VIA ELECTRONIC MAIL

May 15, 2019

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. 10 - 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 2019 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 2019. In addition to this electronic version, a hard copy of the status report is being submitted to the Maryland Department of Environment 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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kk:\emerson\kop-flex\reporting\status reports\mde reports\2019\april 2019

Encl.

cc: Mr. Erich Weissbart, U.S. Environmental Protection Agency, Region III
Mr. Stephen Clarke, Emerson Electric Co.
Sheila Harvey, Esquire, Pillsbury Winthrop Shaw Pittman

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QUARTERLY STATUS REPORT NO. 10 – OFFSITE AREA

FORMER KOP-FLEX FACILITY SITE

January 2019 THROUGH March 2019

Site Name:	Former Kop-Flex Facility
Site Address:	7565 Harmans Road Hanover, Maryland 21076
Consultant:	WSP USA Inc.
Address:	13530 Dulles Technology Drive, Suite 300 Herndon, Virginia 20171
Phone No.:	(703) 709-6500
Project Coordinator:	Eric Johnson, WSP USA
Alternate:	Lisa Bryda**,** WSP USA

1.0 Offsite Activities Conducted During January 2019 through March 2019

1.1 Residential Well Sampling

- 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 8, 2019
  - February 19, 2019
  - March 7, 2019

  Historical analytical results, including those for the first quarter 2019 samples, are summarized in Table 1. Copies of the certified laboratory analytical reports for the January 2019 through March 2019 sampling events are included in Enclosure A.
- Site-related constituents of concern (COCs) were detected in both the untreated water sample and water treated by the mixed-media filter tanks containing granular activated carbon, with one chemical – 1,1-dichloroethene (DCE) – present at a level above the applicable groundwater quality criteria (Table 1). In the pre-treatment samples, concentrations of 1,1-DCE ranged from 6.2 micrograms per liter (µg/l) to 7.1 µg/l, while 1,4-dioxane was present at levels between 1.8 µg/l and 2.7 µg/l. The post-treatment water samples for the three events had concentrations of 1,1-DCE ranging from below the reporting limit of 0.5 µg/l to 3.9 µg/l, and 1,4-dioxane concentrations similar to the levels detected in the untreated water (1.6 µg/l to 2.8 µg/l). The data for the first quarter 2019 sampling events indicate a consistent increase in the concentrations of 1,1-DCE and 1,4-dioxane in the untreated water. The levels for these COCs in the treated water samples fluctuate during the same time period. Trace levels (<1 µg/l) of 1,1,1-trichloroethane (TCA) were also detected in both the treated and untreated samples from February 2019 and March 2019. EMERSUB 16 and WSP have communicated the analytical results for these water samples in writing to the homeowner and MDE.

1.2 Residential Water Service Connection for 1227 Old Camp Meade Road

- As mentioned in Quarterly Offsite Status Report No. 9, boundary surveys of the properties along the access road leading from Old Camp Meade Road to the residence at 1227 Old Camp Meade Road were completed in early January 2019. The survey information indicated the access road was located on common property, with use of the property granted to 1227 Old Camp Meade Road and owners of the neighboring residential properties: 1229, 1231 and 1237 Old Camp Meade Road.
- Based on the survey findings, WSP contacted the Anne Arundel County Department of Public Works (DPW) in late January to discuss obtaining an utility easement for the water service line from the water main along Old Camp Meade Road to the residence. During this call, the County DPW indicated that another option for connecting the home would be via the newly installed water main at the intersection of Reece Road and Hideaway Place (Figure 1).

Upon further evaluation of the available options, EMERSUB 16 and WSP have decided to run the connection from the water main on Reece Road. Since the eastern property boundary for 1227 Old Camp Meade Road does not abut the Reece Road right of way, WSP initiated discussions with the owner of the adjoining property at 1229 Old Camp Meade Road with regards to obtaining a utility easement for the water line.

1.3 Offsite Groundwater Sampling

— The offsite monitoring wells installed downgradient (south) of the Site in March and April 2018 were sampled on February 19, 2019, using a disposable passive sampling device (HydraSleeve™) that had been deployed during the previous (November 2018) sampling of each well. The sample retrieval depths for each monitoring well are consistent with those from the previous monitoring events and are provided in the table below. The locations of the monitoring wells are shown in Figure 2.

Well ID	Hydrologic Unit	Depth to Water (ft BGS)	Well Depth (ft BGS)	Well Screen Interval (ft BGS)	Sample Interval (ft BGS)
MW-29D	Confined Lower Patapsco	60.64	151	141-151	146-148.5
MW-30-273	Confined Lower Patapsco	93.10	273	263-273	267-269.5
MW-30-413	Patuxent	130.73	413	403-413	407-409.5
MW-32D	Confined Lower Patapsco	93.79	236	226-236	233-235.5
MW-34D	Confined Lower Patapsco/Arundel Clay Gradational Zone	127.40	385	375-385	379-381.5
MW-36D	Patuxent	134.83	360	350-360	357-359.5

FT = feet; BGS = below ground surface

As part of the monitoring event, WSP also obtained water level measurements from all deep offsite monitoring wells, with the exception of MW-46D on the Verizon property north of the Site. This well was not accessible because a vehicle was parked over the at-grade well cover on the day of the event. The water level collected for all monitoring wells is provided in Table 2.

— A potentiometric surface contour map for the confined portion of the Lower Patapsco aquifer is shown in Figure 2 based on the water levels measured during the sampling event. Evaluation of the hydraulic heads indicates the general direction of groundwater flow in the confined zone is to the south/southeast.

— The February 2019 analytical results for samples from the offsite monitoring wells are summarized in Table 3. A copy of the certified laboratory analytical report for these samples is provided in Enclosure B. Historical groundwater sampling data for the offsite monitoring wells can be found in Table 4.

Concentrations of the primary site-related COCs in the February 2019 samples are shown in Figure 3. For the wells screened in the confined Lower Patapsco aquifer, site-related COCs were only detected in the groundwater sample from MW-30D-273. The concentrations of chlorinated VOCs and 1,4-dioxane in the February 2019 sample are

similar to the levels detected in the previous sampling events (Table 4). No chlorinated VOCs or 1,4-dioxane were detected in the remaining confined Lower Patapsco monitoring wells.

Monitoring well MW-36D installed in the eastern portion of the Harmans Woods neighborhood, and the deeper well (413 feet BGS) at the MW-30D location are screened in the Patuxent aquifer below the Arundel Clay. Consistent with the previous (November 2018) sampling event, no site-related VOCs or 1,4-dioxane were detected in the samples from these wells (Table 4 and Figure 3). These results indicate COCs have not migrated to the deeper aquifer below the Lower Patapsco unit.

- In accordance with the approved Offsite Groundwater Monitoring Plan, EMERSUB 16, LLC submitted a 2018 Offsite Groundwater Monitoring Report to the EPA and MDE on March 27, 2019. The monitoring report presented the results of the quarterly groundwater sampling events conducted during the 2018 calendar year, including an evaluation of the distribution and concentration trends for site-related COCs in the impacted portion of the aquifer system. Information was also provided regarding the installation of the additional offsite groundwater monitoring wells during March and April 2018. The report recommended the abandonment of shallow wells MW-25 and MW-28 because they are no longer part of the offsite monitoring program.

2.0 Planned Offsite Activities for Next Reporting Period (April 2019 Through June 2019)

- Perform semi-annual sampling of the offsite groundwater monitoring wells in the confined portion of the Lower Patapsco aquifer and Patuxent aquifer in late May 2019.
- Continue to conduct monthly monitoring of the untreated and treated water from the residential well at 1227 Old Camp Meade Road.
- Complete surveying and other activities necessary for the preparation, execution and recordation of a utility easement on the property at 1229 Old Camp Meade Road, which will be used for the installation of the public water service connection for the home at 1227 Old Camp Meade Road. A copy of the utility easement will be provided to the county DPW to initiate work on tapping into the Reece Road water main.

3.0 Key Personnel/Facility Changes

During the reporting period, there were no changes to either key project personnel or conditions relevant to the performance of the ongoing work at the site.

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

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

0 250 500
SCALE IN FEET

Drawn By:	EGC
Checked:	CC 4/29/2019
Approved:	RG 5/2/2019
DWG Name:	314V1545.011-030

FORMER KOP-FLEX FACILITY
HANOVER, MARYLAND

PREPARED FOR
EMERSUB 16 LLC
ST. LOUIS, MISSOURI

Figure 1

PROPERTY WITH RESIDENTIAL WELL IDENTIFIED FOR REGULAR MONITORING AND PUBLIC WATER CONNECTION

WSP USA Inc.
13530 DULLES TECHNOLOGY DR
SUITE 300
HERNDON, VA 20171
TEL: +1 703.709.6500

REVISIONS

REV	DESCRIPTION

DRAWN BY EGC
CHECKED
APPROVED

POTENTIOMETRIC SURFACE CONTOUR MAP CONFINED PORTION OF THE LOWER PATAPSCO AQUIFER FEBRUARY 2019

FORMER KOP-FLEX FACILITY SITE
HANOVER, MARYLAND

PREPARED FOR
EMERSUB 16 LLC
ST. LOUIS, MISSOURI

WSP USA Inc.
13530 DULLES TECHNOLOGY DR, SUITE 300
HERNDON, VA 20171
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FIGURE 2

Drawing Number
314V1545.011-028

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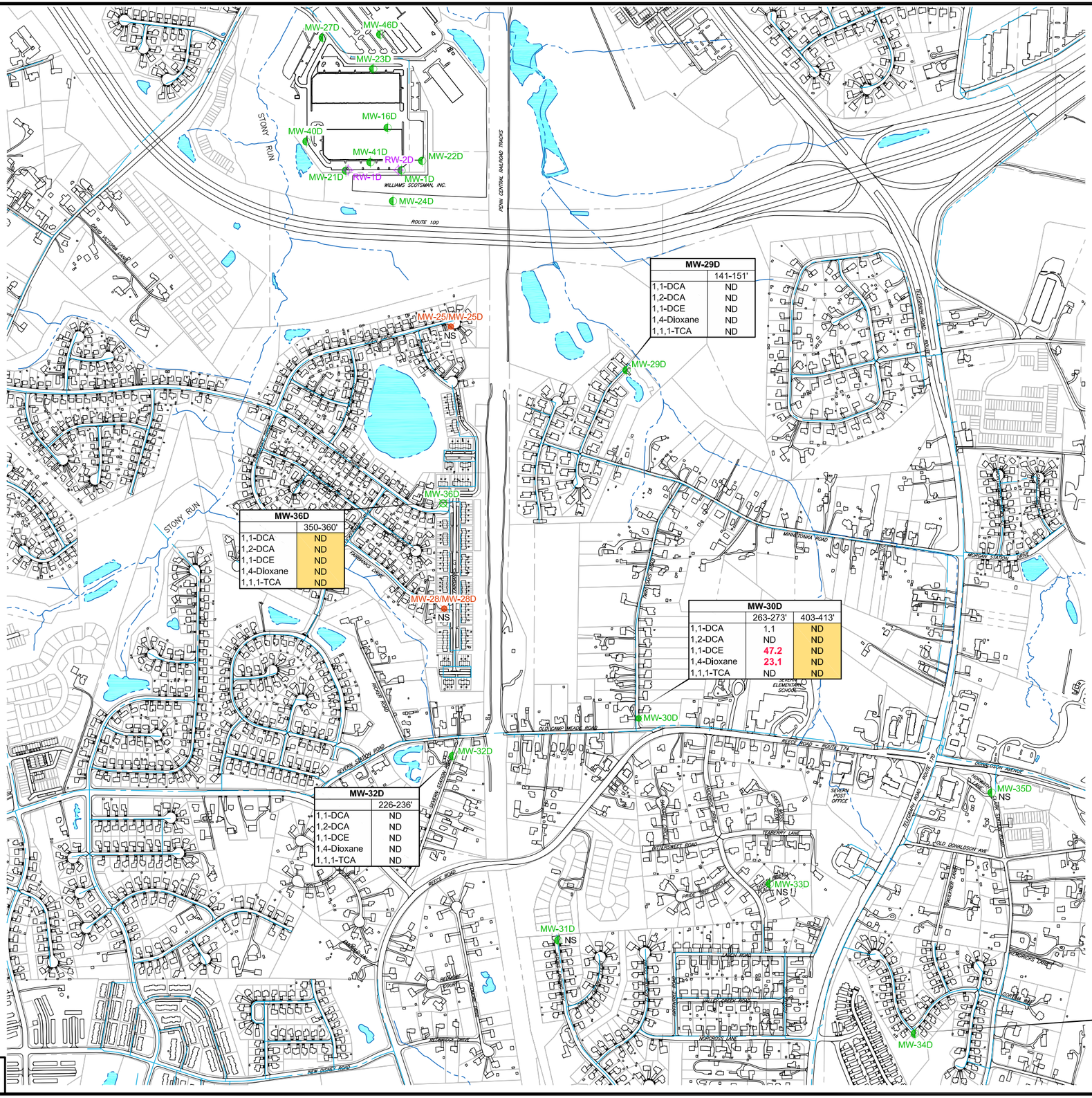

MW-29D	
	141-151'
1,1-DCA	ND
1,2-DCA	ND
1,1-DCE	ND
1,4-Dioxane	ND
1,1,1-TCA	ND

MW-36D	
	350-360'
1,1-DCA	ND
1,2-DCA	ND
1,1-DCE	ND
1,4-Dioxane	ND
1,1,1-TCA	ND

MW-30D		
	263-273'	403-413'
1,1-DCA	1.1	ND
1,2-DCA	ND	ND
1,1-DCE	47.2	ND
1,4-Dioxane	23.1	ND
1,1,1-TCA	ND	ND

MW-32D	
	226-236'
1,1-DCA	ND
1,2-DCA	ND
1,1-DCE	ND
1,4-Dioxane	ND
1,1,1-TCA	ND

MW-34D	
	375-385'
1,1-DCA	ND
1,2-DCA	ND
1,1-DCE	ND
1,4-Dioxane	ND
1,1,1-TCA	ND

LEGEND

– – –	PROPERTY LINE
— · —	WATER MAIN
– – –	STREAM
▨	WATER BODY
●	UNCONFINED AND CONFINED LOWER PATAPSCO AQUIFER MONITORING WELL
◐	CONFINED LOWER PATAPSCO AQUIFER MONITORING WELL
⊗	PATUXENT AQUIFER MONITORING WELLS
⊗	CONFINED LOWER PATAPSCO AQUIFER AND PATUXENT AQUIFER MONITORING WELLS
⌖	RECOVERY WELL

MW-30D		
	263-273'	403-413'
1,1-DCA	1.1	ND
1,2-DCA	ND	ND
1,1-DCE	47.2	ND
1,4-Dioxane	23.1	ND
1,1,1-TCA	ND	ND

WELL IDENTIFICATION
SCREENED INTERVAL (FT–BGS)
SAMPLE RESULTS IN ppb
(RED INDICATES RESULTS ABOVE MDE CLEANUP STANDARDS)
CONSTITUENTS

DCA	DICHLOROETHANE
DCE	DICHLOROETHENE
TCA	TRICHLOROETHANE
ND	NOT DETECTED
NS	WELL NOT SAMPLED
🟨	WELL SCREENED IN THE PATUXENT AQUIFER

N

0 800 1600
SCALE IN FEET

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

B

Drawn By: EGC
Checked: CC 4/11/2019
Approved: [illegible] 4/30/2019
DWG Name: 314V1545.011-029

FORMER KOP–FLEX FACILITY
HANOVER, MARYLAND
PREPARED FOR
EMERSON
ST. LOUIS, MISSOURI

Figure 3

GROUNDWATER MONITORING RESULTS
LOWER PATAPSCO AQUIFER AND PATUXENT AQUIFER
OFFSITE MONITORING WELLS – FEBRUARY 2019

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SUITE 300
HERNDON, VA 20171
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TABLES

Table 1

Historical Water Sampling Results
Residential Well - 1227 Old Camp Meade Road
Former Kop-Flex Facility Site
Hanover, Maryland

	Parameter	**Acetone**	**Bromoform**	**Carbon Disulfide**	**Chloroform**	**1,1-Dichloroethane**	**1,1-Dichloroethene**	**Methyl Tert Butyl Ether**	**Toluene**	**1,1,1-Trichloroethane**	**1,4-Dioxane**
	Units	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
	MCL	550 (a)	80 (a)	100 (a)	80 (a)	90 (a)	7	20 (a)	1,000	200	4.6 (b)
Sample Type	**Date**										
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	2 U
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	2 U
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	2.3
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	2 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	2 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	2 U
Pre-Treatment	9/12/2014	5 U	0.5 U	0.5 U	0.5 U	0.5 U	2	0.5 U	0.5 U	0.21 J	2 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	2 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	2 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	2 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	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	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	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	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	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	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	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	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	2.6
Pre-Treatment	11/30/2017	5 U	0.5 U	0.5 U	0.5 U	0.16 J	6	0.5 U	0.5 U	0.3 J	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	2.4
Pre-Treatment	12/15/2017	5 U	0.5 U	0.5 U	0.5 U	0.5 U	7	0.5 U	0.5 U	0.36 J	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	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	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	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	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	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	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	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	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	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	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	2.7
Pre-Treatment	6/28/2018	5 U	0.5 U	0.5 U	0.5 U	0.5 U	5.6	0.5 U	0.5 U	0.28 J	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	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	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	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	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	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	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	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	0.5 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	0.5 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	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	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	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	1.7
Pre-Treatment	1/8/2019	NR	0.5 U	0.5 U	0.5 U	0.5 U	6.2	0.5 U	0.5 U	0.5 U	1.8
Post-Treatment	1/8/2019	NR	0.5 U	0.5 U	0.5 U	0.5 U	3.9	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	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	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	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	2.8

(a) Maryland Department of Environment Action Level
(b) Maryland 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
NR = result not reported by laboratory
Bold value indicates concentration above the comparative criterion.
Gray shaded rows represent pre-treatment water samples.

Table 2

Historical Groundwater Level Data (2015 to Present)
Offsite Area
Former Kop-Flex Facility Site
Hanover, Maryland

Well ID	Zone	TOC elevation	3/17/2015		6/15/2015		9/21/2015		1/4/2016		3/21/2016		12/7/2016		5/1/2017	
			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*	*Depth to Water*	*Groundwater Elevation*
MW-25	Shallow	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	14.02	116.58
MW-28	Shallow	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	27.4	123.10
MW-45	Shallow	126.7	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	13.67	113.05
MW-24D	Confined LPA	129.1	50.9	78.20	49.29	79.81	NM	-	NM	-	44.38	84.72	46.3	82.80	48.35	80.75
MW-25D-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	53.80	76.70
MW-25D-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	53.11	77.39
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	82.72	67.78
MW-29D	Confined LPA	131.9	NM	--	NM	--	NM	--	NM	--	NM	--	NM	--	NM	--
MW-30D-273	Confined LPA	153.5	NM	--	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	100.24	62.26
MW-32D	Confined LPA	156.1	NM	--	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	117.26	61.34
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	117.03	61.27
MW-34D	Confined LPA	183.9	NM	--	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	117.28	60.52
MW-46D	Confined LPA	124.8	NM	--	NM	--	NM	--	NM	--	NM	--	NM	--	NM	--
MW-30D-413	Patuxent	153.1	NM	--	NM	--	NM	--	NM	--	NM	--	NM	--	NM	--
MW-36D	Patuxent	158.7	NM	--	NM	--	NM	--	NM	--	NM	--	NM	--	NM	--

Notes:

NM = Not Measured
TOC = Top of Casing

Table 2

Historical Groundwater Level Data (2015 to Present)
Offsite Area
Former Kop-Flex Facility Site
Hanover, Maryland

Well ID	Zone	TOC elevation	8/31/2017		11/14/2017		2/13/2018		5/31/2018		8/23/2018		11/8/2018		2/19/2019	
			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*	*Depth to Water*	*Groundwater Elevation*
MW-25	Shallow	130.6	14.09	116.51	14.6	116.00	14.56	116.04	13.10	117.50	NM	--	11.84	118.76	11.75	118.85
MW-28	Shallow	150.5	27.2	123.30	27.22	123.28	27.48	123.02	27.42	123.08	NM	--	24.33	126.17	23.30	127.20
MW-45	Shallow	126.7	NM	--	NM	--	NM	--	12.98	113.74	NM	--	NA	--	11.98	114.74
MW-24D	Confined LPA	129.1	48.35	80.75	51.99	77.11	NM	--	50.94	78.16	NM	--	NA	--	48.92	80.18
MW-25D-130	Confined LPA	130.5	61.38	69.12	58.46	72.04	58.31	72.19	58.23	72.27	59.53	70.97	58.75	71.75	54.96	75.54
MW-25D-192	Confined LPA	130.5	60.36	70.14	58.71	71.79	57.49	73.01	57.40	73.10	58.69	71.81	57.63	72.87	54.20	76.30
MW-28D	Confined LPA	150.5	94.55	55.95	89.03	61.47	67.37	83.13	88.75	61.75	90.98	59.52	88.30	62.20	84.78	65.72
MW-29D	Confined LPA	131.9	NM	--	NM	--	NM	--	64.94	66.98	66.56	65.36	65.03	66.89	60.64	71.28
MW-30D-273	Confined LPA	153.5	NM	--	NM	--	NM	--	98.66	54.88	100.70	52.84	98.14	55.40	93.10	60.44
MW-31D	Confined LPA	162.5	115.67	46.83	107.21	55.29	106.29	56.21	106.80	55.70	109.95	52.55	106.27	56.23	102.47	60.03
MW-32D	Confined LPA	156.1	NM	--	NM	--	NM	--	97.90	58.24	100.65	55.49	98.97	57.17	93.79	62.35
MW-33D-235	Confined LPA	178.6	133.39	45.21	124.55	54.05	123.79	54.81	124.00	54.60	127.52	51.08	125.14	53.46	119.35	59.25
MW-33D-295	Confined LPA	178.3	133.14	45.16	124.36	53.94	123.60	54.70	123.83	54.47	127.34	50.96	125.69	52.61	119.10	59.20
MW-34D	Confined LPA	183.9	NM	--	NM	--	NM	--	132.70	51.21	136.42	47.49	131.76	52.15	127.40	56.51
MW-35D	Confined LPA	177.8	133.55	44.25	125.59	52.21	124.02	53.78	124.27	53.53	128.19	49.61	123.64	54.16	119.28	58.52
MW-46D	Confined LPA	124.8	NM	--	NM	--	NM	--	37.37	87.43	NM	--	32.68	92.12	NM	--
MW-30D-413	Patuxent	153.1	NM	--	NM	--	NM	--	138.10	15.03	143.75	9.38	140.62	12.51	130.73	22.40
MW-36D	Patuxent	158.7	NM	--	NM	--	NM	--	141.75	16.96	146.32	12.39	143.85	14.86	134.83	23.88

Notes:
NM = Not Measured
TOC = Top of Casing

Table 3

Offsite Monitoring Well Sample Results
Former Kop-Flex Facility Site
Hanover, Maryland
February 2019

Parameters (a)	Groundwater Quality Standards (µg/L) (b)	Well ID: / Sampling Date:	LOWER PATAPSCO AQUIFER				PATUXENT AQUIFER	
			MW-29D 19-Feb-19	MW-30D-273 19-Feb-19	MW-32D 19-Feb-19	MW-34D 19-Feb-19	MW-30D-413 19-Feb-19	MW-36D 19-Feb-19
1,1-Dichloroethane	90		1.0 U	1.1	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	7		1.0 U	**47.2**	1.0 U	1.0 U	1.0 U	1.0 U
1,4-Dioxane	4.6 (c)		2.0 U	**23.1**	2.0 U	2.0 U	2.0 U	2.0 U
1,1,1-Trichloroethane	200		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	5		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Total CVOCs & 1,4-Dioxane		-	-	71.4	-	-	-	-

a/ U = not detected above the method detection limit; CVOC = chlorinated volatile organic compound.
Bolded values indicate an exceedence of the Groundwater Quality Standards
All sample concentrations in micrograms per liter (µg/l)

b/ Source: http://www.mde.maryland.gov/assets/document/Final%20Update%20No%202.1%20dated%205-20-08(1).pdf

c/ Value represents the MDE risk-based action level.

