bag)		
4. No. Coolers:	1		

Quality Control Preservation	Y	or	N	N/A
1. Trip Blank present / cooler:	☑		☐	☐
2. Trip Blank listed on COC:	☑		☐	☐
3. Samples preserved properly:	☑		☐	
4. VOCs headspace free:	☑		☐	☐

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Test Strip Lot #s: pH 1-12: 229517 pH 12+: 208717 Other: (Specify) _____ _____

Comments

SM089-03
Rev. Date 12/7/17

JD1504: Chain of Custody
Page 2 of 2

MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Instrument Performance Checks (BFB)
- Surrogate Recovery Summaries

Method Blank Summary

Job Number: JD1504
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5912-MB	1B122203.D	1	01/13/20	BK	n/a	n/a	V1B5912

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JD1504-1, JD1504-2, JD1504-3

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	2.5	ug/l	
78-93-3	2-Butanone	ND	5.0	0.43	ug/l	
71-43-2	Benzene	ND	0.50	0.16	ug/l	
108-86-1	Bromobenzene	ND	0.50	0.12	ug/l	
74-97-5	Bromochloromethane	ND	0.50	0.17	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.13	ug/l	
75-25-2	Bromoform	ND	0.50	0.27	ug/l	
74-83-9	Bromomethane	ND	0.50	0.18	ug/l	
104-51-8	n-Butylbenzene	ND	0.50	0.068	ug/l	
135-98-8	sec-Butylbenzene	ND	0.50	0.43	ug/l	
98-06-6	tert-Butylbenzene	ND	0.50	0.057	ug/l	
75-15-0	Carbon disulfide	ND	0.50	0.18	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.093	ug/l	
75-00-3	Chloroethane	ND	0.50	0.080	ug/l	
67-66-3	Chloroform	ND	0.50	0.17	ug/l	
74-87-3	Chloromethane	ND	0.50	0.13	ug/l	
95-49-8	o-Chlorotoluene	ND	0.50	0.098	ug/l	
106-43-4	p-Chlorotoluene	ND	0.50	0.075	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.24	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.22	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.19	ug/l	
563-58-6	1,1-Dichloropropene	ND	0.50	0.14	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	1.0	0.14	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.50	0.15	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.18	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.19	ug/l	
142-28-9	1,3-Dichloropropane	ND	0.50	0.17	ug/l	
594-20-7	2,2-Dichloropropane	ND	0.50	0.31	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.14	ug/l	
74-95-3	Dibromomethane	ND	0.50	0.23	ug/l	
75-71-8	Dichlorodifluoromethane	ND	0.50	0.40	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.14	ug/l	
95-50-1	o-Dichlorobenzene	ND	0.50	0.14	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.10	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.21	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.14	ug/l	

Method Blank Summary

Job Number: JD1504
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5912-MB	1B122203.D	1	01/13/20	BK	n/a	n/a	V1B5912

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JD1504-1, JD1504-2, JD1504-3

CAS No.	Compound	Result	RL	MDL	Units	Q
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.16	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.18	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.076	ug/l	
87-68-3	Hexachlorobutadiene	ND	0.50	0.13	ug/l	
591-78-6	2-Hexanone	ND	2.0	0.24	ug/l	
98-82-8	Isopropylbenzene	ND	0.50	0.054	ug/l	
99-87-6	p-Isopropyltoluene	ND	0.50	0.43	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.37	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	0.50	0.11	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	0.22	ug/l	
91-20-3	Naphthalene	0.35	0.50	0.28	ug/l	J
103-65-1	n-Propylbenzene	ND	0.50	0.066	ug/l	
100-42-5	Styrene	ND	0.50	0.069	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.50	0.20	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.13	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.19	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	0.50	0.091	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	0.50	0.13	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	0.055	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	0.40	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	0.057	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.23	ug/l	
108-88-3	Toluene	ND	0.50	0.11	ug/l	
79-01-6	Trichloroethylene	ND	0.50	0.20	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.19	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.15	ug/l	
	m,p-Xylene	ND	0.50	0.14	ug/l	
95-47-6	o-Xylene	ND	0.50	0.076	ug/l	
1330-20-7	Xylenes (total)	ND	0.50	0.076	ug/l	

CAS No.	Surrogate Recoveries		Limits
2199-69-1	1,2-Dichlorobenzene-d4	87%	70-130%
460-00-4	4-Bromofluorobenzene	96%	70-130%

Method Blank Summary

Job Number: JD1504
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5912-MB	1B122203.D	1	01/13/20	BK	n/a	n/a	V1B5912

The QC reported here applies to the following samples: **Method:**

JD1504-1, JD1504-2, JD1504-3

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

Method Blank Summary

Job Number: JD1504
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3A7093-MB	3A163653.D	1	01/20/20	RS	n/a	n/a	V3A7093

The QC reported here applies to the following samples: **Method:** SW846 8260C BY SIM

JD1504-1, JD1504-2, JD1504-3

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.40	0.095	ug/l	

CAS No.	Surrogate Recoveries		Limits
17647-74-4	1,4-Dioxane-d8	103%	25-195%

Blank Spike Summary

Job Number: JD1504
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5912-BS	1B122202.D	1	01/13/20	BK	n/a	n/a	V1B5912

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JD1504-1, JD1504-2, JD1504-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	20	16.8	84	70-130
78-93-3	2-Butanone	20	17.8	89	70-130
71-43-2	Benzene	5	4.4	88	70-130
108-86-1	Bromobenzene	5	4.3	86	70-130
74-97-5	Bromochloromethane	5	4.1	82	70-130
75-27-4	Bromodichloromethane	5	4.3	86	70-130
75-25-2	Bromoform	5	4.0	80	70-130
74-83-9	Bromomethane	5	4.3	86	70-130
104-51-8	n-Butylbenzene	5	5.1	102	70-130
135-98-8	sec-Butylbenzene	5	5.0	100	70-130
98-06-6	tert-Butylbenzene	5	4.8	96	70-130
75-15-0	Carbon disulfide	5	4.4	88	70-130
108-90-7	Chlorobenzene	5	4.4	88	70-130
75-00-3	Chloroethane	5	4.6	92	70-130
67-66-3	Chloroform	5	4.2	84	70-130
74-87-3	Chloromethane	5	4.4	88	70-130
95-49-8	o-Chlorotoluene	5	4.6	92	70-130
106-43-4	p-Chlorotoluene	5	4.8	96	70-130
56-23-5	Carbon tetrachloride	5	4.1	82	70-130
75-34-3	1,1-Dichloroethane	5	4.3	86	70-130
75-35-4	1,1-Dichloroethylene	5	4.3	86	70-130
563-58-6	1,1-Dichloropropene	5	4.5	90	70-130
96-12-8	1,2-Dibromo-3-chloropropane	5	4.6	92	70-130
106-93-4	1,2-Dibromoethane	5	4.4	88	70-130
107-06-2	1,2-Dichloroethane	5	4.2	84	70-130
78-87-5	1,2-Dichloropropane	5	4.7	94	70-130
142-28-9	1,3-Dichloropropane	5	4.5	90	70-130
594-20-7	2,2-Dichloropropane	5	4.2	84	70-130
124-48-1	Dibromochloromethane	5	4.2	84	70-130
74-95-3	Dibromomethane	5	4.3	86	70-130
75-71-8	Dichlorodifluoromethane	5	4.8	96	70-130
541-73-1	m-Dichlorobenzene	5	4.4	88	70-130
95-50-1	o-Dichlorobenzene	5	4.5	90	70-130
106-46-7	p-Dichlorobenzene	5	4.5	90	70-130
156-60-5	trans-1,2-Dichloroethylene	5	4.2	84	70-130
156-59-2	cis-1,2-Dichloroethylene	5	4.3	86	70-130

* = Outside of Control Limits.

Blank Spike Summary

Job Number: JD1504
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5912-BS	1B122202.D	1	01/13/20	BK	n/a	n/a	V1B5912

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JD1504-1, JD1504-2, JD1504-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
10061-01-5	cis-1,3-Dichloropropene	5	4.7	94	70-130
10061-02-6	trans-1,3-Dichloropropene	5	4.5	90	70-130
100-41-4	Ethylbenzene	5	4.7	94	70-130
87-68-3	Hexachlorobutadiene	5	4.1	82	70-130
591-78-6	2-Hexanone	20	20.6	103	70-130
98-82-8	Isopropylbenzene	5	4.9	98	70-130
99-87-6	p-Isopropyltoluene	5	4.8	96	70-130
75-09-2	Methylene chloride	5	4.2	84	70-130
1634-04-4	Methyl Tert Butyl Ether	5	4.6	92	70-130
108-10-1	4-Methyl-2-pentanone	20	19.9	100	70-130
91-20-3	Naphthalene	5	4.6	92	70-130
103-65-1	n-Propylbenzene	5	4.9	98	70-130
100-42-5	Styrene	5	4.6	92	70-130
630-20-6	1,1,1,2-Tetrachloroethane	5	4.2	84	70-130
71-55-6	1,1,1-Trichloroethane	5	4.1	82	70-130
79-34-5	1,1,2,2-Tetrachloroethane	5	5.0	100	70-130
79-00-5	1,1,2-Trichloroethane	5	4.7	94	70-130
87-61-6	1,2,3-Trichlorobenzene	5	4.5	90	70-130
96-18-4	1,2,3-Trichloropropane	5	4.6	92	70-130
120-82-1	1,2,4-Trichlorobenzene	5	4.4	88	70-130
95-63-6	1,2,4-Trimethylbenzene	5	5.0	100	70-130
108-67-8	1,3,5-Trimethylbenzene	5	4.9	98	70-130
127-18-4	Tetrachloroethylene	5	4.0	80	70-130
108-88-3	Toluene	5	4.5	90	70-130
79-01-6	Trichloroethylene	5	4.2	84	70-130
75-69-4	Trichlorofluoromethane	5	4.6	92	70-130
75-01-4	Vinyl chloride	5	4.6	92	70-130
	m,p-Xylene	10	9.4	94	70-130
95-47-6	o-Xylene	5	4.8	96	70-130
1330-20-7	Xylenes (total)	15	14.2	95	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
2199-69-1	1,2-Dichlorobenzene-d4	100%	70-130%
460-00-4	4-Bromofluorobenzene	105%	70-130%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: JD1504
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3A7093-BS	3A163652.D	1	01/20/20	RS	n/a	n/a	V3A7093

The QC reported here applies to the following samples: **Method:** SW846 8260C BY SIM

JD1504-1, JD1504-2, JD1504-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
123-91-1	1,4-Dioxane	20	19.6	98	48-137

CAS No.	Surrogate Recoveries	BSP	Limits
17647-74-4	1,4-Dioxane-d8	93%	25-195%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: JD1504
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JD1474-1MS	1B122209.D	1	01/13/20	BK	n/a	n/a	V1B5912
JD1474-1	1B122205.D	1	01/13/20	BK	n/a	n/a	V1B5912

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JD1504-1, JD1504-2, JD1504-3

CAS No.	Compound	JD1474-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
67-64-1	Acetone	ND		20	17.5	88	41-142
78-93-3	2-Butanone	ND		20	21.7	109	55-129
71-43-2	Benzene	ND		5	4.4	88	53-138
108-86-1	Bromobenzene	ND		5	4.6	92	54-138
74-97-5	Bromochloromethane	ND		5	3.9	78	55-140
75-27-4	Bromodichloromethane	ND		5	4.5	90	57-147
75-25-2	Bromoform	ND		5	4.9	98	47-137
74-83-9	Bromomethane	ND		5	5.0	100	40-162
104-51-8	n-Butylbenzene	ND		5	5.3	106	45-144
135-98-8	sec-Butylbenzene	ND		5	5.4	108	46-145
98-06-6	tert-Butylbenzene	ND		5	5.1	102	48-141
75-15-0	Carbon disulfide	ND		5	4.2	84	35-127
108-90-7	Chlorobenzene	ND		5	4.9	98	54-135
75-00-3	Chloroethane	ND		5	5.3	106	38-153
67-66-3	Chloroform	ND		5	4.0	80	57-151
74-87-3	Chloromethane	ND		5	5.4	108	39-165
95-49-8	o-Chlorotoluene	ND		5	4.8	96	55-142
106-43-4	p-Chlorotoluene	ND		5	5.2	104	55-139
56-23-5	Carbon tetrachloride	ND		5	4.1	82	49-170
75-34-3	1,1-Dichloroethane	ND		5	4.2	84	55-149
75-35-4	1,1-Dichloroethylene	ND		5	4.3	86	42-142
563-58-6	1,1-Dichloropropene	ND		5	4.5	90	46-151
96-12-8	1,2-Dibromo-3-chloropropane	ND		5	5.7	114	48-141
106-93-4	1,2-Dibromoethane	ND		5	5.0	100	57-135
107-06-2	1,2-Dichloroethane	ND		5	4.1	82	59-166
78-87-5	1,2-Dichloropropane	ND		5	4.9	98	53-142
142-28-9	1,3-Dichloropropane	ND		5	5.3	106	58-143
594-20-7	2,2-Dichloropropane	ND		5	3.8	76	38-165
124-48-1	Dibromochloromethane	ND		5	4.9	98	55-138
74-95-3	Dibromomethane	ND		5	4.4	88	61-144
75-71-8	Dichlorodifluoromethane	ND		5	5.9	118	23-172
541-73-1	m-Dichlorobenzene	ND		5	4.7	94	53-138
95-50-1	o-Dichlorobenzene	ND		5	4.8	96	54-140
106-46-7	p-Dichlorobenzene	ND		5	4.8	96	53-137
156-60-5	trans-1,2-Dichloroethylene	ND		5	3.9	78	47-148
156-59-2	cis-1,2-Dichloroethylene	ND		5	4.0	80	51-146

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: JD1504
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JD1474-1MS	1B122209.D	1	01/13/20	BK	n/a	n/a	V1B5912
JD1474-1	1B122205.D	1	01/13/20	BK	n/a	n/a	V1B5912

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JD1504-1, JD1504-2, JD1504-3

CAS No.	Compound	JD1474-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
10061-01-5	cis-1,3-Dichloropropene	ND		5	5.0	100	51-136
10061-02-6	trans-1,3-Dichloropropene	ND		5	4.9	98	54-142
100-41-4	Ethylbenzene	ND		5	5.0	100	51-138
87-68-3	Hexachlorobutadiene	ND		5	4.5	90	40-154
591-78-6	2-Hexanone	ND		20	26.7	134* [a]	53-128
98-82-8	Isopropylbenzene	ND		5	5.1	102	49-139
99-87-6	p-Isopropyltoluene	ND		5	5.1	102	45-141
75-09-2	Methylene chloride	ND		5	3.9	78	54-137
1634-04-4	Methyl Tert Butyl Ether	ND		5	4.3	86	53-143
108-10-1	4-Methyl-2-pentanone	ND		20	25.2	126	58-127
91-20-3	Naphthalene	ND		5	4.9	98	44-140
103-65-1	n-Propylbenzene	ND		5	5.3	106	50-142
100-42-5	Styrene	ND		5	5.0	100	23-130
630-20-6	1,1,1,2-Tetrachloroethane	ND		5	4.7	94	57-144
71-55-6	1,1,1-Trichloroethane	ND		5	4.1	82	52-164
79-34-5	1,1,2,2-Tetrachloroethane	ND		5	6.1	122	58-138
79-00-5	1,1,2-Trichloroethane	ND		5	5.5	110	59-139
87-61-6	1,2,3-Trichlorobenzene	ND		5	4.6	92	47-141
96-18-4	1,2,3-Trichloropropane	ND		5	5.6	112	56-148
120-82-1	1,2,4-Trichlorobenzene	ND		5	4.5	90	46-137
95-63-6	1,2,4-Trimethylbenzene	ND		5	5.2	104	41-138
108-67-8	1,3,5-Trimethylbenzene	ND		5	5.1	102	45-138
127-18-4	Tetrachloroethylene	ND		5	4.4	88	45-145
108-88-3	Toluene	ND		5	4.9	98	52-134
79-01-6	Trichloroethylene	ND		5	4.3	86	54-143
75-69-4	Trichlorofluoromethane	ND		5	5.5	110	36-167
75-01-4	Vinyl chloride	ND		5	5.7	114	35-162
	m,p-Xylene	ND		10	10.1	101	49-135
95-47-6	o-Xylene	ND		5	5.0	100	49-134
1330-20-7	Xylenes (total)	ND		15	15.0	100	50-134

CAS No.	Surrogate Recoveries	MS	JD1474-1	Limits
2199-69-1	1,2-Dichlorobenzene-d4	93%	87%	70-130%
460-00-4	4-Bromofluorobenzene	101%	96%	70-130%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: JD1504
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JD1474-1MS	1B122209.D	1	01/13/20	BK	n/a	n/a	V1B5912
JD1474-1	1B122205.D	1	01/13/20	BK	n/a	n/a	V1B5912

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JD1504-1, JD1504-2, JD1504-3

(a) Outside in house control limits.

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: JD1504
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JD1504-1MS	3A163658.D	1	01/20/20	RS	n/a	n/a	V3A7093
JD1504-1	3A163655.D	1	01/20/20	RS	n/a	n/a	V3A7093

The QC reported here applies to the following samples: **Method:** SW846 8260C BY SIM

JD1504-1, JD1504-2, JD1504-3

CAS No.	Compound	JD1504-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
123-91-1	1,4-Dioxane	2.5		20	24.6	111	28-162

CAS No.	Surrogate Recoveries	MS	JD1504-1	Limits
17647-74-4	1,4-Dioxane-d8	119%	108%	25-195%

* = Outside of Control Limits.

Duplicate Summary

Job Number: JD1504
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JD1504-1DUP	1B122210.D	1	01/13/20	BK	n/a	n/a	V1B5912
JD1504-1 [a]	1B122207.D	1	01/13/20	BK	n/a	n/a	V1B5912

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JD1504-1, JD1504-2, JD1504-3

CAS No.	Compound	JD1504-1 ug/l	Q	DUP ug/l	Q	RPD	Limits
67-64-1	Acetone	129		119		8	10
78-93-3	2-Butanone	240		216		11	12
71-43-2	Benzene	ND		ND		nc	10
108-86-1	Bromobenzene	ND		ND		nc	10
74-97-5	Bromochloromethane	ND		ND		nc	10
75-27-4	Bromodichloromethane	ND		ND		nc	10
75-25-2	Bromoform	ND		ND		nc	10
74-83-9	Bromomethane	ND		ND		nc	10
104-51-8	n-Butylbenzene	ND		ND		nc	10
135-98-8	sec-Butylbenzene	ND		ND		nc	10
98-06-6	tert-Butylbenzene	ND		ND		nc	10
75-15-0	Carbon disulfide	ND		ND		nc	19
108-90-7	Chlorobenzene	ND		ND		nc	10
75-00-3	Chloroethane	ND		ND		nc	10
67-66-3	Chloroform	ND		ND		nc	12
74-87-3	Chloromethane	0.15	J	ND		200* [b]	10
95-49-8	o-Chlorotoluene	ND		ND		nc	10
106-43-4	p-Chlorotoluene	ND		ND		nc	10
56-23-5	Carbon tetrachloride	ND		ND		nc	10
75-34-3	1,1-Dichloroethane	ND		ND		nc	10
75-35-4	1,1-Dichloroethylene	5.0		5.2		4	10
563-58-6	1,1-Dichloropropene	ND		ND		nc	10
96-12-8	1,2-Dibromo-3-chloropropane	ND		ND		nc	10
106-93-4	1,2-Dibromoethane	ND		ND		nc	10
107-06-2	1,2-Dichloroethane	ND		ND		nc	10
78-87-5	1,2-Dichloropropane	ND		ND		nc	10
142-28-9	1,3-Dichloropropane	ND		ND		nc	10
594-20-7	2,2-Dichloropropane	ND		ND		nc	10
124-48-1	Dibromochloromethane	ND		ND		nc	10
74-95-3	Dibromomethane	ND		ND		nc	10
75-71-8	Dichlorodifluoromethane	ND		ND		nc	10
541-73-1	m-Dichlorobenzene	ND		ND		nc	10
95-50-1	o-Dichlorobenzene	ND		ND		nc	10
106-46-7	p-Dichlorobenzene	ND		ND		nc	10
156-60-5	trans-1,2-Dichloroethylene	ND		ND		nc	10
156-59-2	cis-1,2-Dichloroethylene	ND		ND		nc	10

* = Outside of Control Limits.

Duplicate Summary

Job Number: JD1504
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JD1504-1DUP	1B122210.D	1	01/13/20	BK	n/a	n/a	V1B5912
JD1504-1 [a]	1B122207.D	1	01/13/20	BK	n/a	n/a	V1B5912

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JD1504-1, JD1504-2, JD1504-3

CAS No.	Compound	JD1504-1 ug/l	Q	DUP ug/l	Q	RPD	Limits
10061-01-5	cis-1,3-Dichloropropene	ND		ND		nc	10
10061-02-6	trans-1,3-Dichloropropene	ND		ND		nc	10
100-41-4	Ethylbenzene	ND		ND		nc	10
87-68-3	Hexachlorobutadiene	ND		ND		nc	10
591-78-6	2-Hexanone	ND		ND		nc	10
98-82-8	Isopropylbenzene	ND		ND		nc	10
99-87-6	p-Isopropyltoluene	ND		ND		nc	10
75-09-2	Methylene chloride	ND		ND		nc	10
1634-04-4	Methyl Tert Butyl Ether	ND		ND		nc	10
108-10-1	4-Methyl-2-pentanone	ND		ND		nc	10
91-20-3	Naphthalene	ND		ND		nc	10
103-65-1	n-Propylbenzene	ND		ND		nc	10
100-42-5	Styrene	ND		ND		nc	10
630-20-6	1,1,1,2-Tetrachloroethane	ND		ND		nc	10
71-55-6	1,1,1-Trichloroethane	ND		ND		nc	10
79-34-5	1,1,2,2-Tetrachloroethane	ND		ND		nc	10
79-00-5	1,1,2-Trichloroethane	ND		ND		nc	10
87-61-6	1,2,3-Trichlorobenzene	ND		ND		nc	10
96-18-4	1,2,3-Trichloropropane	ND		ND		nc	10
120-82-1	1,2,4-Trichlorobenzene	ND		ND		nc	10
95-63-6	1,2,4-Trimethylbenzene	ND		ND		nc	10
108-67-8	1,3,5-Trimethylbenzene	ND		ND		nc	10
127-18-4	Tetrachloroethylene	ND		ND		nc	10
108-88-3	Toluene	ND		ND		nc	10
79-01-6	Trichloroethylene	ND		ND		nc	10
75-69-4	Trichlorofluoromethane	ND		ND		nc	10
75-01-4	Vinyl chloride	ND		ND		nc	10
	m,p-Xylene	ND		ND		nc	10
95-47-6	o-Xylene	ND		ND		nc	10
1330-20-7	Xylenes (total)	ND		ND		nc	10

CAS No.	Surrogate Recoveries	DUP	JD1504-1	Limits
2199-69-1	1,2-Dichlorobenzene-d4	84%	85%	70-130%
460-00-4	4-Bromofluorobenzene	98%	99%	70-130%

* = Outside of Control Limits.