Table 4

Historical Offsite Groundwater Sampling Results (2015 to Present)
Former Kop-Flex Facility Site
Hanover, Maryland

Well ID		Chloroethane	1,1-Dichloroethane	1,2-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	1,4-Dioxane	Methylene Chloride	1,1,1-Trichloroethane	1,1,2-Trichloroethane	Trichloroethene	Vinyl chloride
Groundwater Quality Standard (µg/L)		3.6	90	5	7	70	4.6	5	200	5	5	2
	Sample Date											
Unconfined Lower Patapsco Wells (b)												
MW-25	3/19/2015	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	6/24/2015	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	9/23/2015	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	1/6/2016	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	3/23/2016	1.0 U	1.0 U	1.0 U	1.5	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	7/20/2016	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	9/8/2016	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	12/8/2016	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	2/21/2017	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	3.0	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	5/2/2017	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	8/31/2017	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	11/14/2017	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	**11.7**	1.0 U	1.0 U	1.0 U	1.0 U
	2/13/2018	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	5/30/2018	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
MW-28	3/17/2015	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	6/23/2015	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	9/22/2015	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	1/5/2016	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	3/22/2016	1.0 U	1.0 U	1.0 U	6.2	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	7/19/2016	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	9/7/2016	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	12/8/2016	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	2/21/2017	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	5/2/2017	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	8/31/2017	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	11/14/2017	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	2/14/2018	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	5/30/2018	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U

Table 4

Historical Offsite Groundwater Sampling Results (2015 to Present)
Former Kop-Flex Facility Site
Hanover, Maryland

Well ID		Chloroethane	1,1-Dichloroethane	1,2-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	1,4-Dioxane	Methylene Chloride	1,1,1-Trichloroethane	1,1,2-Trichloroethane	Trichloroethene	Vinyl chloride
Groundwater Quality Standard (µg/L)		3.6	90	5	7	70	4.6	5	200	5	5	2
Confined Lower Patapsco Wells												
MW-25D-130	3/19/2015	10.0 U	38.6	**10.8**	**854**	10.0 U	**446**	200 U	**8,930**	100 U	100 U	100 U
	6/24/2015	1.0 U	37.1	**8.9**	**1,030**	4.6	**303**	2.0 U	46.3	1.2	**6.8**	1.0 U
	9/23/2015	10.0 U	29.7	10.0 U	**697**	10.0 U	**295**	20.0 U	32.3	10.0 U	**14.2**	10.0 U
	1/7/2016	5.0 U	33.4	**9.7**	**800**	5.0 U	**398**	10.0 U	5.0 U	5.0 U	**6.1**	5.0 U
	3/23/2016	5.0 U	24.5	**8.0**	**676**	5.0 U	**302**	10.0 U	26.2	5.0 U	**5.0**	5.0 U
	7/19/2016	10.0 U	39.3	**10.2**	**1,090**	4.9 J	**367**	14.3 J	37.0	10.0 U	**6.5** J	10.0 U
	9/9/2016	5.0 U	27.9	**6.4**	**661**	5.0 U	**241**	**12.0**	25.0	5.0 U	5.0 U	5.0 U
	12/8/2016	1.0 U	6.7	1.5	**171**	1.0 U	**13.6**	2.0 U	6.9	1.0 U	1.0 U	1.0 U
	2/21/2017	1.0 U	7.2	1.7	**194**	1.0 U	**69.1**	2.0 U	7.0	1.0 U	1.2	1.0 U
	5/2/2017	2.0 U	6.5	2.0 U	**174**	2.0 U	**61.0**	4.0 U	5.0	2.0 U	2.0 U	2.0 U
	8/31/2017	2.0 U	7.4	1.7	**193**	2.0 U	**57.9**	4.0 U	6.9	2.0 U	2.0 U	2.0 U
	11/14/2017	2.0 U	5.1	1.3	**151**	0.57 J	**58.5**	5.0 U	6.4	1.0 U	1.1	1.0 U
	2/13/2018	2.0 U	6.3	2.0 U	**154**	2.0 U	**67.1**	5.0 U	6.4	1.0 U	1.0 U	1.0 U
	5/30/2018	2.0 U	5.0	1.4	**144**	2.0 U	**53.9**	5.0 U	5.3	1.0 U	1.0 U	1.0 U
	8/23/2018	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/8/2018	2.0 U	4.4	1.1	**109**	2.0 U	**40.2**	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	2/19/2019	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-25D-192	3/19/2015	1.0 U	11.7	1.0 U	**53.0**	1.0 U	**49.4**	2.0 U	13.7	1.0 U	1.0 U	1.0 U
	6/25/2015	1.0 U	11.9	1.0 U	**59.4**	1.0 U	**39.8**	2.0 U	14.2	1.0 U	1.0 U	1.0 U
	9/22/2015	1.0 U	13.9	1.0 U	**51.4**	1.0 U	**45.0**	2.0 U	12.9	1.0 U	1.3	1.0 U
	1/7/2016	1.0 U	11.7	1.0 U	**47.2**	1.0 U	**41.7**	2.0 U	12.5	1.0 U	1.0 U	1.0 U
	3/23/2016	1.0 U	10.3	1.0 U	**43.3**	1.0 U	**42.2**	2.0 U	11.3	1.0 U	1.0 U	1.0 U
	7/20/2016	1.0 U	11.7	0.73 J	**54.9**	1.0 U	**54.4**	2.0 U	11.1	1.0 U	1.0 U	1.0 U
	9/8/2016	1.0 U	12.9	1.0 U	**56.8**	1.0 U	**39.3**	2.0 U	12.6	1.0 U	1.0 U	1.0 U
	12/8/2016	1.0 U	16.1	1.0 U	**64.6**	1.0 U	**51.3**	2.0 U	13.3	1.0 U	1.0 U	1.0 U
	2/21/2017	1.0 U	14.0	1.0 U	**63.3**	1.0 U	**52.1**	2.0 U	11.6	1.0 U	1.0 U	1.0 U
	5/2/2017	1.0 U	16.9	1.0 U	**81.0**	1.0 U	**53.1**	2.0 U	13.5	1.0 U	1.0 U	1.0 U
	8/31/2017	1.0 U	15.7	1.0 U	**62.5**	1.0 U	**44.3**	2.0 U	13.1	1.0 U	1.0 U	1.0 U
	11/14/2017	5.0 U	13.6	0.67 J	**67.2**	1.0 U	**56.7**	5.0 U	13.6	1.0 U	1.0 U	1.0 U
	2/13/2018	5.0 U	13.7	1.0 U	**69.2**	1.0 U	**42.7**	5.0 U	11.0	1.0 U	1.0 U	1.0 U
	5/30/2018	5.0 U	10.8	1.0 U	**58.3**	1.0 U	**50.8**	5.0 U	7.2	1.0 U	1.0 U	1.0 U
	8/23/2018	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/8/2018	5.0 U	13.7	1.0 U	**61.0**	1.0 U	**49.3**	5.0 U	9.8	1.0 U	1.0 U	1.0 U
	2/19/2019	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Table 4

Historical Offsite Groundwater Sampling Results (2015 to Present)
Former Kop-Flex Facility Site
Hanover, Maryland

Well ID		Chloroethane	1,1-Dichloroethane	1,2-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	1,4-Dioxane	Methylene Chloride	1,1,1-Trichloroethane	1,1,2-Trichloroethane	Trichloroethene	Vinyl chloride
Groundwater Quality Standard (µg/L)		3.6	90	5	7	70	4.6	5	200	5	5	2
MW-28D	3/17/2015	1.0 U	1.0 U	1.0 U	**10.6**	1.0 U	**5.0**	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	6/23/2015	1.0 U	1.0 U	1.0 U	**12.8**	1.0 U	4.5	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	9/22/2015	1.0 U	1.0 U	1.0 U	**14.3**	1.0 U	4.4	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	1/5/2016	1.0 U	1.0 U	1.0 U	**11.5**	1.0 U	**5.5**	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	3/23/2016	1.0 U	1.0 U	1.0 U	**9.1**	1.0 U	4.0	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	7/19/2016	1.0 U	1.0 U	0.25 J	**10.1**	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	9/7/2016	1.0 U	1.0 U	1.0 U	**12.0**	1.0 U	**5.0**	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	12/8/2016	1.0 U	1.0 U	1.0 U	6.3	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	2/21/2017	1.0 U	1.0 U	1.0 U	4.6	1.0 U	3.0	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	5/2/2017	1.0 U	1.0 U	1.0 U	5.8	1.0 U	2.7	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	8/31/2017	1.0 U	1.0 U	1.0 U	5.0	1.0 U	2.7	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	11/14/2017	5.0 U	1.0 U	1.0 U	5.5	1.0 U	3.5	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	2/14/2018	5.0 U	1.0 U	1.0 U	4.3	1.0 U	2.8	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	5/30/2018	5.0 U	1.0 U	1.0 U	6.1	1.0 U	2.4	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	8/23/2018	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/8/2018	5.0 U	1.0 U	1.0 U	6.9	1.0 U	2.3	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	2/19/2019	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-29D	5/21/2018	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	8/23/2018	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	11/8/2018	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	2/19/2019	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
MW-30D-273	5/31/2018	5.0 U	1.0 U	1.0 U	**27.4**	1.0 U	**16.4**	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	8/23/2018	5.0 U	1.0	1.0 U	**40.7**	1.0 U	**24.5**	5.0 U	1.7	1.0 U	1.0 U	1.0 U
	11/8/2018	5.0 U	1.2	1.0 U	**44.0**	1.0 U	**22.2**	5.0 U	2.1	1.0 U	1.0 U	1.0 U
	2/19/2019	1.0 U	1.1	1.0 U	**47.2**	1.0 U	**23.1**	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
MW-31D	3/17/2015	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	6/24/2015	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	9/22/2015	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	1/6/2016	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	3/21/2016	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	7/19/2016	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	9/6/2016	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	12/8/2016	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	2/21/2017	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	5/2/2017	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	8/31/2017	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	11/14/2017	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	2/14/2018	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	5/31/2018	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U

Table 4

Historical Offsite Groundwater Sampling Results (2015 to Present)
Former Kop-Flex Facility Site
Hanover, Maryland

Well ID		Chloroethane	1,1-Dichloroethane	1,2-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	1,4-Dioxane	Methylene Chloride	1,1,1-Trichloroethane	1,1,2-Trichloroethane	Trichloroethene	Vinyl chloride
Groundwater Quality Standard (µg/L)		3.6	90	5	7	70	4.6	5	200	5	5	2
	8/23/2018	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/8/2018	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	2/19/2019	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-32D	5/31/2018	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	8/23/2018	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	11/8/2018	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	2/19/2019	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
MW-33D-235	3/18/2015	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	6/23/2015	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	9/21/2015	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	1/4/2016	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	3/21/2016	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	3.0	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	7/18/2016	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	9/7/2016	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	12/8/2016	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	2/21/2017	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	5/2/2017	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	8/31/2017	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	11/14/2017	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	4.3	**12.0**	1.0 U	1.0 U	1.0 U	1.0 U
	2/13/2018	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	5/31/2018	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	8/23/2018	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/8/2018	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	2/19/2019	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-33D-295	3/18/2015	1.0 U	1.0 U	1.0 U	4.6	1.0 U	**8.0**	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	6/23/2015	1.0 U	1.0 U	1.0 U	3.3	1.0 U	**6.8**	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	9/21/2015	1.0 U	1.0 U	1.0 U	4.8	1.0 U	**6.8**	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	1/4/2016	1.0 U	1.0 U	1.0 U	3.7	1.0 U	**7.6**	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	3/21/2016	1.0 U	1.0 U	1.0 U	3.9	1.0 U	**7.8**	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	7/18/2016	1.0 U	1.0 U	0.36 J	3.2	1.0 U	**5.1**	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	9/7/2016	1.0 U	1.0 U	1.0 U	3.8	1.0 U	**7.4**	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	12/8/2016	1.0 U	1.0 U	1.0 U	5.4	1.0 U	**7.4**	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	2/21/2017	1.0 U	1.0 U	1.0 U	4.0	1.0 U	**6.8**	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	5/2/2017	1.0 U	1.0 U	1.0 U	5.3	1.0 U	**7.4**	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	8/31/2017	1.0 U	1.0 U	1.0 U	5.6	1.0 U	**6.3**	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	11/14/2017	5.0 U	1.0 U	1.0 U	3.4	1.0 U	**9.7**	**11.5**	0.49 J	1.0 U	1.0 U	1.0 U
	2/13/2018	5.0 U	1.0 U	1.0 U	4.6	1.0 U	**6.9**	2.0 U	0.49 J	1.0 U	1.0 U	1.0 U
	5/31/2018	5.0 U	1.0 U	1.0 U	4.6	1.0 U	**6.9**	2.0 U	0.49 J	1.0 U	1.0 U	1.0 U
	8/23/2018	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/8/2018	5.0 U	1.0 U	1.0 U	4.2	1.0 U	**6.1**	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	2/19/2019	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Table 4

Historical Offsite Groundwater Sampling Results (2015 to Present)
Former Kop-Flex Facility Site
Hanover, Maryland

Well ID		Chloroethane	1,1-Dichloroethane	1,2-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	1,4-Dioxane	Methylene Chloride	1,1,1-Trichloroethane	1,1,2-Trichloroethane	Trichloroethene	Vinyl chloride
Groundwater Quality Standard (µg/L)		3.6	90	5	7	70	4.6	5	200	5	5	2
MW-34D	5/31/2018	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	8/23/2018	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	11/8/2018	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	2/19/2019	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
MW-35D	3/18/2015	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	6/22/2015	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	9/21/2015	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	1/6/2016	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	4/15/2016	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	7/18/2016	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	9/6/2016	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	12/8/2016	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	2/21/2017	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	5/2/2017	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	8/31/2017	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	11/14/2017	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	2/14/2018	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	5/31/2018	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	8/23/2018	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/8/2018	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	2/19/2019	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Confined Patuxent Wells												
MW-30D-413	5/31/2018	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	8/23/2018	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	11/8/2018	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	2/19/2019	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
MW-36D	5/30/2018	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	8/23/2018	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	11/8/2018	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	2/19/2019	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U

a/ U = not detected above the method detection limit; J = estimated concentration between the reporting limit and method detection limit.
Bolded values indicate an exceedence of the Groundwater Quality Standards
All sample concentrations in micrograms per liter (µg/l)
NS = well not sampled
b/ Wells screened in this portion of the Lower Patapsco aquifer were removed from the monitoring program after the May 2018 sampling event.

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

JANUARY 2019

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: JC81048

Sampling Date: 01/08/19

Report to:

WSP
11190 Sunrise Valley Drive Suite 300
Reston, VA 20190
Eric.Johnson@WSPGroup.com

ATTN: Eric Johnson

Total number of pages in report: 36

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.

Brian McGuire
General Manager

Client Service contact: Rocus Peters 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 6 7

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SGS North America Inc.

Sample Summary

WSP Environment & Energy

Job No: JC81048

Kop-Flex, Hanover, VA
Project No: 31401545.011.02

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
JC81048-1	01/08/19	10:15	MK/HC	01/09/19	DW	Drinking Water	RW-1227OCM-010819-F
JC81048-2	01/08/19	10:30	MK/HC	01/09/19	DW	Drinking Water	RW-1227OCM-010819
JC81048-3	01/08/19	10:30	MK/HC	01/09/19	DW	Drinking Water TB	TB-010819

Summary of Hits

Job Number: JC81048
Account: WSP Environment & Energy
Project: Kop-Flex, Hanover, VA
Collected: 01/08/19

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JC81048-1	**RW-1227OCM-010819-F**					
1,1-Dichloroethylene [a]		3.9	0.50	0.50	ug/l	EPA 524.2
1,4-Dioxane		1.8	0.40	0.095	ug/l	SW846 8260C BY SIM
JC81048-2	**RW-1227OCM-010819**					
1,1-Dichloroethylene [a]		6.2	0.50	0.50	ug/l	EPA 524.2
1,4-Dioxane		1.8	0.40	0.095	ug/l	SW846 8260C BY SIM
JC81048-3	**TB-010819**					

No hits reported in this sample.

(a) Analysis performed at SGS Wheat Ridge, CO.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	RW-1227OCM-010819-F		
Lab Sample ID:	JC81048-1	**Date Sampled:**	01/08/19
Matrix:	DW - Drinking Water	**Date Received:**	01/09/19
Method:	EPA 524.2	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	4V31990.D	1	01/16/19 15:58	AMS	n/a	n/a	D:V4V1644
Run #2							

	Purge Volume
Run #1	25.0 ml
Run #2	

VOA List

CAS No.	Compound	Result	MCL	RL	MDL	Units	Q
71-43-2	Benzene	ND	5.0	0.50	0.50	ug/l	
108-86-1	Bromobenzene	ND		0.50	0.50	ug/l	
74-97-5	Bromochloromethane	ND		0.50	0.50	ug/l	
75-27-4	Bromodichloromethane	ND		0.50	0.50	ug/l	
75-25-2	Bromoform	ND		0.50	0.50	ug/l	
74-83-9	Bromomethane	ND		0.50	0.50	ug/l	
104-51-8	n-Butylbenzene	ND		0.50	0.50	ug/l	
135-98-8	sec-Butylbenzene	ND		0.50	0.50	ug/l	
98-06-6	tert-Butylbenzene	ND		0.50	0.50	ug/l	
56-23-5	Carbon tetrachloride	ND	5.0	0.50	0.50	ug/l	
108-90-7	Chlorobenzene	ND	100	0.50	0.50	ug/l	
75-00-3	Chloroethane	ND		0.50	0.50	ug/l	
67-66-3	Chloroform	ND		0.50	0.50	ug/l	
74-87-3	Chloromethane	ND		0.50	0.50	ug/l	
95-49-8	o-Chlorotoluene	ND		0.50	0.50	ug/l	
106-43-4	p-Chlorotoluene	ND		0.50	0.50	ug/l	
124-48-1	Dibromochloromethane	ND		0.50	0.50	ug/l	
74-95-3	Dibromomethane	ND		0.50	0.50	ug/l	
541-73-1	m-Dichlorobenzene	ND		0.50	0.50	ug/l	
95-50-1	o-Dichlorobenzene	ND	600	0.50	0.50	ug/l	
106-46-7	p-Dichlorobenzene	ND	75	0.50	0.50	ug/l	
75-71-8	Dichlorodifluoromethane	ND		0.50	0.50	ug/l	
75-34-3	1,1-Dichloroethane	ND		0.50	0.50	ug/l	
107-06-2	1,2-Dichloroethane	ND	5.0	0.50	0.50	ug/l	
75-35-4	1,1-Dichloroethylene	3.9	7.0	0.50	0.50	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	70	0.50	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	100	0.50	0.50	ug/l	
78-87-5	1,2-Dichloropropane	ND	5.0	0.50	0.50	ug/l	
142-28-9	1,3-Dichloropropane	ND		0.50	0.50	ug/l	
594-20-7	2,2-Dichloropropane	ND		0.50	0.50	ug/l	
563-58-6	1,1-Dichloropropene	ND		0.50	0.50	ug/l	
10061-01-5	cis-1,3-Dichloropropene [b]	ND		0.50	0.50	ug/l	

ND = Not detected MDL = Method Detection Limit
MCL = Maximum Contamination Level (40 CFR 141)
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-010819-F		
Lab Sample ID:	JC81048-1	**Date Sampled:**	01/08/19
Matrix:	DW - Drinking Water	**Date Received:**	01/09/19
Method:	EPA 524.2	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	MCL	RL	MDL	Units	Q
542-75-6	1,3-Dichloropropene [b]	ND		0.50	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene [b]	ND		0.50	0.50	ug/l	
100-41-4	Ethylbenzene	ND	700	0.50	0.50	ug/l	
87-68-3	Hexachlorobutadiene	ND		0.50	0.50	ug/l	
98-82-8	Isopropylbenzene	ND		0.50	0.50	ug/l	
99-87-6	p-Isopropyltoluene	ND		0.50	0.50	ug/l	
75-09-2	Methylene chloride	ND	5.0	0.50	0.50	ug/l	
91-20-3	Naphthalene [b]	ND		0.50	0.50	ug/l	
103-65-1	n-Propylbenzene	ND		0.50	0.50	ug/l	
100-42-5	Styrene	ND	100	0.50	0.50	ug/l	
127-18-4	Tetrachloroethylene	ND	5.0	0.50	0.50	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND		0.50	0.50	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND		0.50	0.50	ug/l	
108-88-3	Toluene	ND	1000	0.50	0.50	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND		0.50	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	70	0.50	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	200	0.50	0.50	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	5.0	0.50	0.50	ug/l	
79-01-6	Trichloroethylene	ND	5.0	0.50	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND		0.50	0.50	ug/l	
96-18-4	1,2,3-Trichloropropane	ND		0.50	0.50	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND		0.50	0.50	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND		0.50	0.50	ug/l	
75-01-4	Vinyl chloride	ND	2.0	0.50	0.50	ug/l	
	m,p-Xylene	ND		0.50	0.50	ug/l	
95-47-6	o-Xylene	ND		0.50	0.50	ug/l	
1330-20-7	Xylenes (total)	ND	10000	0.50	0.50	ug/l	
	Total Trihalomethane	ND	80	0.50	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	94%		70-130%
2199-69-1	1,2-Dichlorobenzene-d4	93%		70-130%

(a) Analysis performed at SGS Wheat Ridge, CO.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
MCL = Maximum Contamination Level (40 CFR 141)
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-010819-F		
Lab Sample ID:	JC81048-1	**Date Sampled:**	01/08/19
Matrix:	DW - Drinking Water	**Date Received:**	01/09/19
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	3A161557.D	1	01/11/19 18:49	RS	n/a	n/a	V3A6982
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	MCL	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	1.8		0.40	0.095	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17647-74-4	1,4-Dioxane-d8	81%		25-195%

ND = Not detected MDL = Method Detection Limit
MCL = Maximum Contamination Level (40 CFR 141)
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-010819		
Lab Sample ID:	JC81048-2	**Date Sampled:**	01/08/19
Matrix:	DW - Drinking Water	**Date Received:**	01/09/19
Method:	EPA 524.2	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	4V31991.D	1	01/16/19 16:26	AMS	n/a	n/a	D:V4V1644
Run #2							

	Purge Volume
Run #1	25.0 ml
Run #2	

VOA List

CAS No.	Compound	Result	MCL	RL	MDL	Units	Q
71-43-2	Benzene	ND	5.0	0.50	0.50	ug/l	
108-86-1	Bromobenzene	ND		0.50	0.50	ug/l	
74-97-5	Bromochloromethane	ND		0.50	0.50	ug/l	
75-27-4	Bromodichloromethane	ND		0.50	0.50	ug/l	
75-25-2	Bromoform	ND		0.50	0.50	ug/l	
74-83-9	Bromomethane	ND		0.50	0.50	ug/l	
104-51-8	n-Butylbenzene	ND		0.50	0.50	ug/l	
135-98-8	sec-Butylbenzene	ND		0.50	0.50	ug/l	
98-06-6	tert-Butylbenzene	ND		0.50	0.50	ug/l	
56-23-5	Carbon tetrachloride	ND	5.0	0.50	0.50	ug/l	
108-90-7	Chlorobenzene	ND	100	0.50	0.50	ug/l	
75-00-3	Chloroethane	ND		0.50	0.50	ug/l	
67-66-3	Chloroform	ND		0.50	0.50	ug/l	
74-87-3	Chloromethane	ND		0.50	0.50	ug/l	
95-49-8	o-Chlorotoluene	ND		0.50	0.50	ug/l	
106-43-4	p-Chlorotoluene	ND		0.50	0.50	ug/l	
124-48-1	Dibromochloromethane	ND		0.50	0.50	ug/l	
74-95-3	Dibromomethane	ND		0.50	0.50	ug/l	
541-73-1	m-Dichlorobenzene	ND		0.50	0.50	ug/l	
95-50-1	o-Dichlorobenzene	ND	600	0.50	0.50	ug/l	
106-46-7	p-Dichlorobenzene	ND	75	0.50	0.50	ug/l	
75-71-8	Dichlorodifluoromethane	ND		0.50	0.50	ug/l	
75-34-3	1,1-Dichloroethane	ND		0.50	0.50	ug/l	
107-06-2	1,2-Dichloroethane	ND	5.0	0.50	0.50	ug/l	
75-35-4	1,1-Dichloroethylene	6.2	7.0	0.50	0.50	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	70	0.50	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	100	0.50	0.50	ug/l	
78-87-5	1,2-Dichloropropane	ND	5.0	0.50	0.50	ug/l	
142-28-9	1,3-Dichloropropane	ND		0.50	0.50	ug/l	
594-20-7	2,2-Dichloropropane	ND		0.50	0.50	ug/l	
563-58-6	1,1-Dichloropropene	ND		0.50	0.50	ug/l	
10061-01-5	cis-1,3-Dichloropropene [b]	ND		0.50	0.50	ug/l	

ND = Not detected MDL = Method Detection Limit
MCL = Maximum Contamination Level (40 CFR 141)
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-010819		
Lab Sample ID:	JC81048-2	**Date Sampled:**	01/08/19
Matrix:	DW - Drinking Water	**Date Received:**	01/09/19
Method:	EPA 524.2	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	MCL	RL	MDL	Units	Q
542-75-6	1,3-Dichloropropene [b]	ND		0.50	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene [b]	ND		0.50	0.50	ug/l	
100-41-4	Ethylbenzene	ND	700	0.50	0.50	ug/l	
87-68-3	Hexachlorobutadiene	ND		0.50	0.50	ug/l	
98-82-8	Isopropylbenzene	ND		0.50	0.50	ug/l	
99-87-6	p-Isopropyltoluene	ND		0.50	0.50	ug/l	
75-09-2	Methylene chloride	ND	5.0	0.50	0.50	ug/l	
91-20-3	Naphthalene [b]	ND		0.50	0.50	ug/l	
103-65-1	n-Propylbenzene	ND		0.50	0.50	ug/l	
100-42-5	Styrene	ND	100	0.50	0.50	ug/l	
127-18-4	Tetrachloroethylene	ND	5.0	0.50	0.50	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND		0.50	0.50	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND		0.50	0.50	ug/l	
108-88-3	Toluene	ND	1000	0.50	0.50	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND		0.50	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	70	0.50	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	200	0.50	0.50	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	5.0	0.50	0.50	ug/l	
79-01-6	Trichloroethylene	ND	5.0	0.50	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND		0.50	0.50	ug/l	
96-18-4	1,2,3-Trichloropropane	ND		0.50	0.50	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND		0.50	0.50	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND		0.50	0.50	ug/l	
75-01-4	Vinyl chloride	ND	2.0	0.50	0.50	ug/l	
	m,p-Xylene	ND		0.50	0.50	ug/l	
95-47-6	o-Xylene	ND		0.50	0.50	ug/l	
1330-20-7	Xylenes (total)	ND	10000	0.50	0.50	ug/l	
	Total Trihalomethane	ND	80	0.50	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	98%		70-130%
2199-69-1	1,2-Dichlorobenzene-d4	94%		70-130%