Duplicate Summary

Job Number: JD1504
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JD1504-1DUP	1B122210.D	1	01/13/20	BK	n/a	n/a	V1B5912
JD1504-1 [a]	1B122207.D	1	01/13/20	BK	n/a	n/a	V1B5912

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JD1504-1, JD1504-2, JD1504-3

(a) EPA 524.2 is not a certified method for non-potable water samples.
(b) RPD acceptable due to low DUP and sample concentrations.

* = Outside of Control Limits.

Duplicate Summary

Job Number: JD1504
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JD1504-2DUP	3A163660.D	1	01/20/20	RS	n/a	n/a	V3A7093
JD1504-2	3A163656.D	1	01/20/20	RS	n/a	n/a	V3A7093

The QC reported here applies to the following samples: **Method:** SW846 8260C BY SIM

JD1504-1, JD1504-2, JD1504-3

CAS No.	Compound	JD1504-2 ug/l	Q	DUP ug/l	Q	RPD	Limits
123-91-1	1,4-Dioxane	3.5		2.7		26	48

CAS No.	Surrogate Recoveries	DUP	JD1504-2	Limits
17647-74-4	1,4-Dioxane-d8	111%	136%	25-195%

* = Outside of Control Limits.

Instrument Performance Check (BFB)

Job Number: JD1504
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample: V1B5887-BFB
Lab File ID: 1B121697.D
Instrument ID: GCMS1B
Injection Date: 11/14/19
Injection Time: 08:10

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	14.99 - 40.0% of mass 95	4724	16.5		Pass
75	30.0 - 80.0% of mass 95	13306	46.5		Pass
95	Base peak, 100% relative abundance	28613	100.0		Pass
96	5.0 - 9.0% of mass 95	2235	7.81		Pass
173	Less than 2.0% of mass 174	113	0.39	(0.42) [a]	Pass
174	50.0 - 120.0% of mass 95	27043	94.5		Pass
175	5.0 - 9.0% of mass 174	2095	7.32	(7.75) [a]	Pass
176	95.0 - 101.0% of mass 174	26315	92.0	(97.3) [a]	Pass
177	5.0 - 9.0% of mass 176	1697	5.93	(6.45) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V1B5887-IC5887	1B121698.D	11/14/19	08:47	00:37	Initial cal 0.2
V1B5887-IC5887	1B121699.D	11/14/19	09:18	01:08	Initial cal 0.5
V1B5887-IC5887	1B121700.D	11/14/19	09:49	01:39	Initial cal 1
V1B5887-IC5887	1B121701.D	11/14/19	10:20	02:10	Initial cal 2
V1B5887-IC5887	1B121702.D	11/14/19	10:51	02:41	Initial cal 5
V1B5887-ICC5887	1B121703.D	11/14/19	11:22	03:12	Initial cal 10
V1B5887-IC5887	1B121704.D	11/14/19	11:54	03:44	Initial cal 20
V1B5887-IC5887	1B121705.D	11/14/19	12:25	04:15	Initial cal 40
V1B5887-IC5887	1B121706.D	11/14/19	12:57	04:47	Initial cal 80
V1B5887-ICV5887	1B121709.D	11/14/19	14:34	06:24	Initial cal verification 10
V1B5887-ICV5887	1B121710.D	11/14/19	15:15	07:05	Initial cal verification 10

Instrument Performance Check (BFB)

Job Number: JD1504
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample: V1B5912-BFB
Lab File ID: 1B122200.D
Instrument ID: GCMS1B
Injection Date: 01/13/20
Injection Time: 09:50

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	14.99 - 40.0% of mass 95	5946	15.5		Pass
75	30.0 - 80.0% of mass 95	17242	45.0		Pass
95	Base peak, 100% relative abundance	38336	100.0		Pass
96	5.0 - 9.0% of mass 95	2924	7.63		Pass
173	Less than 2.0% of mass 174	118	0.31	(0.34) [a]	Pass
174	50.0 - 120.0% of mass 95	34677	90.5		Pass
175	5.0 - 9.0% of mass 174	2687	7.01	(7.75) [a]	Pass
176	95.0 - 101.0% of mass 174	33299	86.9	(96.0) [a]	Pass
177	5.0 - 9.0% of mass 176	2300	6.00	(6.91) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V1B5912-CC5887	1B122201.D	01/13/20	10:23	00:33	Continuing cal 10
V1B5912-BS	1B122202.D	01/13/20	10:55	01:05	Blank Spike
V1B5912-MB	1B122203.D	01/13/20	11:27	01:37	Method Blank
ZZZZZZ	1B122204.D	01/13/20	11:58	02:08	(unrelated sample)
JD1474-1	1B122205.D	01/13/20	12:29	02:39	(used for QC only; not part of job JD1504)
ZZZZZZ	1B122206.D	01/13/20	13:01	03:11	(unrelated sample)
JD1504-1	1B122207.D	01/13/20	13:32	03:42	RW-1227OCM-010920
JD1504-2	1B122208.D	01/13/20	14:05	04:15	RW-1227OCM-010920-F
JD1474-1MS	1B122209.D	01/13/20	14:36	04:46	Matrix Spike
JD1504-1DUP	1B122210.D	01/13/20	15:07	05:17	Duplicate
JD1504-3	1B122212.D	01/13/20	16:10	06:20	TB-010920
ZZZZZZ	1B122213.D	01/13/20	16:42	06:52	(unrelated sample)
ZZZZZZ	1B122214.D	01/13/20	17:13	07:23	(unrelated sample)
ZZZZZZ	1B122215.D	01/13/20	17:45	07:55	(unrelated sample)
ZZZZZZ	1B122216.D	01/13/20	18:16	08:26	(unrelated sample)
ZZZZZZ	1B122217.D	01/13/20	18:48	08:58	(unrelated sample)
ZZZZZZ	1B122218.D	01/13/20	19:20	09:30	(unrelated sample)
ZZZZZZ	1B122219.D	01/13/20	19:51	10:01	(unrelated sample)

Instrument Performance Check (BFB)

Job Number: JD1504
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample:	V3A6923-BFB	**Injection Date:**	07/18/18
Lab File ID:	3A160428.D	**Injection Time:**	16:55
Instrument ID:	GCMS3A		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	25408	20.8		Pass
75	30.0 - 60.0% of mass 95	62880	51.6		Pass
95	Base peak, 100% relative abundance	121864	100.0		Pass
96	5.0 - 9.0% of mass 95	8101	6.65		Pass
173	Less than 2.0% of mass 174	826	0.68	(0.81) [a]	Pass
174	50.0 - 120.0% of mass 95	102317	84.0		Pass
175	5.0 - 9.0% of mass 174	8168	6.70	(7.98) [a]	Pass
176	95.0 - 101.0% of mass 174	100370	82.4	(98.1) [a]	Pass
177	5.0 - 9.0% of mass 176	6691	5.49	(6.67) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V3A6923-IC6923	3A160429.D	07/18/18	17:26	00:31	Initial cal 0.25
V3A6923-IC6923	3A160430.D	07/18/18	17:52	00:57	Initial cal 0.4
V3A6923-IC6923	3A160431.D	07/18/18	18:18	01:23	Initial cal 1
V3A6923-IC6923	3A160432.D	07/18/18	18:43	01:48	Initial cal 2
V3A6923-IC6923	3A160433.D	07/18/18	19:09	02:14	Initial cal 5
V3A6923-ICC6923	3A160434.D	07/18/18	19:35	02:40	Initial cal 20
V3A6923-IC6923	3A160435.D	07/18/18	20:00	03:05	Initial cal 50
V3A6923-IC6923	3A160436.D	07/18/18	20:26	03:31	Initial cal 100
V3A6923-IC6923	3A160437.D	07/18/18	20:52	03:57	Initial cal 200
V3A6923-ICV6923	3A160443.D	07/18/18	23:25	06:30	Initial cal verification 20

Instrument Performance Check (BFB)

Job Number: JD1504
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample:	V3A7093-BFB	**Injection Date:**	01/20/20
Lab File ID:	3A163650.D	**Injection Time:**	09:11
Instrument ID:	GCMS3A		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	10420	17.7		Pass
75	30.0 - 60.0% of mass 95	29178	49.5		Pass
95	Base peak, 100% relative abundance	58968	100.0		Pass
96	5.0 - 9.0% of mass 95	3729	6.32		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	47074	79.8		Pass
175	5.0 - 9.0% of mass 174	3828	6.49	(8.13) [a]	Pass
176	95.0 - 101.0% of mass 174	45698	77.5	(97.1) [a]	Pass
177	5.0 - 9.0% of mass 176	3343	5.67	(7.32) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V3A7093-CC6923	3A163651.D	01/20/20	09:53	00:42	Continuing cal 5
V3A7093-BS	3A163652.D	01/20/20	10:24	01:13	Blank Spike
V3A7093-MB	3A163653.D	01/20/20	11:00	01:49	Method Blank
JD1504-3	3A163654.D	01/20/20	11:30	02:19	TB-010920
JD1504-1	3A163655.D	01/20/20	12:00	02:49	RW-1227OCM-010920
JD1504-2	3A163656.D	01/20/20	12:28	03:17	RW-1227OCM-010920-F
ZZZZZZ	3A163657.D	01/20/20	12:58	03:47	(unrelated sample)
JD1504-1MS	3A163658.D	01/20/20	13:26	04:15	Matrix Spike
JD1504-2DUP	3A163660.D	01/20/20	14:24	05:13	Duplicate
ZZZZZZ	3A163662.D	01/20/20	15:34	06:23	(unrelated sample)
ZZZZZZ	3A163663.D	01/20/20	16:03	06:52	(unrelated sample)
ZZZZZZ	3A163664.D	01/20/20	16:32	07:21	(unrelated sample)

Surrogate Recovery Summary

Job Number: JD1504
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Method: EPA 524.2 REV 4.1 **Matrix:** AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2
JD1504-1	1B122207.D	85	99
JD1504-2	1B122208.D	84	93
JD1504-3	1B122212.D	87	92
JD1474-1MS	1B122209.D	93	101
JD1504-1DUP	1B122210.D	84	98
V1B5912-BS	1B122202.D	100	105
V1B5912-MB	1B122203.D	87	96

Surrogate Compounds	Recovery Limits
S1 = 1,2-Dichlorobenzene-d4	70-130%
S2 = 4-Bromofluorobenzene	70-130%

Surrogate Recovery Summary

Job Number: JD1504
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Method: SW846 8260C BY SIM **Matrix:** AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1
JD1504-1	3A163655.D	108
JD1504-2	3A163656.D	136
JD1504-3	3A163654.D	109
JD1504-1MS	3A163658.D	119
JD1504-2DUP	3A163660.D	111
V3A7093-BS	3A163652.D	93
V3A7093-MB	3A163653.D	103

Surrogate Compounds	Recovery Limits
S1 = 1,4-Dioxane-d8	25-195%

FEBRUARY 2020

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

WSP Environment & Energy

Kop-Flex, Hanover, VA

31401545.011/02

SGS Job Number: JD2755

Sampling Date: 02/04/20

Report to:

WSP
11190 Sunrise Valley Drive Suite 300
Reston, VA 20190
eric.johnson@wspgroup.com; Chris.Cresci@wspgroup.com

ATTN: Eric Johnson

Total number of pages in report: 41

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Laura Degenhardt
General Manager

Client Service contact: Tammy McCloskey 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, FL, IL, IN, KS, KY, LA, MA, MD, ME, MN, NC, OH VAP (CL0056), AK (UST-103), AZ (AZ0786), PA, RI, SC, TX, UT, VA, WV, DoD ELAP (ANAB L2248)

Sections: 1 2 3 4 5

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SGS North America Inc.

Sample Summary

WSP Environment & Energy

Job No: JD2755

Kop-Flex, Hanover, VA
Project No: 31401545.011/02

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
JD2755-1	02/04/20	10:20	CC/SB	02/05/20	AQ	Ground Water	RW-1227OCM-020420-F
JD2755-2	02/04/20	10:25	CC/SB	02/05/20	AQ	Ground Water	RW-1227OCM-020420
JD2755-3	02/04/20	10:25	CC/SB	02/05/20	AQ	Trip Blank Water	TRIP BLANK

This report contains results reported as ND = Not detected. The following applies:
Organics ND = Not detected above the MDL

Summary of Hits

Job Number: JD2755
Account: WSP Environment & Energy
Project: Kop-Flex, Hanover, VA
Collected: 02/04/20

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JD2755-1	**RW-1227OCM-020420-F**					
Methylene chloride		0.39 J	0.50	0.37	ug/l	EPA 524.2 REV 4.1
1,1,1-Trichloroethane		0.26 J	0.50	0.22	ug/l	EPA 524.2 REV 4.1
1,4-Dioxane		2.2	0.40	0.095	ug/l	SW846 8260C BY SIM
JD2755-2	**RW-1227OCM-020420**					
1,1-Dichloroethylene		7.5	0.50	0.19	ug/l	EPA 524.2 REV 4.1
Methylene chloride		0.42 J	0.50	0.37	ug/l	EPA 524.2 REV 4.1
1,1,1-Trichloroethane		0.25 J	0.50	0.22	ug/l	EPA 524.2 REV 4.1
1,4-Dioxane		2.1	0.40	0.095	ug/l	SW846 8260C BY SIM
JD2755-3	**TRIP BLANK**					
Chloroform		0.21 J	0.50	0.17	ug/l	EPA 524.2 REV 4.1
Methylene chloride		0.45 J	0.50	0.37	ug/l	EPA 524.2 REV 4.1
1,4-Dioxane		0.19 J	0.40	0.095	ug/l	SW846 8260C BY SIM

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	RW-1227OCM-020420-F		
Lab Sample ID:	JD2755-1	**Date Sampled:**	02/04/20
Matrix:	AQ - Ground Water	**Date Received:**	02/05/20
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1B122407.D	1	02/06/20 13:22	BK	n/a	n/a	V1B5923
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	2.5	ug/l	
78-93-3	2-Butanone	ND	5.0	0.43	ug/l	
71-43-2	Benzene	ND	0.50	0.16	ug/l	
108-86-1	Bromobenzene	ND	0.50	0.12	ug/l	
74-97-5	Bromochloromethane	ND	0.50	0.17	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.13	ug/l	
75-25-2	Bromoform	ND	0.50	0.27	ug/l	
74-83-9	Bromomethane	ND	0.50	0.18	ug/l	
104-51-8	n-Butylbenzene	ND	0.50	0.068	ug/l	
135-98-8	sec-Butylbenzene	ND	0.50	0.43	ug/l	
98-06-6	tert-Butylbenzene	ND	0.50	0.057	ug/l	
75-15-0	Carbon disulfide	ND	0.50	0.18	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.093	ug/l	
75-00-3	Chloroethane	ND	0.50	0.080	ug/l	
67-66-3	Chloroform	ND	0.50	0.17	ug/l	
74-87-3	Chloromethane	ND	0.50	0.13	ug/l	
95-49-8	o-Chlorotoluene	ND	0.50	0.098	ug/l	
106-43-4	p-Chlorotoluene	ND	0.50	0.075	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.24	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.22	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.19	ug/l	
563-58-6	1,1-Dichloropropene	ND	0.50	0.14	ug/l	
96-12-8	1,2-Dibromo-3-chloropropan [a]	ND	1.0	0.14	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.50	0.15	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.18	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.19	ug/l	
142-28-9	1,3-Dichloropropane [b]	ND	0.50	0.17	ug/l	
594-20-7	2,2-Dichloropropane	ND	0.50	0.31	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.14	ug/l	
74-95-3	Dibromomethane	ND	0.50	0.23	ug/l	
75-71-8	Dichlorodifluoromethane	ND	0.50	0.40	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.14	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	RW-1227OCM-020420-F		
Lab Sample ID:	JD2755-1	**Date Sampled:**	02/04/20
Matrix:	AQ - Ground Water	**Date Received:**	02/05/20
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-50-1	o-Dichlorobenzene	ND	0.50	0.14	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.10	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.21	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.14	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.18	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.16	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.076	ug/l	
87-68-3	Hexachlorobutadiene	ND	0.50	0.13	ug/l	
591-78-6	2-Hexanone [c]	ND	2.0	0.24	ug/l	
98-82-8	Isopropylbenzene	ND	0.50	0.054	ug/l	
99-87-6	p-Isopropyltoluene	ND	0.50	0.43	ug/l	
75-09-2	Methylene chloride	0.39	0.50	0.37	ug/l	J
1634-04-4	Methyl Tert Butyl Ether	ND	0.50	0.11	ug/l	
108-10-1	4-Methyl-2-pentanone [c]	ND	2.0	0.22	ug/l	
91-20-3	Naphthalene	ND	0.50	0.28	ug/l	
103-65-1	n-Propylbenzene	ND	0.50	0.066	ug/l	
100-42-5	Styrene	ND	0.50	0.069	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.50	0.20	ug/l	
71-55-6	1,1,1-Trichloroethane	0.26	0.50	0.22	ug/l	J
79-34-5	1,1,2,2-Tetrachloroethane [c]	ND	0.50	0.13	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.19	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	0.50	0.091	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	0.50	0.13	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	0.055	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	0.40	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	0.057	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.23	ug/l	
108-88-3	Toluene	ND	0.50	0.11	ug/l	
79-01-6	Trichloroethylene	ND	0.50	0.20	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.19	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.15	ug/l	
	m,p-Xylene	ND	0.50	0.14	ug/l	
95-47-6	o-Xylene	ND	0.50	0.076	ug/l	
1330-20-7	Xylenes (total)	ND	0.50	0.076	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	85%		70-130%
460-00-4	4-Bromofluorobenzene	88%		70-130%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	RW-1227OCM-020420-F		
Lab Sample ID:	JD2755-1	**Date Sampled:**	02/04/20
Matrix:	AQ - Ground Water	**Date Received:**	02/05/20
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	RL	MDL	Units	Q

(a) This compound in BS is outside in house QC limits bias high.
(b) Associated CCV outside of control limits high, sample was ND.
(c) Associated CCV outside of control limits high, sample was ND. This compound in BS is outside in house QC criteria bias high.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	RW-1227OCM-020420-F		
Lab Sample ID:	JD2755-1	**Date Sampled:**	02/04/20
Matrix:	AQ - Ground Water	**Date Received:**	02/05/20
Method:	SW846 8260C BY SIM	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3A163732.D	1	02/07/20 16:31	RS	n/a	n/a	V3A7098
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	2.2	0.40	0.095	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17647-74-4	1,4-Dioxane-d8	95%		25-195%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	RW-1227OCM-020420		
Lab Sample ID:	JD2755-2	**Date Sampled:**	02/04/20
Matrix:	AQ - Ground Water	**Date Received:**	02/05/20
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1B122408.D	1	02/06/20 13:54	BK	n/a	n/a	V1B5923
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	2.5	ug/l	
78-93-3	2-Butanone	ND	5.0	0.43	ug/l	
71-43-2	Benzene	ND	0.50	0.16	ug/l	
108-86-1	Bromobenzene	ND	0.50	0.12	ug/l	
74-97-5	Bromochloromethane	ND	0.50	0.17	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.13	ug/l	
75-25-2	Bromoform	ND	0.50	0.27	ug/l	
74-83-9	Bromomethane	ND	0.50	0.18	ug/l	
104-51-8	n-Butylbenzene	ND	0.50	0.068	ug/l	
135-98-8	sec-Butylbenzene	ND	0.50	0.43	ug/l	
98-06-6	tert-Butylbenzene	ND	0.50	0.057	ug/l	
75-15-0	Carbon disulfide	ND	0.50	0.18	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.093	ug/l	
75-00-3	Chloroethane	ND	0.50	0.080	ug/l	
67-66-3	Chloroform	ND	0.50	0.17	ug/l	
74-87-3	Chloromethane	ND	0.50	0.13	ug/l	
95-49-8	o-Chlorotoluene	ND	0.50	0.098	ug/l	
106-43-4	p-Chlorotoluene	ND	0.50	0.075	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.24	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.22	ug/l	
75-35-4	1,1-Dichloroethylene	7.5	0.50	0.19	ug/l	
563-58-6	1,1-Dichloropropene	ND	0.50	0.14	ug/l	
96-12-8	1,2-Dibromo-3-chloropropan [a]	ND	1.0	0.14	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.50	0.15	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.18	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.19	ug/l	
142-28-9	1,3-Dichloropropane [b]	ND	0.50	0.17	ug/l	
594-20-7	2,2-Dichloropropane	ND	0.50	0.31	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.14	ug/l	
74-95-3	Dibromomethane	ND	0.50	0.23	ug/l	
75-71-8	Dichlorodifluoromethane	ND	0.50	0.40	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.14	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	RW-1227OCM-020420		
Lab Sample ID:	JD2755-2	**Date Sampled:**	02/04/20
Matrix:	AQ - Ground Water	**Date Received:**	02/05/20
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-50-1	o-Dichlorobenzene	ND	0.50	0.14	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.10	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.21	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.14	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.18	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.16	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.076	ug/l	
87-68-3	Hexachlorobutadiene	ND	0.50	0.13	ug/l	
591-78-6	2-Hexanone [c]	ND	2.0	0.24	ug/l	
98-82-8	Isopropylbenzene	ND	0.50	0.054	ug/l	
99-87-6	p-Isopropyltoluene	ND	0.50	0.43	ug/l	
75-09-2	Methylene chloride	0.42	0.50	0.37	ug/l	J
1634-04-4	Methyl Tert Butyl Ether	ND	0.50	0.11	ug/l	
108-10-1	4-Methyl-2-pentanone [c]	ND	2.0	0.22	ug/l	
91-20-3	Naphthalene	ND	0.50	0.28	ug/l	
103-65-1	n-Propylbenzene	ND	0.50	0.066	ug/l	
100-42-5	Styrene	ND	0.50	0.069	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.50	0.20	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25	0.50	0.22	ug/l	J
79-34-5	1,1,2,2-Tetrachloroethane [c]	ND	0.50	0.13	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.19	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	0.50	0.091	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	0.50	0.13	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	0.055	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	0.40	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	0.057	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.23	ug/l	
108-88-3	Toluene	ND	0.50	0.11	ug/l	
79-01-6	Trichloroethylene	ND	0.50	0.20	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.19	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.15	ug/l	
	m,p-Xylene	ND	0.50	0.14	ug/l	
95-47-6	o-Xylene	ND	0.50	0.076	ug/l	
1330-20-7	Xylenes (total)	ND	0.50	0.076	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	83%		70-130%
460-00-4	4-Bromofluorobenzene	89%		70-130%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	RW-1227OCM-020420		
Lab Sample ID:	JD2755-2	**Date Sampled:**	02/04/20
Matrix:	AQ - Ground Water	**Date Received:**	02/05/20
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	RL	MDL	Units	Q

(a) This compound in BS is outside in house QC limits bias high.
(b) Associated CCV outside of control limits high, sample was ND.
(c) Associated CCV outside of control limits high, sample was ND. This compound in BS is outside in house QC criteria bias high.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	RW-1227OCM-020420		
Lab Sample ID:	JD2755-2	**Date Sampled:**	02/04/20
Matrix:	AQ - Ground Water	**Date Received:**	02/05/20
Method:	SW846 8260C BY SIM	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3A163733.D	1	02/07/20 17:00	RS	n/a	n/a	V3A7098
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	2.1	0.40	0.095	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17647-74-4	1,4-Dioxane-d8	89%		25-195%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	JD2755-3	**Date Sampled:**	02/04/20
Matrix:	AQ - Trip Blank Water	**Date Received:**	02/05/20
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1B122406.D	1	02/06/20 12:51	BK	n/a	n/a	V1B5923
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	2.5	ug/l	
78-93-3	2-Butanone	ND	5.0	0.43	ug/l	
71-43-2	Benzene	ND	0.50	0.16	ug/l	
108-86-1	Bromobenzene	ND	0.50	0.12	ug/l	
74-97-5	Bromochloromethane	ND	0.50	0.17	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.13	ug/l	
75-25-2	Bromoform	ND	0.50	0.27	ug/l	
74-83-9	Bromomethane	ND	0.50	0.18	ug/l	
104-51-8	n-Butylbenzene	ND	0.50	0.068	ug/l	
135-98-8	sec-Butylbenzene	ND	0.50	0.43	ug/l	
98-06-6	tert-Butylbenzene	ND	0.50	0.057	ug/l	
75-15-0	Carbon disulfide	ND	0.50	0.18	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.093	ug/l	
75-00-3	Chloroethane	ND	0.50	0.080	ug/l	
67-66-3	Chloroform	0.21	0.50	0.17	ug/l	J
74-87-3	Chloromethane	ND	0.50	0.13	ug/l	
95-49-8	o-Chlorotoluene	ND	0.50	0.098	ug/l	
106-43-4	p-Chlorotoluene	ND	0.50	0.075	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.24	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.22	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.19	ug/l	
563-58-6	1,1-Dichloropropene	ND	0.50	0.14	ug/l	
96-12-8	1,2-Dibromo-3-chloropropan [a]	ND	1.0	0.14	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.50	0.15	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.18	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.19	ug/l	
142-28-9	1,3-Dichloropropane [b]	ND	0.50	0.17	ug/l	
594-20-7	2,2-Dichloropropane	ND	0.50	0.31	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.14	ug/l	
74-95-3	Dibromomethane	ND	0.50	0.23	ug/l	
75-71-8	Dichlorodifluoromethane	ND	0.50	0.40	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.14	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	JD2755-3	**Date Sampled:**	02/04/20
Matrix:	AQ - Trip Blank Water	**Date Received:**	02/05/20
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-50-1	o-Dichlorobenzene	ND	0.50	0.14	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.10	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.21	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.14	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.18	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.16	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.076	ug/l	
87-68-3	Hexachlorobutadiene	ND	0.50	0.13	ug/l	
591-78-6	2-Hexanone [c]	ND	2.0	0.24	ug/l	
98-82-8	Isopropylbenzene	ND	0.50	0.054	ug/l	
99-87-6	p-Isopropyltoluene	ND	0.50	0.43	ug/l	
75-09-2	Methylene chloride	0.45	0.50	0.37	ug/l	J
1634-04-4	Methyl Tert Butyl Ether	ND	0.50	0.11	ug/l	
108-10-1	4-Methyl-2-pentanone [c]	ND	2.0	0.22	ug/l	
91-20-3	Naphthalene	ND	0.50	0.28	ug/l	
103-65-1	n-Propylbenzene	ND	0.50	0.066	ug/l	
100-42-5	Styrene	ND	0.50	0.069	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.50	0.20	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane [c]	ND	0.50	0.13	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.19	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	0.50	0.091	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	0.50	0.13	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	0.055	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	0.40	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	0.057	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.23	ug/l	
108-88-3	Toluene	ND	0.50	0.11	ug/l	
79-01-6	Trichloroethylene	ND	0.50	0.20	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.19	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.15	ug/l	
	m,p-Xylene	ND	0.50	0.14	ug/l	
95-47-6	o-Xylene	ND	0.50	0.076	ug/l	
1330-20-7	Xylenes (total)	ND	0.50	0.076	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	85%		70-130%
460-00-4	4-Bromofluorobenzene	91%		70-130%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	JD2755-3	**Date Sampled:**	02/04/20
Matrix:	AQ - Trip Blank Water	**Date Received:**	02/05/20
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	RL	MDL	Units	Q

(a) This compound in BS is outside in house QC limits bias high.
(b) Associated CCV outside of control limits high, sample was ND.
(c) Associated CCV outside of control limits high, sample was ND. This compound in BS is outside in house QC criteria bias high.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	JD2755-3	**Date Sampled:**	02/04/20
Matrix:	AQ - Trip Blank Water	**Date Received:**	02/05/20
Method:	SW846 8260C BY SIM	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3A163730.D	1	02/07/20 15:34	RS	n/a	n/a	V3A7098
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	0.19	0.40	0.095	ug/l	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17647-74-4	1,4-Dioxane-d8	104%		25-195%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

GW WTB

FX# 8127 8179 5578

JD2755

Page 1 of 1

CHAIN-OF-CUSTODY RECORD

WSP USA Office Address: 13530 Dulles Technology Dr. Suite 200 Herndon, VA

Project Name: Kapflex OFFSite

Project Location: Hanover, MD

Project Number & Task: 31401545.011102

WSP USA Contact Name: Chris Cresci

WSP USA Contact E-mail: Chris.Cresci@wsp.com

WSP USA Contact Phone: 703-709-6500

Sampler(s) Name(s): Chris Cresci, Shannon Burke

Sampler(s) Signature(s):

No. 009975

Laboratory Name & Location: SGS Accutest Dayton, NJ

Laboratory Project Manager: Tammy McCloskey

Requested Turn-Around-Time: [X] Standard [ ] 24 HR [ ] 48 HR [ ] 72 HR [ ] ___ HR

Requested Analyses & Preservatives: VOCs C2H (8260 SIM), 1,4 Dioxane (8260 SIM)

	Sample Identification	Matrix	Collection Start* Date	Collection Start* Time	Collection Stop* Date	Collection Stop* Time	Number of Containers	Sample Comments
1	RW-12270CM-020420-FD	AQ	2/4/20	1020	6	X X		
2	RW-12270CM-020420	AQ	2/4/20	1025	6	X X		V969
3	Trip Blank				4	X X		

Initial Assessment 3B DM

Label Verification

Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Shipment Method	Tracking Number(s)
	2/4/20		FEDEX				
Relinquished By (Signature) FX	Date 2/5/2020	Time 0850	Received By (Signature)	Date	Time	Number of Packages	Custody Seal Number(s)

*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)

4.1 4

JD2755: Chain of Custody
Page 1 of 2

SGS Sample Receipt Summary

Job Number: JD2755 **Client:** _____ **Project:** _____

Date / Time Received: 2/5/2020 9:50:00 AM **Delivery Method:** _____ **Airbill #'s:** _____

Cooler Temps (Raw Measured) °C: Cooler 1: (2.1);

Cooler Temps (Corrected) °C: Cooler 1: (1.8);

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Cooler temp verification:	IR Gun		
3. Cooler media:	Ice (Bag)		
4. No. Coolers:	1		

Quality Control Preservation	Y	or	N	N/A
1. Trip Blank present / cooler:	☑		☐	☐
2. Trip Blank listed on COC:	☑		☐	☐
3. Samples preserved properly:	☑		☐	
4. VOCs headspace free:	☑		☐	☐

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Test Strip Lot #s: pH 1-12: 229517 pH 12+: 208717 Other: (Specify) _____ _____

Comments

SM089-03
Rev. Date 12/7/17

JD2755: Chain of Custody
Page 2 of 2

MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Instrument Performance Checks (BFB)
- Surrogate Recovery Summaries

Method Blank Summary

Job Number: JD2755
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5923-MB	1B122404.D	1	02/06/20	BK	n/a	n/a	V1B5923

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JD2755-1, JD2755-2, JD2755-3

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	2.5	ug/l	
78-93-3	2-Butanone	ND	5.0	0.43	ug/l	
71-43-2	Benzene	ND	0.50	0.16	ug/l	
108-86-1	Bromobenzene	ND	0.50	0.12	ug/l	
74-97-5	Bromochloromethane	ND	0.50	0.17	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.13	ug/l	
75-25-2	Bromoform	ND	0.50	0.27	ug/l	
74-83-9	Bromomethane	ND	0.50	0.18	ug/l	
104-51-8	n-Butylbenzene	ND	0.50	0.068	ug/l	
135-98-8	sec-Butylbenzene	ND	0.50	0.43	ug/l	
98-06-6	tert-Butylbenzene	ND	0.50	0.057	ug/l	
75-15-0	Carbon disulfide	ND	0.50	0.18	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.093	ug/l	
75-00-3	Chloroethane	ND	0.50	0.080	ug/l	
67-66-3	Chloroform	ND	0.50	0.17	ug/l	
74-87-3	Chloromethane	ND	0.50	0.13	ug/l	
95-49-8	o-Chlorotoluene	ND	0.50	0.098	ug/l	
106-43-4	p-Chlorotoluene	ND	0.50	0.075	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.24	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.22	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.19	ug/l	
563-58-6	1,1-Dichloropropene	ND	0.50	0.14	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	1.0	0.14	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.50	0.15	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.18	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.19	ug/l	
142-28-9	1,3-Dichloropropane	ND	0.50	0.17	ug/l	
594-20-7	2,2-Dichloropropane	ND	0.50	0.31	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.14	ug/l	
74-95-3	Dibromomethane	ND	0.50	0.23	ug/l	
75-71-8	Dichlorodifluoromethane	ND	0.50	0.40	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.14	ug/l	
95-50-1	o-Dichlorobenzene	ND	0.50	0.14	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.10	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.21	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.14	ug/l	

Method Blank Summary

Job Number: JD2755
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5923-MB	1B122404.D	1	02/06/20	BK	n/a	n/a	V1B5923

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JD2755-1, JD2755-2, JD2755-3

CAS No.	Compound	Result	RL	MDL	Units	Q
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.16	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.18	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.076	ug/l	
87-68-3	Hexachlorobutadiene	ND	0.50	0.13	ug/l	
591-78-6	2-Hexanone	ND	2.0	0.24	ug/l	
98-82-8	Isopropylbenzene	ND	0.50	0.054	ug/l	
99-87-6	p-Isopropyltoluene	ND	0.50	0.43	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.37	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	0.50	0.11	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	0.22	ug/l	
91-20-3	Naphthalene	0.36	0.50	0.28	ug/l	J
103-65-1	n-Propylbenzene	ND	0.50	0.066	ug/l	
100-42-5	Styrene	ND	0.50	0.069	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.50	0.20	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.13	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.19	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	0.50	0.091	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	0.50	0.13	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	0.055	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	0.40	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	0.057	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.23	ug/l	
108-88-3	Toluene	ND	0.50	0.11	ug/l	
79-01-6	Trichloroethylene	ND	0.50	0.20	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.19	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.15	ug/l	
	m,p-Xylene	ND	0.50	0.14	ug/l	
95-47-6	o-Xylene	ND	0.50	0.076	ug/l	
1330-20-7	Xylenes (total)	ND	0.50	0.076	ug/l	

CAS No.	Surrogate Recoveries		Limits
2199-69-1	1,2-Dichlorobenzene-d4	85%	70-130%
460-00-4	4-Bromofluorobenzene	93%	70-130%

Method Blank Summary

Job Number: JD2755
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3A7098-MB	3A163729.D	1	02/07/20	RS	n/a	n/a	V3A7098

The QC reported here applies to the following samples: **Method:** SW846 8260C BY SIM

JD2755-1, JD2755-2, JD2755-3

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.40	0.095	ug/l	

CAS No.	Surrogate Recoveries		Limits
17647-74-4	1,4-Dioxane-d8	94%	25-195%

Blank Spike Summary

Job Number: JD2755
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5923-BS	1B122403.D	1	02/06/20	BK	n/a	n/a	V1B5923

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JD2755-1, JD2755-2, JD2755-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	20	21.0	105	70-130
78-93-3	2-Butanone	20	23.9	120	70-130
71-43-2	Benzene	5	5.6	112	70-130
108-86-1	Bromobenzene	5	5.1	102	70-130
74-97-5	Bromochloromethane	5	4.8	96	70-130
75-27-4	Bromodichloromethane	5	5.6	112	70-130
75-25-2	Bromoform	5	5.3	106	70-130
74-83-9	Bromomethane	5	3.7	74	70-130
104-51-8	n-Butylbenzene	5	6.2	124	70-130
135-98-8	sec-Butylbenzene	5	6.2	124	70-130
98-06-6	tert-Butylbenzene	5	5.8	116	70-130
75-15-0	Carbon disulfide	5	5.1	102	70-130
108-90-7	Chlorobenzene	5	5.7	114	70-130
75-00-3	Chloroethane	5	4.4	88	70-130
67-66-3	Chloroform	5	5.1	102	70-130
74-87-3	Chloromethane	5	4.0	80	70-130
95-49-8	o-Chlorotoluene	5	5.5	110	70-130
106-43-4	p-Chlorotoluene	5	6.2	124	70-130
56-23-5	Carbon tetrachloride	5	5.2	104	70-130
75-34-3	1,1-Dichloroethane	5	5.4	108	70-130
75-35-4	1,1-Dichloroethylene	5	5.5	110	70-130
563-58-6	1,1-Dichloropropene	5	5.5	110	70-130
96-12-8	1,2-Dibromo-3-chloropropane	5	6.6	132* [a]	70-130
106-93-4	1,2-Dibromoethane	5	5.5	110	70-130
107-06-2	1,2-Dichloroethane	5	5.5	110	70-130
78-87-5	1,2-Dichloropropane	5	6.3	126	70-130
142-28-9	1,3-Dichloropropane	5	6.4	128	70-130
594-20-7	2,2-Dichloropropane	5	4.5	90	70-130
124-48-1	Dibromochloromethane	5	5.7	114	70-130
74-95-3	Dibromomethane	5	5.4	108	70-130
75-71-8	Dichlorodifluoromethane	5	4.9	98	70-130
541-73-1	m-Dichlorobenzene	5	5.5	110	70-130
95-50-1	o-Dichlorobenzene	5	5.5	110	70-130
106-46-7	p-Dichlorobenzene	5	5.5	110	70-130
156-60-5	trans-1,2-Dichloroethylene	5	4.9	98	70-130
156-59-2	cis-1,2-Dichloroethylene	5	5.0	100	70-130

* = Outside of Control Limits.

Blank Spike Summary

Job Number: JD2755
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5923-BS	1B122403.D	1	02/06/20	BK	n/a	n/a	V1B5923

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JD2755-1, JD2755-2, JD2755-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
10061-01-5	cis-1,3-Dichloropropene	5	6.1	122	70-130
10061-02-6	trans-1,3-Dichloropropene	5	5.9	118	70-130
100-41-4	Ethylbenzene	5	6.1	122	70-130
87-68-3	Hexachlorobutadiene	5	4.6	92	70-130
591-78-6	2-Hexanone	20	29.0	145* [a]	70-130
98-82-8	Isopropylbenzene	5	5.8	116	70-130
99-87-6	p-Isopropyltoluene	5	5.8	116	70-130
75-09-2	Methylene chloride	5	5.5	110	70-130
1634-04-4	Methyl Tert Butyl Ether	5	5.5	110	70-130
108-10-1	4-Methyl-2-pentanone	20	27.4	137* [a]	70-130
91-20-3	Naphthalene	5	5.7	114	70-130
103-65-1	n-Propylbenzene	5	6.2	124	70-130
100-42-5	Styrene	5	6.1	122	70-130
630-20-6	1,1,1,2-Tetrachloroethane	5	5.3	106	70-130
71-55-6	1,1,1-Trichloroethane	5	5.0	100	70-130
79-34-5	1,1,2,2-Tetrachloroethane	5	6.7	134* [a]	70-130
79-00-5	1,1,2-Trichloroethane	5	6.3	126	70-130
87-61-6	1,2,3-Trichlorobenzene	5	5.2	104	70-130
96-18-4	1,2,3-Trichloropropane	5	6.1	122	70-130
120-82-1	1,2,4-Trichlorobenzene	5	4.9	98	70-130
95-63-6	1,2,4-Trimethylbenzene	5	6.2	124	70-130
108-67-8	1,3,5-Trimethylbenzene	5	6.1	122	70-130
127-18-4	Tetrachloroethylene	5	5.0	100	70-130
108-88-3	Toluene	5	6.0	120	70-130
79-01-6	Trichloroethylene	5	5.2	104	70-130
75-69-4	Trichlorofluoromethane	5	4.6	92	70-130
75-01-4	Vinyl chloride	5	4.1	82	70-130
	m,p-Xylene	10	11.8	118	70-130
95-47-6	o-Xylene	5	5.9	118	70-130
1330-20-7	Xylenes (total)	15	17.8	119	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
2199-69-1	1,2-Dichlorobenzene-d4	97%	70-130%
460-00-4	4-Bromofluorobenzene	106%	70-130%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: JD2755
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5923-BS	1B122403.D	1	02/06/20	BK	n/a	n/a	V1B5923

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JD2755-1, JD2755-2, JD2755-3

(a) High percent recoveries and no associated positive reported in the QC batch.

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JD2755
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3A7098-BS	3A163727.D	1	02/07/20	RS	n/a	n/a	V3A7098
V3A7098-BSD	3A163728.D	1	02/07/20	RS	n/a	n/a	V3A7098

The QC reported here applies to the following samples: **Method:** SW846 8260C BY SIM

JD2755-1, JD2755-2, JD2755-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
123-91-1	1,4-Dioxane	20	16.0	80	18.2	91	13	48-137/32

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
17647-74-4	1,4-Dioxane-d8	96%	102%	25-195%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: JD2755
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JD2755-1MS	1B122409.D	1	02/06/20	BK	n/a	n/a	V1B5923
JD2755-1	1B122407.D	1	02/06/20	BK	n/a	n/a	V1B5923

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JD2755-1, JD2755-2, JD2755-3

CAS No.	Compound	JD2755-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
67-64-1	Acetone	ND		20	18.4	92	41-142
78-93-3	2-Butanone	ND		20	20.3	102	55-129
71-43-2	Benzene	ND		5	5.2	104	53-138
108-86-1	Bromobenzene	ND		5	4.5	90	54-138
74-97-5	Bromochloromethane	ND		5	4.4	88	55-140
75-27-4	Bromodichloromethane	ND		5	5.1	102	57-147
75-25-2	Bromoform	ND		5	4.7	94	47-137
74-83-9	Bromomethane	ND		5	4.2	84	40-162
104-51-8	n-Butylbenzene	ND		5	5.8	116	45-144
135-98-8	sec-Butylbenzene	ND		5	5.6	112	46-145
98-06-6	tert-Butylbenzene	ND		5	5.2	104	48-141
75-15-0	Carbon disulfide	ND		5	5.1	102	35-127
108-90-7	Chlorobenzene	ND		5	5.1	102	54-135
75-00-3	Chloroethane	ND		5	4.6	92	38-153
67-66-3	Chloroform	ND		5	4.9	98	57-151
74-87-3	Chloromethane	ND		5	4.8	96	39-165
95-49-8	o-Chlorotoluene	ND		5	5.0	100	55-142
106-43-4	p-Chlorotoluene	ND		5	5.4	108	55-139
56-23-5	Carbon tetrachloride	ND		5	5.2	104	49-170
75-34-3	1,1-Dichloroethane	ND		5	5.2	104	55-149
75-35-4	1,1-Dichloroethylene	ND		5	5.4	108	42-142
563-58-6	1,1-Dichloropropene	ND		5	5.3	106	46-151
96-12-8	1,2-Dibromo-3-chloropropane	ND		5	6.0	120	48-141
106-93-4	1,2-Dibromoethane	ND		5	5.0	100	57-135
107-06-2	1,2-Dichloroethane	ND		5	5.1	102	59-166
78-87-5	1,2-Dichloropropane	ND		5	5.7	114	53-142
142-28-9	1,3-Dichloropropane	ND		5	5.6	112	58-143
594-20-7	2,2-Dichloropropane	ND		5	4.5	90	38-165
124-48-1	Dibromochloromethane	ND		5	5.1	102	55-138
74-95-3	Dibromomethane	ND		5	4.9	98	61-144
75-71-8	Dichlorodifluoromethane	ND		5	5.8	116	23-172
541-73-1	m-Dichlorobenzene	ND		5	5.0	100	53-138
95-50-1	o-Dichlorobenzene	ND		5	5.1	102	54-140
106-46-7	p-Dichlorobenzene	ND		5	5.0	100	53-137
156-60-5	trans-1,2-Dichloroethylene	ND		5	4.7	94	47-148
156-59-2	cis-1,2-Dichloroethylene	ND		5	4.7	94	51-146

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: JD2755
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JD2755-1MS	1B122409.D	1	02/06/20	BK	n/a	n/a	V1B5923
JD2755-1	1B122407.D	1	02/06/20	BK	n/a	n/a	V1B5923

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JD2755-1, JD2755-2, JD2755-3

CAS No.	Compound	JD2755-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
10061-01-5	cis-1,3-Dichloropropene	ND		5	5.2	104	51-136
10061-02-6	trans-1,3-Dichloropropene	ND		5	5.0	100	54-142
100-41-4	Ethylbenzene	ND		5	5.4	108	51-138
87-68-3	Hexachlorobutadiene	ND		5	4.8	96	40-154
591-78-6	2-Hexanone	ND		20	24.7	124	53-128
98-82-8	Isopropylbenzene	ND		5	5.2	104	49-139
99-87-6	p-Isopropyltoluene	ND		5	5.2	104	45-141
75-09-2	Methylene chloride	0.39	J	5	5.1	94	54-137
1634-04-4	Methyl Tert Butyl Ether	ND		5	4.8	96	53-143
108-10-1	4-Methyl-2-pentanone	ND		20	23.8	119	58-127
91-20-3	Naphthalene	ND		5	3.6	72	44-140
103-65-1	n-Propylbenzene	ND		5	5.5	110	50-142
100-42-5	Styrene	ND		5	0.17	3* [a]	23-130
630-20-6	1,1,1,2-Tetrachloroethane	ND		5	4.9	98	57-144
71-55-6	1,1,1-Trichloroethane	0.26	J	5	5.2	99	52-164
79-34-5	1,1,2,2-Tetrachloroethane	ND		5	6.1	122	58-138
79-00-5	1,1,2-Trichloroethane	ND		5	5.6	112	59-139
87-61-6	1,2,3-Trichlorobenzene	ND		5	5.1	102	47-141
96-18-4	1,2,3-Trichloropropane	ND		5	5.4	108	56-148
120-82-1	1,2,4-Trichlorobenzene	ND		5	4.9	98	46-137
95-63-6	1,2,4-Trimethylbenzene	ND		5	ND	0* [a]	41-138
108-67-8	1,3,5-Trimethylbenzene	ND		5	ND	0* [a]	45-138
127-18-4	Tetrachloroethylene	ND		5	4.7	94	45-145
108-88-3	Toluene	ND		5	5.3	106	52-134
79-01-6	Trichloroethylene	ND		5	5.1	102	54-143
75-69-4	Trichlorofluoromethane	ND		5	5.5	110	36-167
75-01-4	Vinyl chloride	ND		5	4.2	84	35-162
	m,p-Xylene	ND		10	5.7	57	49-135
95-47-6	o-Xylene	ND		5	4.9	98	49-134
1330-20-7	Xylenes (total)	ND		15	10.6	71	50-134

CAS No.	Surrogate Recoveries	MS	JD2755-1	Limits
2199-69-1	1,2-Dichlorobenzene-d4	97%	85%	70-130%
460-00-4	4-Bromofluorobenzene	99%	88%	70-130%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: JD2755
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JD2755-1MS	1B122409.D	1	02/06/20	BK	n/a	n/a	V1B5923
JD2755-1	1B122407.D	1	02/06/20	BK	n/a	n/a	V1B5923

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JD2755-1, JD2755-2, JD2755-3

(a) Outside in house control limits.