(a) Analysis performed at SGS Wheat Ridge, CO.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
MCL = Maximum Contamination Level (40 CFR 141)
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-010819		
Lab Sample ID:	JC81048-2	**Date Sampled:**	01/08/19
Matrix:	DW - Drinking Water	**Date Received:**	01/09/19
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	3A161558.D	1	01/11/19 19:18	RS	n/a	n/a	V3A6982
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	MCL	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	1.8		0.40	0.095	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17647-74-4	1,4-Dioxane-d8	84%		25-195%

ND = Not detected MDL = Method Detection Limit
MCL = Maximum Contamination Level (40 CFR 141)
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-010819		
Lab Sample ID:	JC81048-3	**Date Sampled:**	01/08/19
Matrix:	DW - Drinking Water TB	**Date Received:**	01/09/19
Method:	EPA 524.2	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	4V31992.D	1	01/16/19 16:54	AMS	n/a	n/a	D:V4V1644
Run #2							

	Purge Volume
Run #1	25.0 ml
Run #2	

VOA List

CAS No.	Compound	Result	MCL	RL	MDL	Units	Q
71-43-2	Benzene	ND	5.0	0.50	0.50	ug/l	
108-86-1	Bromobenzene	ND		0.50	0.50	ug/l	
74-97-5	Bromochloromethane	ND		0.50	0.50	ug/l	
75-27-4	Bromodichloromethane	ND		0.50	0.50	ug/l	
75-25-2	Bromoform	ND		0.50	0.50	ug/l	
74-83-9	Bromomethane	ND		0.50	0.50	ug/l	
104-51-8	n-Butylbenzene	ND		0.50	0.50	ug/l	
135-98-8	sec-Butylbenzene	ND		0.50	0.50	ug/l	
98-06-6	tert-Butylbenzene	ND		0.50	0.50	ug/l	
56-23-5	Carbon tetrachloride	ND	5.0	0.50	0.50	ug/l	
108-90-7	Chlorobenzene	ND	100	0.50	0.50	ug/l	
75-00-3	Chloroethane	ND		0.50	0.50	ug/l	
67-66-3	Chloroform	ND		0.50	0.50	ug/l	
74-87-3	Chloromethane	ND		0.50	0.50	ug/l	
95-49-8	o-Chlorotoluene	ND		0.50	0.50	ug/l	
106-43-4	p-Chlorotoluene	ND		0.50	0.50	ug/l	
124-48-1	Dibromochloromethane	ND		0.50	0.50	ug/l	
74-95-3	Dibromomethane	ND		0.50	0.50	ug/l	
541-73-1	m-Dichlorobenzene	ND		0.50	0.50	ug/l	
95-50-1	o-Dichlorobenzene	ND	600	0.50	0.50	ug/l	
106-46-7	p-Dichlorobenzene	ND	75	0.50	0.50	ug/l	
75-71-8	Dichlorodifluoromethane	ND		0.50	0.50	ug/l	
75-34-3	1,1-Dichloroethane	ND		0.50	0.50	ug/l	
107-06-2	1,2-Dichloroethane	ND	5.0	0.50	0.50	ug/l	
75-35-4	1,1-Dichloroethylene	ND	7.0	0.50	0.50	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	70	0.50	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	100	0.50	0.50	ug/l	
78-87-5	1,2-Dichloropropane	ND	5.0	0.50	0.50	ug/l	
142-28-9	1,3-Dichloropropane	ND		0.50	0.50	ug/l	
594-20-7	2,2-Dichloropropane	ND		0.50	0.50	ug/l	
563-58-6	1,1-Dichloropropene	ND		0.50	0.50	ug/l	
10061-01-5	cis-1,3-Dichloropropene [b]	ND		0.50	0.50	ug/l	

ND = Not detected MDL = Method Detection Limit
MCL = Maximum Contamination Level (40 CFR 141)
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-010819		
Lab Sample ID:	JC81048-3	**Date Sampled:**	01/08/19
Matrix:	DW - Drinking Water TB	**Date Received:**	01/09/19
Method:	EPA 524.2	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	MCL	RL	MDL	Units	Q
542-75-6	1,3-Dichloropropene [b]	ND		0.50	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene [b]	ND		0.50	0.50	ug/l	
100-41-4	Ethylbenzene	ND	700	0.50	0.50	ug/l	
87-68-3	Hexachlorobutadiene	ND		0.50	0.50	ug/l	
98-82-8	Isopropylbenzene	ND		0.50	0.50	ug/l	
99-87-6	p-Isopropyltoluene	ND		0.50	0.50	ug/l	
75-09-2	Methylene chloride	ND	5.0	0.50	0.50	ug/l	
91-20-3	Naphthalene [b]	ND		0.50	0.50	ug/l	
103-65-1	n-Propylbenzene	ND		0.50	0.50	ug/l	
100-42-5	Styrene	ND	100	0.50	0.50	ug/l	
127-18-4	Tetrachloroethylene	ND	5.0	0.50	0.50	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND		0.50	0.50	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND		0.50	0.50	ug/l	
108-88-3	Toluene	ND	1000	0.50	0.50	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND		0.50	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	70	0.50	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	200	0.50	0.50	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	5.0	0.50	0.50	ug/l	
79-01-6	Trichloroethylene	ND	5.0	0.50	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND		0.50	0.50	ug/l	
96-18-4	1,2,3-Trichloropropane	ND		0.50	0.50	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND		0.50	0.50	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND		0.50	0.50	ug/l	
75-01-4	Vinyl chloride	ND	2.0	0.50	0.50	ug/l	
	m,p-Xylene	ND		0.50	0.50	ug/l	
95-47-6	o-Xylene	ND		0.50	0.50	ug/l	
1330-20-7	Xylenes (total)	ND	10000	0.50	0.50	ug/l	
	Total Trihalomethane	ND	80	0.50	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	100%		70-130%
2199-69-1	1,2-Dichlorobenzene-d4	94%		70-130%

(a) Analysis performed at SGS Wheat Ridge, CO.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
MCL = Maximum Contamination Level (40 CFR 141)
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-010819		
Lab Sample ID:	JC81048-3	**Date Sampled:**	01/08/19
Matrix:	DW - Drinking Water TB	**Date Received:**	01/09/19
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	3A161559.D	1	01/11/19 19:47	RS	n/a	n/a	V3A6982
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	MCL	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	79%		25-195%

ND = Not detected MDL = Method Detection Limit
MCL = Maximum Contamination Level (40 CFR 141)
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

DW, NTB

CHAIN-OF-CUSTODY RECORD

JC81048 Page 1 of 1

No. 004565 WSP | PARSONS BRINCKERHOFF

WSP | Parsons Brinckerhoff Office Address	13530 Dulles Technology Drive St 300
Project Name	Kopflex
WSP | Parsons Brinckerhoff Contact Name	Eric Johnson
Project Location	Hanover MD
WSP | Parsons Brinckerhoff Contact E-mail	eric.johnson @wspgroup.com
Project Number & Task	3140545.011.02
WSP | Parsons Brinckerhoff Contact Phone	(703) 709-6500
Sampler(s) Name(s)	Maria Kaplan, Hunter Quintal
Sampler(s) Signature(s)	[signatures]
Laboratory Name & Location	SGS Accutest
Laboratory Project Manager	Rocus Peters
Requested Turn-Around-Time	[X] Standard [ ] 24 HR [ ] 48 HR [ ] 72 HR [ ] ___ HR

Requested Analyses & Preservatives

	Sample Identification	Matrix	Collection Start Date	Collection Stop Time	Number of Containers	VOCs (524)	1,4 Dioxane (8260 SIM)	Sample Comments
1	RW-12270CM-010819	DW	1/8/19	10 15	6	X	X	
2	RW-12270CM-010819	DW	1/8/19	10 30	6	X	X	
3	TB-010819	DW	—	—	4	X	X	Trip Blank

V157

INITIAL ASESSMENT 2A(N)

LABEL VERIFICATION ____

Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Shipment Method	Tracking Number(s)
[signature]	1/08/19	10:36	FEDX			Fedex	8127 8179 4056

Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Number of Packages	Custody Seal Number(s)
FEDX	1/9/19	920	[signature]	1/9/19	920	1	2.3 °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)

JC81048: Chain of Custody
Page 1 of 2

SGS Sample Receipt Summary

Job Number: JC81048 **Client:** _____ **Project:** _____

Date / Time Received: 1/9/2019 9:20:00 AM **Delivery Method:** _____ **Airbill #'s:** _____

Cooler Temps (Raw Measured) °C: Cooler 1: (2.3);

Cooler Temps (Corrected) °C: Cooler 1: (2.0);

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: 206717 pH 12+: 208717 Other: (Specify) _____ _____

Comments

SM089-03
Rev. Date 12/7/17

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: JC81048
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3A6982-MB	3A161541.D	1	01/11/19	RS	n/a	n/a	V3A6982

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

JC81048-1, JC81048-2, JC81048-3

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	83%	25-195%

Blank Spike Summary

Job Number: JC81048
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3A6982-BS	3A161540.D	1	01/11/19	RS	n/a	n/a	V3A6982

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

JC81048-1, JC81048-2, JC81048-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
123-91-1	1,4-Dioxane	20	18.4	92	48-137

CAS No.	Surrogate Recoveries	BSP	Limits
17647-74-4	1,4-Dioxane-d8	90%	25-195%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JC81048
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC81148-17MS	3A161545.D	1	01/11/19	RS	n/a	n/a	V3A6982
JC81148-17MSD	3A161546.D	1	01/11/19	RS	n/a	n/a	V3A6982
JC81148-17	3A161544.D	1	01/11/19	RS	n/a	n/a	V3A6982

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

JC81048-1, JC81048-2, JC81048-3

CAS No.	Compound	JC81148-17 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
123-91-1	1,4-Dioxane	0.56		20	17.6	85	20	16.0	77	10	28-162/64

CAS No.	Surrogate Recoveries	MS	MSD	JC81148-17	Limits
17647-74-4	1,4-Dioxane-d8	81%	76%	88%	25-195%

* = Outside of Control Limits.

Instrument Performance Check (BFB)

Job Number: JC81048
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: JC81048
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample: V3A6982-BFB
Lab File ID: 3A161537.D
Instrument ID: GCMS3A
Injection Date: 01/11/19
Injection Time: 08:47

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	13396	21.4		Pass
75	30.0 - 60.0% of mass 95	31459	50.2		Pass
95	Base peak, 100% relative abundance	62666	100.0		Pass
96	5.0 - 9.0% of mass 95	4649	7.42		Pass
173	Less than 2.0% of mass 174	498	0.79	(0.99) [a]	Pass
174	50.0 - 120.0% of mass 95	50394	80.4		Pass
175	5.0 - 9.0% of mass 174	4031	6.43	(8.00) [a]	Pass
176	95.0 - 101.0% of mass 174	49170	78.5	(97.6) [a]	Pass
177	5.0 - 9.0% of mass 176	3377	5.39	(6.87) [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
V3A6982-CC6923	3A161539.D	01/11/19	10:00	01:13	Continuing cal 20
V3A6982-BS	3A161540.D	01/11/19	10:30	01:43	Blank Spike
V3A6982-MB	3A161541.D	01/11/19	10:59	02:12	Method Blank
ZZZZZZ	3A161542.D	01/11/19	11:32	02:45	(unrelated sample)
ZZZZZZ	3A161543.D	01/11/19	12:01	03:14	(unrelated sample)
JC81148-17	3A161544.D	01/11/19	12:29	03:42	(used for QC only; not part of job JC81048)
JC81148-17MS	3A161545.D	01/11/19	12:58	04:11	Matrix Spike
JC81148-17MSD	3A161546.D	01/11/19	13:27	04:40	Matrix Spike Duplicate
ZZZZZZ	3A161548.D	01/11/19	14:25	05:38	(unrelated sample)
ZZZZZZ	3A161549.D	01/11/19	14:54	06:07	(unrelated sample)
ZZZZZZ	3A161550.D	01/11/19	15:22	06:35	(unrelated sample)
ZZZZZZ	3A161551.D	01/11/19	15:51	07:04	(unrelated sample)
ZZZZZZ	3A161552.D	01/11/19	16:20	07:33	(unrelated sample)
ZZZZZZ	3A161553.D	01/11/19	16:48	08:01	(unrelated sample)
ZZZZZZ	3A161554.D	01/11/19	17:21	08:34	(unrelated sample)
ZZZZZZ	3A161555.D	01/11/19	17:51	09:04	(unrelated sample)
ZZZZZZ	3A161556.D	01/11/19	18:20	09:33	(unrelated sample)
JC81048-1	3A161557.D	01/11/19	18:49	10:02	RW-1227OCM-010819-F
JC81048-2	3A161558.D	01/11/19	19:18	10:31	RW-1227OCM-010819
JC81048-3	3A161559.D	01/11/19	19:47	11:00	TB-010819

Surrogate Recovery Summary

Job Number: JC81048
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
JC81048-1	3A161557.D	81
JC81048-2	3A161558.D	84
JC81048-3	3A161559.D	79
JC81148-17MS	3A161545.D	81
JC81148-17MSD	3A161546.D	76
V3A6982-BS	3A161540.D	90
V3A6982-MB	3A161541.D	83

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

Misc. Forms

Custody Documents and Other Forms

(SGS Wheat Ridge, CO)

Includes the following where applicable:

- Chain of Custody

CHAIN OF CUSTODY

Page 1 of 1

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehsusa

FED-EX Tracking #: | Bottle Order Control #:
SGS Quote #: | SGS Job #: JC81048

Client / Reporting Information

Company Name:
Street Address:
City State Zip
Project Contact: E-mail: Rocus.Peters@sgs.com
Phone #:
Sampler(s) Name(s): MK/HC Phone:

Project Information

Project Name: Kop-Flex, Hanover, VA
Street:
City State
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)

Company Name:
Street Address:
City State Zip
Attention:

Requested Analysis

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL - Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB - Field Blank
EB-Equipment Blank
RB - Rinse Blank
TB - Trip Blank

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	EMCORE	V624STD	LAB USE ONLY
1	RW-1227OCM-010819-F		1/8/19	10:15:00 AM	MK/HC	DW	3									X	
2	RW-1227OCM-010819		1/8/19	10:30:00 AM	MK/HC	DW	3									X	
3	TB-010819		1/8/19	10:30:00 AM	MK/HC	DW	3									X	

Turnaround Time (Business days)

Approved By (SGS PM): / Date:

- [ ] Standard 10 Business Days
- [ ] 5 Business Days RUSH
- [ ] 3 Business Days RUSH
- [ ] 2 Business Days RUSH
- [ ] 1 Business Day EMERGENCY
- [X] Other Due 1/23/2019

Emergency & Rush T/A data available via Lablink. Approval needed for RUSH/Emergency TAT

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [X] Other COMMB

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC Summary + Partial Raw data

Comments / Special Instructions

http://www.sgs.com/en/terms-and-conditions

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by:	Date / Time:	Received By:	Relinquished By:	Date / Time:	Received By:
1	1/11/19 17:00	1	1/12/19 9:15		2
Relinquished by:	Date / Time:	Received By:	Relinquished By:	Date / Time:	Received By:
3		3	4		4
Relinquished by:	Date / Time:	Received By:	Custody Seal #	Intact / Not Intact	Preserved where applicable / Absent	On Ice	Cooler Temp. °C
5		5			Therm. ID:		0.8

FedEx T080

JC81048.xls

JC81048: Chain of Custody
Page 1 of 1
SGS Wheat Ridge, CO

MS Volatiles

QC Data Summaries

(SGS Wheat Ridge, CO)

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: JC81048
Account: ALNJ SGS Dayton, NJ
Project: ESCVAR: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V4V1644-MB	4V31985.D	1	01/16/19	CH	n/a	n/a	V4V1644

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

JC81048-1, JC81048-2, JC81048-3

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.50	0.50	ug/l	
108-86-1	Bromobenzene	ND	0.50	0.50	ug/l	
74-97-5	Bromochloromethane	ND	0.50	0.50	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.50	ug/l	
75-25-2	Bromoform	ND	0.50	0.50	ug/l	
74-83-9	Bromomethane	ND	0.50	0.50	ug/l	
104-51-8	n-Butylbenzene	ND	0.50	0.50	ug/l	
135-98-8	sec-Butylbenzene	ND	0.50	0.50	ug/l	
98-06-6	tert-Butylbenzene	ND	0.50	0.50	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.50	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.50	ug/l	
75-00-3	Chloroethane	ND	0.50	0.50	ug/l	
67-66-3	Chloroform	ND	0.50	0.50	ug/l	
74-87-3	Chloromethane	ND	0.50	0.50	ug/l	
95-49-8	o-Chlorotoluene	ND	0.50	0.50	ug/l	
106-43-4	p-Chlorotoluene	ND	0.50	0.50	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.50	ug/l	
74-95-3	Dibromomethane	ND	0.50	0.50	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.50	ug/l	
95-50-1	o-Dichlorobenzene	ND	0.50	0.50	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.50	ug/l	
75-71-8	Dichlorodifluoromethane	ND	0.50	0.50	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.50	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.50	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.50	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.50	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.50	ug/l	
142-28-9	1,3-Dichloropropane	ND	0.50	0.50	ug/l	
594-20-7	2,2-Dichloropropane	ND	0.50	0.50	ug/l	
563-58-6	1,1-Dichloropropene	ND	0.50	0.50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.50	ug/l	
542-75-6	1,3-Dichloropropene	ND	0.50	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.50	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.50	ug/l	
87-68-3	Hexachlorobutadiene	ND	0.50	0.50	ug/l	

Method Blank Summary

Job Number: JC81048
Account: ALNJ SGS Dayton, NJ
Project: ESCVAR: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V4V1644-MB	4V31985.D	1	01/16/19	CH	n/a	n/a	V4V1644

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

JC81048-1, JC81048-2, JC81048-3

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	0.50	0.50	ug/l	
99-87-6	p-Isopropyltoluene	ND	0.50	0.50	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.50	ug/l	
91-20-3	Naphthalene	ND	0.50	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	0.50	0.50	ug/l	
100-42-5	Styrene	ND	0.50	0.50	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.50	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.50	0.50	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.50	ug/l	
108-88-3	Toluene	ND	0.50	0.50	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	0.50	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.50	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.50	ug/l	
79-01-6	Trichloroethylene	ND	0.50	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	0.50	0.50	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	0.50	0.50	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	0.50	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	0.50	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.50	ug/l	
	m,p-Xylene	ND	0.50	0.50	ug/l	
95-47-6	o-Xylene	ND	0.50	0.50	ug/l	
1330-20-7	Xylenes (total)	ND	0.50	0.50	ug/l	
	Total Trihalomethane	ND	0.50	0.50	ug/l	

CAS No.	Surrogate Recoveries		Limits
460-00-4	4-Bromofluorobenzene	103%	70-130%
2199-69-1	1,2-Dichlorobenzene-d4	98%	70-130%

Blank Spike Summary

Job Number: JC81048
Account: ALNJ SGS Dayton, NJ
Project: ESCVAR: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V4V1644-BS	4V31986.D	1	01/16/19	CH	n/a	n/a	V4V1644

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

JC81048-1, JC81048-2, JC81048-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	5	5.2	104	70-130
108-86-1	Bromobenzene	5	5.8	116	70-130
74-97-5	Bromochloromethane	5	5.2	104	70-130
75-27-4	Bromodichloromethane	5	5.9	118	70-130
75-25-2	Bromoform	5	5.8	116	70-130
74-83-9	Bromomethane	5	4.9	98	70-130
104-51-8	n-Butylbenzene	5	5.7	114	70-130
135-98-8	sec-Butylbenzene	5	5.4	108	70-130
98-06-6	tert-Butylbenzene	5	5.6	112	70-130
56-23-5	Carbon tetrachloride	5	4.8	96	70-130
108-90-7	Chlorobenzene	5	5.6	112	70-130
75-00-3	Chloroethane	5	4.9	98	70-130
67-66-3	Chloroform	5	5.4	108	70-130
74-87-3	Chloromethane	5	4.8	96	70-130
95-49-8	o-Chlorotoluene	5	5.5	110	70-130
106-43-4	p-Chlorotoluene	5	5.6	112	70-130
124-48-1	Dibromochloromethane	5	5.8	116	70-130
74-95-3	Dibromomethane	5	5.2	104	70-130
541-73-1	m-Dichlorobenzene	5	5.7	114	70-130
95-50-1	o-Dichlorobenzene	5	5.6	112	70-130
106-46-7	p-Dichlorobenzene	5	5.6	112	70-130
75-71-8	Dichlorodifluoromethane	5	5.0	100	70-130
75-34-3	1,1-Dichloroethane	5	5.2	104	70-130
107-06-2	1,2-Dichloroethane	5	5.5	110	70-130
75-35-4	1,1-Dichloroethylene	5	4.7	94	70-130
156-59-2	cis-1,2-Dichloroethylene	5	5.2	104	70-130
156-60-5	trans-1,2-Dichloroethylene	5	4.7	94	70-130
78-87-5	1,2-Dichloropropane	5	5.7	114	70-130
142-28-9	1,3-Dichloropropane	5	5.8	116	70-130
594-20-7	2,2-Dichloropropane	5	6.4	128	70-130
563-58-6	1,1-Dichloropropene	5	4.9	98	70-130
10061-01-5	cis-1,3-Dichloropropene	5	6.9	138* [a]	70-130
542-75-6	1,3-Dichloropropene	10	14.4	144* [a]	70-130
10061-02-6	trans-1,3-Dichloropropene	5	7.5	150* [a]	70-130
100-41-4	Ethylbenzene	5	5.8	116	70-130
87-68-3	Hexachlorobutadiene	5	5.2	104	70-130

* = Outside of Control Limits.

Blank Spike Summary

Job Number: JC81048
Account: ALNJ SGS Dayton, NJ
Project: ESCVAR: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V4V1644-BS	4V31986.D	1	01/16/19	CH	n/a	n/a	V4V1644

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

JC81048-1, JC81048-2, JC81048-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
98-82-8	Isopropylbenzene	5	5.6	112	70-130
99-87-6	p-Isopropyltoluene	5	5.7	114	70-130
75-09-2	Methylene chloride	5	4.8	96	70-130
91-20-3	Naphthalene	5	5.4	108	70-130
103-65-1	n-Propylbenzene	5	5.6	112	70-130
100-42-5	Styrene	5	6.2	124	70-130
127-18-4	Tetrachloroethylene	5	5.3	106	70-130
630-20-6	1,1,1,2-Tetrachloroethane	5	5.7	114	70-130
79-34-5	1,1,2,2-Tetrachloroethane	5	5.5	110	70-130
108-88-3	Toluene	5	5.3	106	70-130
87-61-6	1,2,3-Trichlorobenzene	5	5.8	116	70-130
120-82-1	1,2,4-Trichlorobenzene	5	6.0	120	70-130
71-55-6	1,1,1-Trichloroethane	5	5.1	102	70-130
79-00-5	1,1,2-Trichloroethane	5	5.8	116	70-130
79-01-6	Trichloroethylene	5	5.3	106	70-130
75-69-4	Trichlorofluoromethane	5	4.9	98	70-130
96-18-4	1,2,3-Trichloropropane	5	5.9	118	70-130
95-63-6	1,2,4-Trimethylbenzene	5	5.7	114	70-130
108-67-8	1,3,5-Trimethylbenzene	5	5.8	116	70-130
75-01-4	Vinyl chloride	5	5.1	102	70-130
	m,p-Xylene	10	11.5	115	70-130
95-47-6	o-Xylene	5	5.7	114	70-130
1330-20-7	Xylenes (total)	15	17.2	115	70-130
	Total Trihalomethane	20	23.0	115	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
460-00-4	4-Bromofluorobenzene	108%	70-130%
2199-69-1	1,2-Dichlorobenzene-d4	101%	70-130%

(a) Outside control limits. Since the bias is high and the samples are ND, no further action is required.

* = Outside of Control Limits.