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: JD2755
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JD2627-1MS	3A163736.D	1	02/07/20	RS	n/a	n/a	V3A7098
JD2627-1	3A163735.D	1	02/07/20	RS	n/a	n/a	V3A7098

The QC reported here applies to the following samples: **Method:** SW846 8260C BY SIM

JD2755-1, JD2755-2, JD2755-3

CAS No.	Compound	JD2627-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
123-91-1	1,4-Dioxane	9.4		20	35.2	129	28-162

CAS No.	Surrogate Recoveries	MS	JD2627-1	Limits
17647-74-4	1,4-Dioxane-d8	144%	165%	25-195%

* = Outside of Control Limits.

Duplicate Summary

Job Number: JD2755
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JD2755-2DUP	1B122410.D	1	02/06/20	BK	n/a	n/a	V1B5923
JD2755-2	1B122408.D	1	02/06/20	BK	n/a	n/a	V1B5923

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JD2755-1, JD2755-2, JD2755-3

CAS No.	Compound	JD2755-2 ug/l	Q	DUP ug/l	Q	RPD	Limits
67-64-1	Acetone	ND		ND		nc	10
78-93-3	2-Butanone	ND		ND		nc	12
71-43-2	Benzene	ND		ND		nc	10
108-86-1	Bromobenzene	ND		ND		nc	10
74-97-5	Bromochloromethane	ND		ND		nc	10
75-27-4	Bromodichloromethane	ND		ND		nc	10
75-25-2	Bromoform	ND		ND		nc	10
74-83-9	Bromomethane	ND		ND		nc	10
104-51-8	n-Butylbenzene	ND		ND		nc	10
135-98-8	sec-Butylbenzene	ND		ND		nc	10
98-06-6	tert-Butylbenzene	ND		ND		nc	10
75-15-0	Carbon disulfide	ND		ND		nc	19
108-90-7	Chlorobenzene	ND		ND		nc	10
75-00-3	Chloroethane	ND		ND		nc	10
67-66-3	Chloroform	ND		ND		nc	12
74-87-3	Chloromethane	ND		ND		nc	10
95-49-8	o-Chlorotoluene	ND		ND		nc	10
106-43-4	p-Chlorotoluene	ND		ND		nc	10
56-23-5	Carbon tetrachloride	ND		ND		nc	10
75-34-3	1,1-Dichloroethane	ND		ND		nc	10
75-35-4	1,1-Dichloroethylene	7.5		7.5		0	10
563-58-6	1,1-Dichloropropene	ND		ND		nc	10
96-12-8	1,2-Dibromo-3-chloropropane	ND		ND		nc	10
106-93-4	1,2-Dibromoethane	ND		ND		nc	10
107-06-2	1,2-Dichloroethane	ND		ND		nc	10
78-87-5	1,2-Dichloropropane	ND		ND		nc	10
142-28-9	1,3-Dichloropropane	ND		ND		nc	10
594-20-7	2,2-Dichloropropane	ND		ND		nc	10
124-48-1	Dibromochloromethane	ND		ND		nc	10
74-95-3	Dibromomethane	ND		ND		nc	10
75-71-8	Dichlorodifluoromethane	ND		ND		nc	10
541-73-1	m-Dichlorobenzene	ND		ND		nc	10
95-50-1	o-Dichlorobenzene	ND		ND		nc	10
106-46-7	p-Dichlorobenzene	ND		ND		nc	10
156-60-5	trans-1,2-Dichloroethylene	ND		ND		nc	10
156-59-2	cis-1,2-Dichloroethylene	ND		ND		nc	10

* = Outside of Control Limits.

Duplicate Summary

Job Number: JD2755
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JD2755-2DUP	1B122410.D	1	02/06/20	BK	n/a	n/a	V1B5923
JD2755-2	1B122408.D	1	02/06/20	BK	n/a	n/a	V1B5923

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JD2755-1, JD2755-2, JD2755-3

CAS No.	Compound	JD2755-2 ug/l	Q	DUP ug/l	Q	RPD	Limits
10061-01-5	cis-1,3-Dichloropropene	ND		ND		nc	10
10061-02-6	trans-1,3-Dichloropropene	ND		ND		nc	10
100-41-4	Ethylbenzene	ND		ND		nc	10
87-68-3	Hexachlorobutadiene	ND		ND		nc	10
591-78-6	2-Hexanone	ND		ND		nc	10
98-82-8	Isopropylbenzene	ND		ND		nc	10
99-87-6	p-Isopropyltoluene	ND		ND		nc	10
75-09-2	Methylene chloride	0.42	J	0.38	J	10	10
1634-04-4	Methyl Tert Butyl Ether	ND		ND		nc	10
108-10-1	4-Methyl-2-pentanone	ND		ND		nc	10
91-20-3	Naphthalene	ND		ND		nc	10
103-65-1	n-Propylbenzene	ND		ND		nc	10
100-42-5	Styrene	ND		ND		nc	10
630-20-6	1,1,1,2-Tetrachloroethane	ND		ND		nc	10
71-55-6	1,1,1-Trichloroethane	0.25	J	0.27	J	8	10
79-34-5	1,1,2,2-Tetrachloroethane	ND		ND		nc	10
79-00-5	1,1,2-Trichloroethane	ND		ND		nc	10
87-61-6	1,2,3-Trichlorobenzene	ND		ND		nc	10
96-18-4	1,2,3-Trichloropropane	ND		ND		nc	10
120-82-1	1,2,4-Trichlorobenzene	ND		ND		nc	10
95-63-6	1,2,4-Trimethylbenzene	ND		ND		nc	10
108-67-8	1,3,5-Trimethylbenzene	ND		ND		nc	10
127-18-4	Tetrachloroethylene	ND		ND		nc	10
108-88-3	Toluene	ND		ND		nc	10
79-01-6	Trichloroethylene	ND		ND		nc	10
75-69-4	Trichlorofluoromethane	ND		ND		nc	10
75-01-4	Vinyl chloride	ND		ND		nc	10
	m,p-Xylene	ND		ND		nc	10
95-47-6	o-Xylene	ND		ND		nc	10
1330-20-7	Xylenes (total)	ND		ND		nc	10

CAS No.	Surrogate Recoveries	DUP	JD2755-2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	85%	83%	70-130%
460-00-4	4-Bromofluorobenzene	91%	89%	70-130%

* = Outside of Control Limits.

Duplicate Summary

Job Number: JD2755
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JD2627-2DUP	3A163734.D	1	02/07/20	RS	n/a	n/a	V3A7098
JD2627-2	3A163731.D	1	02/07/20	RS	n/a	n/a	V3A7098

The QC reported here applies to the following samples: **Method:** SW846 8260C BY SIM

JD2755-1, JD2755-2, JD2755-3

CAS No.	Compound	JD2627-2 ug/l	Q	DUP ug/l	Q	RPD	Limits
123-91-1	1,4-Dioxane	0.13		0.14	J	7	48

CAS No.	Surrogate Recoveries	DUP	JD2627-2	Limits
17647-74-4	1,4-Dioxane-d8	107%	117%	25-195%

* = Outside of Control Limits.

Instrument Performance Check (BFB)

Job Number: JD2755
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample: V1B5887-BFB
Lab File ID: 1B121697.D
Instrument ID: GCMS1B
Injection Date: 11/14/19
Injection Time: 08:10

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	14.99 - 40.0% of mass 95	4724	16.5		Pass
75	30.0 - 80.0% of mass 95	13306	46.5		Pass
95	Base peak, 100% relative abundance	28613	100.0		Pass
96	5.0 - 9.0% of mass 95	2235	7.81		Pass
173	Less than 2.0% of mass 174	113	0.39	(0.42) [a]	Pass
174	50.0 - 120.0% of mass 95	27043	94.5		Pass
175	5.0 - 9.0% of mass 174	2095	7.32	(7.75) [a]	Pass
176	95.0 - 101.0% of mass 174	26315	92.0	(97.3) [a]	Pass
177	5.0 - 9.0% of mass 176	1697	5.93	(6.45) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V1B5887-IC5887	1B121698.D	11/14/19	08:47	00:37	Initial cal 0.2
V1B5887-IC5887	1B121699.D	11/14/19	09:18	01:08	Initial cal 0.5
V1B5887-IC5887	1B121700.D	11/14/19	09:49	01:39	Initial cal 1
V1B5887-IC5887	1B121701.D	11/14/19	10:20	02:10	Initial cal 2
V1B5887-IC5887	1B121702.D	11/14/19	10:51	02:41	Initial cal 5
V1B5887-ICC5887	1B121703.D	11/14/19	11:22	03:12	Initial cal 10
V1B5887-IC5887	1B121704.D	11/14/19	11:54	03:44	Initial cal 20
V1B5887-IC5887	1B121705.D	11/14/19	12:25	04:15	Initial cal 40
V1B5887-IC5887	1B121706.D	11/14/19	12:57	04:47	Initial cal 80
V1B5887-ICV5887	1B121709.D	11/14/19	14:34	06:24	Initial cal verification 10
V1B5887-ICV5887	1B121710.D	11/14/19	15:15	07:05	Initial cal verification 10

Instrument Performance Check (BFB)

Job Number: JD2755
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample:	V1B5923-BFB	**Injection Date:**	02/06/20
Lab File ID:	1B122401.D	**Injection Time:**	10:05
Instrument ID:	GCMS1B		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	14.99 - 40.0% of mass 95	4040	16.2		Pass
75	30.0 - 80.0% of mass 95	11614	46.6		Pass
95	Base peak, 100% relative abundance	24941	100.0		Pass
96	5.0 - 9.0% of mass 95	1769	7.09		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	19544	78.4		Pass
175	5.0 - 9.0% of mass 174	1487	5.96	(7.61) [a]	Pass
176	95.0 - 101.0% of mass 174	19183	76.9	(98.2) [a]	Pass
177	5.0 - 9.0% of mass 176	1174	4.71	(6.12) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V1B5923-CC5887	1B122402.D	02/06/20	10:38	00:33	Continuing cal 5
V1B5923-BS	1B122403.D	02/06/20	11:17	01:12	Blank Spike
V1B5923-MB	1B122404.D	02/06/20	11:49	01:44	Method Blank
JD2755-3	1B122406.D	02/06/20	12:51	02:46	TRIP BLANK
JD2755-1	1B122407.D	02/06/20	13:22	03:17	RW-1227OCM-020420-F
JD2755-2	1B122408.D	02/06/20	13:54	03:49	RW-1227OCM-020420
JD2755-1MS	1B122409.D	02/06/20	14:25	04:20	Matrix Spike
JD2755-2DUP	1B122410.D	02/06/20	14:57	04:52	Duplicate

Instrument Performance Check (BFB)

Job Number: JD2755
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample: V3A6923-BFB
Lab File ID: 3A160428.D
Instrument ID: GCMS3A
Injection Date: 07/18/18
Injection Time: 16:55

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	25408	20.8		Pass
75	30.0 - 60.0% of mass 95	62880	51.6		Pass
95	Base peak, 100% relative abundance	121864	100.0		Pass
96	5.0 - 9.0% of mass 95	8101	6.65		Pass
173	Less than 2.0% of mass 174	826	0.68	(0.81) [a]	Pass
174	50.0 - 120.0% of mass 95	102317	84.0		Pass
175	5.0 - 9.0% of mass 174	8168	6.70	(7.98) [a]	Pass
176	95.0 - 101.0% of mass 174	100370	82.4	(98.1) [a]	Pass
177	5.0 - 9.0% of mass 176	6691	5.49	(6.67) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V3A6923-IC6923	3A160429.D	07/18/18	17:26	00:31	Initial cal 0.25
V3A6923-IC6923	3A160430.D	07/18/18	17:52	00:57	Initial cal 0.4
V3A6923-IC6923	3A160431.D	07/18/18	18:18	01:23	Initial cal 1
V3A6923-IC6923	3A160432.D	07/18/18	18:43	01:48	Initial cal 2
V3A6923-IC6923	3A160433.D	07/18/18	19:09	02:14	Initial cal 5
V3A6923-ICC6923	3A160434.D	07/18/18	19:35	02:40	Initial cal 20
V3A6923-IC6923	3A160435.D	07/18/18	20:00	03:05	Initial cal 50
V3A6923-IC6923	3A160436.D	07/18/18	20:26	03:31	Initial cal 100
V3A6923-IC6923	3A160437.D	07/18/18	20:52	03:57	Initial cal 200
V3A6923-ICV6923	3A160443.D	07/18/18	23:25	06:30	Initial cal verification 20

Instrument Performance Check (BFB)

Job Number: JD2755
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample:	V3A7098-BFB	**Injection Date:**	02/07/20
Lab File ID:	3A163725.D	**Injection Time:**	12:14
Instrument ID:	GCMS3A		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	14199	17.3		Pass
75	30.0 - 60.0% of mass 95	40260	49.0		Pass
95	Base peak, 100% relative abundance	82131	100.0		Pass
96	5.0 - 9.0% of mass 95	5440	6.62		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	69792	85.0		Pass
175	5.0 - 9.0% of mass 174	5460	6.65	(7.82) [a]	Pass
176	95.0 - 101.0% of mass 174	66492	81.0	(95.3) [a]	Pass
177	5.0 - 9.0% of mass 176	4689	5.71	(7.05) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V3A7098-CC6923	3A163726.D	02/07/20	12:42	00:28	Continuing cal 5
V3A7098-BS	3A163727.D	02/07/20	13:52	01:38	Blank Spike
V3A7098-BSD	3A163728.D	02/07/20	14:30	02:16	Blank Spike Duplicate
V3A7098-MB	3A163729.D	02/07/20	15:05	02:51	Method Blank
JD2755-3	3A163730.D	02/07/20	15:34	03:20	TRIP BLANK
JD2627-2	3A163731.D	02/07/20	16:03	03:49	(used for QC only; not part of job JD2755)
JD2755-1	3A163732.D	02/07/20	16:31	04:17	RW-1227OCM-020420-F
JD2755-2	3A163733.D	02/07/20	17:00	04:46	RW-1227OCM-020420
JD2627-2DUP	3A163734.D	02/07/20	17:29	05:15	Duplicate
JD2627-1	3A163735.D	02/07/20	17:58	05:44	(used for QC only; not part of job JD2755)
JD2627-1MS	3A163736.D	02/07/20	18:27	06:13	Matrix Spike

Surrogate Recovery Summary

Job Number: JD2755
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Method: EPA 524.2 REV 4.1 **Matrix:** AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2
JD2755-1	1B122407.D	85	88
JD2755-2	1B122408.D	83	89
JD2755-3	1B122406.D	85	91
JD2755-1MS	1B122409.D	97	99
JD2755-2DUP	1B122410.D	85	91
V1B5923-BS	1B122403.D	97	106
V1B5923-MB	1B122404.D	85	93

Surrogate Compounds	Recovery Limits
S1 = 1,2-Dichlorobenzene-d4	70-130%
S2 = 4-Bromofluorobenzene	70-130%

Surrogate Recovery Summary

Job Number: JD2755
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Method: SW846 8260C BY SIM **Matrix:** AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1
JD2755-1	3A163732.D	95
JD2755-2	3A163733.D	89
JD2755-3	3A163730.D	104
JD2627-1MS	3A163736.D	144
JD2627-2DUP	3A163734.D	107
V3A7098-BS	3A163727.D	96
V3A7098-BSD	3A163728.D	102
V3A7098-MB	3A163729.D	94

Surrogate Compounds	Recovery Limits
S1 = 1,4-Dioxane-d8	25-195%

MARCH 2020

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

WSP Environment & Energy

Kop-Flex, Hanover, VA

31401545.011102

SGS Job Number: JD4439

Sampling Date: 03/10/20

Report to:

WSP
11190 Sunrise Valley Drive Suite 300
Reston, VA 20190
eric.johnson@wspgroup.com; Chris.Cresci@wspgroup.com

ATTN: Eric Johnson

Total number of pages in report: 44

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Laura Degenhardt
General Manager

Client Service contact: Tammy McCloskey 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, FL, IL, IN, KS, KY, LA, MA, MD, ME, MN, NC, OH VAP (CL0056), AK (UST-103), AZ (AZ0786), PA, RI, SC, TX, UT, VA, WV, DoD ELAP (ANAB L2248)

Sections: 1 2 3 4 5

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SGS North America Inc.

Sample Summary

WSP Environment & Energy

Job No: JD4439

Kop-Flex, Hanover, VA
Project No: 31401545.011102

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
JD4439-1	03/10/20	10:30	CC/SB	03/11/20	AQ	Water	RW-1227OCM-031020
JD4439-2	03/10/20	10:25	CC/SB	03/11/20	AQ	Water	RW-1227OCM-031020-F
JD4439-3	03/10/20	10:30	CC/SB	03/11/20	AQ	Trip Blank Water	TB-031020

This report contains results reported as ND = Not detected. The following applies:
Organics ND = Not detected above the MDL

Summary of Hits

Job Number: JD4439
Account: WSP Environment & Energy
Project: Kop-Flex, Hanover, VA
Collected: 03/10/20

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JD4439-1	**RW-1227OCM-031020**					
1,1-Dichloroethylene [a]		5.9	0.50	0.19	ug/l	EPA 524.2 REV 4.1
1,4-Dioxane		2.6	0.40	0.095	ug/l	SW846 8260C BY SIM
JD4439-2	**RW-1227OCM-031020-F**					
1,4-Dioxane		2.9	0.40	0.095	ug/l	SW846 8260C BY SIM
JD4439-3	**TB-031020**					
1,4-Dioxane		0.33 J	0.40	0.095	ug/l	SW846 8260C BY SIM

(a) EPA 524.2 is not a certified method for non-potable water samples.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	RW-1227OCM-031020		
Lab Sample ID:	JD4439-1	**Date Sampled:**	03/10/20
Matrix:	AQ - Water	**Date Received:**	03/11/20
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1B122722.D	1	03/13/20 17:52	BK	n/a	n/a	V1B5939
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	2.5	ug/l	
78-93-3	2-Butanone	ND	5.0	0.43	ug/l	
71-43-2	Benzene	ND	0.50	0.16	ug/l	
108-86-1	Bromobenzene	ND	0.50	0.12	ug/l	
74-97-5	Bromochloromethane	ND	0.50	0.17	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.13	ug/l	
75-25-2	Bromoform	ND	0.50	0.27	ug/l	
74-83-9	Bromomethane	ND	0.50	0.18	ug/l	
104-51-8	n-Butylbenzene	ND	0.50	0.068	ug/l	
135-98-8	sec-Butylbenzene	ND	0.50	0.43	ug/l	
98-06-6	tert-Butylbenzene	ND	0.50	0.057	ug/l	
75-15-0	Carbon disulfide	ND	0.50	0.18	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.093	ug/l	
75-00-3	Chloroethane	ND	0.50	0.080	ug/l	
67-66-3	Chloroform	ND	0.50	0.17	ug/l	
74-87-3	Chloromethane	ND	0.50	0.13	ug/l	
95-49-8	o-Chlorotoluene	ND	0.50	0.098	ug/l	
106-43-4	p-Chlorotoluene	ND	0.50	0.075	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.24	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.22	ug/l	
75-35-4	1,1-Dichloroethylene	5.9	0.50	0.19	ug/l	
563-58-6	1,1-Dichloropropene	ND	0.50	0.14	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	1.0	0.14	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.50	0.15	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.18	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.19	ug/l	
142-28-9	1,3-Dichloropropane	ND	0.50	0.17	ug/l	
594-20-7	2,2-Dichloropropane	ND	0.50	0.31	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.14	ug/l	
74-95-3	Dibromomethane	ND	0.50	0.23	ug/l	
75-71-8	Dichlorodifluoromethane	ND	0.50	0.40	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.14	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	RW-1227OCM-031020		
Lab Sample ID:	JD4439-1	**Date Sampled:**	03/10/20
Matrix:	AQ - Water	**Date Received:**	03/11/20
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-50-1	o-Dichlorobenzene	ND	0.50	0.14	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.10	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.21	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.14	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.18	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.16	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.076	ug/l	
87-68-3	Hexachlorobutadiene	ND	0.50	0.13	ug/l	
591-78-6	2-Hexanone	ND	2.0	0.24	ug/l	
98-82-8	Isopropylbenzene	ND	0.50	0.054	ug/l	
99-87-6	p-Isopropyltoluene	ND	0.50	0.43	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.37	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	0.50	0.11	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	0.22	ug/l	
91-20-3	Naphthalene	ND	0.50	0.28	ug/l	
103-65-1	n-Propylbenzene	ND	0.50	0.066	ug/l	
100-42-5	Styrene	ND	0.50	0.069	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.50	0.20	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.13	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.19	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	0.50	0.091	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	0.50	0.13	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	0.055	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	0.40	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	0.057	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.23	ug/l	
108-88-3	Toluene	ND	0.50	0.11	ug/l	
79-01-6	Trichloroethylene	ND	0.50	0.20	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.19	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.15	ug/l	
	m,p-Xylene	ND	0.50	0.14	ug/l	
95-47-6	o-Xylene	ND	0.50	0.076	ug/l	
1330-20-7	Xylenes (total)	ND	0.50	0.076	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	85%		70-130%
460-00-4	4-Bromofluorobenzene	86%		70-130%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	RW-1227OCM-031020		
Lab Sample ID:	JD4439-1	**Date Sampled:**	03/10/20
Matrix:	AQ - Water	**Date Received:**	03/11/20
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	RL	MDL	Units	Q

(a) EPA 524.2 is not a certified method for non-potable water samples.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	RW-1227OCM-031020		
Lab Sample ID:	JD4439-1	**Date Sampled:**	03/10/20
Matrix:	AQ - Water	**Date Received:**	03/11/20
Method:	SW846 8260C BY SIM	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3A163882.D	1	03/12/20 13:50	RS	n/a	n/a	V3A7109
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	2.6	0.40	0.095	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17647-74-4	1,4-Dioxane-d8	101%		25-195%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	RW-1227OCM-031020-F		
Lab Sample ID:	JD4439-2	**Date Sampled:**	03/10/20
Matrix:	AQ - Water	**Date Received:**	03/11/20
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1B122723.D	1	03/13/20 18:24	BK	n/a	n/a	V1B5939
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	2.5	ug/l	
78-93-3	2-Butanone	ND	5.0	0.43	ug/l	
71-43-2	Benzene	ND	0.50	0.16	ug/l	
108-86-1	Bromobenzene	ND	0.50	0.12	ug/l	
74-97-5	Bromochloromethane	ND	0.50	0.17	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.13	ug/l	
75-25-2	Bromoform	ND	0.50	0.27	ug/l	
74-83-9	Bromomethane	ND	0.50	0.18	ug/l	
104-51-8	n-Butylbenzene	ND	0.50	0.068	ug/l	
135-98-8	sec-Butylbenzene	ND	0.50	0.43	ug/l	
98-06-6	tert-Butylbenzene	ND	0.50	0.057	ug/l	
75-15-0	Carbon disulfide	ND	0.50	0.18	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.093	ug/l	
75-00-3	Chloroethane	ND	0.50	0.080	ug/l	
67-66-3	Chloroform	ND	0.50	0.17	ug/l	
74-87-3	Chloromethane	ND	0.50	0.13	ug/l	
95-49-8	o-Chlorotoluene	ND	0.50	0.098	ug/l	
106-43-4	p-Chlorotoluene	ND	0.50	0.075	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.24	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.22	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.19	ug/l	
563-58-6	1,1-Dichloropropene	ND	0.50	0.14	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	1.0	0.14	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.50	0.15	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.18	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.19	ug/l	
142-28-9	1,3-Dichloropropane	ND	0.50	0.17	ug/l	
594-20-7	2,2-Dichloropropane	ND	0.50	0.31	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.14	ug/l	
74-95-3	Dibromomethane	ND	0.50	0.23	ug/l	
75-71-8	Dichlorodifluoromethane	ND	0.50	0.40	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.14	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	RW-1227OCM-031020-F		
Lab Sample ID:	JD4439-2	**Date Sampled:**	03/10/20
Matrix:	AQ - Water	**Date Received:**	03/11/20
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-50-1	o-Dichlorobenzene	ND	0.50	0.14	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.10	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.21	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.14	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.18	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.16	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.076	ug/l	
87-68-3	Hexachlorobutadiene	ND	0.50	0.13	ug/l	
591-78-6	2-Hexanone	ND	2.0	0.24	ug/l	
98-82-8	Isopropylbenzene	ND	0.50	0.054	ug/l	
99-87-6	p-Isopropyltoluene	ND	0.50	0.43	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.37	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	0.50	0.11	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	0.22	ug/l	
91-20-3	Naphthalene	ND	0.50	0.28	ug/l	
103-65-1	n-Propylbenzene	ND	0.50	0.066	ug/l	
100-42-5	Styrene	ND	0.50	0.069	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.50	0.20	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.13	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.19	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	0.50	0.091	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	0.50	0.13	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	0.055	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	0.40	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	0.057	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.23	ug/l	
108-88-3	Toluene	ND	0.50	0.11	ug/l	
79-01-6	Trichloroethylene	ND	0.50	0.20	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.19	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.15	ug/l	
	m,p-Xylene	ND	0.50	0.14	ug/l	
95-47-6	o-Xylene	ND	0.50	0.076	ug/l	
1330-20-7	Xylenes (total)	ND	0.50	0.076	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	85%		70-130%
460-00-4	4-Bromofluorobenzene	85%		70-130%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	RW-1227OCM-031020-F		
Lab Sample ID:	JD4439-2	**Date Sampled:**	03/10/20
Matrix:	AQ - Water	**Date Received:**	03/11/20
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	RL	MDL	Units	Q

(a) EPA 524.2 is not a certified method for non-potable water samples.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	RW-1227OCM-031020-F		
Lab Sample ID:	JD4439-2	**Date Sampled:**	03/10/20
Matrix:	AQ - Water	**Date Received:**	03/11/20
Method:	SW846 8260C BY SIM	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3A163883.D	1	03/12/20 14:19	RS	n/a	n/a	V3A7109
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	2.9	0.40	0.095	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17647-74-4	1,4-Dioxane-d8	113%		25-195%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TB-031020		
Lab Sample ID:	JD4439-3	**Date Sampled:**	03/10/20
Matrix:	AQ - Trip Blank Water	**Date Received:**	03/11/20
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1B122721.D	1	03/13/20 17:21	BK	n/a	n/a	V1B5939
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	2.5	ug/l	
78-93-3	2-Butanone	ND	5.0	0.43	ug/l	
71-43-2	Benzene	ND	0.50	0.16	ug/l	
108-86-1	Bromobenzene	ND	0.50	0.12	ug/l	
74-97-5	Bromochloromethane	ND	0.50	0.17	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.13	ug/l	
75-25-2	Bromoform	ND	0.50	0.27	ug/l	
74-83-9	Bromomethane	ND	0.50	0.18	ug/l	
104-51-8	n-Butylbenzene	ND	0.50	0.068	ug/l	
135-98-8	sec-Butylbenzene	ND	0.50	0.43	ug/l	
98-06-6	tert-Butylbenzene	ND	0.50	0.057	ug/l	
75-15-0	Carbon disulfide	ND	0.50	0.18	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.093	ug/l	
75-00-3	Chloroethane	ND	0.50	0.080	ug/l	
67-66-3	Chloroform	ND	0.50	0.17	ug/l	
74-87-3	Chloromethane	ND	0.50	0.13	ug/l	
95-49-8	o-Chlorotoluene	ND	0.50	0.098	ug/l	
106-43-4	p-Chlorotoluene	ND	0.50	0.075	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.24	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.22	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.19	ug/l	
563-58-6	1,1-Dichloropropene	ND	0.50	0.14	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	1.0	0.14	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.50	0.15	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.18	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.19	ug/l	
142-28-9	1,3-Dichloropropane	ND	0.50	0.17	ug/l	
594-20-7	2,2-Dichloropropane	ND	0.50	0.31	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.14	ug/l	
74-95-3	Dibromomethane	ND	0.50	0.23	ug/l	
75-71-8	Dichlorodifluoromethane	ND	0.50	0.40	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.14	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TB-031020		
Lab Sample ID:	JD4439-3	**Date Sampled:**	03/10/20
Matrix:	AQ - Trip Blank Water	**Date Received:**	03/11/20
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-50-1	o-Dichlorobenzene	ND	0.50	0.14	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.10	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.21	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.14	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.18	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.16	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.076	ug/l	
87-68-3	Hexachlorobutadiene	ND	0.50	0.13	ug/l	
591-78-6	2-Hexanone	ND	2.0	0.24	ug/l	
98-82-8	Isopropylbenzene	ND	0.50	0.054	ug/l	
99-87-6	p-Isopropyltoluene	ND	0.50	0.43	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.37	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	0.50	0.11	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	0.22	ug/l	
91-20-3	Naphthalene	ND	0.50	0.28	ug/l	
103-65-1	n-Propylbenzene	ND	0.50	0.066	ug/l	
100-42-5	Styrene	ND	0.50	0.069	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.50	0.20	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.13	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.19	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	0.50	0.091	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	0.50	0.13	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	0.055	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	0.40	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	0.057	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.23	ug/l	
108-88-3	Toluene	ND	0.50	0.11	ug/l	
79-01-6	Trichloroethylene	ND	0.50	0.20	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.19	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.15	ug/l	
	m,p-Xylene	ND	0.50	0.14	ug/l	
95-47-6	o-Xylene	ND	0.50	0.076	ug/l	
1330-20-7	Xylenes (total)	ND	0.50	0.076	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	85%		70-130%
460-00-4	4-Bromofluorobenzene	85%		70-130%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TB-031020		
Lab Sample ID:	JD4439-3	**Date Sampled:**	03/10/20
Matrix:	AQ - Trip Blank Water	**Date Received:**	03/11/20
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	RL	MDL	Units	Q

(a) EPA 524.2 is not a certified method for non-potable water samples.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TB-031020		
Lab Sample ID:	JD4439-3	**Date Sampled:**	03/10/20
Matrix:	AQ - Trip Blank Water	**Date Received:**	03/11/20
Method:	SW846 8260C BY SIM	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3A163881.D	1	03/12/20 13:21	RS	n/a	n/a	V3A7109
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	0.33	0.40	0.095	ug/l	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17647-74-4	1,4-Dioxane-d8	107%		25-195%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

WW WTR

TM-012020-162 JD4439

FX# 8127 8179 4527

CHAIN-OF-CUSTODY RECORD Page 1 of 1

WSP USA Office Address: 13530 Dulles Technology Dr. Suite 300 Herndon, VA

Project Name: KapFlex offsite

WSP USA Contact Name: Eric Johnson

Project Location: Hanover, MD

WSP USA Contact E-mail: Eric.Johnson@wsp.com

Project Number & Task: 31401545.011102

WSP USA Contact Phone: 703-709-6500

Sampler(s) Name(s): Chris Cresci, Shannon Burke

Sampler(s) Signature(s):

Requested Analyses & Preservatives

No. 009977 wsp

Laboratory Name & Location: SGS Accutest Dayton, NJ

Laboratory Project Manager: Tammy McCloskey

Requested Turn-Around-Time: [X] Standard [ ] 24 HR [ ] 48 HR [ ] 72 HR [ ] ___ HR

	Sample Identification	Matrix	Collection Start* Date	Collection Start* Time	Collection Stop* Date	Collection Stop* Time	Number of Containers	VOCs 624	1,4-Dioxane 8260 SIM	Sample Comments
1	RW-1227Acm-030220	AQ	3/10/20		1030		6	X	X	
2	RW-1227Acm-030220-F	AQ	3/10/20		1025		6	X	X	
3	TB-031020						4	X	X	

V1216

Initial Assessment 2A DM

Label Verification

Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Shipment Method	Tracking Number(s)
	3/10/20		FED EX				
FX	3/11/2020	10:30				Number of Packages	Custody Seal Number(s)

*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)

FCEV 210 2-ip IR-4

SGS Sample Receipt Summary

Job Number: JD4439 **Client:** WSP **Project:** KOP-FLEX, HANOVER, VA

Date / Time Received: 3/11/2020 10:50:00 AM **Delivery Method:** **Airbill #'s:**

Cooler Temps (Raw Measured) °C: Cooler 1: (2.0);

Cooler Temps (Corrected) °C: Cooler 1: (1.7);

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Cooler temp verification:	IR Gun		
3. Cooler media:	Ice (Bag)		
4. No. Coolers:	1		

Quality Control Preservation	Y	or	N	N/A
1. Trip Blank present / cooler:	☑		☐	☐
2. Trip Blank listed on COC:	☑		☐	☐
3. Samples preserved properly:	☑		☐	
4. VOCs headspace free:	☑		☐	☐

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Test Strip Lot #s: pH 1-12: 229517 pH 12+: 208717 Other: (Specify)

Comments

SM089-03
Rev. Date 12/7/17

Job Change Order: JD4439

Requested Date:	3/12/2020	**Received Date:**	3/11/2020
Account Name:	WSP Environment & Energy	**Due Date:**	3/25/2020
Project Description:	Kop-Flex, Hanover, VA	**Deliverable:**	COMMB
C/O Initiated By:	TAMMY **PM:** TM	**TAT (Days):**	14

==========

Sample #: JD4439-all

Dept:

TAT: 14

Change:
COC requests VO's via 624 but should have reqeusted VO's via 524. Samples should be logged for V524STD (as well as V8260SIMDIOX as requested on coc)

==========

Above Changes Per: Chris Cresci **Date/Time:** 3/12/2020 8:36:20 AM

To Client: This Change Order is confirmation of the revisions, previously discussed with the Client Service Representative.

Page 1 of 1

JD4439: Chain of Custody
Page 3 of 3

MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Instrument Performance Checks (BFB)
- Surrogate Recovery Summaries

Method Blank Summary

Job Number: JD4439
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5939-MB	1B122709.D	1	03/13/20	BK	n/a	n/a	V1B5939

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JD4439-1, JD4439-2, JD4439-3

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	2.5	ug/l	
78-93-3	2-Butanone	ND	5.0	0.43	ug/l	
71-43-2	Benzene	ND	0.50	0.16	ug/l	
108-86-1	Bromobenzene	ND	0.50	0.12	ug/l	
74-97-5	Bromochloromethane	ND	0.50	0.17	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.13	ug/l	
75-25-2	Bromoform	ND	0.50	0.27	ug/l	
74-83-9	Bromomethane	ND	0.50	0.18	ug/l	
104-51-8	n-Butylbenzene	ND	0.50	0.068	ug/l	
135-98-8	sec-Butylbenzene	ND	0.50	0.43	ug/l	
98-06-6	tert-Butylbenzene	ND	0.50	0.057	ug/l	
75-15-0	Carbon disulfide	ND	0.50	0.18	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.093	ug/l	
75-00-3	Chloroethane	ND	0.50	0.080	ug/l	
67-66-3	Chloroform	ND	0.50	0.17	ug/l	
74-87-3	Chloromethane	ND	0.50	0.13	ug/l	
95-49-8	o-Chlorotoluene	ND	0.50	0.098	ug/l	
106-43-4	p-Chlorotoluene	ND	0.50	0.075	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.24	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.22	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.19	ug/l	
563-58-6	1,1-Dichloropropene	ND	0.50	0.14	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	1.0	0.14	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.50	0.15	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.18	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.19	ug/l	
142-28-9	1,3-Dichloropropane	ND	0.50	0.17	ug/l	
594-20-7	2,2-Dichloropropane	ND	0.50	0.31	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.14	ug/l	
74-95-3	Dibromomethane	ND	0.50	0.23	ug/l	
75-71-8	Dichlorodifluoromethane	ND	0.50	0.40	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.14	ug/l	
95-50-1	o-Dichlorobenzene	ND	0.50	0.14	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.10	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.21	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.14	ug/l	

Method Blank Summary

Job Number: JD4439
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5939-MB	1B122709.D	1	03/13/20	BK	n/a	n/a	V1B5939

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JD4439-1, JD4439-2, JD4439-3

CAS No.	Compound	Result	RL	MDL	Units	Q
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.16	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.18	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.076	ug/l	
87-68-3	Hexachlorobutadiene	ND	0.50	0.13	ug/l	
591-78-6	2-Hexanone	ND	2.0	0.24	ug/l	
98-82-8	Isopropylbenzene	ND	0.50	0.054	ug/l	
99-87-6	p-Isopropyltoluene	ND	0.50	0.43	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.37	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	0.50	0.11	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	0.22	ug/l	
91-20-3	Naphthalene	ND	0.50	0.28	ug/l	
103-65-1	n-Propylbenzene	ND	0.50	0.066	ug/l	
100-42-5	Styrene	ND	0.50	0.069	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.50	0.20	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.13	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.19	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	0.50	0.091	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	0.50	0.13	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	0.055	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	0.40	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	0.057	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.23	ug/l	
108-88-3	Toluene	ND	0.50	0.11	ug/l	
79-01-6	Trichloroethylene	ND	0.50	0.20	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.19	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.15	ug/l	
	m,p-Xylene	ND	0.50	0.14	ug/l	
95-47-6	o-Xylene	ND	0.50	0.076	ug/l	
1330-20-7	Xylenes (total)	ND	0.50	0.076	ug/l	

CAS No.	Surrogate Recoveries		Limits
2199-69-1	1,2-Dichlorobenzene-d4	85%	70-130%
460-00-4	4-Bromofluorobenzene	87%	70-130%

Method Blank Summary

Job Number: JD4439
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5939-MB	1B122709.D	1	03/13/20	BK	n/a	n/a	V1B5939

The QC reported here applies to the following samples: **Method:**

JD4439-1, JD4439-2, JD4439-3

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

Method Blank Summary

Job Number: JD4439
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3A7109-MB	3A163875.D	1	03/12/20	RS	n/a	n/a	V3A7109

The QC reported here applies to the following samples: **Method:** SW846 8260C BY SIM

JD4439-1, JD4439-2, JD4439-3

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.30	0.095	ug/l	

CAS No.	Surrogate Recoveries		Limits
17647-74-4	1,4-Dioxane-d8	108%	25-195%

Blank Spike Summary

Job Number: JD4439
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5939-BS	1B122708.D	1	03/13/20	BK	n/a	n/a	V1B5939

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JD4439-1, JD4439-2, JD4439-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	20	15.6	78	70-130
78-93-3	2-Butanone	20	17.4	87	70-130
71-43-2	Benzene	5	4.3	86	70-130
108-86-1	Bromobenzene	5	4.4	88	70-130
74-97-5	Bromochloromethane	5	4.4	88	70-130
75-27-4	Bromodichloromethane	5	4.5	90	70-130
75-25-2	Bromoform	5	4.6	92	70-130
74-83-9	Bromomethane	5	3.7	74	70-130
104-51-8	n-Butylbenzene	5	3.9	78	70-130
135-98-8	sec-Butylbenzene	5	4.1	82	70-130
98-06-6	tert-Butylbenzene	5	4.1	82	70-130
75-15-0	Carbon disulfide	5	4.0	80	70-130
108-90-7	Chlorobenzene	5	4.4	88	70-130
75-00-3	Chloroethane	5	3.6	72	70-130
67-66-3	Chloroform	5	4.4	88	70-130
74-87-3	Chloromethane	5	4.8	96	70-130
95-49-8	o-Chlorotoluene	5	4.2	84	70-130
106-43-4	p-Chlorotoluene	5	4.4	88	70-130
56-23-5	Carbon tetrachloride	5	4.1	82	70-130
75-34-3	1,1-Dichloroethane	5	4.3	86	70-130
75-35-4	1,1-Dichloroethylene	5	4.0	80	70-130
563-58-6	1,1-Dichloropropene	5	4.1	82	70-130
96-12-8	1,2-Dibromo-3-chloropropane	5	4.2	84	70-130
106-93-4	1,2-Dibromoethane	5	4.6	92	70-130
107-06-2	1,2-Dichloroethane	5	4.4	88	70-130
78-87-5	1,2-Dichloropropane	5	4.6	92	70-130
142-28-9	1,3-Dichloropropane	5	4.6	92	70-130
594-20-7	2,2-Dichloropropane	5	3.6	72	70-130
124-48-1	Dibromochloromethane	5	4.6	92	70-130
74-95-3	Dibromomethane	5	4.4	88	70-130
75-71-8	Dichlorodifluoromethane	5	3.8	76	70-130
541-73-1	m-Dichlorobenzene	5	4.2	84	70-130
95-50-1	o-Dichlorobenzene	5	4.3	86	70-130
106-46-7	p-Dichlorobenzene	5	4.3	86	70-130
156-60-5	trans-1,2-Dichloroethylene	5	4.1	82	70-130
156-59-2	cis-1,2-Dichloroethylene	5	4.2	84	70-130

* = Outside of Control Limits.