Duplicate Summary

Job Number: JC81048
Account: ALNJ SGS Dayton, NJ
Project: ESCVAR: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
DA12681-1DUP	4V31987.D	1	01/16/19	CH	n/a	n/a	V4V1644
DA12681-1	4V31988.D	1	01/16/19	CH	n/a	n/a	V4V1644

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

JC81048-1, JC81048-2, JC81048-3

CAS No.	Compound	DA12681-1 ug/l	Q	DUP ug/l	Q	RPD	Limits
71-43-2	Benzene	ND		ND		nc	30
108-86-1	Bromobenzene	ND		ND		nc	30
74-97-5	Bromochloromethane	ND		ND		nc	30
75-27-4	Bromodichloromethane	ND		ND		nc	30
75-25-2	Bromoform	ND		ND		nc	30
74-83-9	Bromomethane	ND		ND		nc	30
104-51-8	n-Butylbenzene	ND		ND		nc	30
135-98-8	sec-Butylbenzene	ND		ND		nc	30
98-06-6	tert-Butylbenzene	ND		ND		nc	30
56-23-5	Carbon tetrachloride	ND		ND		nc	30
108-90-7	Chlorobenzene	ND		ND		nc	30
75-00-3	Chloroethane	ND		ND		nc	30
67-66-3	Chloroform	ND		ND		nc	30
74-87-3	Chloromethane	ND		ND		nc	30
95-49-8	o-Chlorotoluene	ND		ND		nc	30
106-43-4	p-Chlorotoluene	ND		ND		nc	30
124-48-1	Dibromochloromethane	ND		ND		nc	30
74-95-3	Dibromomethane	ND		ND		nc	30
541-73-1	m-Dichlorobenzene	ND		ND		nc	30
95-50-1	o-Dichlorobenzene	ND		ND		nc	30
106-46-7	p-Dichlorobenzene	ND		ND		nc	30
75-71-8	Dichlorodifluoromethane	ND		ND		nc	30
75-34-3	1,1-Dichloroethane	ND		ND		nc	30
107-06-2	1,2-Dichloroethane	ND		ND		nc	30
75-35-4	1,1-Dichloroethylene	ND		ND		nc	30
156-59-2	cis-1,2-Dichloroethylene	ND		ND		nc	30
156-60-5	trans-1,2-Dichloroethylene	ND		ND		nc	30
78-87-5	1,2-Dichloropropane	ND		ND		nc	30
142-28-9	1,3-Dichloropropane	ND		ND		nc	30
594-20-7	2,2-Dichloropropane	ND		ND		nc	30
563-58-6	1,1-Dichloropropene	ND		ND		nc	30
10061-01-5	cis-1,3-Dichloropropene	ND		ND		nc	30
542-75-6	1,3-Dichloropropene	ND		ND		nc	30
10061-02-6	trans-1,3-Dichloropropene	ND		ND		nc	30
100-41-4	Ethylbenzene	ND		ND		nc	30
87-68-3	Hexachlorobutadiene	ND		ND		nc	30

* = Outside of Control Limits.

Duplicate Summary

Job Number: JC81048
Account: ALNJ SGS Dayton, NJ
Project: ESCVAR: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
DA12681-1DUP	4V31987.D	1	01/16/19	CH	n/a	n/a	V4V1644
DA12681-1	4V31988.D	1	01/16/19	CH	n/a	n/a	V4V1644

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

JC81048-1, JC81048-2, JC81048-3

CAS No.	Compound	DA12681-1 ug/l	Q	DUP ug/l	Q	RPD	Limits
98-82-8	Isopropylbenzene	ND		ND		nc	30
99-87-6	p-Isopropyltoluene	ND		ND		nc	30
75-09-2	Methylene chloride	ND		ND		nc	30
91-20-3	Naphthalene	ND		ND		nc	30
103-65-1	n-Propylbenzene	ND		ND		nc	30
100-42-5	Styrene	ND		ND		nc	30
127-18-4	Tetrachloroethylene	ND		ND		nc	30
630-20-6	1,1,1,2-Tetrachloroethane	ND		ND		nc	30
79-34-5	1,1,2,2-Tetrachloroethane	ND		ND		nc	30
108-88-3	Toluene	ND		ND		nc	30
87-61-6	1,2,3-Trichlorobenzene	ND		ND		nc	30
120-82-1	1,2,4-Trichlorobenzene	ND		ND		nc	30
71-55-6	1,1,1-Trichloroethane	ND		ND		nc	30
79-00-5	1,1,2-Trichloroethane	ND		ND		nc	30
79-01-6	Trichloroethylene	ND		ND		nc	30
75-69-4	Trichlorofluoromethane	ND		ND		nc	30
96-18-4	1,2,3-Trichloropropane	ND		ND		nc	30
95-63-6	1,2,4-Trimethylbenzene	ND		ND		nc	30
108-67-8	1,3,5-Trimethylbenzene	ND		ND		nc	30
75-01-4	Vinyl chloride	ND		ND		nc	30
	m,p-Xylene	ND		ND		nc	30
95-47-6	o-Xylene	ND		ND		nc	30
1330-20-7	Xylenes (total)	ND		ND		nc	30
	Total Trihalomethane	ND		ND		nc	30

CAS No.	Surrogate Recoveries	DUP	DA12681-1	Limits
460-00-4	4-Bromofluorobenzene	94%	98%	70-130%
2199-69-1	1,2-Dichlorobenzene-d4	87%	90%	70-130%

* = Outside of Control Limits.

Instrument Performance Check (BFB)

Job Number: JC81048
Account: ALNJ SGS Dayton, NJ
Project: ESCVAR: Kop-Flex, Hanover, VA

Sample: V4V1643-BFB
Lab File ID: 4V31966.D
Instrument ID: GCMS4V
Injection Date: 01/04/19
Injection Time: 18:00

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	13019	17.4		Pass
75	30.0 - 80.0% of mass 95	39912	53.4		Pass
95	Base peak, 100% relative abundance	74709	100.0		Pass
96	5.0 - 9.0% of mass 95	5611	7.51		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	59152	79.2		Pass
175	5.0 - 9.0% of mass 174	4791	6.41	(8.10) [a]	Pass
176	94.95 - 101.0% of mass 174	56672	75.9	(95.8) [a]	Pass
177	5.0 - 9.0% of mass 176	4380	5.86	(7.73) [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
V4V1643-IC1643	4V31967.D	01/04/19	18:28	00:28	Initial cal 0.25
V4V1643-IC1643	4V31968.D	01/04/19	18:56	00:56	Initial cal 0.5
V4V1643-IC1643	4V31969.D	01/04/19	19:24	01:24	Initial cal 1
V4V1643-IC1643	4V31970.D	01/04/19	19:52	01:52	Initial cal 2
V4V1643-ICC1643	4V31971.D	01/04/19	20:21	02:21	Initial cal 5
V4V1643-IC1643	4V31972.D	01/04/19	20:49	02:49	Initial cal 10
V4V1643-IC1643	4V31973.D	01/04/19	21:17	03:17	Initial cal 15
V4V1643-IC1643	4V31974.D	01/04/19	21:46	03:46	Initial cal 40
V4V1643-IC1643	4V31975.D	01/04/19	22:14	04:14	Initial cal 80
V4V1643-IC1643	4V31976.D	01/04/19	22:42	04:42	Initial cal 100
V4V1643-ICV1643	4V31978.D	01/04/19	23:38	05:38	Initial cal verification 5

Instrument Performance Check (BFB)

Job Number: JC81048
Account: ALNJ SGS Dayton, NJ
Project: ESCVAR: Kop-Flex, Hanover, VA

Sample: V4V1644-BFB
Lab File ID: 4V31981.D
Instrument ID: GCMS4V
Injection Date: 01/16/19
Injection Time: 11:43

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	16680	16.0		Pass
75	30.0 - 80.0% of mass 95	53741	51.6		Pass
95	Base peak, 100% relative abundance	104157	100.0		Pass
96	5.0 - 9.0% of mass 95	7744	7.43		Pass
173	Less than 2.0% of mass 174	257	0.25	(0.31) [a]	Pass
174	50.0 - 120.0% of mass 95	82202	78.9		Pass
175	5.0 - 9.0% of mass 174	6641	6.38	(8.08) [a]	Pass
176	94.95 - 101.0% of mass 174	80693	77.5	(98.2) [a]	Pass
177	5.0 - 9.0% of mass 176	5160	4.95	(6.39) [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
V4V1644-CC1643	4V31982.D	01/16/19	12:12	00:29	Continuing cal 5
V4V1644-CC1643	4V31983.D	01/16/19	12:40	00:57	Continuing cal 0.25
V4V1644-CC1643	4V31984.D	01/16/19	13:09	01:26	Continuing cal 0.5
V4V1644-MB	4V31985.D	01/16/19	13:37	01:54	Method Blank
V4V1644-BS	4V31986.D	01/16/19	14:05	02:22	Blank Spike
DA12681-1DUP	4V31987.D	01/16/19	14:34	02:51	Duplicate
DA12681-1	4V31988.D	01/16/19	15:02	03:19	(used for QC only; not part of job JC81048)
ZZZZZZ	4V31989.D	01/16/19	15:30	03:47	(unrelated sample)
JC81048-1	4V31990.D	01/16/19	15:58	04:15	RW-1227OCM-010819-F
JC81048-2	4V31991.D	01/16/19	16:26	04:43	RW-1227OCM-010819
JC81048-3	4V31992.D	01/16/19	16:54	05:11	TB-010819
ZZZZZZ	4V31993.D	01/16/19	17:23	05:40	(unrelated sample)
ZZZZZZ	4V31994.D	01/16/19	17:51	06:08	(unrelated sample)
ZZZZZZ	4V31995.D	01/16/19	18:19	06:36	(unrelated sample)
ZZZZZZ	4V31997.D	01/16/19	19:16	07:33	(unrelated sample)

Surrogate Recovery Summary

Job Number: JC81048
Account: ALNJ SGS Dayton, NJ
Project: ESCVAR: Kop-Flex, Hanover, VA

Method: EPA 524.2 **Matrix:** AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2
JC81048-1	4V31990.D	94	93
JC81048-2	4V31991.D	98	94
JC81048-3	4V31992.D	100	94
DA12681-1DUP	4V31987.D	94	87
V4V1644-BS	4V31986.D	108	101
V4V1644-MB	4V31985.D	103	98

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

FEBRUARY 2019

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

31401545011/2

SGS Job Number: JC83153

Sampling Date: 02/19/19

Report to:

WSP
11190 Sunrise Valley Drive Suite 300
Reston, VA 20190
Eric.Johnson@WSPGroup.com

ATTN: Eric Johnson

Total number of pages in report: 39

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.

Brian McGuire
General Manager

Client Service contact: Rocus Peters 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)

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SGS North America Inc.

Sample Summary

WSP Environment & Energy

Job No: JC83153

Kop-Flex, Hanover, VA
Project No: 31401545011/2

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
JC83153-1	02/19/19	09:55	CM	02/20/19	AQ	Trip Blank Water	TRIP BLANK
JC83153-2	02/19/19	09:55	CM	02/20/19	AQ	Ground Water	RW-12270CM-021919
JC83153-3	02/19/19	09:50	CM	02/20/19	AQ	Ground Water	RW-12270CM-021919-F

Summary of Hits

Job Number: JC83153
Account: WSP Environment & Energy
Project: Kop-Flex, Hanover, VA
Collected: 02/19/19

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JC83153-1	**TRIP BLANK**					
Methylene chloride [a]		0.82	0.50	0.37	ug/l	EPA 524.2 REV 4.1
JC83153-2	**RW-12270CM-021919**					
1,1-Dichloroethylene [a]		6.7	0.50	0.19	ug/l	EPA 524.2 REV 4.1
1,1,1-Trichloroethane [a]		0.28 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
JC83153-3	**RW-12270CM-021919-F**					
1,1,1-Trichloroethane [a]		0.32 J	0.50	0.22	ug/l	EPA 524.2 REV 4.1
1,4-Dioxane		1.6	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:	TRIP BLANK		
Lab Sample ID:	JC83153-1	**Date Sampled:**	02/19/19
Matrix:	AQ - Trip Blank Water	**Date Received:**	02/20/19
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]	1B118335.D	1	02/25/19 16:46	BK	n/a	n/a	V1B5711
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 [b]	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:	JC83153-1	**Date Sampled:**	02/19/19
Matrix:	AQ - Trip Blank Water	**Date Received:**	02/20/19
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	0.82	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	100%		70-130%
460-00-4	4-Bromofluorobenzene	83%		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:	JC83153-1	**Date Sampled:**	02/19/19
Matrix:	AQ - Trip Blank Water	**Date Received:**	02/20/19
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.
(b) Associated CCV outside of control limits high, sample was ND.

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:	JC83153-1	**Date Sampled:**	02/19/19
Matrix:	AQ - Trip Blank Water	**Date Received:**	02/20/19
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	3A161756.D	1	02/21/19 11:02	RS	n/a	n/a	V3A6997
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	83%		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-12270CM-021919		
Lab Sample ID:	JC83153-2	**Date Sampled:**	02/19/19
Matrix:	AQ - Ground Water	**Date Received:**	02/20/19
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]	1B118336.D	1	02/25/19 17:18	BK	n/a	n/a	V1B5711
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	6.7	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 [b]	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-12270CM-021919		
Lab Sample ID:	JC83153-2	**Date Sampled:**	02/19/19
Matrix:	AQ - Ground Water	**Date Received:**	02/20/19
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	0.28	0.50	0.22	ug/l	J
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	102%		70-130%
460-00-4	4-Bromofluorobenzene	84%		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-12270CM-021919		
Lab Sample ID:	JC83153-2	**Date Sampled:**	02/19/19
Matrix:	AQ - Ground Water	**Date Received:**	02/20/19
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.
(b) Associated CCV outside of control limits high, sample was ND.

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-12270CM-021919		
Lab Sample ID:	JC83153-2	**Date Sampled:**	02/19/19
Matrix:	AQ - Ground Water	**Date Received:**	02/20/19
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	3A161757.D	1	02/21/19 11:31	RS	n/a	n/a	V3A6997
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	85%		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-12270CM-021919-F		
Lab Sample ID:	JC83153-3	**Date Sampled:**	02/19/19
Matrix:	AQ - Ground Water	**Date Received:**	02/20/19
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]	1B118337.D	1	02/25/19 17:50	BK	n/a	n/a	V1B5711
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 [b]	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-12270CM-021919-F		
Lab Sample ID:	JC83153-3	**Date Sampled:**	02/19/19
Matrix:	AQ - Ground Water	**Date Received:**	02/20/19
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	0.32	0.50	0.22	ug/l	J
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	101%		70-130%
460-00-4	4-Bromofluorobenzene	82%		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-12270CM-021919-F		
Lab Sample ID:	JC83153-3	**Date Sampled:**	02/19/19
Matrix:	AQ - Ground Water	**Date Received:**	02/20/19
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.
(b) Associated CCV outside of control limits high, sample was ND.

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-12270CM-021919-F		
Lab Sample ID:	JC83153-3	**Date Sampled:**	02/19/19
Matrix:	AQ - Ground Water	**Date Received:**	02/20/19
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	3A161758.D	1	02/21/19 12:00	RS	n/a	n/a	V3A6997
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	1.6	0.40	0.095	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17647-74-4	1,4-Dioxane-d8	70%		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

CHAIN-OF-CUSTODY RECORD

JC83153 Page 1 of 1

WSP USA Office Address: 13530 Dulles Technology Dr. Ste. 350 Herndon, VA 20171

Project Name: Kapflex	WSP USA Contact Name: Eric Johnson
Project Location: Hyattsville, MD	WSP USA Contact E-mail: eric.johnson@wsp.com
Project Number & Task: 31401545.01 / 02	WSP USA Contact Phone: 703 709 6500
Sampler(s) Name(s): Chris Cresci, Molly Ley	Sampler(s) Signature(s):

Requested Analyses & Preservatives: VOCs (524), 1,4-Dioxane (8260 SIM)

No. 009920 — WSP

Laboratory Name & Location: SGS Accutest

Laboratory Project Manager: Rocus Peters

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

	Sample Identification	Matrix	Collection Start* Date	Collection Start* Time	Collection Stop* Time	Number of Containers	VOCs (524)	1,4-Dioxane (8260 SIM)	Sample Comments
1	Trip Blank	GW	lab provided			6	X	X	
2	RW-1227OCM-021919	GW	2/19/19	09 55		6	X	X	
3	RW-1227OCM-021919-R	GW	2/19/19	09 50		6	X	X	U412

INITIAL ASSESSMENT JA

LABEL VERIFICATION

Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Shipment Method	Tracking Number(s)
	2/19/19	16 30	FedEx				8127 8179 5534
Relinquished By (Signature) FedEx	Date 2/20/19	Time 12:20	Received By (Signature)	Date 2/20/19	Time 1220	Number of Packages	Custody Seal Number(s)

DM ice 2.1 C IG

*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

JC83153: Chain of Custody
Page 1 of 2

SGS Sample Receipt Summary

Job Number: JC83153 **Client:** _____ **Project:** _____

Date / Time Received: 2/20/2019 12:20:00 PM **Delivery Method:** _____ **Airbill #'s:** _____

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

Cooler Temps (Corrected) °C: Cooler 1: (1.2);

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: 206717 pH 12+: 208717 Other: (Specify) _____ _____

Comments

SM089-03
Rev. Date 12/7/17

JC83153: Chain of Custody
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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: JC83153
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5711-MB	1B118325.D	1	02/25/19	BK	n/a	n/a	V1B5711

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

JC83153-1, JC83153-2, JC83153-3

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: JC83153
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5711-MB	1B118325.D	1	02/25/19	BK	n/a	n/a	V1B5711

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

JC83153-1, JC83153-2, JC83153-3

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	100%	70-130%
460-00-4	4-Bromofluorobenzene	89%	70-130%

Method Blank Summary

Job Number: JC83153
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5711-MB	1B118325.D	1	02/25/19	BK	n/a	n/a	V1B5711

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

JC83153-1, JC83153-2, JC83153-3

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

Method Blank Summary

Job Number: JC83153
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3A6997-MB	3A161755.D	1	02/21/19	RS	n/a	n/a	V3A6997

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

JC83153-1, JC83153-2, JC83153-3

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	104%	25-195%

Blank Spike Summary

Job Number: JC83153
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3A6997-BS	3A161754.D	1	02/21/19	RS	n/a	n/a	V3A6997

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

JC83153-1, JC83153-2, JC83153-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
123-91-1	1,4-Dioxane	20	19.9	100	48-137

CAS No.	Surrogate Recoveries	BSP	Limits
17647-74-4	1,4-Dioxane-d8	100%	25-195%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JC83153
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5711-BS	1B118323.D	1	02/25/19	BK	n/a	n/a	V1B5711
V1B5711-BSD	1B118324.D	1	02/25/19	BK	n/a	n/a	V1B5711

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

JC83153-1, JC83153-2, JC83153-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	20	22.8	114	22.9	115	0	70-130/30
78-93-3	2-Butanone	20	19.8	99	21.0	105	6	70-130/30
71-43-2	Benzene	5	5.0	100	5.2	104	4	70-130/30
108-86-1	Bromobenzene	5	5.3	106	5.4	108	2	70-130/30
74-97-5	Bromochloromethane	5	5.2	104	5.2	104	0	70-130/30
75-27-4	Bromodichloromethane	5	5.5	110	5.7	114	4	70-130/30
75-25-2	Bromoform	5	5.2	104	5.4	108	4	70-130/30
74-83-9	Bromomethane	5	5.5	110	5.2	104	6	70-130/30
104-51-8	n-Butylbenzene	5	4.9	98	4.9	98	0	70-130/30
135-98-8	sec-Butylbenzene	5	4.9	98	5.1	102	4	70-130/30
98-06-6	tert-Butylbenzene	5	4.6	92	4.9	98	6	70-130/30
75-15-0	Carbon disulfide	5	5.7	114	5.7	114	0	70-130/30
108-90-7	Chlorobenzene	5	5.3	106	5.5	110	4	70-130/30
75-00-3	Chloroethane	5	5.4	108	5.4	108	0	70-130/30
67-66-3	Chloroform	5	5.2	104	5.2	104	0	70-130/30
74-87-3	Chloromethane	5	5.1	102	5.2	104	2	70-130/30
95-49-8	o-Chlorotoluene	5	5.1	102	5.1	102	0	70-130/30
106-43-4	p-Chlorotoluene	5	5.1	102	5.3	106	4	70-130/30
56-23-5	Carbon tetrachloride	5	5.5	110	5.6	112	2	70-130/30
75-34-3	1,1-Dichloroethane	5	5.4	108	5.5	110	2	70-130/30
75-35-4	1,1-Dichloroethylene	5	5.1	102	5.1	102	0	70-130/30
563-58-6	1,1-Dichloropropene	5	4.9	98	5.0	100	2	70-130/30
96-12-8	1,2-Dibromo-3-chloropropane	5	5.5	110	5.3	106	4	70-130/30
106-93-4	1,2-Dibromoethane	5	5.3	106	5.4	108	2	70-130/30
107-06-2	1,2-Dichloroethane	5	5.5	110	5.5	110	0	70-130/30
78-87-5	1,2-Dichloropropane	5	5.2	104	5.5	110	6	70-130/30
142-28-9	1,3-Dichloropropane	5	5.5	110	5.8	116	5	70-130/30
594-20-7	2,2-Dichloropropane	5	6.5	130	6.4	128	2	70-130/30
124-48-1	Dibromochloromethane	5	5.3	106	5.6	112	6	70-130/30
74-95-3	Dibromomethane	5	5.4	108	5.4	108	0	70-130/30
75-71-8	Dichlorodifluoromethane	5	5.7	114	5.8	116	2	70-130/30
541-73-1	m-Dichlorobenzene	5	5.4	108	5.5	110	2	70-130/30
95-50-1	o-Dichlorobenzene	5	5.4	108	5.5	110	2	70-130/30
106-46-7	p-Dichlorobenzene	5	5.3	106	5.3	106	0	70-130/30
156-60-5	trans-1,2-Dichloroethylene	5	5.1	102	5.1	102	0	70-130/30
156-59-2	cis-1,2-Dichloroethylene	5	5.1	102	5.2	104	2	70-130/30

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JC83153
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5711-BS	1B118323.D	1	02/25/19	BK	n/a	n/a	V1B5711
V1B5711-BSD	1B118324.D	1	02/25/19	BK	n/a	n/a	V1B5711

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

JC83153-1, JC83153-2, JC83153-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
10061-01-5	cis-1,3-Dichloropropene	5	4.8	96	5.1	102	6	70-130/30
10061-02-6	trans-1,3-Dichloropropene	5	5.2	104	5.5	110	6	70-130/30
100-41-4	Ethylbenzene	5	4.9	98	5.1	102	4	70-130/30
87-68-3	Hexachlorobutadiene	5	5.4	108	5.2	104	4	70-130/30
591-78-6	2-Hexanone	20	19.0	95	20.7	104	9	70-130/30
98-82-8	Isopropylbenzene	5	4.7	94	4.9	98	4	70-130/30
99-87-6	p-Isopropyltoluene	5	4.9	98	5.0	100	2	70-130/30
75-09-2	Methylene chloride	5	5.3	106	5.2	104	2	70-130/30
1634-04-4	Methyl Tert Butyl Ether	5	4.5	90	4.6	92	2	70-130/30
108-10-1	4-Methyl-2-pentanone	20	20.8	104	21.9	110	5	70-130/30
91-20-3	Naphthalene	5	4.6	92	4.6	92	0	70-130/30
103-65-1	n-Propylbenzene	5	5.0	100	5.1	102	2	70-130/30
100-42-5	Styrene	5	4.7	94	4.9	98	4	70-130/30
630-20-6	1,1,1,2-Tetrachloroethane	5	5.7	114	5.8	116	2	70-130/30
71-55-6	1,1,1-Trichloroethane	5	5.4	108	5.5	110	2	70-130/30
79-34-5	1,1,2,2-Tetrachloroethane	5	5.6	112	5.6	112	0	70-130/30
79-00-5	1,1,2-Trichloroethane	5	5.4	108	5.7	114	5	70-130/30
87-61-6	1,2,3-Trichlorobenzene	5	5.1	102	5.0	100	2	70-130/30
96-18-4	1,2,3-Trichloropropane	5	5.7	114	5.7	114	0	70-130/30
120-82-1	1,2,4-Trichlorobenzene	5	5.0	100	4.8	96	4	70-130/30
95-63-6	1,2,4-Trimethylbenzene	5	5.1	102	5.2	104	2	70-130/30
108-67-8	1,3,5-Trimethylbenzene	5	5.1	102	5.2	104	2	70-130/30
127-18-4	Tetrachloroethylene	5	5.1	102	5.3	106	4	70-130/30
108-88-3	Toluene	5	4.8	96	5.0	100	4	70-130/30
79-01-6	Trichloroethylene	5	5.0	100	5.2	104	4	70-130/30
75-69-4	Trichlorofluoromethane	5	5.7	114	5.6	112	2	70-130/30
75-01-4	Vinyl chloride	5	5.2	104	5.2	104	0	70-130/30
	m,p-Xylene	10	10.3	103	10.7	107	4	70-130/30
95-47-6	o-Xylene	5	5.1	102	5.3	106	4	70-130/30
1330-20-7	Xylenes (total)	15	15.4	103	15.9	106	3	70-130/30

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
2199-69-1	1,2-Dichlorobenzene-d4	113%	108%	70-130%
460-00-4	4-Bromofluorobenzene	103%	102%	70-130%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: JC83153
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC83153-3MS	3A161760.D	1	02/21/19	RS	n/a	n/a	V3A6997
JC83153-3	3A161758.D	1	02/21/19	RS	n/a	n/a	V3A6997

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

JC83153-1, JC83153-2, JC83153-3

CAS No.	Compound	JC83153-3 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
123-91-1	1,4-Dioxane	1.6		20	16.7	76	28-162