Blank Spike Summary

Job Number: JD4439
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5939-BS	1B122708.D	1	03/13/20	BK	n/a	n/a	V1B5939

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JD4439-1, JD4439-2, JD4439-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
10061-01-5	cis-1,3-Dichloropropene	5	4.4	88	70-130
10061-02-6	trans-1,3-Dichloropropene	5	4.4	88	70-130
100-41-4	Ethylbenzene	5	4.3	86	70-130
87-68-3	Hexachlorobutadiene	5	3.7	74	70-130
591-78-6	2-Hexanone	20	18.2	91	70-130
98-82-8	Isopropylbenzene	5	4.1	82	70-130
99-87-6	p-Isopropyltoluene	5	4.0	80	70-130
75-09-2	Methylene chloride	5	4.3	86	70-130
1634-04-4	Methyl Tert Butyl Ether	5	4.2	84	70-130
108-10-1	4-Methyl-2-pentanone	20	18.2	91	70-130
91-20-3	Naphthalene	5	4.0	80	70-130
103-65-1	n-Propylbenzene	5	4.2	84	70-130
100-42-5	Styrene	5	4.3	86	70-130
630-20-6	1,1,1,2-Tetrachloroethane	5	4.4	88	70-130
71-55-6	1,1,1-Trichloroethane	5	4.0	80	70-130
79-34-5	1,1,2,2-Tetrachloroethane	5	4.5	90	70-130
79-00-5	1,1,2-Trichloroethane	5	4.7	94	70-130
87-61-6	1,2,3-Trichlorobenzene	5	4.0	80	70-130
96-18-4	1,2,3-Trichloropropane	5	4.4	88	70-130
120-82-1	1,2,4-Trichlorobenzene	5	4.0	80	70-130
95-63-6	1,2,4-Trimethylbenzene	5	4.2	84	70-130
108-67-8	1,3,5-Trimethylbenzene	5	4.1	82	70-130
127-18-4	Tetrachloroethylene	5	4.2	84	70-130
108-88-3	Toluene	5	4.3	86	70-130
79-01-6	Trichloroethylene	5	4.2	84	70-130
75-69-4	Trichlorofluoromethane	5	3.9	78	70-130
75-01-4	Vinyl chloride	5	4.2	84	70-130
	m,p-Xylene	10	8.6	86	70-130
95-47-6	o-Xylene	5	4.3	86	70-130
1330-20-7	Xylenes (total)	15	12.9	86	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
2199-69-1	1,2-Dichlorobenzene-d4	98%	70-130%
460-00-4	4-Bromofluorobenzene	100%	70-130%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JD4439
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3A7109-BS	3A163872.D	1	03/12/20	RS	n/a	n/a	V3A7109
V3A7109-BSD	3A163873.D	1	03/12/20	RS	n/a	n/a	V3A7109

The QC reported here applies to the following samples: **Method:** SW846 8260C BY SIM

JD4439-1, JD4439-2, JD4439-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
123-91-1	1,4-Dioxane	20	20.4	102	22.5	113	10	48-137/32

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
17647-74-4	1,4-Dioxane-d8	106%	124%	25-195%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: JD4439
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JD4556-1MS	1B122716.D	1	03/13/20	BK	n/a	n/a	V1B5939
JD4556-1 [a]	1B122714.D	1	03/13/20	BK	n/a	n/a	V1B5939

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JD4439-1, JD4439-2, JD4439-3

CAS No.	Compound	JD4556-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
67-64-1	Acetone	ND		20	17.0	85	41-142
78-93-3	2-Butanone	ND		20	18.5	93	55-129
71-43-2	Benzene	ND		5	5.6	112	53-138
108-86-1	Bromobenzene	ND		5	5.5	110	54-138
74-97-5	Bromochloromethane	ND		5	5.5	110	55-140
75-27-4	Bromodichloromethane	ND		5	5.5	110	57-147
75-25-2	Bromoform	ND		5	5.3	106	47-137
74-83-9	Bromomethane	ND		5	4.5	90	40-162
104-51-8	n-Butylbenzene	ND		5	5.5	110	45-144
135-98-8	sec-Butylbenzene	ND		5	5.5	110	46-145
98-06-6	tert-Butylbenzene	ND		5	5.5	110	48-141
75-15-0	Carbon disulfide	ND		5	5.6	112	35-127
108-90-7	Chlorobenzene	ND		5	5.6	112	54-135
75-00-3	Chloroethane	ND		5	4.4	88	38-153
67-66-3	Chloroform	ND		5	5.3	106	57-151
74-87-3	Chloromethane	ND		5	4.5	90	39-165
95-49-8	o-Chlorotoluene	ND		5	5.6	112	55-142
106-43-4	p-Chlorotoluene	ND		5	5.6	112	55-139
56-23-5	Carbon tetrachloride	ND		5	5.3	106	49-170
75-34-3	1,1-Dichloroethane	ND		5	5.5	110	55-149
75-35-4	1,1-Dichloroethylene	ND		5	5.4	108	42-142
563-58-6	1,1-Dichloropropene	ND		5	5.6	112	46-151
96-12-8	1,2-Dibromo-3-chloropropane	ND		5	4.8	96	48-141
106-93-4	1,2-Dibromoethane	ND		5	5.3	106	57-135
107-06-2	1,2-Dichloroethane	ND		5	5.5	110	59-166
78-87-5	1,2-Dichloropropane	ND		5	5.7	114	53-142
142-28-9	1,3-Dichloropropane	ND		5	5.5	110	58-143
594-20-7	2,2-Dichloropropane	ND		5	5.3	106	38-165
124-48-1	Dibromochloromethane	ND		5	5.4	108	55-138
74-95-3	Dibromomethane	ND		5	5.4	108	61-144
75-71-8	Dichlorodifluoromethane	ND		5	4.9	98	23-172
541-73-1	m-Dichlorobenzene	ND		5	5.5	110	53-138
95-50-1	o-Dichlorobenzene	ND		5	5.6	112	54-140
106-46-7	p-Dichlorobenzene	ND		5	5.6	112	53-137
156-60-5	trans-1,2-Dichloroethylene	ND		5	5.4	108	47-148
156-59-2	cis-1,2-Dichloroethylene	ND		5	5.4	108	51-146

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: JD4439
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JD4556-1MS	1B122716.D	1	03/13/20	BK	n/a	n/a	V1B5939
JD4556-1 [a]	1B122714.D	1	03/13/20	BK	n/a	n/a	V1B5939

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JD4439-1, JD4439-2, JD4439-3

CAS No.	Compound	JD4556-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
10061-01-5	cis-1,3-Dichloropropene	ND		5	5.3	106	51-136
10061-02-6	trans-1,3-Dichloropropene	ND		5	5.2	104	54-142
100-41-4	Ethylbenzene	ND		5	5.4	108	51-138
87-68-3	Hexachlorobutadiene	ND		5	5.4	108	40-154
591-78-6	2-Hexanone	ND		20	19.4	97	53-128
98-82-8	Isopropylbenzene	ND		5	5.4	108	49-139
99-87-6	p-Isopropyltoluene	ND		5	5.5	110	45-141
75-09-2	Methylene chloride	ND		5	5.3	106	54-137
1634-04-4	Methyl Tert Butyl Ether	ND		5	5.1	102	53-143
108-10-1	4-Methyl-2-pentanone	ND		20	20.1	101	58-127
91-20-3	Naphthalene	ND		5	5.0	100	44-140
103-65-1	n-Propylbenzene	ND		5	5.5	110	50-142
100-42-5	Styrene	ND		5	5.3	106	23-130
630-20-6	1,1,1,2-Tetrachloroethane	ND		5	5.4	108	57-144
71-55-6	1,1,1-Trichloroethane	ND		5	5.3	106	52-164
79-34-5	1,1,2,2-Tetrachloroethane	ND		5	5.3	106	58-138
79-00-5	1,1,2-Trichloroethane	ND		5	5.6	112	59-139
87-61-6	1,2,3-Trichlorobenzene	ND		5	5.3	106	47-141
96-18-4	1,2,3-Trichloropropane	ND		5	5.1	102	56-148
120-82-1	1,2,4-Trichlorobenzene	ND		5	5.3	106	46-137
95-63-6	1,2,4-Trimethylbenzene	ND		5	5.4	108	41-138
108-67-8	1,3,5-Trimethylbenzene	ND		5	5.4	108	45-138
127-18-4	Tetrachloroethylene	ND		5	5.6	112	45-145
108-88-3	Toluene	ND		5	5.4	108	52-134
79-01-6	Trichloroethylene	ND		5	5.6	112	54-143
75-69-4	Trichlorofluoromethane	ND		5	4.7	94	36-167
75-01-4	Vinyl chloride	ND		5	5.0	100	35-162
	m,p-Xylene	ND		10	10.9	109	49-135
95-47-6	o-Xylene	ND		5	5.4	108	49-134
1330-20-7	Xylenes (total)	ND		15	16.3	109	50-134

CAS No.	Surrogate Recoveries	MS	JD4556-1	Limits
2199-69-1	1,2-Dichlorobenzene-d4	102%	86%	70-130%
460-00-4	4-Bromofluorobenzene	99%	88%	70-130%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: JD4439
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JD4556-1MS	1B122716.D	1	03/13/20	BK	n/a	n/a	V1B5939
JD4556-1 [a]	1B122714.D	1	03/13/20	BK	n/a	n/a	V1B5939

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JD4439-1, JD4439-2, JD4439-3

(a) EPA 524.2 is not a certified method for non-potable water samples.

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: JD4439
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JD4355-3MS	3A163885.D	1	03/12/20	RS	n/a	n/a	V3A7109
JD4355-3	3A163878.D	1	03/12/20	RS	n/a	n/a	V3A7109

The QC reported here applies to the following samples: **Method:** SW846 8260C BY SIM

JD4439-1, JD4439-2, JD4439-3

CAS No.	Compound	JD4355-3 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
123-91-1	1,4-Dioxane	ND		20	19.8	99	28-162

CAS No.	Surrogate Recoveries	MS	JD4355-3	Limits
17647-74-4	1,4-Dioxane-d8	98%	98%	25-195%

* = Outside of Control Limits.

Duplicate Summary

Job Number: JD4439
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JD4556-2DUP	1B122718.D	1	03/13/20	BK	n/a	n/a	V1B5939
JD4556-2 [a]	1B122715.D	1	03/13/20	BK	n/a	n/a	V1B5939

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JD4439-1, JD4439-2, JD4439-3

CAS No.	Compound	JD4556-2 ug/l	Q	DUP ug/l	Q	RPD	Limits
67-64-1	Acetone	ND		ND		nc	10
78-93-3	2-Butanone	ND		ND		nc	12
71-43-2	Benzene	ND		ND		nc	10
108-86-1	Bromobenzene	ND		ND		nc	10
74-97-5	Bromochloromethane	ND		ND		nc	10
75-27-4	Bromodichloromethane	ND		ND		nc	10
75-25-2	Bromoform	ND		ND		nc	10
74-83-9	Bromomethane	ND		ND		nc	10
104-51-8	n-Butylbenzene	ND		ND		nc	10
135-98-8	sec-Butylbenzene	ND		ND		nc	10
98-06-6	tert-Butylbenzene	ND		ND		nc	10
75-15-0	Carbon disulfide	ND		ND		nc	19
108-90-7	Chlorobenzene	ND		ND		nc	10
75-00-3	Chloroethane	ND		ND		nc	10
67-66-3	Chloroform	ND		ND		nc	12
74-87-3	Chloromethane	ND		ND		nc	10
95-49-8	o-Chlorotoluene	ND		ND		nc	10
106-43-4	p-Chlorotoluene	ND		ND		nc	10
56-23-5	Carbon tetrachloride	ND		ND		nc	10
75-34-3	1,1-Dichloroethane	ND		ND		nc	10
75-35-4	1,1-Dichloroethylene	ND		ND		nc	10
563-58-6	1,1-Dichloropropene	ND		ND		nc	10
96-12-8	1,2-Dibromo-3-chloropropane	ND		ND		nc	10
106-93-4	1,2-Dibromoethane	ND		ND		nc	10
107-06-2	1,2-Dichloroethane	ND		ND		nc	10
78-87-5	1,2-Dichloropropane	ND		ND		nc	10
142-28-9	1,3-Dichloropropane	ND		ND		nc	10
594-20-7	2,2-Dichloropropane	ND		ND		nc	10
124-48-1	Dibromochloromethane	ND		ND		nc	10
74-95-3	Dibromomethane	ND		ND		nc	10
75-71-8	Dichlorodifluoromethane	ND		ND		nc	10
541-73-1	m-Dichlorobenzene	ND		ND		nc	10
95-50-1	o-Dichlorobenzene	ND		ND		nc	10
106-46-7	p-Dichlorobenzene	ND		ND		nc	10
156-60-5	trans-1,2-Dichloroethylene	ND		ND		nc	10
156-59-2	cis-1,2-Dichloroethylene	ND		ND		nc	10

* = Outside of Control Limits.

Duplicate Summary

Job Number: JD4439
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JD4556-2DUP	1B122718.D	1	03/13/20	BK	n/a	n/a	V1B5939
JD4556-2 [a]	1B122715.D	1	03/13/20	BK	n/a	n/a	V1B5939

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JD4439-1, JD4439-2, JD4439-3

CAS No.	Compound	JD4556-2 ug/l	Q	DUP ug/l	Q	RPD	Limits
10061-01-5	cis-1,3-Dichloropropene	ND		ND		nc	10
10061-02-6	trans-1,3-Dichloropropene	ND		ND		nc	10
100-41-4	Ethylbenzene	ND		ND		nc	10
87-68-3	Hexachlorobutadiene	ND		ND		nc	10
591-78-6	2-Hexanone	ND		ND		nc	10
98-82-8	Isopropylbenzene	ND		ND		nc	10
99-87-6	p-Isopropyltoluene	ND		ND		nc	10
75-09-2	Methylene chloride	ND		ND		nc	10
1634-04-4	Methyl Tert Butyl Ether	ND		ND		nc	10
108-10-1	4-Methyl-2-pentanone	ND		ND		nc	10
91-20-3	Naphthalene	ND		ND		nc	10
103-65-1	n-Propylbenzene	ND		ND		nc	10
100-42-5	Styrene	ND		ND		nc	10
630-20-6	1,1,1,2-Tetrachloroethane	ND		ND		nc	10
71-55-6	1,1,1-Trichloroethane	ND		ND		nc	10
79-34-5	1,1,2,2-Tetrachloroethane	ND		ND		nc	10
79-00-5	1,1,2-Trichloroethane	ND		ND		nc	10
87-61-6	1,2,3-Trichlorobenzene	ND		ND		nc	10
96-18-4	1,2,3-Trichloropropane	ND		ND		nc	10
120-82-1	1,2,4-Trichlorobenzene	ND		ND		nc	10
95-63-6	1,2,4-Trimethylbenzene	ND		ND		nc	10
108-67-8	1,3,5-Trimethylbenzene	ND		ND		nc	10
127-18-4	Tetrachloroethylene	ND		ND		nc	10
108-88-3	Toluene	ND		ND		nc	10
79-01-6	Trichloroethylene	ND		ND		nc	10
75-69-4	Trichlorofluoromethane	ND		ND		nc	10
75-01-4	Vinyl chloride	ND		ND		nc	10
	m,p-Xylene	ND		ND		nc	10
95-47-6	o-Xylene	ND		ND		nc	10
1330-20-7	Xylenes (total)	ND		ND		nc	10

CAS No.	Surrogate Recoveries	DUP	JD4556-2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	88%	88%	70-130%
460-00-4	4-Bromofluorobenzene	86%	88%	70-130%

* = Outside of Control Limits.

Duplicate Summary

Job Number: JD4439
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JD4556-2DUP	1B122718.D	1	03/13/20	BK	n/a	n/a	V1B5939
JD4556-2 [a]	1B122715.D	1	03/13/20	BK	n/a	n/a	V1B5939

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JD4439-1, JD4439-2, JD4439-3

(a) EPA 524.2 is not a certified method for non-potable water samples.

* = Outside of Control Limits.

Duplicate Summary

Job Number: JD4439
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JD4355-2DUP	3A163880.D	1	03/12/20	RS	n/a	n/a	V3A7109
JD4355-2	3A163877.D	1	03/12/20	RS	n/a	n/a	V3A7109

The QC reported here applies to the following samples: **Method:** SW846 8260C BY SIM

JD4439-1, JD4439-2, JD4439-3

CAS No.	Compound	JD4355-2 ug/l	Q	DUP ug/l	Q	RPD	Limits
123-91-1	1,4-Dioxane	ND		ND		nc	48

CAS No.	Surrogate Recoveries	DUP	JD4355-2	Limits
17647-74-4	1,4-Dioxane-d8	108%	108%	25-195%

* = Outside of Control Limits.

Instrument Performance Check (BFB)

Job Number: JD4439
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample: V1B5937-BFB
Lab File ID: 1B122661.D
Instrument ID: GCMS1B
Injection Date: 03/11/20
Injection Time: 09:20

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	14.99 - 40.0% of mass 95	3787	20.1		Pass
75	30.0 - 80.0% of mass 95	9763	51.8		Pass
95	Base peak, 100% relative abundance	18843	100.0		Pass
96	5.0 - 9.0% of mass 95	1441	7.65		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	15559	82.6		Pass
175	5.0 - 9.0% of mass 174	1179	6.26	(7.58) [a]	Pass
176	95.0 - 101.0% of mass 174	15237	80.9	(97.9) [a]	Pass
177	5.0 - 9.0% of mass 176	1090	5.78	(7.15) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V1B5937-IC5937	1B122662.D	03/11/20	10:19	00:59	Initial cal 0.2
V1B5937-IC5937	1B122663.D	03/11/20	10:50	01:30	Initial cal 0.5
V1B5937-IC5937	1B122664.D	03/11/20	11:22	02:02	Initial cal 1
V1B5937-IC5937	1B122665.D	03/11/20	11:54	02:34	Initial cal 2
V1B5937-IC5937	1B122666.D	03/11/20	12:25	03:05	Initial cal 5
V1B5937-ICC5937	1B122667.D	03/11/20	12:56	03:36	Initial cal 10
V1B5937-IC5937	1B122668.D	03/11/20	13:28	04:08	Initial cal 20
V1B5937-IC5937	1B122669.D	03/11/20	14:00	04:40	Initial cal 40
V1B5937-IC5937	1B122670.D	03/11/20	14:31	05:11	Initial cal 80
V1B5937-ICV5937	1B122673.D	03/11/20	16:06	06:46	Initial cal verification 10

Instrument Performance Check (BFB)

Job Number: JD4439
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample:	V1B5937-BFB2	**Injection Date:**	03/12/20
Lab File ID:	1B122675.D	**Injection Time:**	08:43
Instrument ID:	GCMS1B		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	14.99 - 40.0% of mass 95	4131	20.1		Pass
75	30.0 - 80.0% of mass 95	10702	51.9		Pass
95	Base peak, 100% relative abundance	20603	100.0		Pass
96	5.0 - 9.0% of mass 95	1416	6.87		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	17079	82.9		Pass
175	5.0 - 9.0% of mass 174	1152	5.59	(6.75) [a]	Pass
176	95.0 - 101.0% of mass 174	16383	79.5	(95.9) [a]	Pass
177	5.0 - 9.0% of mass 176	1032	5.01	(6.30) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V1B5937-ICV5937	1B122676.D	03/12/20	09:17	00:34	Initial cal verification 10

Instrument Performance Check (BFB)

Job Number: JD4439
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample: V1B5939-BFB
Lab File ID: 1B122706.D
Instrument ID: GCMS1B
Injection Date: 03/13/20
Injection Time: 09:07

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	14.99 - 40.0% of mass 95	3482	19.3		Pass
75	30.0 - 80.0% of mass 95	9052	50.3		Pass
95	Base peak, 100% relative abundance	18011	100.0		Pass
96	5.0 - 9.0% of mass 95	1318	7.32		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	14935	82.9		Pass
175	5.0 - 9.0% of mass 174	1164	6.46	(7.79) [a]	Pass
176	95.0 - 101.0% of mass 174	14614	81.1	(97.9) [a]	Pass
177	5.0 - 9.0% of mass 176	1001	5.56	(6.85) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V1B5939-CC5937	1B122707.D	03/13/20	09:42	00:35	Continuing cal 5
V1B5939-BS	1B122708.D	03/13/20	10:23	01:16	Blank Spike
V1B5939-MB	1B122709.D	03/13/20	10:54	01:47	Method Blank
ZZZZZZ	1B122710.D	03/13/20	11:34	02:27	(unrelated sample)
ZZZZZZ	1B122711.D	03/13/20	12:05	02:58	(unrelated sample)
ZZZZZZ	1B122712.D	03/13/20	12:36	03:29	(unrelated sample)
ZZZZZZ	1B122713.D	03/13/20	13:08	04:01	(unrelated sample)
JD4556-1	1B122714.D	03/13/20	13:40	04:33	(used for QC only; not part of job JD4439)
JD4556-2	1B122715.D	03/13/20	14:11	05:04	(used for QC only; not part of job JD4439)
JD4556-1MS	1B122716.D	03/13/20	14:43	05:36	Matrix Spike
ZZZZZZ	1B122717.D	03/13/20	15:14	06:07	(unrelated sample)
JD4556-2DUP	1B122718.D	03/13/20	15:46	06:39	Duplicate
ZZZZZZ	1B122719.D	03/13/20	16:18	07:11	(unrelated sample)
ZZZZZZ	1B122720.D	03/13/20	16:49	07:42	(unrelated sample)
JD4439-3	1B122721.D	03/13/20	17:21	08:14	TB-031020
JD4439-1	1B122722.D	03/13/20	17:52	08:45	RW-1227OCM-031020
JD4439-2	1B122723.D	03/13/20	18:24	09:17	RW-1227OCM-031020-F
ZZZZZZ	1B122724.D	03/13/20	18:55	09:48	(unrelated sample)
ZZZZZZ	1B122725.D	03/13/20	19:27	10:20	(unrelated sample)
ZZZZZZ	1B122726.D	03/13/20	19:58	10:51	(unrelated sample)
ZZZZZZ	1B122727.D	03/13/20	20:30	11:23	(unrelated sample)

Instrument Performance Check (BFB)

Job Number: JD4439
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample:	V3A6923-BFB	**Injection Date:**	07/18/18
Lab File ID:	3A160428.D	**Injection Time:**	16:55
Instrument ID:	GCMS3A		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	25408	20.8		Pass
75	30.0 - 60.0% of mass 95	62880	51.6		Pass
95	Base peak, 100% relative abundance	121864	100.0		Pass
96	5.0 - 9.0% of mass 95	8101	6.65		Pass
173	Less than 2.0% of mass 174	826	0.68	(0.81) [a]	Pass
174	50.0 - 120.0% of mass 95	102317	84.0		Pass
175	5.0 - 9.0% of mass 174	8168	6.70	(7.98) [a]	Pass
176	95.0 - 101.0% of mass 174	100370	82.4	(98.1) [a]	Pass
177	5.0 - 9.0% of mass 176	6691	5.49	(6.67) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V3A6923-IC6923	3A160429.D	07/18/18	17:26	00:31	Initial cal 0.25
V3A6923-IC6923	3A160430.D	07/18/18	17:52	00:57	Initial cal 0.4
V3A6923-IC6923	3A160431.D	07/18/18	18:18	01:23	Initial cal 1
V3A6923-IC6923	3A160432.D	07/18/18	18:43	01:48	Initial cal 2
V3A6923-IC6923	3A160433.D	07/18/18	19:09	02:14	Initial cal 5
V3A6923-ICC6923	3A160434.D	07/18/18	19:35	02:40	Initial cal 20
V3A6923-IC6923	3A160435.D	07/18/18	20:00	03:05	Initial cal 50
V3A6923-IC6923	3A160436.D	07/18/18	20:26	03:31	Initial cal 100
V3A6923-IC6923	3A160437.D	07/18/18	20:52	03:57	Initial cal 200
V3A6923-ICV6923	3A160443.D	07/18/18	23:25	06:30	Initial cal verification 20