CAS No.	Surrogate Recoveries	MS	JC83153-3	Limits
17647-74-4	1,4-Dioxane-d8	73%	70%	25-195%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JC83153
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC83308-1MS	1B118330.D	1	02/25/19	BK	n/a	n/a	V1B5711
JC83308-1MSD	1B118334.D	1	02/25/19	BK	n/a	n/a	V1B5711
JC83308-1	1B118326.D	1	02/25/19	BK	n/a	n/a	V1B5711

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

JC83153-1, JC83153-2, JC83153-3

CAS No.	Compound	JC83308-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	ND		20	20.4	102	20	17.4	87	16	41-142/24
78-93-3	2-Butanone	ND		20	16.9	85	20	14.4	72	16	55-129/31
71-43-2	Benzene	ND		5	4.3	86	5	4.1	82	5	53-138/16
108-86-1	Bromobenzene	ND		5	4.3	86	5	4.2	84	2	54-138/17
74-97-5	Bromochloromethane	ND		5	4.4	88	5	4.3	86	2	55-140/13
75-27-4	Bromodichloromethane	ND		5	4.4	88	5	4.2	84	5	57-147/11
75-25-2	Bromoform	ND		5	4.2	84	5	3.9	78	7	47-137/13
74-83-9	Bromomethane	ND		5	4.7	94	5	5.4	108	14	40-162/27
104-51-8	n-Butylbenzene	ND		5	3.9	78	5	3.8	76	3	45-144/19
135-98-8	sec-Butylbenzene	ND		5	4.0	80	5	4.0	80	0	46-145/20
98-06-6	tert-Butylbenzene	ND		5	3.7	74	5	3.7	74	0	48-141/17
75-15-0	Carbon disulfide	ND		5	4.7	94	5	4.8	96	2	35-127/32
108-90-7	Chlorobenzene	ND		5	4.2	84	5	4.1	82	2	54-135/15
75-00-3	Chloroethane	ND		5	4.7	94	5	5.4	108	14	38-153/43
67-66-3	Chloroform	ND		5	4.3	86	5	4.1	82	5	57-151/13
74-87-3	Chloromethane	ND		5	4.5	90	5	5.0	100	11	39-165/35
95-49-8	o-Chlorotoluene	ND		5	4.0	80	5	4.1	82	2	55-142/15
106-43-4	p-Chlorotoluene	ND		5	4.0	80	5	4.0	80	0	55-139/20
56-23-5	Carbon tetrachloride	ND		5	4.6	92	5	4.8	96	4	49-170/24
75-34-3	1,1-Dichloroethane	ND		5	4.5	90	5	4.5	90	0	55-149/13
75-35-4	1,1-Dichloroethylene	ND		5	4.2	84	5	4.4	88	5	42-142/20
563-58-6	1,1-Dichloropropene	ND		5	4.0	80	5	4.1	82	2	46-151/21
96-12-8	1,2-Dibromo-3-chloropropane	ND		5	4.8	96	5	3.9	78	21	48-141/27
106-93-4	1,2-Dibromoethane	ND		5	4.3	86	5	4.1	82	5	57-135/10
107-06-2	1,2-Dichloroethane	ND		5	4.6	92	5	4.4	88	4	59-166/15
78-87-5	1,2-Dichloropropane	ND		5	4.3	86	5	4.1	82	5	53-142/11
142-28-9	1,3-Dichloropropane	ND		5	4.5	90	5	4.1	82	9	58-143/13
594-20-7	2,2-Dichloropropane	ND		5	5.3	106	5	5.5	110	4	38-165/19
124-48-1	Dibromochloromethane	ND		5	4.3	86	5	4.0	80	7	55-138/15
74-95-3	Dibromomethane	ND		5	4.6	92	5	4.1	82	11* [a]	61-144/10
75-71-8	Dichlorodifluoromethane	ND		5	5.1	102	5	5.9	118	15	23-172/30
541-73-1	m-Dichlorobenzene	ND		5	4.3	86	5	4.3	86	0	53-138/17
95-50-1	o-Dichlorobenzene	ND		5	4.4	88	5	4.2	84	5	54-140/11
106-46-7	p-Dichlorobenzene	ND		5	4.2	84	5	4.2	84	0	53-137/14
156-60-5	trans-1,2-Dichloroethylene	ND		5	4.2	84	5	4.2	84	0	47-148/22
156-59-2	cis-1,2-Dichloroethylene	ND		5	4.3	86	5	4.2	84	2	51-146/14

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JC83153
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC83308-1MS	1B118330.D	1	02/25/19	BK	n/a	n/a	V1B5711
JC83308-1MSD	1B118334.D	1	02/25/19	BK	n/a	n/a	V1B5711
JC83308-1	1B118326.D	1	02/25/19	BK	n/a	n/a	V1B5711

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

JC83153-1, JC83153-2, JC83153-3

CAS No.	Compound	JC83308-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
10061-01-5	cis-1,3-Dichloropropene	ND		5	3.8	76	5	3.6	72	5	51-136/11
10061-02-6	trans-1,3-Dichloropropene	ND		5	4.1	82	5	3.8	76	8	54-142/10
100-41-4	Ethylbenzene	ND		5	3.9	78	5	3.9	78	0	51-138/18
87-68-3	Hexachlorobutadiene	ND		5	4.6	92	5	4.6	92	0	40-154/21
591-78-6	2-Hexanone	ND		20	15.3	77	20	13.1	66	15	53-128/29
98-82-8	Isopropylbenzene	ND		5	3.7	74	5	3.8	76	3	49-139/16
99-87-6	p-Isopropyltoluene	ND		5	3.9	78	5	3.9	78	0	45-141/17
75-09-2	Methylene chloride	ND		5	4.4	88	5	4.2	84	5	54-137/14
1634-04-4	Methyl Tert Butyl Ether	ND		5	3.9	78	5	3.5	70	11* [a]	53-143/10
108-10-1	4-Methyl-2-pentanone	ND		20	16.9	85	20	14.4	72	16	58-127/32
91-20-3	Naphthalene	ND		5	3.8	76	5	3.2	64	17* [a]	44-140/14
103-65-1	n-Propylbenzene	ND		5	4.0	80	5	4.0	80	0	50-142/20
100-42-5	Styrene	ND		5	3.7	74	5	3.6	72	3	23-130/20
630-20-6	1,1,1,2-Tetrachloroethane	ND		5	4.6	92	5	4.4	88	4	57-144/11
71-55-6	1,1,1-Trichloroethane	ND		5	4.5	90	5	4.6	92	2	52-164/13
79-34-5	1,1,2,2-Tetrachloroethane	ND		5	4.7	94	5	4.1	82	14* [a]	58-138/10
79-00-5	1,1,2-Trichloroethane	ND		5	4.4	88	5	4.1	82	7	59-139/11
87-61-6	1,2,3-Trichlorobenzene	ND		5	4.2	84	5	3.8	76	10	47-141/17
96-18-4	1,2,3-Trichloropropane	ND		5	4.7	94	5	4.2	84	11	56-148/15
120-82-1	1,2,4-Trichlorobenzene	ND		5	4.0	80	5	3.7	74	8	46-137/17
95-63-6	1,2,4-Trimethylbenzene	ND		5	3.9	78	5	3.9	78	0	41-138/16
108-67-8	1,3,5-Trimethylbenzene	ND		5	4.0	80	5	4.0	80	0	45-138/16
127-18-4	Tetrachloroethylene	ND		5	4.2	84	5	4.3	86	2	45-145/19
108-88-3	Toluene	ND		5	3.8	76	5	3.8	76	0	52-134/19
79-01-6	Trichloroethylene	ND		5	4.1	82	5	4.2	84	2	54-143/15
75-69-4	Trichlorofluoromethane	ND		5	5.2	104	5	5.9	118	13	36-167/28
75-01-4	Vinyl chloride	ND		5	4.6	92	5	5.3	106	14	35-162/30
	m,p-Xylene	ND		10	8.1	81	10	8.0	80	1	49-135/18
95-47-6	o-Xylene	ND		5	4.0	80	5	3.9	78	3	49-134/19
1330-20-7	Xylenes (total)	ND		15	12.1	81	15	11.9	79	2	50-134/18

CAS No.	Surrogate Recoveries	MS	MSD	JC83308-1	Limits
2199-69-1	1,2-Dichlorobenzene-d4	112%	111%	100%	70-130%
460-00-4	4-Bromofluorobenzene	99%	98%	89%	70-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JC83153
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC83308-1MS	1B118330.D	1	02/25/19	BK	n/a	n/a	V1B5711
JC83308-1MSD	1B118334.D	1	02/25/19	BK	n/a	n/a	V1B5711
JC83308-1	1B118326.D	1	02/25/19	BK	n/a	n/a	V1B5711

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

JC83153-1, JC83153-2, JC83153-3

(a) Outside in house control limits.

* = Outside of Control Limits.

Duplicate Summary

Job Number: JC83153
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC83153-2DUP	3A161759.D	1	02/21/19	RS	n/a	n/a	V3A6997
JC83153-2	3A161757.D	1	02/21/19	RS	n/a	n/a	V3A6997

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

JC83153-1, JC83153-2, JC83153-3

CAS No.	Compound	JC83153-2 ug/l	Q	DUP ug/l	Q	RPD	Limits
123-91-1	1,4-Dioxane	2.1		1.6		27	48

CAS No.	Surrogate Recoveries	DUP	JC83153-2	Limits
17647-74-4	1,4-Dioxane-d8	70%	85%	25-195%

* = Outside of Control Limits.

Instrument Performance Check (BFB)

Job Number: JC83153
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample:	V1B5696-BFB	**Injection Date:**	02/04/19
Lab File ID:	1B118030.D	**Injection Time:**	10:22
Instrument ID:	GCMS1B		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	14.99 - 40.0% of mass 95	3056	17.3		Pass
75	30.0 - 80.0% of mass 95	8333	47.1		Pass
95	Base peak, 100% relative abundance	17690	100.0		Pass
96	5.0 - 9.0% of mass 95	1231	6.96		Pass
173	Less than 2.0% of mass 174	62	0.35	(0.40) [a]	Pass
174	50.0 - 120.0% of mass 95	15613	88.3		Pass
175	5.0 - 9.0% of mass 174	1016	5.74	(6.51) [a]	Pass
176	95.0 - 101.0% of mass 174	14850	83.9	(95.1) [a]	Pass
177	5.0 - 9.0% of mass 176	1012	5.72	(6.81) [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
V1B5696-IC5696	1B118031.D	02/04/19	10:54	00:32	Initial cal 0.2
V1B5696-IC5696	1B118032.D	02/04/19	11:26	01:04	Initial cal 0.5
V1B5696-IC5696	1B118033.D	02/04/19	11:58	01:36	Initial cal 1
V1B5696-IC5696	1B118034.D	02/04/19	12:29	02:07	Initial cal 2
V1B5696-IC5696	1B118035.D	02/04/19	13:01	02:39	Initial cal 5
V1B5696-ICC5696	1B118036.D	02/04/19	13:32	03:10	Initial cal 10
V1B5696-IC5696	1B118037.D	02/04/19	14:04	03:42	Initial cal 20
V1B5696-IC5696	1B118038.D	02/04/19	14:35	04:13	Initial cal 40
V1B5696-IC5696	1B118039.D	02/04/19	15:06	04:44	Initial cal 80
V1B5696-ICV5696	1B118041.D	02/04/19	16:08	05:46	Initial cal verification 10
V1B5696-ICV5696	1B118042.D	02/04/19	16:44	06:22	Initial cal verification 10
V1B5697-BS	1B118043.D	02/04/19	17:17	06:55	Blank Spike
V1B5697-CC5696	1B118043.D	02/04/19	17:17	06:55	Continuing cal 5
V1B5697-MB	1B118044.D	02/04/19	17:49	07:27	Method Blank
ZZZZZZ	1B118046.D	02/04/19	18:52	08:30	(unrelated sample)
ZZZZZZ	1B118047.D	02/04/19	19:24	09:02	(unrelated sample)
V1B5697-BSD	1B118048.D	02/04/19	19:55	09:33	Blank Spike Duplicate

Instrument Performance Check (BFB)

Job Number: JC83153
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample: V1B5711-BFB
Lab File ID: 1B118322.D
Instrument ID: GCMS1B
Injection Date: 02/25/19
Injection Time: 09:42

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	14.99 - 40.0% of mass 95	2926	17.4		Pass
75	30.0 - 80.0% of mass 95	7967	47.3		Pass
95	Base peak, 100% relative abundance	16835	100.0		Pass
96	5.0 - 9.0% of mass 95	1137	6.75		Pass
173	Less than 2.0% of mass 174	79	0.47	(0.58) [a]	Pass
174	50.0 - 120.0% of mass 95	13689	81.3		Pass
175	5.0 - 9.0% of mass 174	972	5.77	(7.10) [a]	Pass
176	95.0 - 101.0% of mass 174	13420	79.7	(98.0) [a]	Pass
177	5.0 - 9.0% of mass 176	837	4.97	(6.24) [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
V1B5711-BS	1B118323.D	02/25/19	10:19	00:37	Blank Spike
V1B5711-CC5696	1B118323.D	02/25/19	10:19	00:37	Continuing cal 5
V1B5711-BSD	1B118324.D	02/25/19	10:57	01:15	Blank Spike Duplicate
V1B5711-MB	1B118325.D	02/25/19	11:29	01:47	Method Blank
JC83308-1	1B118326.D	02/25/19	12:03	02:21	(used for QC only; not part of job JC83153)
ZZZZZZ	1B118327.D	02/25/19	12:34	02:52	(unrelated sample)
ZZZZZZ	1B118328.D	02/25/19	13:05	03:23	(unrelated sample)
ZZZZZZ	1B118329.D	02/25/19	13:37	03:55	(unrelated sample)
JC83308-1MS	1B118330.D	02/25/19	14:08	04:26	Matrix Spike
ZZZZZZ	1B118332.D	02/25/19	15:11	05:29	(unrelated sample)
ZZZZZZ	1B118333.D	02/25/19	15:43	06:01	(unrelated sample)
JC83308-1MSD	1B118334.D	02/25/19	16:15	06:33	Matrix Spike Duplicate
JC83153-1	1B118335.D	02/25/19	16:46	07:04	TRIP BLANK
JC83153-2	1B118336.D	02/25/19	17:18	07:36	RW-12270CM-021919
JC83153-3	1B118337.D	02/25/19	17:50	08:08	RW-12270CM-021919-F
ZZZZZZ	1B118338.D	02/25/19	18:22	08:40	(unrelated sample)
ZZZZZZ	1B118339.D	02/25/19	18:53	09:11	(unrelated sample)
ZZZZZZ	1B118340.D	02/25/19	19:25	09:43	(unrelated sample)
ZZZZZZ	1B118341.D	02/25/19	19:56	10:14	(unrelated sample)
ZZZZZZ	1B118342.D	02/25/19	20:28	10:46	(unrelated sample)
ZZZZZZ	1B118343.D	02/25/19	20:59	11:17	(unrelated sample)
ZZZZZZ	1B118344.D	02/25/19	21:31	11:49	(unrelated sample)

Instrument Performance Check (BFB)

Job Number: JC83153
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: JC83153
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample:	V3A6997-BFB	**Injection Date:**	02/21/19
Lab File ID:	3A161751.D	**Injection Time:**	08:04
Instrument ID:	GCMS3A		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	6421	22.5		Pass
75	30.0 - 60.0% of mass 95	14213	49.8		Pass
95	Base peak, 100% relative abundance	28544	100.0		Pass
96	5.0 - 9.0% of mass 95	2025	7.09		Pass
173	Less than 2.0% of mass 174	186	0.65	(0.90) [a]	Pass
174	50.0 - 120.0% of mass 95	20583	72.1		Pass
175	5.0 - 9.0% of mass 174	1623	5.69	(7.89) [a]	Pass
176	95.0 - 101.0% of mass 174	20458	71.7	(99.4) [a]	Pass
177	5.0 - 9.0% of mass 176	1232	4.32	(6.02) [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
V3A6997-CC6923	3A161753.D	02/21/19	09:32	01:28	Continuing cal 20
V3A6997-BS	3A161754.D	02/21/19	10:00	01:56	Blank Spike
V3A6997-MB	3A161755.D	02/21/19	10:32	02:28	Method Blank
JC83153-1	3A161756.D	02/21/19	11:02	02:58	TRIP BLANK
JC83153-2	3A161757.D	02/21/19	11:31	03:27	RW-12270CM-021919
JC83153-3	3A161758.D	02/21/19	12:00	03:56	RW-12270CM-021919-F
JC83153-2DUP	3A161759.D	02/21/19	12:28	04:24	Duplicate
JC83153-3MS	3A161760.D	02/21/19	12:57	04:53	Matrix Spike

Surrogate Recovery Summary

Job Number: JC83153
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
JC83153-1	1B118335.D	100	83
JC83153-2	1B118336.D	102	84
JC83153-3	1B118337.D	101	82
JC83308-1MS	1B118330.D	112	99
JC83308-1MSD	1B118334.D	111	98
V1B5711-BS	1B118323.D	113	103
V1B5711-BSD	1B118324.D	108	102
V1B5711-MB	1B118325.D	100	89

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

Surrogate Recovery Summary

Job Number: JC83153
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
JC83153-1	3A161756.D	83
JC83153-2	3A161757.D	85
JC83153-3	3A161758.D	70
JC83153-2DUP	3A161759.D	70
JC83153-3MS	3A161760.D	73
V3A6997-BS	3A161754.D	100
V3A6997-MB	3A161755.D	104

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

MARCH 2019

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

31401545.011/2

SGS Job Number: JC84081

Sampling Date: 03/07/19

Report to:

WSP
11190 Sunrise Valley Drive Suite 300
Reston, VA 20190
Eric.Johnson@WSPGroup.com

ATTN: Eric Johnson

Total number of pages in report: 40

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.

Brian McGuire
General Manager

Client Service contact: Rocus Peters 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: JC84081

Kop-Flex, Hanover, VA
Project No: 31401545.011/2

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
JC84081-1	03/07/19	10:40	MK	03/08/19	AQ	Trip Blank Water	TRIP BLANK
JC84081-2	03/07/19	10:35	MK	03/08/19	AQ	Ground Water	RW-12270CM-030719-F
JC84081-3	03/07/19	10:40	MK	03/08/19	AQ	Ground Water	RW-12270CM-030719

Summary of Hits

Job Number: JC84081
Account: WSP Environment & Energy
Project: Kop-Flex, Hanover, VA
Collected: 03/07/19

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JC84081-1	**TRIP BLANK**					
No hits reported in this sample.						
JC84081-2	**RW-12270CM-030719-F**					
1,1-Dichloroethylene [a]		0.57	0.50	0.19	ug/l	EPA 524.2 REV 4.1
1,1,1-Trichloroethane [a]		0.30 J	0.50	0.22	ug/l	EPA 524.2 REV 4.1
1,4-Dioxane		2.8	0.40	0.095	ug/l	SW846 8260C BY SIM
JC84081-3	**RW-12270CM-030719**					
1,1-Dichloroethylene [a]		7.1	0.50	0.19	ug/l	EPA 524.2 REV 4.1
1,1,1-Trichloroethane [a]		0.28 J	0.50	0.22	ug/l	EPA 524.2 REV 4.1
1,4-Dioxane		2.7	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:	TRIP BLANK		
Lab Sample ID:	JC84081-1	**Date Sampled:**	03/07/19
Matrix:	AQ - Trip Blank Water	**Date Received:**	03/08/19
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]	1B118514.D	1	03/12/19 12:48	BK	n/a	n/a	V1B5721
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:	TRIP BLANK		
Lab Sample ID:	JC84081-1	**Date Sampled:**	03/07/19
Matrix:	AQ - Trip Blank Water	**Date Received:**	03/08/19
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	96%		70-130%
460-00-4	4-Bromofluorobenzene	89%		70-130%

ND = Not detected MDL = Method Detection Limit
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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:	JC84081-1	**Date Sampled:**	03/07/19
Matrix:	AQ - Trip Blank Water	**Date Received:**	03/08/19
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:	TRIP BLANK		
Lab Sample ID:	JC84081-1	**Date Sampled:**	03/07/19
Matrix:	AQ - Trip Blank Water	**Date Received:**	03/08/19
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	3A161807.D	1	03/11/19 15:51	RS	n/a	n/a	V3A7001
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	106%		25-195%

ND = Not detected MDL = Method Detection Limit
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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-12270CM-030719-F		
Lab Sample ID:	JC84081-2	**Date Sampled:**	03/07/19
Matrix:	AQ - Ground Water	**Date Received:**	03/08/19
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]	1B118515.D	1	03/12/19 13:20	BK	n/a	n/a	V1B5721
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	0.57	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-12270CM-030719-F		
Lab Sample ID:	JC84081-2	**Date Sampled:**	03/07/19
Matrix:	AQ - Ground Water	**Date Received:**	03/08/19
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	0.30	0.50	0.22	ug/l	J
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	99%		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:	RW-12270CM-030719-F		
Lab Sample ID:	JC84081-2	**Date Sampled:**	03/07/19
Matrix:	AQ - Ground Water	**Date Received:**	03/08/19
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-12270CM-030719-F		
Lab Sample ID:	JC84081-2	**Date Sampled:**	03/07/19
Matrix:	AQ - Ground Water	**Date Received:**	03/08/19
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	3A161808.D	1	03/11/19 16:20	RS	n/a	n/a	V3A7001
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	2.8	0.40	0.095	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17647-74-4	1,4-Dioxane-d8	119%		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-12270CM-030719		
Lab Sample ID:	JC84081-3	**Date Sampled:**	03/07/19
Matrix:	AQ - Ground Water	**Date Received:**	03/08/19
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]	1B118516.D	1	03/12/19 13:51	BK	n/a	n/a	V1B5721
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	7.1	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-12270CM-030719		
Lab Sample ID:	JC84081-3	**Date Sampled:**	03/07/19
Matrix:	AQ - Ground Water	**Date Received:**	03/08/19
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	0.28	0.50	0.22	ug/l	J
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	99%		70-130%
460-00-4	4-Bromofluorobenzene	90%		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-12270CM-030719		
Lab Sample ID:	JC84081-3	**Date Sampled:**	03/07/19
Matrix:	AQ - Ground Water	**Date Received:**	03/08/19
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-12270CM-030719		
Lab Sample ID:	JC84081-3	**Date Sampled:**	03/07/19
Matrix:	AQ - Ground Water	**Date Received:**	03/08/19
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	3A161809.D	1	03/11/19 16:49	RS	n/a	n/a	V3A7001
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	2.7	0.40	0.095	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17647-74-4	1,4-Dioxane-d8	112%		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

CHAIN-OF-CUSTODY RECORD

JC84081

Page 1 of 1

WSP | Parsons Brinckerhoff Office Address	13530 Dulles Technology Dr #300 Herndon, VA 2071
Project Name	Kop Flex
WSP | Parsons Brinckerhoff Contact Name	Eric Johnson
Project Location	Hanover, MD
WSP | Parsons Brinckerhoff Contact E-mail	eric.johnson @wspgroup.com
Project Number & Task	31401545.011 / 2
WSP | Parsons Brinckerhoff Contact Phone	703-709-6500
Sampler(s) Name(s)	Maria Kaplan, Shannan 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 (8260 SIM)	1,4-Dioxane (8260 SIM)	Sample Comments
1	Trip Blank	AQ					4	X	X	
2	RW-12270CM-030719-F	GW	3/7/19		1035		6	X	X	
3	RW-12270CM-030719	GW	3/7/19		1040		6	X	X	VS39

No. 004532 WSP | PARSONS BRINCKERHOFF

Laboratory Name & Location: SGS Accutest

Laboratory Project Manager: Rocus Peters

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

INITIAL ASESSMENT ZA

LABEL VERIFICATION

Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Shipment Method	Tracking Number(s)
	3/7/19	1120	Fed Ex	3/7/19	1200	Fedex	8094 7536 8426
FEDX	3/8/19	940		3/8/19	940	Number of Packages	Custody Seal Number(s) 04020 3.3°

*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

JC84081: Chain of Custody
Page 1 of 2

SGS Sample Receipt Summary

Job Number: JC84081 **Client:** _____ **Project:** _____

Date / Time Received: 3/8/2019 9:40:00 AM **Delivery Method:** _____ **Airbill #'s:** _____

Cooler Temps (Raw Measured) °C: Cooler 1: (3.3);

Cooler Temps (Corrected) °C: Cooler 1: (2.3);

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: 206717 pH 12+: 208717 Other: (Specify) _____ _____

Comments

SM089-03
Rev. Date 12/7/17

JC84081: 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: JC84081
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5721-MB	1B118510.D	1	03/12/19	BK	n/a	n/a	V1B5721

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

JC84081-1, JC84081-2, JC84081-3

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: JC84081
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5721-MB	1B118510.D	1	03/12/19	BK	n/a	n/a	V1B5721

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

JC84081-1, JC84081-2, JC84081-3

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	94%	70-130%
460-00-4	4-Bromofluorobenzene	93%	70-130%

Method Blank Summary

Job Number: JC84081
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5721-MB	1B118510.D	1	03/12/19	BK	n/a	n/a	V1B5721

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

JC84081-1, JC84081-2, JC84081-3

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

Method Blank Summary

Job Number: JC84081
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3A7001-MB	3A161799.D	1	03/11/19	RS	n/a	n/a	V3A7001

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

JC84081-1, JC84081-2, JC84081-3

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	99%	25-195%

Blank Spike Summary

Job Number: JC84081
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5721-BS	1B118509.D	1	03/12/19	BK	n/a	n/a	V1B5721

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

JC84081-1, JC84081-2, JC84081-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	20	20.3	102	70-130
78-93-3	2-Butanone	20	20.1	101	70-130
71-43-2	Benzene	5	4.7	94	70-130
108-86-1	Bromobenzene	5	4.8	96	70-130
74-97-5	Bromochloromethane	5	4.9	98	70-130
75-27-4	Bromodichloromethane	5	4.6	92	70-130
75-25-2	Bromoform	5	4.5	90	70-130
74-83-9	Bromomethane	5	3.9	78	70-130
104-51-8	n-Butylbenzene	5	5.0	100	70-130
135-98-8	sec-Butylbenzene	5	5.0	100	70-130
98-06-6	tert-Butylbenzene	5	5.0	100	70-130
75-15-0	Carbon disulfide	5	4.8	96	70-130
108-90-7	Chlorobenzene	5	4.7	94	70-130
75-00-3	Chloroethane	5	4.0	80	70-130
67-66-3	Chloroform	5	4.7	94	70-130
74-87-3	Chloromethane	5	3.9	78	70-130
95-49-8	o-Chlorotoluene	5	4.8	96	70-130
106-43-4	p-Chlorotoluene	5	4.9	98	70-130
56-23-5	Carbon tetrachloride	5	4.8	96	70-130
75-34-3	1,1-Dichloroethane	5	4.7	94	70-130
75-35-4	1,1-Dichloroethylene	5	4.8	96	70-130
563-58-6	1,1-Dichloropropene	5	5.0	100	70-130
96-12-8	1,2-Dibromo-3-chloropropane	5	4.4	88	70-130
106-93-4	1,2-Dibromoethane	5	4.3	86	70-130
107-06-2	1,2-Dichloroethane	5	4.8	96	70-130
78-87-5	1,2-Dichloropropane	5	4.7	94	70-130
142-28-9	1,3-Dichloropropane	5	4.6	92	70-130
594-20-7	2,2-Dichloropropane	5	5.4	108	70-130
124-48-1	Dibromochloromethane	5	4.6	92	70-130
74-95-3	Dibromomethane	5	4.6	92	70-130
75-71-8	Dichlorodifluoromethane	5	3.9	78	70-130
541-73-1	m-Dichlorobenzene	5	4.9	98	70-130
95-50-1	o-Dichlorobenzene	5	4.7	94	70-130
106-46-7	p-Dichlorobenzene	5	4.8	96	70-130
156-60-5	trans-1,2-Dichloroethylene	5	4.7	94	70-130
156-59-2	cis-1,2-Dichloroethylene	5	4.7	94	70-130

* = Outside of Control Limits.