Instrument Performance Check (BFB)

Job Number: JD4439
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample:	V3A7109-BFB	**Injection Date:**	03/12/20
Lab File ID:	3A163870.D	**Injection Time:**	07:52
Instrument ID:	GCMS3A		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	15765	16.2		Pass
75	30.0 - 60.0% of mass 95	47066	48.3		Pass
95	Base peak, 100% relative abundance	97496	100.0		Pass
96	5.0 - 9.0% of mass 95	6749	6.92		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	91965	94.3		Pass
175	5.0 - 9.0% of mass 174	7163	7.35	(7.79) [a]	Pass
176	95.0 - 101.0% of mass 174	91426	93.8	(99.4) [a]	Pass
177	5.0 - 9.0% of mass 176	5956	6.11	(6.51) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V3A7109-CC6923	3A163871.D	03/12/20	08:26	00:34	Continuing cal 5
V3A7109-BS	3A163872.D	03/12/20	09:01	01:09	Blank Spike
V3A7109-BSD	3A163873.D	03/12/20	09:30	01:38	Blank Spike Duplicate
V3A7109-MB	3A163875.D	03/12/20	10:28	02:36	Method Blank
ZZZZZZ	3A163876.D	03/12/20	10:57	03:05	(unrelated sample)
JD4355-2	3A163877.D	03/12/20	11:25	03:33	(used for QC only; not part of job JD4439)
JD4355-3	3A163878.D	03/12/20	11:54	04:02	(used for QC only; not part of job JD4439)
ZZZZZZ	3A163879.D	03/12/20	12:23	04:31	(unrelated sample)
JD4355-2DUP	3A163880.D	03/12/20	12:51	04:59	Duplicate
JD4439-3	3A163881.D	03/12/20	13:21	05:29	TB-031020
JD4439-1	3A163882.D	03/12/20	13:50	05:58	RW-1227OCM-031020
JD4439-2	3A163883.D	03/12/20	14:19	06:27	RW-1227OCM-031020-F
ZZZZZZ	3A163884.D	03/12/20	14:48	06:56	(unrelated sample)
JD4355-3MS	3A163885.D	03/12/20	15:17	07:25	Matrix Spike

Surrogate Recovery Summary

Job Number: JD4439
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Method: EPA 524.2 REV 4.1 **Matrix:** AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2
JD4439-1	1B122722.D	85	86
JD4439-2	1B122723.D	85	85
JD4439-3	1B122721.D	85	85
JD4556-1MS	1B122716.D	102	99
JD4556-2DUP	1B122718.D	88	86
V1B5939-BS	1B122708.D	98	100
V1B5939-MB	1B122709.D	85	87

Surrogate Compounds	Recovery Limits
S1 = 1,2-Dichlorobenzene-d4	70-130%
S2 = 4-Bromofluorobenzene	70-130%

Surrogate Recovery Summary

Job Number: JD4439
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Method: SW846 8260C BY SIM **Matrix:** AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1
JD4439-1	3A163882.D	101
JD4439-2	3A163883.D	113
JD4439-3	3A163881.D	107
JD4355-2DUP	3A163880.D	108
JD4355-3MS	3A163885.D	98
V3A7109-BS	3A163872.D	106
V3A7109-BSD	3A163873.D	124
V3A7109-MB	3A163875.D	108

Surrogate Compounds	Recovery Limits
S1 = 1,4-Dioxane-d8	25-195%

ENCLOSURE B – LABORATORY ANALYTICAL REPORT FOR RESIDENTIAL WELL SAMPLE (1409 BITTERSWEET DRIVE)

PHASE SEPARATION SCIENCE

6630 Baltimore National Pike
Baltimore, MD 21228
410-747-8770
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Certificate of Analysis

Project Name: Kop-Flex Offsite
PSS Project No.: 20022504

March 10, 2020

Eric Johnson
WSP USA - Herndon
13530 Dulles Technology Dr, Ste 300
Herndon, VA 20171

Reference: PSS Project No: **20022504**
Project Name: Kop-Flex Offsite
Project Location: Hanover, MD
Project ID.: 31401545.011

Dear Eric Johnson:

This report includes the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Phase Separation Science (PSS) Project number(s) **20022504**.

All work reported herein has been performed in accordance with current NELAP standards, referenced methodologies, PSS Standard Operating Procedures and the PSS Quality Assurance Manual unless otherwise noted in the Case Narrative Summary. PSS is limited in liability to the actual cost of the sample analysis done.

PSS reserves the right to return any unused samples, extracts or related solutions. Otherwise, the samples are scheduled for disposal, without any further notice, on March 31, 2020, with the exception of air canisters which are cleaned immediately following analysis. This includes any samples that were received with a request to be held but lacked a specific hold period. It is your responsibility to provide a written request defining a specific disposal date if additional storage is required. Upon receipt, the request will be acknowledged by PSS, thus extending the storage period.

This report shall not be reproduced except in full, without the written approval of an authorized PSS representative. A copy of this report will be retained by PSS for at least 5 years, after which time it will be disposed of without further notice, unless prior arrangements have been made.

We thank you for selecting Phase Separation Science, Inc. to serve your analytical needs. If you have any questions concerning this report, do not hesitate to contact us at 410-747-8770 or info@phaseonline.com.

Sincerely,

Dan Prucnal
Laboratory Manager

PHASE SEPARATION SCIENCE

6630 Baltimore National Pike
Baltimore, MD 21228
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800-932-9047
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Explanation of Qualifiers

Project Name: Kop-Flex Offsite
PSS Project No.: 20022504

Project ID: 31401545.011

The following samples were received under chain of custody by Phase Separation Science (PSS) on 02/25/2020 at 11:15 am

PSS Sample ID	Sample ID	Matrix	Date/Time Collected
20022504-001	1409BD-022520-F	WATER	02/25/20 10:45
20022504-002	1409BD-022520	WATER	02/25/20 10:40
20022504-003	Trip Blank	WATER	02/25/20 11:15

Please reference the Chain of Custody and Sample Receipt Checklist for specific container counts and preservatives. Any sample conditions not in compliance with sample acceptance criteria are described in Case Narrative Summary.

Notes:

1. The presence of a common laboratory contaminant such as methylene chloride may be considered a possible laboratory artifact. Where observed, appropriate consideration of data should be taken.
2. Unless otherwise noted in the case narrative, results are reported on a dry weight basis with the exception of pH, flashpoint, moisture, and paint filter test.
3. Drinking water samples collected for the purpose of compliance with SDWA may not be suitable for their intended use unless collected by a certified sampler [COMAR 26.08.05.07.C.2].
4. The analyses of 1,2-dibromo-3-chloropropane (DBCP) and 1,2-dibromoethane (EDB) by EPA 524.2 and calcium, magnesium, sodium and iron by EPA 200.8 are not currently promulgated for use in testing to meet the Safe Drinking Water Act and as such cannot be used for compliance purposes. The listings of the current promulgated methods for testing in compliance with the Safe Drinking Water Act can be found in the 40 CFR part 141.1, for the primary drinking water contaminates, and part 141.3, for the secondary drinking water contaminates.
5. Sample prepared under EPA 3550C with concentrations greater than 20 mg/Kg should employ the microtip extraction procedure if required to meet data quality objectives.
6. The analysis of acrolein by EPA 624 must be analyzed within three days of sampling unless pH is adjusted to 4-5 units [40 CFR part 136.3(e)].
7. Method 180.1, The Determination of Turbidity by Nephelometry, recommends samples over 40 NTU be diluted until the turbidity falls below 40 units. Routine samples over 40 NTU may not be diluted as long as the data quality objectives are not affected.
8. Alkalinity results analyzed by EPA 310.2 that are reported by dilution are estimated and are not in compliance with method requirements.

Standard Flags/Abbreviations:

B	A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
C	Results Pending Final Confirmation.
E	The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
Fail	The result exceeds the regulatory level for Toxicity Characteristic (TCLP) as cited in 40 CFR 261.24 Table 1.
J	The target analyte was positively identified below the reporting limit but greater than the MDL.
MDL	This is the Laboratory Method Detection Limit which is equivalent to the Limit of Detection (LOD). The LOD is an estimate of the minimum amount of a substance that an analytical process can reliably detect. This value will remain constant across multiple similar instrumentation and among different analysts. An LOD is analyte and matrix specific.
ND	Not Detected at or above the reporting limit.
RL	PSS Reporting Limit.
U	Not detected.

Certifications:

NELAP Certifications: PA 68-03330, VA 460156
State Certifications: MD 179, WV 303
Regulated Soil Permit: P330-12-00268
NSWC USCG Accepted Laboratory
LDBE MWAA LD1997-0041-2015

PHASE SEPARATION SCIENCE

6630 Baltimore National Pike
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www.phaseonline.com

Certificate of Analysis

Project Name: Kop-Flex Offsite
PSS Project No.: 20022504

Sample ID: 1409BD-022520-F **Date/Time Sampled: 02/25/2020 10:45** **PSS Sample ID: 20022504-001**
Matrix: WATER **Date/Time Received: 02/25/2020 11:15**

VOC In Drinking Water | Analytical Method: EPA 524.2 | Preparation Method: 524.2

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Benzene	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011
Bromobenzene	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011
Bromochloromethane	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011
Bromodichloromethane	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011
Bromoform	ND	ug/L	1.0		1	02/25/20	02/25/20 18:31	1011
Bromomethane	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011
tert-Butylbenzene	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011
sec-Butylbenzene	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011
n-Butylbenzene	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011
Carbon tetrachloride	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011
Chlorobenzene	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011
Chloroethane	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011
Chloroform	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011
Chloromethane	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011
2-Chlorotoluene	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011
4-Chlorotoluene	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	02/25/20	02/25/20 18:31	1011
Dibromochloromethane	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011
1,2-Dibromoethane	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011
Dibromomethane	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011
1,2-Dichlorobenzene	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011
1,3-Dichlorobenzene	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011
1,4-Dichlorobenzene	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011
Dichlorodifluoromethane	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011
1,1-Dichloroethane	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011
1,2-Dichloroethane	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011
cis-1,2-Dichloroethene	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011
trans-1,2-Dichloroethene	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011
1,1-Dichloroethene	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011
1,2-Dichloropropane	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011
1,3-Dichloropropane	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011
2,2-Dichloropropane	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011
1,1-Dichloropropene	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011
cis-1,3-Dichloropropene	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011
trans-1,3-Dichloropropene	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011

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Project Name: Kop-Flex Offsite
PSS Project No.: 20022504

Sample ID: 1409BD-022520-F **Date/Time Sampled: 02/25/2020 10:45** **PSS Sample ID: 20022504-001**
Matrix: WATER **Date/Time Received: 02/25/2020 11:15**

VOC In Drinking Water | Analytical Method: EPA 524.2 | Preparation Method: 524.2

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Ethylbenzene	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011
Hexachlorobutadiene	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011
Isopropylbenzene	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011
4-Isopropyltoluene	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011
Methylene chloride	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011
Methyl-t-Butyl Ether	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011
Naphthalene	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011
n-Propylbenzene	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011
Styrene	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011
Tetrachloroethene	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011
Toluene	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011
1,2,3-Trichlorobenzene	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011
1,2,4-Trichlorobenzene	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011
1,1,1-Trichloroethane	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011
1,1,2-Trichloroethane	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011
Trichloroethene	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011
Trichlorofluoromethane	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011
1,2,3-Trichloropropane	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011
1,2,4-Trimethylbenzene	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011
1,3,5-Trimethylbenzene	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011
Vinyl chloride	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011
o-Xylene	ND	ug/L	0.50		1	02/25/20	02/25/20 18:31	1011
m&p-Xylene	ND	ug/L	1.0		1	02/25/20	02/25/20 18:31	1011

Surrogate(s)	*Recovery*		*Limits*				
4-Bromofluorobenzene	*96*	*%*	*83-126*		*1*	*02/25/20*	*02/25/20 18:31*	*1011*
Dibromofluoromethane	*95*	*%*	*92-118*		*1*	*02/25/20*	*02/25/20 18:31*	*1011*
Toluene-D8	*99*	*%*	*92-117*		*1*	*02/25/20*	*02/25/20 18:31*	*1011*

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Project Name: Kop-Flex Offsite
PSS Project No.: 20022504

Sample ID: 1409BD-022520-F **Date/Time Sampled: 02/25/2020 10:45** **PSS Sample ID: 20022504-001**
Matrix: WATER **Date/Time Received: 02/25/2020 11:15**

1,4-Dioxane by GC/MS - SIM Analytical Method: SW-846 8260 B-Modified Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
1,4-Dioxane (P-Dioxane)	ND	ug/L	1.0		1	03/09/20	03/09/20 19:40	1045
Surrogate(s)	***Recovery***		***Limits***					
Toluene-D8	*97*	*%*	*80-120*		*1*	*03/09/20*	*03/09/20 19:40*	*1045*

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Project Name: Kop-Flex Offsite
PSS Project No.: 20022504

Sample ID: 1409BD-022520 **Date/Time Sampled: 02/25/2020 10:40** **PSS Sample ID: 20022504-002**
Matrix: WATER **Date/Time Received: 02/25/2020 11:15**

Turbidity — Analytical Method: EPA 180.1

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Turbidity	**2.5**	NTU	0.50		1	02/25/20	02/25/20 12:45	1061

Total Metals (2) — Analytical Method: EPA 200.7

	Result	Units	RL	Flag	Prepared	Analyzed	Analyst
Iron	**2.77**	mg/L	0.050		02/27/20	02/27/20 09:49	4005
Sodium	ND	mg/L	1.00		03/03/20	03/03/20 16:12	4005

Total Lead — Analytical Method: EPA 200.8 — Preparation Method: 200.8
Qualifier(s): See Batch 172326 on Case Narrative.

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Lead	**1.1**	ug/L	1.0		1	02/27/20	03/03/20 01:23	1064

Inorganic Anions — Analytical Method: EPA 300.0 — Preparation Method: E300.0P

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Nitrite (as N)	ND	mg/L	0.10		1	02/25/20	02/25/20 16:03	1053
Nitrate (as N)	ND	mg/L	0.10		1	02/25/20	02/25/20 16:03	1053

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Project Name: Kop-Flex Offsite
PSS Project No.: 20022504

Sample ID: 1409BD-022520 **Date/Time Sampled: 02/25/2020 10:40** **PSS Sample ID: 20022504-002**
Matrix: WATER **Date/Time Received: 02/25/2020 11:15**

VOC In Drinking Water | Analytical Method: EPA 524.2 | Preparation Method: 524.2

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Benzene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011
Bromobenzene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011
Bromochloromethane	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011
Bromodichloromethane	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011
Bromoform	ND	ug/L	1.0		1	02/25/20	02/25/20 19:00	1011
Bromomethane	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011
tert-Butylbenzene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011
sec-Butylbenzene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011
n-Butylbenzene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011
Carbon tetrachloride	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011
Chlorobenzene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011
Chloroethane	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011
Chloroform	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011
Chloromethane	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011
2-Chlorotoluene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011
4-Chlorotoluene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	02/25/20	02/25/20 19:00	1011
Dibromochloromethane	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011
1,2-Dibromoethane	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011
Dibromomethane	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011
1,2-Dichlorobenzene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011
1,3-Dichlorobenzene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011
1,4-Dichlorobenzene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011
Dichlorodifluoromethane	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011
1,1-Dichloroethane	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011
1,2-Dichloroethane	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011
cis-1,2-Dichloroethene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011
trans-1,2-Dichloroethene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011
1,1-Dichloroethene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011
1,2-Dichloropropane	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011
1,3-Dichloropropane	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011
2,2-Dichloropropane	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011
1,1-Dichloropropene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011
cis-1,3-Dichloropropene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011
trans-1,3-Dichloropropene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011

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Certificate of Analysis

Project Name: Kop-Flex Offsite
PSS Project No.: 20022504

Sample ID: 1409BD-022520 **Date/Time Sampled: 02/25/2020 10:40** **PSS Sample ID: 20022504-002**
Matrix: WATER **Date/Time Received: 02/25/2020 11:15**

VOC In Drinking Water | Analytical Method: EPA 524.2 | Preparation Method: 524.2

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Ethylbenzene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011
Hexachlorobutadiene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011
Isopropylbenzene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011
4-Isopropyltoluene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011
Methylene chloride	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011
Methyl-t-Butyl Ether	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011
Naphthalene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011
n-Propylbenzene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011
Styrene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011
Tetrachloroethene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011
Toluene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011
1,2,3-Trichlorobenzene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011
1,2,4-Trichlorobenzene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011
1,1,1-Trichloroethane	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011
1,1,2-Trichloroethane	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011
Trichloroethene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011
Trichlorofluoromethane	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011
1,2,3-Trichloropropane	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011
1,2,4-Trimethylbenzene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011
1,3,5-Trimethylbenzene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011
Vinyl chloride	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011
o-Xylene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:00	1011
m&p-Xylene	ND	ug/L	1.0		1	02/25/20	02/25/20 19:00	1011

Surrogate(s)	*Recovery*		*Limits*				
4-Bromofluorobenzene	*97*	*%*	*83-126*		*1*	*02/25/20*	*02/25/20 19:00*	*1011*
Dibromofluoromethane	*95*	*%*	*92-118*		*1*	*02/25/20*	*02/25/20 19:00*	*1011*
Toluene-D8	*100*	*%*	*92-117*		*1*	*02/25/20*	*02/25/20 19:00*	*1011*

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Project Name: Kop-Flex Offsite
PSS Project No.: 20022504

Sample ID: 1409BD-022520 **Date/Time Sampled: 02/25/2020 10:40** **PSS Sample ID: 20022504-002**
Matrix: WATER **Date/Time Received: 02/25/2020 11:15**

Total Suspended Solids — Analytical Method: SM 2540D -2011

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Suspended Solids	ND	mg/L	1.0		1	02/25/20	02/25/20 12:55	1061

pH, Electrometric — Analytical Method: SM 4500-H+ B -2011

Qualifier(s): See Sample Receipt section on Case Narrative.

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
pH	**5.2**	S.U.			1	02/25/20	02/25/20 13:57	1061

Chromogenic Substrate Coliform Test — Analytical Method: SM 9223B

	Result	Units	RL	Flag	Prepared	Analyzed	Analyst
E. COLI	**<1.0**	MPN/100mL	1.0		02/25/20	02/25/20 14:12	4005
Total Coliform	**<1.0**	MPN/100mL	1.0		02/25/20	02/25/20 14:12	4005

1,4-Dioxane by GC/MS - SIM — Analytical Method: SW-846 8260 B-Modified — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
1,4-Dioxane (P-Dioxane)	ND	ug/L	1.0		1	03/09/20	03/09/20 20:24	1045

Surrogate(s)	*Recovery*		*Limits*				
Toluene-D8	*96*	*%*	*80-120*		*1*	*03/09/20*	*03/09/20 20:24*	*1045*

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Certificate of Analysis

Project Name: Kop-Flex Offsite
PSS Project No.: 20022504

Sample ID: Trip Blank **Date/Time Sampled: 02/25/2020 11:15** **PSS Sample ID: 20022504-003**
Matrix: WATER **Date/Time Received: 02/25/2020 11:15**

VOC In Drinking Water | Analytical Method: EPA 524.2 | Preparation Method: 524.2

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Benzene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011
Bromobenzene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011
Bromochloromethane	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011
Bromodichloromethane	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011
Bromoform	ND	ug/L	1.0		1	02/25/20	02/25/20 19:29	1011
Bromomethane	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011
tert-Butylbenzene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011
sec-Butylbenzene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011
n-Butylbenzene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011
Carbon tetrachloride	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011
Chlorobenzene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011
Chloroethane	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011
Chloroform	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011
Chloromethane	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011
2-Chlorotoluene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011
4-Chlorotoluene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	02/25/20	02/25/20 19:29	1011
Dibromochloromethane	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011
1,2-Dibromoethane	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011
Dibromomethane	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011
1,2-Dichlorobenzene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011
1,3-Dichlorobenzene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011
1,4-Dichlorobenzene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011
Dichlorodifluoromethane	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011
1,1-Dichloroethane	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011
1,2-Dichloroethane	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011
cis-1,2-Dichloroethene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011
trans-1,2-Dichloroethene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011
1,1-Dichloroethene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011
1,2-Dichloropropane	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011
1,3-Dichloropropane	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011
2,2-Dichloropropane	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011
1,1-Dichloropropene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011
cis-1,3-Dichloropropene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011
trans-1,3-Dichloropropene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011

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Certificate of Analysis

Project Name: Kop-Flex Offsite
PSS Project No.: 20022504

Sample ID: Trip Blank **Date/Time Sampled: 02/25/2020 11:15** **PSS Sample ID: 20022504-003**
Matrix: WATER **Date/Time Received: 02/25/2020 11:15**

VOC In Drinking Water | Analytical Method: EPA 524.2 | Preparation Method: 524.2

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Ethylbenzene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011
Hexachlorobutadiene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011
Isopropylbenzene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011
4-Isopropyltoluene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011
Methylene chloride	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011
Methyl-t-Butyl Ether	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011
Naphthalene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011
n-Propylbenzene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011
Styrene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011
Tetrachloroethene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011
Toluene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011
1,2,3-Trichlorobenzene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011
1,2,4-Trichlorobenzene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011
1,1,1-Trichloroethane	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011
1,1,2-Trichloroethane	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011
Trichloroethene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011
Trichlorofluoromethane	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011
1,2,3-Trichloropropane	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011
1,2,4-Trimethylbenzene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011
1,3,5-Trimethylbenzene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011
Vinyl chloride	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011
o-Xylene	ND	ug/L	0.50		1	02/25/20	02/25/20 19:29	1011
m&p-Xylene	ND	ug/L	1.0		1	02/25/20	02/25/20 19:29	1011

Surrogate(s)	*Recovery*		*Limits*				
4-Bromofluorobenzene	*97*	*%*	*83-126*		*1*	*02/25/20*	*02/25/20 19:29*	*1011*
Dibromofluoromethane	*95*	*%*	*92-118*		*1*	*02/25/20*	*02/25/20 19:29*	*1011*
Toluene-D8	*100*	*%*	*92-117*		*1*	*02/25/20*	*02/25/20 19:29*	*1011*

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Certificate of Analysis

Project Name: Kop-Flex Offsite
PSS Project No.: 20022504

Sample ID: Trip Blank **Date/Time Sampled: 02/25/2020 11:15** **PSS Sample ID: 20022504-003**
Matrix: WATER **Date/Time Received: 02/25/2020 11:15**

1,4-Dioxane by GC/MS - SIM Analytical Method: SW-846 8260 B-Modified Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
1,4-Dioxane (P-Dioxane)	ND	ug/L	1.0		1	03/09/20	03/09/20 19:17	1045
Surrogate(s)	***Recovery***		***Limits***					
Toluene-D8	*98*	*%*	*80-120*		*1*	*03/09/20*	*03/09/20 19:17*	*1045*

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Project Name: Kop-Flex Offsite

PSS Project No.: 20022504

Any holding time exceedances, deviations from the method specifications, regulatory requirements or variations to the procedures outlined in the PSS Quality Assurance Manual are outlined below.