Blank Spike Summary

Job Number: JC84081
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5721-BS	1B118509.D	1	03/12/19	BK	n/a	n/a	V1B5721

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

JC84081-1, JC84081-2, JC84081-3

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	4.8	96	70-130
100-41-4	Ethylbenzene	5	5.1	102	70-130
87-68-3	Hexachlorobutadiene	5	4.2	84	70-130
591-78-6	2-Hexanone	20	19.1	96	70-130
98-82-8	Isopropylbenzene	5	5.0	100	70-130
99-87-6	p-Isopropyltoluene	5	5.0	100	70-130
75-09-2	Methylene chloride	5	4.8	96	70-130
1634-04-4	Methyl Tert Butyl Ether	5	4.8	96	70-130
108-10-1	4-Methyl-2-pentanone	20	19.6	98	70-130
91-20-3	Naphthalene	5	4.4	88	70-130
103-65-1	n-Propylbenzene	5	5.0	100	70-130
100-42-5	Styrene	5	4.8	96	70-130
630-20-6	1,1,1,2-Tetrachloroethane	5	4.7	94	70-130
71-55-6	1,1,1-Trichloroethane	5	4.8	96	70-130
79-34-5	1,1,2,2-Tetrachloroethane	5	4.5	90	70-130
79-00-5	1,1,2-Trichloroethane	5	4.6	92	70-130
87-61-6	1,2,3-Trichlorobenzene	5	4.3	86	70-130
96-18-4	1,2,3-Trichloropropane	5	4.7	94	70-130
120-82-1	1,2,4-Trichlorobenzene	5	4.4	88	70-130
95-63-6	1,2,4-Trimethylbenzene	5	5.1	102	70-130
108-67-8	1,3,5-Trimethylbenzene	5	5.0	100	70-130
127-18-4	Tetrachloroethylene	5	4.9	98	70-130
108-88-3	Toluene	5	5.0	100	70-130
79-01-6	Trichloroethylene	5	4.6	92	70-130
75-69-4	Trichlorofluoromethane	5	3.9	78	70-130
75-01-4	Vinyl chloride	5	3.9	78	70-130
	m,p-Xylene	10	10.3	103	70-130
95-47-6	o-Xylene	5	4.9	98	70-130
1330-20-7	Xylenes (total)	15	15.2	101	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
2199-69-1	1,2-Dichlorobenzene-d4	99%	70-130%
460-00-4	4-Bromofluorobenzene	103%	70-130%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: JC84081
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3A7001-BS	3A161798.D	1	03/11/19	RS	n/a	n/a	V3A7001

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

JC84081-1, JC84081-2, JC84081-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
123-91-1	1,4-Dioxane	20	20.8	104	48-137

CAS No.	Surrogate Recoveries	BSP	Limits
17647-74-4	1,4-Dioxane-d8	105%	25-195%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: JC84081
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC84092-1MS	1B118517.D	1	03/12/19	BK	n/a	n/a	V1B5721
JC84092-1	1B118513.D	1	03/12/19	BK	n/a	n/a	V1B5721

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

JC84081-1, JC84081-2, JC84081-3

CAS No.	Compound	JC84092-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
67-64-1	Acetone	ND		20	13.3	67	41-142
78-93-3	2-Butanone	ND		20	12.4	62	55-129
71-43-2	Benzene	ND		5	2.8	56	53-138
108-86-1	Bromobenzene	ND		5	3.0	60	54-138
74-97-5	Bromochloromethane	ND		5	3.1	62	55-140
75-27-4	Bromodichloromethane	ND		5	2.9	58	57-147
75-25-2	Bromoform	ND		5	2.9	58	47-137
74-83-9	Bromomethane	ND		5	4.4	88	40-162
104-51-8	n-Butylbenzene	ND		5	2.9	58	45-144
135-98-8	sec-Butylbenzene	ND		5	2.9	58	46-145
98-06-6	tert-Butylbenzene	ND		5	2.8	56	48-141
75-15-0	Carbon disulfide	ND		5	2.9	58	35-127
108-90-7	Chlorobenzene	ND		5	2.8	56	54-135
75-00-3	Chloroethane	ND		5	4.6	92	38-153
67-66-3	Chloroform	ND		5	2.9	58	57-151
74-87-3	Chloromethane	ND		5	4.4	88	39-165
95-49-8	o-Chlorotoluene	ND		5	2.9	58	55-142
106-43-4	p-Chlorotoluene	ND		5	2.9	58	55-139
56-23-5	Carbon tetrachloride	ND		5	2.9	58	49-170
75-34-3	1,1-Dichloroethane	ND		5	2.8	56	55-149
75-35-4	1,1-Dichloroethylene	ND		5	2.9	58	42-142
563-58-6	1,1-Dichloropropene	ND		5	2.9	58	46-151
96-12-8	1,2-Dibromo-3-chloropropane	ND		5	3.1	62	48-141
106-93-4	1,2-Dibromoethane	ND		5	3.0	60	57-135
107-06-2	1,2-Dichloroethane	ND		5	3.0	60	59-166
78-87-5	1,2-Dichloropropane	ND		5	2.9	58	53-142
142-28-9	1,3-Dichloropropane	ND		5	2.9	58	58-143
594-20-7	2,2-Dichloropropane	ND		5	3.3	66	38-165
124-48-1	Dibromochloromethane	ND		5	2.9	58	55-138
74-95-3	Dibromomethane	ND		5	3.1	62	61-144
75-71-8	Dichlorodifluoromethane	ND		5	4.3	86	23-172
541-73-1	m-Dichlorobenzene	ND		5	3.0	60	53-138
95-50-1	o-Dichlorobenzene	ND		5	3.0	60	54-140
106-46-7	p-Dichlorobenzene	ND		5	3.0	60	53-137
156-60-5	trans-1,2-Dichloroethylene	ND		5	2.8	56	47-148
156-59-2	cis-1,2-Dichloroethylene	ND		5	3.0	60	51-146

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: JC84081
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC84092-1MS	1B118517.D	1	03/12/19	BK	n/a	n/a	V1B5721
JC84092-1	1B118513.D	1	03/12/19	BK	n/a	n/a	V1B5721

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

JC84081-1, JC84081-2, JC84081-3

CAS No.	Compound	JC84092-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
10061-01-5	cis-1,3-Dichloropropene	ND		5	2.8	56	51-136
10061-02-6	trans-1,3-Dichloropropene	ND		5	2.9	58	54-142
100-41-4	Ethylbenzene	ND		5	2.9	58	51-138
87-68-3	Hexachlorobutadiene	ND		5	2.8	56	40-154
591-78-6	2-Hexanone	ND		20	11.8	59	53-128
98-82-8	Isopropylbenzene	ND		5	2.9	58	49-139
99-87-6	p-Isopropyltoluene	ND		5	2.9	58	45-141
75-09-2	Methylene chloride	ND		5	3.1	62	54-137
1634-04-4	Methyl Tert Butyl Ether	ND		5	3.1	62	53-143
108-10-1	4-Methyl-2-pentanone	ND		20	12.3	62	58-127
91-20-3	Naphthalene	ND		5	2.9	58	44-140
103-65-1	n-Propylbenzene	ND		5	2.9	58	50-142
100-42-5	Styrene	ND		5	2.8	56	23-130
630-20-6	1,1,1,2-Tetrachloroethane	ND		5	3.0	60	57-144
71-55-6	1,1,1-Trichloroethane	ND		5	3.0	60	52-164
79-34-5	1,1,2,2-Tetrachloroethane	ND		5	3.0	60	58-138
79-00-5	1,1,2-Trichloroethane	ND		5	3.0	60	59-139
87-61-6	1,2,3-Trichlorobenzene	ND		5	2.9	58	47-141
96-18-4	1,2,3-Trichloropropane	ND		5	3.1	62	56-148
120-82-1	1,2,4-Trichlorobenzene	ND		5	2.9	58	46-137
95-63-6	1,2,4-Trimethylbenzene	ND		5	2.9	58	41-138
108-67-8	1,3,5-Trimethylbenzene	ND		5	2.9	58	45-138
127-18-4	Tetrachloroethylene	ND		5	2.9	58	45-145
108-88-3	Toluene	ND		5	2.8	56	52-134
79-01-6	Trichloroethylene	ND		5	2.9	58	54-143
75-69-4	Trichlorofluoromethane	ND		5	4.7	94	36-167
75-01-4	Vinyl chloride	ND		5	4.6	92	35-162
	m,p-Xylene	ND		10	5.9	59	49-135
95-47-6	o-Xylene	ND		5	2.9	58	49-134
1330-20-7	Xylenes (total)	ND		15	8.8	59	50-134

CAS No.	Surrogate Recoveries	MS	JC84092-1	Limits
2199-69-1	1,2-Dichlorobenzene-d4	102%	92%	70-130%
460-00-4	4-Bromofluorobenzene	101%	90%	70-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JC84081
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC84089-1MS	3A161804.D	1	03/11/19	RS	n/a	n/a	V3A7001
JC84089-1MSD	3A161805.D	1	03/11/19	RS	n/a	n/a	V3A7001
JC84089-1	3A161801.D	1	03/11/19	RS	n/a	n/a	V3A7001

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

JC84081-1, JC84081-2, JC84081-3

CAS No.	Compound	JC84089-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
123-91-1	1,4-Dioxane	11.9		20	36.6	124	20	35.0	116	4	28-162/64

CAS No.	Surrogate Recoveries	MS	MSD	JC84089-1	Limits
17647-74-4	1,4-Dioxane-d8	131%	121%	118%	25-195%

* = Outside of Control Limits.

Duplicate Summary

Job Number: JC84081
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC84081-2DUP	1B118518.D	1	03/12/19	BK	n/a	n/a	V1B5721
JC84081-2 [a]	1B118515.D	1	03/12/19	BK	n/a	n/a	V1B5721

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

JC84081-1, JC84081-2, JC84081-3

CAS No.	Compound	JC84081-2 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	0.57		0.27	J	71* [b]	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: JC84081
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC84081-2DUP	1B118518.D	1	03/12/19	BK	n/a	n/a	V1B5721
JC84081-2 [a]	1B118515.D	1	03/12/19	BK	n/a	n/a	V1B5721

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

JC84081-1, JC84081-2, JC84081-3

CAS No.	Compound	JC84081-2 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	0.30	J	0.31	J	3	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	JC84081-2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	98%	99%	70-130%
460-00-4	4-Bromofluorobenzene	94%	91%	70-130%

* = Outside of Control Limits.

Duplicate Summary

Job Number: JC84081
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC84081-2DUP	1B118518.D	1	03/12/19	BK	n/a	n/a	V1B5721
JC84081-2 [a]	1B118515.D	1	03/12/19	BK	n/a	n/a	V1B5721

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

JC84081-1, JC84081-2, JC84081-3

(a) EPA 524.2 is not a certified method for non-potable water samples.
(b) High RPD due to low concentration of hit

* = Outside of Control Limits.

Instrument Performance Check (BFB)

Job Number: JC84081
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample: V1B5718-BFB
Lab File ID: 1B118456.D
Instrument ID: GCMS1B
Injection Date: 03/07/19
Injection Time: 17:49

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	14.99 - 40.0% of mass 95	2616	17.4		Pass
75	30.0 - 80.0% of mass 95	7722	51.4		Pass
95	Base peak, 100% relative abundance	15013	100.0		Pass
96	5.0 - 9.0% of mass 95	1076	7.17		Pass
173	Less than 2.0% of mass 174	59	0.39	(0.42) [a]	Pass
174	50.0 - 120.0% of mass 95	14046	93.6		Pass
175	5.0 - 9.0% of mass 174	1188	7.91	(8.46) [a]	Pass
176	95.0 - 101.0% of mass 174	13688	91.2	(97.5) [a]	Pass
177	5.0 - 9.0% of mass 176	929	6.19	(6.79) [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
V1B5718-IC5718	1B118457.D	03/07/19	18:33	00:44	Initial cal 0.2
V1B5718-IC5718	1B118458.D	03/07/19	19:04	01:15	Initial cal 0.5
V1B5718-IC5718	1B118459.D	03/07/19	19:36	01:47	Initial cal 1
V1B5718-IC5718	1B118460.D	03/07/19	20:07	02:18	Initial cal 2
V1B5718-IC5718	1B118461.D	03/07/19	20:38	02:49	Initial cal 5
V1B5718-ICC5718	1B118462.D	03/07/19	21:10	03:21	Initial cal 10
V1B5718-IC5718	1B118463.D	03/07/19	21:41	03:52	Initial cal 20
V1B5718-IC5718	1B118464.D	03/07/19	22:13	04:24	Initial cal 40
V1B5718-IC5718	1B118465.D	03/07/19	22:44	04:55	Initial cal 80
V1B5718-ICV5718	1B118468.D	03/08/19	00:19	06:30	Initial cal verification 10

Instrument Performance Check (BFB)

Job Number: JC84081
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample: V1B5721-BFB
Lab File ID: 1B118508.D
Instrument ID: GCMS1B
Injection Date: 03/12/19
Injection Time: 09:07

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	14.99 - 40.0% of mass 95	3269	16.6		Pass
75	30.0 - 80.0% of mass 95	9322	47.3		Pass
95	Base peak, 100% relative abundance	19701	100.0		Pass
96	5.0 - 9.0% of mass 95	1383	7.02		Pass
173	Less than 2.0% of mass 174	58	0.29	(0.33) [a]	Pass
174	50.0 - 120.0% of mass 95	17793	90.3		Pass
175	5.0 - 9.0% of mass 174	1276	6.48	(7.17) [a]	Pass
176	95.0 - 101.0% of mass 174	17274	87.7	(97.1) [a]	Pass
177	5.0 - 9.0% of mass 176	1279	6.49	(7.40) [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
V1B5721-BS	1B118509.D	03/12/19	09:46	00:39	Blank Spike
V1B5721-CC5718	1B118509.D	03/12/19	09:46	00:39	Continuing cal 5
V1B5721-MB	1B118510.D	03/12/19	10:42	01:35	Method Blank
ZZZZZZ	1B118511.D	03/12/19	11:14	02:07	(unrelated sample)
ZZZZZZ	1B118512.D	03/12/19	11:46	02:39	(unrelated sample)
JC84092-1	1B118513.D	03/12/19	12:17	03:10	(used for QC only; not part of job JC84081)
JC84081-1	1B118514.D	03/12/19	12:48	03:41	TRIP BLANK
JC84081-2	1B118515.D	03/12/19	13:20	04:13	RW-12270CM-030719-F
JC84081-3	1B118516.D	03/12/19	13:51	04:44	RW-12270CM-030719
JC84092-1MS	1B118517.D	03/12/19	14:23	05:16	Matrix Spike
JC84081-2DUP	1B118518.D	03/12/19	14:54	05:47	Duplicate
ZZZZZZ	1B118519.D	03/12/19	15:52	06:45	(unrelated sample)
ZZZZZZ	1B118520.D	03/12/19	16:24	07:17	(unrelated sample)
ZZZZZZ	1B118521.D	03/12/19	16:55	07:48	(unrelated sample)
ZZZZZZ	1B118522.D	03/12/19	17:27	08:20	(unrelated sample)
ZZZZZZ	1B118523.D	03/12/19	17:59	08:52	(unrelated sample)
ZZZZZZ	1B118524.D	03/12/19	18:30	09:23	(unrelated sample)
ZZZZZZ	1B118525.D	03/12/19	19:02	09:55	(unrelated sample)
ZZZZZZ	1B118526.D	03/12/19	19:33	10:26	(unrelated sample)
ZZZZZZ	1B118527.D	03/12/19	20:05	10:58	(unrelated sample)

Instrument Performance Check (BFB)

Job Number: JC84081
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: JC84081
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample: V3A7001-BFB
Lab File ID: 3A161796.D
Instrument ID: GCMS3A
Injection Date: 03/11/19
Injection Time: 10:24

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	7136	23.3		Pass
75	30.0 - 60.0% of mass 95	16367	53.5		Pass
95	Base peak, 100% relative abundance	30574	100.0		Pass
96	5.0 - 9.0% of mass 95	2208	7.22		Pass
173	Less than 2.0% of mass 174	289	0.95	(1.27) [a]	Pass
174	50.0 - 120.0% of mass 95	22672	74.2		Pass
175	5.0 - 9.0% of mass 174	1812	5.93	(7.99) [a]	Pass
176	95.0 - 101.0% of mass 174	21619	70.7	(95.4) [a]	Pass
177	5.0 - 9.0% of mass 176	1662	5.44	(7.69) [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
V3A7001-CC6923	3A161797.D	03/11/19	11:04	00:40	Continuing cal 20
V3A7001-BS	3A161798.D	03/11/19	11:33	01:09	Blank Spike
V3A7001-MB	3A161799.D	03/11/19	12:02	01:38	Method Blank
ZZZZZZ	3A161800.D	03/11/19	12:30	02:06	(unrelated sample)
JC84089-1	3A161801.D	03/11/19	12:59	02:35	(used for QC only; not part of job JC84081)
ZZZZZZ	3A161802.D	03/11/19	13:28	03:04	(unrelated sample)
ZZZZZZ	3A161803.D	03/11/19	13:56	03:32	(unrelated sample)
JC84089-1MS	3A161804.D	03/11/19	14:25	04:01	Matrix Spike
JC84089-1MSD	3A161805.D	03/11/19	14:54	04:30	Matrix Spike Duplicate
JC84081-1	3A161807.D	03/11/19	15:51	05:27	TRIP BLANK
JC84081-2	3A161808.D	03/11/19	16:20	05:56	RW-12270CM-030719-F
JC84081-3	3A161809.D	03/11/19	16:49	06:25	RW-12270CM-030719
ZZZZZZ	3A161810.D	03/11/19	17:17	06:53	(unrelated sample)
ZZZZZZ	3A161811.D	03/11/19	17:46	07:22	(unrelated sample)
ZZZZZZ	3A161812.D	03/11/19	18:15	07:51	(unrelated sample)
ZZZZZZ	3A161813.D	03/11/19	18:43	08:19	(unrelated sample)
ZZZZZZ	3A161814.D	03/11/19	19:12	08:48	(unrelated sample)
ZZZZZZ	3A161815.D	03/11/19	19:41	09:17	(unrelated sample)
ZZZZZZ	3A161816.D	03/11/19	20:09	09:45	(unrelated sample)

Surrogate Recovery Summary

Job Number: JC84081
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
JC84081-1	1B118514.D	96	89
JC84081-2	1B118515.D	99	91
JC84081-3	1B118516.D	99	90
JC84081-2DUP	1B118518.D	98	94
JC84092-1MS	1B118517.D	102	101
V1B5721-BS	1B118509.D	99	103
V1B5721-MB	1B118510.D	94	93

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

Surrogate Recovery Summary

Job Number: JC84081
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
JC84081-1	3A161807.D	106
JC84081-2	3A161808.D	119
JC84081-3	3A161809.D	112
JC84089-1MS	3A161804.D	131
JC84089-1MSD	3A161805.D	121
V3A7001-BS	3A161798.D	105
V3A7001-MB	3A161799.D	99

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

ENCLOSURE B – LABORATORY ANALYTICAL REPORT FOR OFFSITE GROUNDWATER MONITORING WELL SAMPLES (FEBRUARY 2019)

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

February 22, 2019

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

RE: Project: KOPFLEX
Pace Project No.: 92418503

Dear Eric Johnson:
Enclosed are the analytical results for sample(s) received by the laboratory on February 20, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Taylor Ezell
taylor.ezell@pacelabs.com
(704)875-9092
Project Manager

Enclosures

cc: Molly Long, WSP

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

CERTIFICATIONS

Project: KOPFLEX
Pace Project No.: 92418503

Charlotte Certification IDs

9800 Kincey Ave. Ste 100, Huntersville, NC 28078
Louisiana/NELAP Certification # LA170028
North Carolina Drinking Water Certification #: 37706
North Carolina Field Services Certification #: 5342
North Carolina Wastewater Certification #: 12
South Carolina Certification #: 99006001
Florida/NELAP Certification #: E87627
Kentucky UST Certification #: 84
Virginia/VELAP Certification #: 460221

Pace Analytical Services, LLC
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(704)875-9092

SAMPLE SUMMARY

Project: KOPFLEX
Pace Project No.: 92418503

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92418503001	**Trip Blank**	Water	02/20/19 00:00	02/20/19 14:25
92418503002	**MW-32D**	Water	02/19/19 09:10	02/20/19 14:25
92418503003	**MW-30D-273**	Water	02/19/19 10:20	02/20/19 14:25
92418503004	**MW-30D-413**	Water	02/19/19 10:30	02/20/19 14:25
92418503005	**MW-29D**	Water	02/19/19 10:45	02/20/19 14:25
92418503006	**MW-34D**	Water	02/19/19 11:25	02/20/19 14:25
92418503007	**MW-36D**	Water	02/19/19 12:30	02/20/19 14:25

Pace Analytical Services, LLC
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SAMPLE ANALYTE COUNT

Project: KOPFLEX
Pace Project No.: 92418503

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92418503001	**Trip Blank**	EPA 8260B	CL	63	PASI-C
		EPA 8260B Mod.	DLK	3	PASI-C
92418503002	**MW-32D**	EPA 8260B	CL	63	PASI-C
		EPA 8260B Mod.	DLK	3	PASI-C
92418503003	**MW-30D-273**	EPA 8260B	CL	63	PASI-C
		EPA 8260B Mod.	DLK	3	PASI-C
92418503004	**MW-30D-413**	EPA 8260B	CL	63	PASI-C
		EPA 8260B Mod.	DLK	3	PASI-C
92418503005	**MW-29D**	EPA 8260B	CL	63	PASI-C
		EPA 8260B Mod.	DLK	3	PASI-C
92418503006	**MW-34D**	EPA 8260B	CL	63	PASI-C
		EPA 8260B Mod.	DLK	3	PASI-C
92418503007	**MW-36D**	EPA 8260B	CL	63	PASI-C
		EPA 8260B Mod.	DLK	3	PASI-C

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: KOPFLEX
Pace Project No.: 92418503

Sample: Trip Blank **Lab ID: 92418503001** Collected: 02/20/19 00:00 Received: 02/20/19 14:25 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260B							
Acetone	ND	ug/L	25.0	1		02/20/19 21:19	67-64-1	
Benzene	ND	ug/L	1.0	1		02/20/19 21:19	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		02/20/19 21:19	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		02/20/19 21:19	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		02/20/19 21:19	75-27-4	
Bromoform	ND	ug/L	1.0	1		02/20/19 21:19	75-25-2	
Bromomethane	ND	ug/L	2.0	1		02/20/19 21:19	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		02/20/19 21:19	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	1		02/20/19 21:19	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		02/20/19 21:19	108-90-7	
Chloroethane	ND	ug/L	1.0	1		02/20/19 21:19	75-00-3	
Chloroform	ND	ug/L	5.0	1		02/20/19 21:19	67-66-3	
Chloromethane	ND	ug/L	1.0	1		02/20/19 21:19	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		02/20/19 21:19	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		02/20/19 21:19	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.0	1		02/20/19 21:19	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		02/20/19 21:19	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		02/20/19 21:19	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		02/20/19 21:19	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		02/20/19 21:19	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		02/20/19 21:19	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		02/20/19 21:19	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		02/20/19 21:19	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		02/20/19 21:19	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		02/20/19 21:19	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		02/20/19 21:19	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		02/20/19 21:19	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		02/20/19 21:19	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		02/20/19 21:19	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		02/20/19 21:19	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		02/20/19 21:19	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		02/20/19 21:19	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		02/20/19 21:19	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		02/20/19 21:19	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	1		02/20/19 21:19	108-20-3	
Ethylbenzene	ND	ug/L	1.0	1		02/20/19 21:19	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		02/20/19 21:19	87-68-3	
2-Hexanone	ND	ug/L	5.0	1		02/20/19 21:19	591-78-6	
p-Isopropyltoluene	ND	ug/L	1.0	1		02/20/19 21:19	99-87-6	
Methylene Chloride	ND	ug/L	5.0	1		02/20/19 21:19	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		02/20/19 21:19	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		02/20/19 21:19	1634-04-4	
Naphthalene	ND	ug/L	1.0	1		02/20/19 21:19	91-20-3	
Styrene	ND	ug/L	1.0	1		02/20/19 21:19	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		02/20/19 21:19	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		02/20/19 21:19	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		02/20/19 21:19	127-18-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: KOPFLEX
Pace Project No.: 92418503

Sample: Trip Blank **Lab ID: 92418503001** Collected: 02/20/19 00:00 Received: 02/20/19 14:25 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260B							
Toluene	ND	ug/L	1.0	1		02/20/19 21:19	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		02/20/19 21:19	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		02/20/19 21:19	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		02/20/19 21:19	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		02/20/19 21:19	79-00-5	
Trichloroethene	ND	ug/L	1.0	1		02/20/19 21:19	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		02/20/19 21:19	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	1		02/20/19 21:19	96-18-4	
Vinyl acetate	ND	ug/L	2.0	1		02/20/19 21:19	108-05-4	
Vinyl chloride	ND	ug/L	1.0	1		02/20/19 21:19	75-01-4	
Xylene (Total)	ND	ug/L	1.0	1		02/20/19 21:19	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	1		02/20/19 21:19	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		02/20/19 21:19	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	102	%	70-130	1		02/20/19 21:19	460-00-4	
1,2-Dichloroethane-d4 (S)	96	%	70-130	1		02/20/19 21:19	17060-07-0	
Toluene-d8 (S)	114	%	70-130	1		02/20/19 21:19	2037-26-5	
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	ND	ug/L	2.0	1		02/21/19 13:33	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	92	%	50-150	1		02/21/19 13:33	17060-07-0	
Toluene-d8 (S)	100	%	50-150	1		02/21/19 13:33	2037-26-5	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: KOPFLEX
Pace Project No.: 92418503

Sample: MW-32D **Lab ID: 92418503002** Collected: 02/19/19 09:10 Received: 02/20/19 14:25 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260B							
Acetone	ND	ug/L	25.0	1		02/20/19 22:48	67-64-1	
Benzene	ND	ug/L	1.0	1		02/20/19 22:48	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		02/20/19 22:48	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		02/20/19 22:48	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		02/20/19 22:48	75-27-4	
Bromoform	ND	ug/L	1.0	1		02/20/19 22:48	75-25-2	
Bromomethane	ND	ug/L	2.0	1		02/20/19 22:48	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		02/20/19 22:48	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	1		02/20/19 22:48	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		02/20/19 22:48	108-90-7	
Chloroethane	ND	ug/L	1.0	1		02/20/19 22:48	75-00-3	
Chloroform	ND	ug/L	5.0	1		02/20/19 22:48	67-66-3	
Chloromethane	ND	ug/L	1.0	1		02/20/19 22:48	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		02/20/19 22:48	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		02/20/19 22:48	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.0	1		02/20/19 22:48	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		02/20/19 22:48	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		02/20/19 22:48	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		02/20/19 22:48	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		02/20/19 22:48	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		02/20/19 22:48	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		02/20/19 22:48	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		02/20/19 22:48	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		02/20/19 22:48	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		02/20/19 22:48	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		02/20/19 22:48	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		02/20/19 22:48	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		02/20/19 22:48	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		02/20/19 22:48	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		02/20/19 22:48	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		02/20/19 22:48	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		02/20/19 22:48	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		02/20/19 22:48	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		02/20/19 22:48	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	1		02/20/19 22:48	108-20-3	
Ethylbenzene	ND	ug/L	1.0	1		02/20/19 22:48	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		02/20/19 22:48	87-68-3	
2-Hexanone	ND	ug/L	5.0	1		02/20/19 22:48	591-78-6	
p-Isopropyltoluene	ND	ug/L	1.0	1		02/20/19 22:48	99-87-6	
Methylene Chloride	ND	ug/L	5.0	1		02/20/19 22:48	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		02/20/19 22:48	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		02/20/19 22:48	1634-04-4	
Naphthalene	ND	ug/L	1.0	1		02/20/19 22:48	91-20-3	
Styrene	ND	ug/L	1.0	1		02/20/19 22:48	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		02/20/19 22:48	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		02/20/19 22:48	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		02/20/19 22:48	127-18-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: KOPFLEX
Pace Project No.: 92418503

Sample: MW-32D **Lab ID: 92418503002** Collected: 02/19/19 09:10 Received: 02/20/19 14:25 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260B							
Toluene	ND	ug/L	1.0	1		02/20/19 22:48	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		02/20/19 22:48	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		02/20/19 22:48	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		02/20/19 22:48	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		02/20/19 22:48	79-00-5	
Trichloroethene	ND	ug/L	1.0	1		02/20/19 22:48	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		02/20/19 22:48	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	1		02/20/19 22:48	96-18-4	
Vinyl acetate	ND	ug/L	2.0	1		02/20/19 22:48	108-05-4	
Vinyl chloride	ND	ug/L	1.0	1		02/20/19 22:48	75-01-4	
Xylene (Total)	ND	ug/L	1.0	1		02/20/19 22:48	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	1		02/20/19 22:48	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		02/20/19 22:48	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	99	%	70-130	1		02/20/19 22:48	460-00-4	
1,2-Dichloroethane-d4 (S)	98	%	70-130	1		02/20/19 22:48	17060-07-0	
Toluene-d8 (S)	112	%	70-130	1		02/20/19 22:48	2037-26-5	
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	ND	ug/L	2.0	1		02/21/19 13:52	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	96	%	50-150	1		02/21/19 13:52	17060-07-0	
Toluene-d8 (S)	103	%	50-150	1		02/21/19 13:52	2037-26-5	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: KOPFLEX
Pace Project No.: 92418503

Sample: MW-30D-273 **Lab ID: 92418503003** Collected: 02/19/19 10:20 Received: 02/20/19 14:25 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260B							
Acetone	ND	ug/L	25.0	1		02/21/19 00:52	67-64-1	
Benzene	ND	ug/L	1.0	1		02/21/19 00:52	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		02/21/19 00:52	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		02/21/19 00:52	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		02/21/19 00:52	75-27-4	
Bromoform	ND	ug/L	1.0	1		02/21/19 00:52	75-25-2	
Bromomethane	ND	ug/L	2.0	1		02/21/19 00:52	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		02/21/19 00:52	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	1		02/21/19 00:52	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		02/21/19 00:52	108-90-7	
Chloroethane	ND	ug/L	1.0	1		02/21/19 00:52	75-00-3	
Chloroform	ND	ug/L	5.0	1		02/21/19 00:52	67-66-3	
Chloromethane	ND	ug/L	1.0	1		02/21/19 00:52	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		02/21/19 00:52	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		02/21/19 00:52	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.0	1		02/21/19 00:52	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		02/21/19 00:52	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		02/21/19 00:52	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		02/21/19 00:52	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		02/21/19 00:52	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		02/21/19 00:52	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		02/21/19 00:52	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		02/21/19 00:52	75-71-8	
1,1-Dichloroethane	**1.1**	ug/L	1.0	1		02/21/19 00:52	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		02/21/19 00:52	107-06-2	
1,1-Dichloroethene	**47.2**	ug/L	1.0	1		02/21/19 00:52	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		02/21/19 00:52	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		02/21/19 00:52	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		02/21/19 00:52	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		02/21/19 00:52	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		02/21/19 00:52	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		02/21/19 00:52	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		02/21/19 00:52	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		02/21/19 00:52	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	1		02/21/19 00:52	108-20-3	
Ethylbenzene	ND	ug/L	1.0	1		02/21/19 00:52	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		02/21/19 00:52	87-68-3	
2-Hexanone	ND	ug/L	5.0	1		02/21/19 00:52	591-78-6	
p-Isopropyltoluene	ND	ug/L	1.0	1		02/21/19 00:52	99-87-6	
Methylene Chloride	ND	ug/L	5.0	1		02/21/19 00:52	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		02/21/19 00:52	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		02/21/19 00:52	1634-04-4	
Naphthalene	ND	ug/L	1.0	1		02/21/19 00:52	91-20-3	
Styrene	ND	ug/L	1.0	1		02/21/19 00:52	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		02/21/19 00:52	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		02/21/19 00:52	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		02/21/19 00:52	127-18-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: KOPFLEX
Pace Project No.: 92418503

Sample: MW-30D-273 **Lab ID: 92418503003** Collected: 02/19/19 10:20 Received: 02/20/19 14:25 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260B							
Toluene	ND	ug/L	1.0	1		02/21/19 00:52	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		02/21/19 00:52	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		02/21/19 00:52	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		02/21/19 00:52	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		02/21/19 00:52	79-00-5	
Trichloroethene	ND	ug/L	1.0	1		02/21/19 00:52	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		02/21/19 00:52	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	1		02/21/19 00:52	96-18-4	
Vinyl acetate	ND	ug/L	2.0	1		02/21/19 00:52	108-05-4	
Vinyl chloride	ND	ug/L	1.0	1		02/21/19 00:52	75-01-4	
Xylene (Total)	ND	ug/L	1.0	1		02/21/19 00:52	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	1		02/21/19 00:52	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		02/21/19 00:52	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	105	%	70-130	1		02/21/19 00:52	460-00-4	
1,2-Dichloroethane-d4 (S)	97	%	70-130	1		02/21/19 00:52	17060-07-0	
Toluene-d8 (S)	120	%	70-130	1		02/21/19 00:52	2037-26-5	
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	**23.1**	ug/L	2.0	1		02/21/19 14:12	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	98	%	50-150	1		02/21/19 14:12	17060-07-0	
Toluene-d8 (S)	102	%	50-150	1		02/21/19 14:12	2037-26-5	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: KOPFLEX
Pace Project No.: 92418503

Sample: MW-30D-413 **Lab ID: 92418503004** Collected: 02/19/19 10:30 Received: 02/20/19 14:25 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260B							
Acetone	ND	ug/L	25.0	1		02/20/19 23:42	67-64-1	
Benzene	ND	ug/L	1.0	1		02/20/19 23:42	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		02/20/19 23:42	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		02/20/19 23:42	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		02/20/19 23:42	75-27-4	
Bromoform	ND	ug/L	1.0	1		02/20/19 23:42	75-25-2	
Bromomethane	ND	ug/L	2.0	1		02/20/19 23:42	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		02/20/19 23:42	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	1		02/20/19 23:42	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		02/20/19 23:42	108-90-7	
Chloroethane	ND	ug/L	1.0	1		02/20/19 23:42	75-00-3	
Chloroform	ND	ug/L	5.0	1		02/20/19 23:42	67-66-3	
Chloromethane	ND	ug/L	1.0	1		02/20/19 23:42	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		02/20/19 23:42	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		02/20/19 23:42	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.0	1		02/20/19 23:42	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		02/20/19 23:42	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		02/20/19 23:42	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		02/20/19 23:42	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		02/20/19 23:42	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		02/20/19 23:42	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		02/20/19 23:42	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		02/20/19 23:42	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		02/20/19 23:42	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		02/20/19 23:42	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		02/20/19 23:42	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		02/20/19 23:42	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		02/20/19 23:42	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		02/20/19 23:42	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		02/20/19 23:42	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		02/20/19 23:42	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		02/20/19 23:42	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		02/20/19 23:42	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		02/20/19 23:42	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	1		02/20/19 23:42	108-20-3	
Ethylbenzene	ND	ug/L	1.0	1		02/20/19 23:42	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		02/20/19 23:42	87-68-3	
2-Hexanone	ND	ug/L	5.0	1		02/20/19 23:42	591-78-6	
p-Isopropyltoluene	ND	ug/L	1.0	1		02/20/19 23:42	99-87-6	
Methylene Chloride	ND	ug/L	5.0	1		02/20/19 23:42	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		02/20/19 23:42	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		02/20/19 23:42	1634-04-4	
Naphthalene	ND	ug/L	1.0	1		02/20/19 23:42	91-20-3	
Styrene	ND	ug/L	1.0	1		02/20/19 23:42	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		02/20/19 23:42	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		02/20/19 23:42	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		02/20/19 23:42	127-18-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: KOPFLEX
Pace Project No.: 92418503

Sample: MW-30D-413 **Lab ID: 92418503004** Collected: 02/19/19 10:30 Received: 02/20/19 14:25 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260B							
Toluene	ND	ug/L	1.0	1		02/20/19 23:42	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		02/20/19 23:42	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		02/20/19 23:42	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		02/20/19 23:42	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		02/20/19 23:42	79-00-5	
Trichloroethene	ND	ug/L	1.0	1		02/20/19 23:42	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		02/20/19 23:42	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	1		02/20/19 23:42	96-18-4	
Vinyl acetate	ND	ug/L	2.0	1		02/20/19 23:42	108-05-4	
Vinyl chloride	ND	ug/L	1.0	1		02/20/19 23:42	75-01-4	
Xylene (Total)	ND	ug/L	1.0	1		02/20/19 23:42	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	1		02/20/19 23:42	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		02/20/19 23:42	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	101	%	70-130	1		02/20/19 23:42	460-00-4	
1,2-Dichloroethane-d4 (S)	94	%	70-130	1		02/20/19 23:42	17060-07-0	
Toluene-d8 (S)	115	%	70-130	1		02/20/19 23:42	2037-26-5	
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	ND	ug/L	2.0	1		02/21/19 14:31	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	95	%	50-150	1		02/21/19 14:31	17060-07-0	
Toluene-d8 (S)	102	%	50-150	1		02/21/19 14:31	2037-26-5	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: KOPFLEX
Pace Project No.: 92418503

Sample: MW-29D **Lab ID: 92418503005** Collected: 02/19/19 10:45 Received: 02/20/19 14:25 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260B							
Acetone	ND	ug/L	25.0	1		02/20/19 23:24	67-64-1	
Benzene	ND	ug/L	1.0	1		02/20/19 23:24	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		02/20/19 23:24	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		02/20/19 23:24	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		02/20/19 23:24	75-27-4	
Bromoform	ND	ug/L	1.0	1		02/20/19 23:24	75-25-2	
Bromomethane	ND	ug/L	2.0	1		02/20/19 23:24	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		02/20/19 23:24	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	1		02/20/19 23:24	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		02/20/19 23:24	108-90-7	
Chloroethane	ND	ug/L	1.0	1		02/20/19 23:24	75-00-3	
Chloroform	ND	ug/L	5.0	1		02/20/19 23:24	67-66-3	
Chloromethane	ND	ug/L	1.0	1		02/20/19 23:24	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		02/20/19 23:24	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		02/20/19 23:24	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.0	1		02/20/19 23:24	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		02/20/19 23:24	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		02/20/19 23:24	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		02/20/19 23:24	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		02/20/19 23:24	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		02/20/19 23:24	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		02/20/19 23:24	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		02/20/19 23:24	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		02/20/19 23:24	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		02/20/19 23:24	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		02/20/19 23:24	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		02/20/19 23:24	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		02/20/19 23:24	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		02/20/19 23:24	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		02/20/19 23:24	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		02/20/19 23:24	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		02/20/19 23:24	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		02/20/19 23:24	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		02/20/19 23:24	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	1		02/20/19 23:24	108-20-3	
Ethylbenzene	ND	ug/L	1.0	1		02/20/19 23:24	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		02/20/19 23:24	87-68-3	
2-Hexanone	ND	ug/L	5.0	1		02/20/19 23:24	591-78-6	
p-Isopropyltoluene	ND	ug/L	1.0	1		02/20/19 23:24	99-87-6	
Methylene Chloride	ND	ug/L	5.0	1		02/20/19 23:24	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		02/20/19 23:24	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		02/20/19 23:24	1634-04-4	
Naphthalene	ND	ug/L	1.0	1		02/20/19 23:24	91-20-3	
Styrene	ND	ug/L	1.0	1		02/20/19 23:24	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		02/20/19 23:24	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		02/20/19 23:24	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		02/20/19 23:24	127-18-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: KOPFLEX
Pace Project No.: 92418503

Sample: MW-29D **Lab ID: 92418503005** Collected: 02/19/19 10:45 Received: 02/20/19 14:25 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260B							
Toluene	ND	ug/L	1.0	1		02/20/19 23:24	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		02/20/19 23:24	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		02/20/19 23:24	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		02/20/19 23:24	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		02/20/19 23:24	79-00-5	
Trichloroethene	ND	ug/L	1.0	1		02/20/19 23:24	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		02/20/19 23:24	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	1		02/20/19 23:24	96-18-4	
Vinyl acetate	ND	ug/L	2.0	1		02/20/19 23:24	108-05-4	
Vinyl chloride	ND	ug/L	1.0	1		02/20/19 23:24	75-01-4	
Xylene (Total)	ND	ug/L	1.0	1		02/20/19 23:24	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	1		02/20/19 23:24	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		02/20/19 23:24	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	100	%	70-130	1		02/20/19 23:24	460-00-4	
1,2-Dichloroethane-d4 (S)	97	%	70-130	1		02/20/19 23:24	17060-07-0	
Toluene-d8 (S)	116	%	70-130	1		02/20/19 23:24	2037-26-5	
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	ND	ug/L	2.0	1		02/21/19 14:51	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	96	%	50-150	1		02/21/19 14:51	17060-07-0	
Toluene-d8 (S)	105	%	50-150	1		02/21/19 14:51	2037-26-5	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: KOPFLEX
Pace Project No.: 92418503

Sample: MW-34D **Lab ID: 92418503006** Collected: 02/19/19 11:25 Received: 02/20/19 14:25 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260B							
Acetone	ND	ug/L	25.0	1		02/20/19 23:06	67-64-1	
Benzene	ND	ug/L	1.0	1		02/20/19 23:06	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		02/20/19 23:06	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		02/20/19 23:06	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		02/20/19 23:06	75-27-4	
Bromoform	ND	ug/L	1.0	1		02/20/19 23:06	75-25-2	
Bromomethane	ND	ug/L	2.0	1		02/20/19 23:06	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		02/20/19 23:06	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	1		02/20/19 23:06	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		02/20/19 23:06	108-90-7	
Chloroethane	ND	ug/L	1.0	1		02/20/19 23:06	75-00-3	
Chloroform	ND	ug/L	5.0	1		02/20/19 23:06	67-66-3	
Chloromethane	ND	ug/L	1.0	1		02/20/19 23:06	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		02/20/19 23:06	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		02/20/19 23:06	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.0	1		02/20/19 23:06	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		02/20/19 23:06	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		02/20/19 23:06	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		02/20/19 23:06	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		02/20/19 23:06	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		02/20/19 23:06	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		02/20/19 23:06	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		02/20/19 23:06	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		02/20/19 23:06	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		02/20/19 23:06	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		02/20/19 23:06	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		02/20/19 23:06	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		02/20/19 23:06	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		02/20/19 23:06	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		02/20/19 23:06	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		02/20/19 23:06	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		02/20/19 23:06	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		02/20/19 23:06	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		02/20/19 23:06	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	1		02/20/19 23:06	108-20-3	
Ethylbenzene	ND	ug/L	1.0	1		02/20/19 23:06	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		02/20/19 23:06	87-68-3	
2-Hexanone	ND	ug/L	5.0	1		02/20/19 23:06	591-78-6	
p-Isopropyltoluene	ND	ug/L	1.0	1		02/20/19 23:06	99-87-6	
Methylene Chloride	ND	ug/L	5.0	1		02/20/19 23:06	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		02/20/19 23:06	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		02/20/19 23:06	1634-04-4	
Naphthalene	ND	ug/L	1.0	1		02/20/19 23:06	91-20-3	
Styrene	ND	ug/L	1.0	1		02/20/19 23:06	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		02/20/19 23:06	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		02/20/19 23:06	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		02/20/19 23:06	127-18-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
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ANALYTICAL RESULTS

Project: KOPFLEX
Pace Project No.: 92418503

Sample: MW-34D **Lab ID: 92418503006** Collected: 02/19/19 11:25 Received: 02/20/19 14:25 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260B							
Toluene	ND	ug/L	1.0	1		02/20/19 23:06	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		02/20/19 23:06	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		02/20/19 23:06	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		02/20/19 23:06	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		02/20/19 23:06	79-00-5	
Trichloroethene	ND	ug/L	1.0	1		02/20/19 23:06	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		02/20/19 23:06	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	1		02/20/19 23:06	96-18-4	
Vinyl acetate	ND	ug/L	2.0	1		02/20/19 23:06	108-05-4	
Vinyl chloride	ND	ug/L	1.0	1		02/20/19 23:06	75-01-4	
Xylene (Total)	ND	ug/L	1.0	1		02/20/19 23:06	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	1		02/20/19 23:06	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		02/20/19 23:06	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	99	%	70-130	1		02/20/19 23:06	460-00-4	
1,2-Dichloroethane-d4 (S)	98	%	70-130	1		02/20/19 23:06	17060-07-0	
Toluene-d8 (S)	111	%	70-130	1		02/20/19 23:06	2037-26-5	
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	ND	ug/L	2.0	1		02/21/19 15:10	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	99	%	50-150	1		02/21/19 15:10	17060-07-0	
Toluene-d8 (S)	100	%	50-150	1		02/21/19 15:10	2037-26-5	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
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ANALYTICAL RESULTS

Project: KOPFLEX
Pace Project No.: 92418503

Sample: MW-36D **Lab ID: 92418503007** Collected: 02/19/19 12:30 Received: 02/20/19 14:25 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260B							
Acetone	ND	ug/L	25.0	1		02/21/19 00:35	67-64-1	
Benzene	ND	ug/L	1.0	1		02/21/19 00:35	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		02/21/19 00:35	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		02/21/19 00:35	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		02/21/19 00:35	75-27-4	
Bromoform	ND	ug/L	1.0	1		02/21/19 00:35	75-25-2	
Bromomethane	ND	ug/L	2.0	1		02/21/19 00:35	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		02/21/19 00:35	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	1		02/21/19 00:35	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		02/21/19 00:35	108-90-7	
Chloroethane	ND	ug/L	1.0	1		02/21/19 00:35	75-00-3	
Chloroform	ND	ug/L	5.0	1		02/21/19 00:35	67-66-3	
Chloromethane	ND	ug/L	1.0	1		02/21/19 00:35	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		02/21/19 00:35	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		02/21/19 00:35	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.0	1		02/21/19 00:35	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		02/21/19 00:35	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		02/21/19 00:35	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		02/21/19 00:35	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		02/21/19 00:35	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		02/21/19 00:35	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		02/21/19 00:35	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		02/21/19 00:35	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		02/21/19 00:35	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		02/21/19 00:35	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		02/21/19 00:35	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		02/21/19 00:35	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		02/21/19 00:35	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		02/21/19 00:35	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		02/21/19 00:35	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		02/21/19 00:35	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		02/21/19 00:35	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		02/21/19 00:35	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		02/21/19 00:35	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	1		02/21/19 00:35	108-20-3	
Ethylbenzene	ND	ug/L	1.0	1		02/21/19 00:35	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		02/21/19 00:35	87-68-3	
2-Hexanone	ND	ug/L	5.0	1		02/21/19 00:35	591-78-6	
p-Isopropyltoluene	ND	ug/L	1.0	1		02/21/19 00:35	99-87-6	
Methylene Chloride	ND	ug/L	5.0	1		02/21/19 00:35	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		02/21/19 00:35	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		02/21/19 00:35	1634-04-4	
Naphthalene	ND	ug/L	1.0	1		02/21/19 00:35	91-20-3	
Styrene	ND	ug/L	1.0	1		02/21/19 00:35	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		02/21/19 00:35	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		02/21/19 00:35	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		02/21/19 00:35	127-18-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
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ANALYTICAL RESULTS