Matrix spike and matrix spike duplicate analyses may not be performed due to insufficient sample quantity. In these instances, a laboratory control sample and laboratory control sample duplicate are analyzed unless otherwise noted or specified in the method.

Sample Receipt:

The analyses of chlorine, pH, dissolved oxygen, temperature and sulfite for drinking water and non-potable samples tested for compliance have a maximum holding time of 15 minutes. As such, all laboratory analyses for these analytes exceed holding times.

20022504: Analyses associated with analyst code 4005 were performed by
Enviro-Chem Laboratories, Inc., 47 Loveton Circle, Suite K, Sparks, MD 21152

General Comments:
Sodium analysis added, per client.

Analytical:

Total Metals + Hardness

Batch: 172326
Matrix Spike/Matrix Spike Duplicate (MS/MSD) exceedances identified; see QC summary form. The concentration of the following analytes in the reference sample was greater than four times the matrix spike concentration: copper.

NELAP accreditation was held for all analyses performed unless noted below. See www.phaseonline.com for complete PSS scope of accreditation.
EPA 200.7, SM 9223B

EPA 524.2: 1,2-Dibromo-3-chloropropane, 1,2-Dibromoethane,

SW-846 8260 B-Modified: 1,4-Dioxane

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Lab Chronology

Project Name: Kop-Flex Offsite
PSS Project No.: 20022504

Method	Client Sample ID	Analysis Type	PSS Sample ID	Mtx	Prep Batch	Analytical Batch	Prepared	Analyzed
EPA 180.1	1409BD-022520	Initial	20022504-002	W	172150	172150	02/25/2020 12:45	02/25/2020 12:45
	172150-1-BLK	BLK	172150-1-BLK	W	172150	172150	02/25/2020 12:21	02/25/2020 12:21
	MW-1 D	MD	20022502-001 D	W	172150	172150	02/25/2020 12:21	02/25/2020 12:21
	1409BD-022520 D	MD	20022504-002 D	W	172150	172150	02/25/2020 12:48	02/25/2020 12:48
EPA 200.7	1409BD-022520	Initial	20022504-002	W	172457	172457	02/27/2020 09:49	02/27/2020 09:49
	1409BD-022520	Initial	20022504-002	W	172457	172457	03/03/2020 16:12	03/03/2020 16:12
EPA 200.8	1409BD-022520	Initial	20022504-002	W	80500	172326	02/27/2020 11:46	03/03/2020 01:23
	80500-1-BKS	BKS	80500-1-BKS	W	80500	172326	02/27/2020 11:46	03/03/2020 01:18
	80500-1-BLK	BLK	80500-1-BLK	W	80500	172326	02/27/2020 11:46	03/03/2020 01:13
	1409BD-022520 S	MS	20022504-002 S	W	80500	172326	02/27/2020 11:46	03/03/2020 01:28
	JH200210-25 S	MS	20022616-003 S	W	80500	172326	02/27/2020 11:46	03/03/2020 03:45
	1409BD-022520 SD	MSD	20022504-002 S	W	80500	172326	02/27/2020 11:46	03/03/2020 01:32
EPA 300.0	1409BD-022520	Initial	20022504-002	W	80467	172190	02/25/2020 12:21	02/25/2020 16:03
	80467-1-BKS	BKS	80467-1-BKS	W	80467	172190	02/25/2020 12:21	02/25/2020 12:19
	80467-1-BLK	BLK	80467-1-BLK	W	80467	172190	02/25/2020 12:21	02/25/2020 11:54
	MW-1 S	MS	20022502-001 S	W	80467	172190	02/25/2020 12:21	02/25/2020 15:13
	MW-1 SD	MSD	20022502-001 S	W	80467	172190	02/25/2020 12:21	02/25/2020 15:38
EPA 524.2	1409BD-022520-F	Initial	20022504-001	W	80478	172188	02/25/2020 08:19	02/25/2020 18:31
	1409BD-022520	Initial	20022504-002	W	80478	172188	02/25/2020 08:19	02/25/2020 19:00
	Trip Blank	Initial	20022504-003	W	80478	172188	02/25/2020 08:19	02/25/2020 19:29
	80478-1-BKS	BKS	80478-1-BKS	W	80478	172188	02/25/2020 08:19	02/25/2020 09:23
	80478-1-BLK	BLK	80478-1-BLK	W	80478	172188	02/25/2020 08:19	02/25/2020 10:50
	80478-1-BSD	BSD	80478-1-BSD	W	80478	172188	02/25/2020 08:19	02/25/2020 09:52
SM 2540D -2011	1409BD-022520	Initial	20022504-002	W	172147	172147	02/25/2020 12:55	02/25/2020 12:55
	172147-1-BLK	BLK	172147-1-BLK	W	172147	172147	02/25/2020 12:03	02/25/2020 12:03
	601 D	MD	20022414-002 D	W	172147	172147	02/25/2020 12:03	02/25/2020 12:03
SM 4500-H+ B -2011	1409BD-022520	Initial	20022504-002	W	172157	172157	02/25/2020 13:57	02/25/2020 13:57
	MW-1 D	MD	20022502-001 D	W	172157	172157	02/25/2020 13:57	02/25/2020 13:57
SM 9223B	1409BD-022520	Initial	20022504-002	W	172468	172468	02/25/2020 14:12	02/25/2020 14:12
SW-846 8260 B-Modified	1409BD-022520-F	Initial	20022504-001	W	80629	172476	03/10/2020 11:39	03/09/2020 19:40
	1409BD-022520	Initial	20022504-002	W	80629	172476	03/10/2020 11:39	03/09/2020 20:24
	Trip Blank	Initial	20022504-003	W	80629	172476	03/10/2020 11:39	03/09/2020 19:17
	80629-1-BKS	BKS	80629-1-BKS	W	80629	172476	03/10/2020 11:39	03/09/2020 17:26
	80629-1-BLK	BLK	80629-1-BLK	W	80629	172476	03/10/2020 11:39	03/09/2020 18:55
	80629-1-BSD	BSD	80629-1-BSD	W	80629	172476	03/10/2020 11:39	03/09/2020 17:48

Analytical Method: EPA 180.1
Seq Number: 172150 Matrix: Water
MB Sample Id: 172150-1-BLK

Parameter	MB Result	LOD	RL	Units	Flag
Turbidity	ND	0.1800	0.5000	NTU	

Analytical Method: EPA 180.1
Seq Number: 172150 Matrix: Water
Parent Sample Id: 20022504-002 MD Sample Id: 20022504-002 D

Parameter	Parent Result	MD Result	%RPD	RPD Limit	Units	Flag
Turbidity	2.460	2.450	0	20	NTU	

Analytical Method: SM 2540D -2011
Seq Number: 172147 Matrix: Water
MB Sample Id: 172147-1-BLK

Parameter	MB Result	LOD	RL	Units	Flag
Suspended Solids	ND	0.5000	1.000	mg/L	

Analytical Method: EPA 200.8 Prep Method: E200.8_PREP
Seq Number: 172326 Matrix: Water Date Prep: 02/27/20
MB Sample Id: 80500-1-BLK LCS Sample Id: 80500-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Flag
Lead	<1.000	40.00	42.37	106	85-115	ug/L	

Analytical Method: EPA 200.8 Prep Method: E200.8_PREP
Seq Number: 172326 Matrix: Water Date Prep: 02/27/20
Parent Sample Id: 20022504-002 MS Sample Id: 20022504-002 S MSD Sample Id: 20022504-002 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Flag
Lead	1.133	40.00	54.64	134	43.44	106	70-130	23	25	ug/L	X

Analytical Method: EPA 300.0 Prep Method: E300.0P
Seq Number: 172190 Matrix: Water Date Prep: 02/25/20
MB Sample Id: 80467-1-BLK LCS Sample Id: 80467-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Flag
Nitrite (as N)	<0.1000	5.000	4.978	100	90-110	mg/L	
Nitrate (as N)	<0.1000	5.000	4.891	98	90-110	mg/L	

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QC Summary

Project Name Kop-Flex Offsite
PSS Project No.: 20022504

Analytical Method: EPA 524.2 Prep Method: E524.2PREP
Seq Number: 172188 Matrix: Water Date Prep: 02/25/20
MB Sample Id: 80478-1-BLK LCS Sample Id: 80478-1-BKS LCSD Sample Id: 80478-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Flag
Benzene	<0.5000	10.00	10.19	102	10.77	108	70-130	6	30	ug/L	
Bromobenzene	<0.5000	10.00	10.09	101	10.77	108	70-130	7	30	ug/L	
Bromochloromethane	<0.5000	10.00	9.770	98	10.78	108	70-130	10	30	ug/L	
Bromodichloromethane	<0.5000	10.00	9.330	93	10.12	101	70-130	8	30	ug/L	
Bromoform	<1.000	20.00	15.62	78	18.03	90	70-130	14	30	ug/L	
Bromomethane	<0.5000	10.00	9.540	95	10.15	102	70-130	7	30	ug/L	
tert-Butylbenzene	<0.5000	10.00	10.10	101	10.42	104	70-130	3	30	ug/L	
sec-Butylbenzene	<0.5000	10.00	10.28	103	10.69	107	70-130	4	30	ug/L	
n-Butylbenzene	<0.5000	10.00	10.57	106	10.91	109	70-130	3	30	ug/L	
Carbon tetrachloride	<0.5000	10.00	9.450	95	9.870	99	70-130	4	30	ug/L	
Chlorobenzene	<0.5000	10.00	10.20	102	10.76	108	70-130	6	30	ug/L	
Chloroethane	<0.5000	10.00	9.930	99	10.40	104	70-130	5	30	ug/L	
Chloroform	<0.5000	10.00	10.01	100	10.58	106	70-130	6	30	ug/L	
Chloromethane	<0.5000	10.00	9.530	95	10.08	101	70-130	6	30	ug/L	
2-Chlorotoluene	<0.5000	10.00	10.16	102	10.72	107	70-130	5	30	ug/L	
4-Chlorotoluene	<0.5000	10.00	10.20	102	10.73	107	70-130	5	30	ug/L	
1,2-Dibromo-3-chloropropane	<5.000	50.00	40.02	80	49.71	99	70-130	21	30	ug/L	
Dibromochloromethane	<0.5000	10.00	8.570	86	9.650	97	70-130	12	30	ug/L	
1,2-Dibromoethane	<0.5000	10.00	9.430	94	10.76	108	70-130	14	30	ug/L	
Dibromomethane	<0.5000	10.00	9.440	94	10.73	107	70-130	13	30	ug/L	
1,2-Dichlorobenzene	<0.5000	10.00	9.890	99	10.81	108	70-130	9	30	ug/L	
1,3-Dichlorobenzene	<0.5000	10.00	10.25	103	10.91	109	70-130	6	30	ug/L	
1,4-Dichlorobenzene	<0.5000	10.00	10.42	104	10.97	110	70-130	6	30	ug/L	
Dichlorodifluoromethane	<0.5000	10.00	9.330	93	9.380	94	70-130	1	30	ug/L	
1,1-Dichloroethane	<0.5000	10.00	9.930	99	10.31	103	70-130	4	30	ug/L	
1,2-Dichloroethane	<0.5000	10.00	9.380	94	10.32	103	70-130	9	30	ug/L	
cis-1,2-Dichloroethene	<0.5000	10.00	9.850	99	10.33	103	70-130	4	30	ug/L	
trans-1,2-Dichloroethene	<0.5000	10.00	9.930	99	10.51	105	70-130	6	30	ug/L	
1,1-Dichloroethene	<0.5000	10.00	10.05	101	10.34	103	70-130	2	30	ug/L	
1,2-Dichloropropane	<0.5000	10.00	9.750	98	10.35	104	70-130	6	30	ug/L	
1,3-Dichloropropane	<0.5000	10.00	9.430	94	10.57	106	70-130	12	30	ug/L	
2,2-Dichloropropane	<0.5000	10.00	9.990	100	10.05	101	70-130	1	30	ug/L	
1,1-Dichloropropene	<0.5000	10.00	9.930	99	10.37	104	70-130	5	30	ug/L	
cis-1,3-Dichloropropene	<0.5000	10.00	9.310	93	10.08	101	70-130	8	30	ug/L	
trans-1,3-Dichloropropene	<0.5000	10.00	8.830	88	9.730	97	70-130	10	30	ug/L	
Ethylbenzene	<0.5000	10.00	10.26	103	10.74	107	70-130	4	30	ug/L	
Hexachlorobutadiene	<0.5000	10.00	10.66	107	10.85	109	70-130	2	30	ug/L	
Isopropylbenzene	<0.5000	10.00	10.02	100	10.49	105	70-130	5	30	ug/L	
4-Isopropyltoluene	<0.5000	10.00	10.31	103	10.83	108	70-130	5	30	ug/L	
Methylene chloride	<0.5000	10.00	10.01	100	10.87	109	70-130	9	30	ug/L	
Methyl-t-Butyl Ether	<0.5000	10.00	9.110	91	10.55	106	70-130	15	30	ug/L	
Naphthalene	<0.5000	10.00	9.570	96	11.39	114	70-130	17	30	ug/L	
n-Propylbenzene	<0.5000	10.00	10.31	103	10.66	107	70-130	4	30	ug/L	
Styrene	<0.5000	10.00	10.00	100	10.57	106	70-130	6	30	ug/L	
1,1,1,2-Tetrachloroethane	<0.5000	10.00	9.440	94	9.990	100	70-130	6	30	ug/L	
1,1,2,2-Tetrachloroethane	<0.5000	10.00	10.23	102	12.08	121	70-130	17	30	ug/L	
Tetrachloroethene	<0.5000	10.00	10.05	101	10.37	104	70-130	3	30	ug/L	
Toluene	<0.5000	10.00	10.10	101	10.61	106	70-130	5	30	ug/L	
1,2,3-Trichlorobenzene	<0.5000	10.00	10.24	102	11.26	113	70-130	10	30	ug/L	
1,2,4-Trichlorobenzene	<0.5000	10.00	10.31	103	11.21	112	70-130	8	30	ug/L	
1,1,1-Trichloroethane	<0.5000	10.00	9.530	95	9.900	99	70-130	4	30	ug/L	

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QC Summary

Project Name Kop-Flex Offsite
PSS Project No.: 20022504

Analytical Method: EPA 524.2 Prep Method: E524.2PREP
Seq Number: 172188 Matrix: Water Date Prep: 02/25/20
MB Sample Id: 80478-1-BLK LCS Sample Id: 80478-1-BKS LCSD Sample Id: 80478-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Flag
1,1,2-Trichloroethane	<0.5000	10.00	9.580	96	10.81	108	70-130	12	30	ug/L	
Trichloroethene	<0.5000	10.00	9.250	93	9.750	98	70-130	5	30	ug/L	
Trichlorofluoromethane	<0.5000	10.00	9.700	97	10.04	100	70-130	3	30	ug/L	
1,2,3-Trichloropropane	<0.5000	10.00	8.650	87	10.61	106	70-130	20	30	ug/L	
1,2,4-Trimethylbenzene	<0.5000	10.00	10.29	103	10.88	109	70-130	6	30	ug/L	
1,3,5-Trimethylbenzene	<0.5000	10.00	10.24	102	10.77	108	70-130	6	30	ug/L	
Vinyl chloride	<0.5000	10.00	9.590	96	9.960	100	70-130	4	30	ug/L	
o-Xylene	<0.5000	10.00	10.04	100	10.84	108	70-130	8	30	ug/L	
m&p-Xylene	<1.000	20.00	20.76	104	21.76	109	70-130	5	30	ug/L	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	LCSD Result	LCSD Flag	Limits	Units
4-Bromofluorobenzene	97		96		99		83-126	%
Dibromofluoromethane	96		98		101		92-118	%
Toluene-D8	100		99		99		92-117	%

Analytical Method: SW-846 8260 B-Modified Prep Method: SW5030B
Seq Number: 172476 Matrix: Water Date Prep: 03/10/20
MB Sample Id: 80629-1-BLK LCS Sample Id: 80629-1-BKS LCSD Sample Id: 80629-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Flag
1,4-Dioxane (P-Dioxane)	<1.000	30.00	29.97	100	28.74	96	50-150	4	20	ug/L	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	LCSD Result	LCSD Flag	Limits	Units
Toluene-D8	97		99		99		80-120	%

F = RPD exceeded the laboratory control limits
X = Recovery of MS, MSD or both outside of QC Criteria
H= Recovery of BS,BSD or both exceeded the laboratory control limits
L = Recovery of BS,BSD or both below the laboratory control limits

CHAIN-OF-CUSTODY RECORD 20022504

WSP USA Office Address	13530 Dulles Technology Dr. Suite 300 Herndon, VA
Project Name	Kapflex OFFSITE
WSP USA Contact Name	Eric Johnson
Project Location	Hanover, MD
WSP USA Contact E-mail	Eric.Johnson@wsp.com
Project Number & Task	31401545.011
WSP USA Contact Phone	703-709-6500
Sampler(s) Name(s)	Chris Crespo, Shannon Burke
Sampler(s) Signature(s)	

Requested Analyses & Preservatives

Sample Identification	Matrix	Collection Start* Date	Collection Start* Time	Collection Stop* Date	Collection Stop* Time	Number of Containers	VOCs 524.2	1,4 Dioxane 8260 Sim	Total Suspended Solids	Turbidity 180.1	Nitrate Nitrite 353.2	Iron and Lead 200.7	Total Metals 200.8	Total Coliform, E. Coli 9223B			Sample Comments
1409BD-022520-F	AQ	2/25/20		1045		6	X	X									
1409BD-022520	AQ	2/25/20		1040		12	X	X	X	X	X	X	X	X			
Trip Blank						4	X	X									

# of Coolers: 1
Custody Seal: ABS
Ice Present: ABS
Shipping Carrier: Client
Temp: 5.3-7.1°C

Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Shipment Method	Tracking Number(s)
	2/25/20	1445					
Relinquished By (Signature)	**Date**	**Time**	**Received By (Signature)**	**Date**	**Time**	**Number of Packages**	**Custody Seal Number(s)**

No. 009976

Laboratory Name & Location: Phase Separation Science

Laboratory Project Manager: Amber Corfee

Requested Turn-Around-Time: [X] Standard [ ] 24 HR [ ] 48 HR [ ] 72 HR [ ] ____ HR

*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)

PHASE SEPARATION SCIENCE

6630 Baltimore National Pike
Baltimore, MD 21228
410-747-8770
800-932-9047
www.phaseonline.com

Sample Receipt Checklist

Project Name: Kop-Flex Offsite
PSS Project No.: 20022504

Client Name WSP USA - Herndon
Disposal Date 03/31/2020

Received By Thomas Wingate
Date Received 02/25/2020 11:15:00 AM
Delivered By Client
Tracking No Not Applicable
Logged In By Thomas Wingate

Shipping Container(s)
No. of Coolers 1

		Ice	Present
Custody Seal(s) Intact?	N/A	Temp (deg C)	7.1
Seal(s) Signed / Dated?	N/A	Temp Blank Present	No

Documentation

		Sampler Name	C. Cresci/S. Burke
COC agrees with sample labels?	Yes	MD DW Cert. No.	N/A
Chain of Custody	Yes		

Sample Container

		Custody Seal(s) Intact?	Not Applicable
Appropriate for Specified Analysis?	Yes	Seal(s) Signed / Dated	Not Applicable
Intact?	Yes		
Labeled and Labels Legible?	Yes		

Holding Time

		Total No. of Samples Received	3
All Samples Received Within Holding Time(s)?	No	Total No. of Containers Received	22

Preservation

Total Metals	(pH<2)	Yes
Dissolved Metals, filtered within 15 minutes of collection	(pH<2)	N/A
Orthophosphorus, filtered within 15 minutes of collection		N/A
Cyanides	(pH>12)	N/A
Sulfide	(pH>9)	N/A
TOC, DOC (field filtered), COD, Phenols	(pH<2)	N/A
TOX, TKN, NH3, Total Phos	(pH<2)	N/A
VOC, BTEX (VOA Vials Rcvd Preserved)	(pH<2)	Yes
Do VOA vials have zero headspace?		Yes
624 VOC (Rcvd at least one unpreserved VOA vial)		N/A
524 VOC (Rcvd with trip blanks)	(pH<2)	Yes

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Sample Receipt Checklist

Project Name: Kop-Flex Offsite
PSS Project No.: 20022504

Client Name	WSP USA - Herndon	**Received By**	Thomas Wingate
Disposal Date	03/31/2020	**Date Received**	02/25/2020 11:15:00 AM
		Delivered By	Client
		Tracking No	Not Applicable
		Logged In By	Thomas Wingate

Comments: (Any "No" response must be detailed in the comments section below.)

For any improper preservation conditions, list sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of sampling. Samples which require thermal preservation shall be considered acceptable when received at a temperature above freezing to 6°C. Samples that are hand delivered on the day that they are collected may not meet these criteria but shall be considered acceptable if there is evidence that the chilling process has begun such as arrival on ice.

The analyses of chlorine, pH, dissolved oxygen, temperature and sulfite for drinking water and non-potable samples tested for compliance have a maximum holding time of 15 minutes. As such, all laboratory analyses for these analytes exceed holding times.

Samples Inspected/Checklist Completed By: Thomas Wingate Date: 02/25/2020

PM Review and Approval: Amber Confer Date: 02/25/2020