Project: KOPFLEX
Pace Project No.: 92418503

Sample: MW-36D **Lab ID: 92418503007** Collected: 02/19/19 12:30 Received: 02/20/19 14:25 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260B							
Toluene	ND	ug/L	1.0	1		02/21/19 00:35	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		02/21/19 00:35	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		02/21/19 00:35	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		02/21/19 00:35	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		02/21/19 00:35	79-00-5	
Trichloroethene	ND	ug/L	1.0	1		02/21/19 00:35	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		02/21/19 00:35	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	1		02/21/19 00:35	96-18-4	
Vinyl acetate	ND	ug/L	2.0	1		02/21/19 00:35	108-05-4	
Vinyl chloride	ND	ug/L	1.0	1		02/21/19 00:35	75-01-4	
Xylene (Total)	ND	ug/L	1.0	1		02/21/19 00:35	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	1		02/21/19 00:35	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		02/21/19 00:35	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	101	%	70-130	1		02/21/19 00:35	460-00-4	
1,2-Dichloroethane-d4 (S)	97	%	70-130	1		02/21/19 00:35	17060-07-0	
Toluene-d8 (S)	113	%	70-130	1		02/21/19 00:35	2037-26-5	
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	ND	ug/L	2.0	1		02/21/19 15:29	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	96	%	50-150	1		02/21/19 15:29	17060-07-0	
Toluene-d8 (S)	100	%	50-150	1		02/21/19 15:29	2037-26-5	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
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QUALITY CONTROL DATA

Project: KOPFLEX
Pace Project No.: 92418503

QC Batch: 459272 Analysis Method: EPA 8260B
QC Batch Method: EPA 8260B Analysis Description: 8260 MSV Low Level
Associated Lab Samples: 92418503001, 92418503002, 92418503003, 92418503004, 92418503005, 92418503006, 92418503007

METHOD BLANK: 2503004 Matrix: Water
Associated Lab Samples: 92418503001, 92418503002, 92418503003, 92418503004, 92418503005, 92418503006, 92418503007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	02/20/19 21:02	
1,1,1-Trichloroethane	ug/L	ND	1.0	02/20/19 21:02	
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	02/20/19 21:02	
1,1,2-Trichloroethane	ug/L	ND	1.0	02/20/19 21:02	
1,1-Dichloroethane	ug/L	ND	1.0	02/20/19 21:02	
1,1-Dichloroethene	ug/L	ND	1.0	02/20/19 21:02	
1,1-Dichloropropene	ug/L	ND	1.0	02/20/19 21:02	
1,2,3-Trichlorobenzene	ug/L	ND	1.0	02/20/19 21:02	
1,2,3-Trichloropropane	ug/L	ND	1.0	02/20/19 21:02	
1,2,4-Trichlorobenzene	ug/L	ND	1.0	02/20/19 21:02	
1,2-Dibromo-3-chloropropane	ug/L	ND	2.0	02/20/19 21:02	
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	02/20/19 21:02	
1,2-Dichlorobenzene	ug/L	ND	1.0	02/20/19 21:02	
1,2-Dichloroethane	ug/L	ND	1.0	02/20/19 21:02	
1,2-Dichloropropane	ug/L	ND	1.0	02/20/19 21:02	
1,3-Dichlorobenzene	ug/L	ND	1.0	02/20/19 21:02	
1,3-Dichloropropane	ug/L	ND	1.0	02/20/19 21:02	
1,4-Dichlorobenzene	ug/L	ND	1.0	02/20/19 21:02	
2,2-Dichloropropane	ug/L	ND	1.0	02/20/19 21:02	
2-Butanone (MEK)	ug/L	ND	5.0	02/20/19 21:02	
2-Chlorotoluene	ug/L	ND	1.0	02/20/19 21:02	
2-Hexanone	ug/L	ND	5.0	02/20/19 21:02	
4-Chlorotoluene	ug/L	ND	1.0	02/20/19 21:02	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	5.0	02/20/19 21:02	
Acetone	ug/L	ND	25.0	02/20/19 21:02	
Benzene	ug/L	ND	1.0	02/20/19 21:02	
Bromobenzene	ug/L	ND	1.0	02/20/19 21:02	
Bromochloromethane	ug/L	ND	1.0	02/20/19 21:02	
Bromodichloromethane	ug/L	ND	1.0	02/20/19 21:02	
Bromoform	ug/L	ND	1.0	02/20/19 21:02	
Bromomethane	ug/L	ND	2.0	02/20/19 21:02	
Carbon tetrachloride	ug/L	ND	1.0	02/20/19 21:02	
Chlorobenzene	ug/L	ND	1.0	02/20/19 21:02	
Chloroethane	ug/L	ND	1.0	02/20/19 21:02	
Chloroform	ug/L	ND	5.0	02/20/19 21:02	
Chloromethane	ug/L	ND	1.0	02/20/19 21:02	
cis-1,2-Dichloroethene	ug/L	ND	1.0	02/20/19 21:02	
cis-1,3-Dichloropropene	ug/L	ND	1.0	02/20/19 21:02	
Dibromochloromethane	ug/L	ND	1.0	02/20/19 21:02	
Dibromomethane	ug/L	ND	1.0	02/20/19 21:02	
Dichlorodifluoromethane	ug/L	ND	1.0	02/20/19 21:02	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: KOPFLEX
Pace Project No.: 92418503

METHOD BLANK: 2503004 Matrix: Water
Associated Lab Samples: 92418503001, 92418503002, 92418503003, 92418503004, 92418503005, 92418503006, 92418503007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diisopropyl ether	ug/L	ND	1.0	02/20/19 21:02	
Ethylbenzene	ug/L	ND	1.0	02/20/19 21:02	
Hexachloro-1,3-butadiene	ug/L	ND	1.0	02/20/19 21:02	
m&p-Xylene	ug/L	ND	2.0	02/20/19 21:02	
Methyl-tert-butyl ether	ug/L	ND	1.0	02/20/19 21:02	
Methylene Chloride	ug/L	ND	5.0	02/20/19 21:02	
Naphthalene	ug/L	ND	1.0	02/20/19 21:02	
o-Xylene	ug/L	ND	1.0	02/20/19 21:02	
p-Isopropyltoluene	ug/L	ND	1.0	02/20/19 21:02	
Styrene	ug/L	ND	1.0	02/20/19 21:02	
Tetrachloroethene	ug/L	ND	1.0	02/20/19 21:02	
Toluene	ug/L	ND	1.0	02/20/19 21:02	
trans-1,2-Dichloroethene	ug/L	ND	1.0	02/20/19 21:02	
trans-1,3-Dichloropropene	ug/L	ND	1.0	02/20/19 21:02	
Trichloroethene	ug/L	ND	1.0	02/20/19 21:02	
Trichlorofluoromethane	ug/L	ND	1.0	02/20/19 21:02	
Vinyl acetate	ug/L	ND	2.0	02/20/19 21:02	
Vinyl chloride	ug/L	ND	1.0	02/20/19 21:02	
Xylene (Total)	ug/L	ND	1.0	02/20/19 21:02	
1,2-Dichloroethane-d4 (S)	%	96	70-130	02/20/19 21:02	
4-Bromofluorobenzene (S)	%	103	70-130	02/20/19 21:02	
Toluene-d8 (S)	%	113	70-130	02/20/19 21:02	

LABORATORY CONTROL SAMPLE: 2503005

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	50	53.5	107	70-130	
1,1,1-Trichloroethane	ug/L	50	47.4	95	70-130	
1,1,2,2-Tetrachloroethane	ug/L	50	48.0	96	70-130	
1,1,2-Trichloroethane	ug/L	50	51.7	103	70-130	
1,1-Dichloroethane	ug/L	50	47.6	95	70-130	
1,1-Dichloroethene	ug/L	50	49.4	99	70-130	
1,1-Dichloropropene	ug/L	50	45.6	91	70-130	
1,2,3-Trichlorobenzene	ug/L	50	53.7	107	70-130	
1,2,3-Trichloropropane	ug/L	50	49.0	98	70-130	
1,2,4-Trichlorobenzene	ug/L	50	52.5	105	70-130	
1,2-Dibromo-3-chloropropane	ug/L	50	49.1	98	70-130	
1,2-Dibromoethane (EDB)	ug/L	50	53.5	107	70-130	
1,2-Dichlorobenzene	ug/L	50	49.1	98	70-130	
1,2-Dichloroethane	ug/L	50	45.8	92	70-130	
1,2-Dichloropropane	ug/L	50	50.9	102	70-130	
1,3-Dichlorobenzene	ug/L	50	48.9	98	70-130	
1,3-Dichloropropane	ug/L	50	55.0	110	70-131	
1,4-Dichlorobenzene	ug/L	50	49.4	99	70-130	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: KOPFLEX
Pace Project No.: 92418503

LABORATORY CONTROL SAMPLE: 2503005

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,2-Dichloropropane	ug/L	50	49.4	99	69-130	
2-Butanone (MEK)	ug/L	100	99.0	99	64-135	
2-Chlorotoluene	ug/L	50	48.0	96	70-130	
2-Hexanone	ug/L	100	101	101	66-135	
4-Chlorotoluene	ug/L	50	48.0	96	70-130	
4-Methyl-2-pentanone (MIBK)	ug/L	100	92.1	92	70-130	
Acetone	ug/L	100	96.1	96	61-157	
Benzene	ug/L	50	49.3	99	70-130	
Bromobenzene	ug/L	50	49.7	99	70-130	
Bromochloromethane	ug/L	50	44.2	88	70-130	
Bromodichloromethane	ug/L	50	49.2	98	70-130	
Bromoform	ug/L	50	51.8	104	70-130	
Bromomethane	ug/L	50	54.8	110	38-130	
Carbon tetrachloride	ug/L	50	48.9	98	70-130	
Chlorobenzene	ug/L	50	47.8	96	70-130	
Chloroethane	ug/L	50	35.4	71	37-142	
Chloroform	ug/L	50	47.1	94	70-130	
Chloromethane	ug/L	50	51.4	103	48-130	
cis-1,2-Dichloroethene	ug/L	50	47.5	95	70-130	
cis-1,3-Dichloropropene	ug/L	50	53.4	107	70-130	
Dibromochloromethane	ug/L	50	55.0	110	70-130	
Dibromomethane	ug/L	50	45.5	91	70-130	
Dichlorodifluoromethane	ug/L	50	53.0	106	53-134	
Diisopropyl ether	ug/L	50	50.4	101	70-135	
Ethylbenzene	ug/L	50	48.3	97	70-130	
Hexachloro-1,3-butadiene	ug/L	50	50.9	102	68-132	
m&p-Xylene	ug/L	100	93.3	93	70-130	
Methyl-tert-butyl ether	ug/L	50	48.2	96	70-130	
Methylene Chloride	ug/L	50	46.4	93	67-132	
Naphthalene	ug/L	50	52.4	105	70-130	
o-Xylene	ug/L	50	48.9	98	70-130	
p-Isopropyltoluene	ug/L	50	49.8	100	70-130	
Styrene	ug/L	50	47.9	96	70-130	
Tetrachloroethene	ug/L	50	47.7	95	69-130	
Toluene	ug/L	50	43.8	88	70-130	
trans-1,2-Dichloroethene	ug/L	50	47.3	95	70-130	
trans-1,3-Dichloropropene	ug/L	50	51.7	103	70-130	
Trichloroethene	ug/L	50	51.0	102	70-130	
Trichlorofluoromethane	ug/L	50	44.8	90	63-130	
Vinyl acetate	ug/L	100	107	107	55-143	
Vinyl chloride	ug/L	50	50.5	101	70-131	
Xylene (Total)	ug/L	150	142	95	70-130	
1,2-Dichloroethane-d4 (S)	%			96	70-130	
4-Bromofluorobenzene (S)	%			97	70-130	
Toluene-d8 (S)	%			94	70-130	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: KOPFLEX
Pace Project No.: 92418503

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2503006 2503007

Parameter	Units	92418503007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,1,1,2-Tetrachloroethane	ug/L	ND	20	20	20.6	20.1	103	100	73-134	3	30	
1,1,1-Trichloroethane	ug/L	ND	20	20	19.4	20.0	97	100	82-143	3	30	
1,1,2,2-Tetrachloroethane	ug/L	ND	20	20	19.4	19.0	97	95	70-136	2	30	
1,1,2-Trichloroethane	ug/L	ND	20	20	19.5	19.9	98	100	70-135	2	30	
1,1-Dichloroethane	ug/L	ND	20	20	18.5	19.2	92	96	70-139	4	30	
1,1-Dichloroethene	ug/L	ND	20	20	19.8	19.8	99	99	70-154	0	30	
1,1-Dichloropropene	ug/L	ND	20	20	17.7	19.2	88	96	70-149	8	30	
1,2,3-Trichlorobenzene	ug/L	ND	20	20	22.3	21.1	112	106	70-135	6	30	
1,2,3-Trichloropropane	ug/L	ND	20	20	19.2	19.6	96	98	71-137	2	30	
1,2,4-Trichlorobenzene	ug/L	ND	20	20	20.9	20.7	105	104	73-140	1	30	
1,2-Dibromo-3-chloropropane	ug/L	ND	20	20	20.0	20.1	100	100	65-134	1	30	
1,2-Dibromoethane (EDB)	ug/L	ND	20	20	20.4	20.1	102	100	70-137	1	30	
1,2-Dichlorobenzene	ug/L	ND	20	20	20.1	20.1	101	100	70-133	0	30	
1,2-Dichloroethane	ug/L	ND	20	20	17.6	18.0	88	90	70-137	2	30	
1,2-Dichloropropane	ug/L	ND	20	20	18.6	19.1	93	96	70-140	3	30	
1,3-Dichlorobenzene	ug/L	ND	20	20	19.2	20.5	96	102	70-135	6	30	
1,3-Dichloropropane	ug/L	ND	20	20	19.3	19.9	97	99	70-143	3	30	
1,4-Dichlorobenzene	ug/L	ND	20	20	19.6	20.2	98	101	70-133	3	30	
2,2-Dichloropropane	ug/L	ND	20	20	20.6	21.6	103	108	61-148	5	30	
2-Butanone (MEK)	ug/L	ND	40	40	36.8	37.2	92	93	60-139	1	30	
2-Chlorotoluene	ug/L	ND	20	20	19.3	19.7	96	99	70-144	2	30	
2-Hexanone	ug/L	ND	40	40	37.7	38.2	94	96	65-138	1	30	
4-Chlorotoluene	ug/L	ND	20	20	18.5	19.6	93	98	70-137	5	30	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	40	40	37.4	36.8	93	92	65-135	2	30	
Acetone	ug/L	ND	40	40	39.3	39.0	98	97	60-148	1	30	
Benzene	ug/L	ND	20	20	19.9	20.0	99	100	70-151	1	30	
Bromobenzene	ug/L	ND	20	20	19.8	20.7	99	103	70-136	4	30	
Bromochloromethane	ug/L	ND	20	20	19.0	20.3	95	102	70-141	7	30	
Bromodichloromethane	ug/L	ND	20	20	19.2	19.9	96	99	70-138	4	30	
Bromoform	ug/L	ND	20	20	17.7	18.6	88	93	63-130	5	30	
Bromomethane	ug/L	ND	20	20	16.8	21.1	84	106	15-152	23	30	
Carbon tetrachloride	ug/L	ND	20	20	20.3	20.7	101	104	70-143	2	30	
Chlorobenzene	ug/L	ND	20	20	19.7	19.9	99	100	70-138	1	30	
Chloroethane	ug/L	ND	20	20	18.9	19.7	95	99	52-163	4	30	
Chloroform	ug/L	ND	20	20	17.7	18.2	89	91	70-139	3	30	
Chloromethane	ug/L	ND	20	20	14.3	11.8	71	59	41-139	19	30	
cis-1,2-Dichloroethene	ug/L	ND	20	20	18.4	19.0	92	95	70-141	3	30	
cis-1,3-Dichloropropene	ug/L	ND	20	20	20.1	20.0	101	100	70-137	1	30	
Dibromochloromethane	ug/L	ND	20	20	20.0	20.2	100	101	70-134	1	30	
Dibromomethane	ug/L	ND	20	20	21.2	21.4	106	107	70-138	1	30	
Dichlorodifluoromethane	ug/L	ND	20	20	19.8	19.8	99	99	47-155	0	30	
Diisopropyl ether	ug/L	ND	20	20	17.8	17.8	89	89	63-144	0	30	
Ethylbenzene	ug/L	ND	20	20	20.2	20.8	101	104	66-153	3	30	
Hexachloro-1,3-butadiene	ug/L	ND	20	20	22.6	21.5	113	108	65-149	5	30	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: KOPFLEX
Pace Project No.: 92418503

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2503006 2503007

Parameter	Units	92418503007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
m&p-Xylene	ug/L	ND	40	40	40.8	41.9	102	105	69-152	3	30	
Methyl-tert-butyl ether	ug/L	ND	20	20	18.3	18.8	92	94	54-156	2	30	
Methylene Chloride	ug/L	ND	20	20	17.9	17.7	89	89	42-159	1	30	
Naphthalene	ug/L	ND	20	20	19.5	19.0	98	95	61-148	2	30	
o-Xylene	ug/L	ND	20	20	20.3	20.4	102	102	70-148	0	30	
p-Isopropyltoluene	ug/L	ND	20	20	20.3	20.8	102	104	70-146	2	30	
Styrene	ug/L	ND	20	20	20.1	20.3	100	101	70-135	1	30	
Tetrachloroethene	ug/L	ND	20	20	21.1	22.6	105	113	59-143	7	30	
Toluene	ug/L	ND	20	20	19.5	20.1	98	100	59-148	3	30	
trans-1,2-Dichloroethene	ug/L	ND	20	20	18.7	19.4	93	97	70-146	4	30	
trans-1,3-Dichloropropene	ug/L	ND	20	20	20.0	19.8	100	99	70-135	1	30	
Trichloroethene	ug/L	ND	20	20	19.8	20.8	99	104	70-147	5	30	
Trichlorofluoromethane	ug/L	ND	20	20	21.2	22.0	106	110	70-148	4	30	
Vinyl acetate	ug/L	ND	40	40	38.0	38.0	95	95	49-151	0	30	
Vinyl chloride	ug/L	ND	20	20	20.4	20.6	102	103	70-156	1	30	
Xylene (Total)	ug/L	ND	60	60	61.1	62.3	102	104	63-158	2	30	
1,2-Dichloroethane-d4 (S)	%						91	91	70-130			
4-Bromofluorobenzene (S)	%						97	98	70-130			
Toluene-d8 (S)	%						97	97	70-130			

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: KOPFLEX
Pace Project No.: 92418503

QC Batch: 459387 Analysis Method: EPA 8260B Mod.
QC Batch Method: EPA 8260B Mod. Analysis Description: 8260 MSV SIM
Associated Lab Samples: 92418503001, 92418503002, 92418503003, 92418503004, 92418503005, 92418503006, 92418503007

METHOD BLANK: 2503363 Matrix: Water
Associated Lab Samples: 92418503001, 92418503002, 92418503003, 92418503004, 92418503005, 92418503006, 92418503007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	ND	2.0	02/21/19 13:13	
1,2-Dichloroethane-d4 (S)	%	96	50-150	02/21/19 13:13	
Toluene-d8 (S)	%	103	50-150	02/21/19 13:13	

LABORATORY CONTROL SAMPLE: 2503364

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	20	18.3	92	71-125	
1,2-Dichloroethane-d4 (S)	%			99	50-150	
Toluene-d8 (S)	%			101	50-150	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2503365 2503366

Parameter	Units	92418503002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,4-Dioxane (p-Dioxane)	ug/L	ND	20	20	20.3	21.9	102	109	50-150	7	30	
1,2-Dichloroethane-d4 (S)	%						95	97	50-150		30	
Toluene-d8 (S)	%						98	98	50-150		30	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALIFIERS

Project: KOPFLEX
Pace Project No.: 92418503

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-C Pace Analytical Services - Charlotte

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: KOPFLEX
Pace Project No.: 92418503

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92418503001	**Trip Blank**	EPA 8260B	459272		
92418503002	**MW-32D**	EPA 8260B	459272		
92418503003	**MW-30D-273**	EPA 8260B	459272		
92418503004	**MW-30D-413**	EPA 8260B	459272		
92418503005	**MW-29D**	EPA 8260B	459272		
92418503006	**MW-34D**	EPA 8260B	459272		
92418503007	**MW-36D**	EPA 8260B	459272		
92418503001	**Trip Blank**	EPA 8260B Mod.	459387		
92418503002	**MW-32D**	EPA 8260B Mod.	459387		
92418503003	**MW-30D-273**	EPA 8260B Mod.	459387		
92418503004	**MW-30D-413**	EPA 8260B Mod.	459387		
92418503005	**MW-29D**	EPA 8260B Mod.	459387		
92418503006	**MW-34D**	EPA 8260B Mod.	459387		
92418503007	**MW-36D**	EPA 8260B Mod.	459387		

Pace Analytical®	Document Name: Sample Condition Upon Receipt(SCUR)	Document Revised: February 7, 2018 Page 1 of 2
	Document No.: F-CAR-CS-033-Rev.06	Issuing Authority: Pace Carolinas Quality Office

Laboratory receiving samples:
Asheville ☐ Eden ☐ Greenwood ☐ Huntersville ☑ Raleigh ☐ Mechanicsville ☐

Sample Condition Upon Receipt

Client Name: WSP

Project # WO# : 92418503

92418503

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☑ Pace ☐ Other:____

Custody Seal Present? ☑ Yes ☐ No **Seals Intact?** ☑ Yes ☐ No

Date/Initials Person Examining Contents: 2-20-19

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other

Biological Tissue Frozen? ☐ Yes ☐ No ☑ N/A

Thermometer: ☑ IR Gun ID: 92T048 **Type of Ice:** ☑ Wet ☐ Blue ☐ None

Cooler Temp (°C): 3.6 **Correction Factor:** Add/Subtract (°C) 0.0

Cooler Temp Corrected (°C): _____

Temp should be above freezing to 6°C
☐ Samples out of temp criteria. Samples on ice, cooling process has begun

USDA Regulated Soil (☑ N/A, water sample)
Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)? ☐ Yes ☑ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☑ No

				Comments/Discrepancy:
Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	2.
Short Hold Time Analysis (<72 hr.)?	☐ Yes	☑ No	☐ N/A	3.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	4.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	5.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	6.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	7.
Dissolved analysis: Samples Field Filtered?	☐ Yes	☐ No	☑ N/A	8.
Sample Labels Match COC?	☑ Yes	☐ No	☐ N/A	9.
-Includes Date/Time/ID/Analysis Matrix: WT				
Headspace in VOA Vials (>5-6mm)?	☑ Yes	☐ No	☐ N/A	10. Trip Blank vials
Trip Blank Present?	☑ Yes	☐ No	☐ N/A	11.
Trip Blank Custody Seals Present?	☐ Yes	☑ No	☐ N/A	

COMMENTS/SAMPLE DISCREPANCY

Field Data Required? ☐ Yes ☐ No

Lot ID of split containers:

CLIENT NOTIFICATION/RESOLUTION

Person contacted: _____ Date/Time: _____

Project Manager SCURF Review: (TR) **Date:** 2/21

Project Manager SRF Review: (TR) **Date:** 2/21

***Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.**

Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC, LLHg

****Bottom half of box is to list number of bottle**

Project # WO# : 92418503

PM: PTE Due Date: 02/27/19

CLIENT: 92-WSP

Item#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic ZN Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A – lab)	SP2T-250 mL Sterile Plastic (N/A – lab)		BP3A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	AG0U-100 mL Amber Unpreserved vials (N/A)	VSGU-20 mL Scintillation vials (N/A)	DG9U-40 mL Amber Unpreserved vials (N/A)
1																6													
2																6													
3																6													
4																6													
5																6													
6																6													
7																2	clear												
8																2	clear												
9																													
10																													
11																													
12																													

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot #

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. Out of hold, incorrect preservative, out of temp, incorrect containers.

CHAIN-OF-CUSTODY RECORD

Page 1 of ___

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

Project Name: kaflex

Project Location: Hanover, MD

Project Number & Task: 31401545.011/1

WSP USA Contact Name: eric johnson

WSP USA Contact E-mail: eric.johnson @wsp.com

WSP USA Contact Phone: 703 742 6500

Sampler(s) Name(s): Crexi Molly

Sampler(s) Signature(s):

No. 009921

Laboratory Name & Location: Pace

Laboratory Project Manager: Taylor Etzel

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

924/8503

Requested Analyses & Preservatives: VOCs (8260) | 1,4-dioxane (8260 SIM)

Sample Identification	Matrix	Collection Start* Date	Collection Start* Time	Collection Stop* Date	Collection Stop* Time	Number of Containers	VOCs (8260)	1,4-dioxane (8260 SIM)	Sample Comments
Trip Blank		lab prepped				4	X	X	001
MW-32D	GW	2/19/19		09	10	6	X	X	002
MW-30D-273				10	20	6	X	X	003
MW-30D-413				10	30	6	X	X	004
MW-29D				10	45	6	X	X	005
MW-34D				11	25	6	X	X	006
MW-36D				12	30	6	X	X	007

Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Shipment Method	Tracking Number(s)
	4/4/19	1600	fed ex				8127 8179 5545
Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Number of Packages	Custody Seal Number(s)
			Stock Room/Office	2-20-19	1425		

*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)