VIA ELECTRONIC MAIL

November 13, 2018

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. 8 - 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 third quarter 2018 in the offsite portion of the Former Kop-Flex Facility Site in Hanover, Maryland. The report also describes the activities planned for the fourth quarter of 2018.

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

Kind regards,

Robert E. Johnson
Senior Technical Manager
Water & Environment

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Encl.

cc: Mr. 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. 8 – OFFSITE AREA

FORMER KOP-FLEX FACILITY SITE

JULY 2018 THROUGH SEPTEMBER 2018

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 July 2018 through September 2018

1.1 Residential Well Monitoring

- 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:
  - July 12, 2018
  - August 9, 2018
  - September 6, 2018

  Historical analytical results, including those for the third quarter 2018 samples, are summarized in Table 1. Copies of the certified laboratory analytical reports for the July 2018 through September 2018 sampling events are included in Enclosure A.

  As with other samples collected during 2018, site-related constituents of concern (COCs) were detected in both the untreated and treated water samples, with none of these chemicals present at levels above the applicable groundwater quality criteria (Table 1). In the pre-treatment samples, concentrations of 1,1-DCE ranged from 5.2 micrograms per liter (µg/l) to 6.9 µg/l, while 1,4-dioxane was present at levels between 1.6 µg/l and 2.2 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 4.0 µg/l, and 1,4-dioxane concentrations similar to the levels detected in the untreated water (1.7 µg/l to 2.1 µg/l). Since the May 2018 sampling event, the concentrations of 1,4-dioxane in both the untreated and treated water have exhibited a clear decreasing trend. Trace levels (<1 µg/l) of 1,1,1-trichloroethane (TCA) also were detected in the August 2018 and September 2018 samples. EMERSUB 16 and WSP have communicated the analytical results for these water samples in writing to the homeowner and MDE.

- Quarterly sampling of the residential well at 7742 Twin Oaks Road continued in accordance with the sampling plan approved by MDE in early 2018. (The location of this residential property in the Severn area is shown in Figure 1.)

  A water sample was collected from this residential well on September 6, 2018. Table 2 summarizes the analytical results for this and previous water samples collected from the well. The certified analytical results for the well sample are included in the corresponding laboratory report in Enclosure A. The data indicate concentrations of 1,1-DCE (3.6 µg/l) and 1,4-dioxane (1.5 µg/l) comparable to well water samples collected in October 2017 and February 2018. No site-related COCs were detected at concentrations exceeding the groundwater quality criteria. As with the samples from 1227 Old Camp Meade Road, trace levels of 1,1,1-TCA also were detected in the sample from this well. The analytical results for this well water sample have been provided in a letter to the homeowners and MDE. Given the presence of a water main along Twin Oaks Road, EMERSUB 16 will, with the homeowners' consent, connect this residence to the public water system. As of the date of this submittal, EMERSUB 16 has obtained the necessary permits and completed the water service connection. The anticipation is the switching of the residence to public water will be finished by mid-November.

1.2 Quarterly Offsite Groundwater Sampling

- The new offsite deep monitoring wells, which were installed earlier this year to the south of the Site, were sampled on August 23, 2018, using a passive sampling device (HydraSleeve™). For each monitoring well, a 2.5-foot (FT) long HydraSleeve™ sampler was deployed at a depth roughly in the middle of the screen interval. After equilibration of the deployed sampler, the Hydrasleeve™ was carefully removed from the well and the groundwater sample immediately collected in the appropriate containers. The sample retrieval depths for all of the wells are provided in the table below.

FT = feet; BGS = below ground surface

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**	**66.56**	**151**	**141 - 151**	**146 – 148.5**
MW-30D-273	**Confined Lower Patapsco**	**100.70**	**273**	**263 - 273**	**267 – 269.5**
MW-30D-413	**Patuxent**	**143.75**	**413**	**403 - 413**	**407 – 409.5**
MW-32D	**Confined Lower Patapsco**	**100.65**	**236**	**226 - 236**	**233 – 235.5**
MW-34D	**Confined Lower Patapsco/Arundel Clay Gradational Zone**	**136.42**	**385**	**375 - 385**	**379 – 381.5**
MW-36D	**Patuxent**	**146.32**	**360**	**350 -360**	**357 – 359.5**

- As part of the August 2018 quarterly sampling event, WSP obtained water level measurements from the new and previously installed deep monitoring wells. A potentiometric surface map of the confined portion of the Lower Patapsco aquifer based on the contouring of the water level data is provided in Figure 2. Evaluation of the hydraulic head data indicates a generally south-southeast flow direction for groundwater in this portion of the aquifer system, which is consistent with the potentiometric surface map generated from the May 2018 and other previous water level measurements. The potentiometric head for the Patuxent aquifer well MW-30D-413 is more than 40 FT lower than the head in the paired well MW-30-273 in the Lower Patapsco aquifer, indicating significant hydraulic separation across the Arundel Clay confining unit.
- The August 2018 analytical results for the samples from the new offsite monitoring wells are summarized in Table 3. A copy of the certified laboratory analytical report for these samples is provided in Enclosure B. Concentrations of the primary site-related COCs in the samples are provided in Figure 3.

  The analytical results for the August 2018 samples from the newly installed wells in the deep aquifers are generally similar to the data from the previous monitoring event. For the wells screened in the confined Lower Patapsco aquifer, site-related

COCs were only detected in the groundwater sample collected from MW-30D-273. The total COC concentration in this sample (67.9 µg/l) was slightly higher than the level from the May 2018 sampling round (43.8 µg/l), with concentrations of 1,1-DCE (27.4 µg/l) and 1,4-dioxane (16.4 µg/l) above the applicable Groundwater Quality Standards. Groundwater samples collected from the new wells screened in the Patuxent aquifer – MW-30D-413 and MW-36D – had no detections of COCs associated with the Former Kop-Flex Facility Site. These results include a non-detect level for tetrachloroethene (PCE) which was found at a very low concentration in the initial sample from well MW-36D. The sampling data support the conclusion that COCs moving through the Lower Patapsco aquifer have not migrated through the Arundel Clay to the underlying aquifer. WSP will continue to evaluate future sampling results from MW-36D to further assess the presence of PCE in this portion of the Patuxent aquifer.

2.0 Planned Offsite Activities for Next Reporting Period (October 2018 Through December 2018)

- Perform semi-annual sampling of all deep offsite groundwater monitoring wells installed in the confined portion of the Lower Patapsco aquifer and Patuxent aquifer in early November 2018.
- Conduct monthly monitoring of the untreated and treated water from the residential well at 1227 Old Camp Meade Road.
- Continue work on obtaining a utility easement for the installation of the public water service connection to the residence at 1227 Old Camp Meade Road.
- Complete the public water service connection to the residence at 7742 Twin Oaks Road and decommission the water supply well on the property.

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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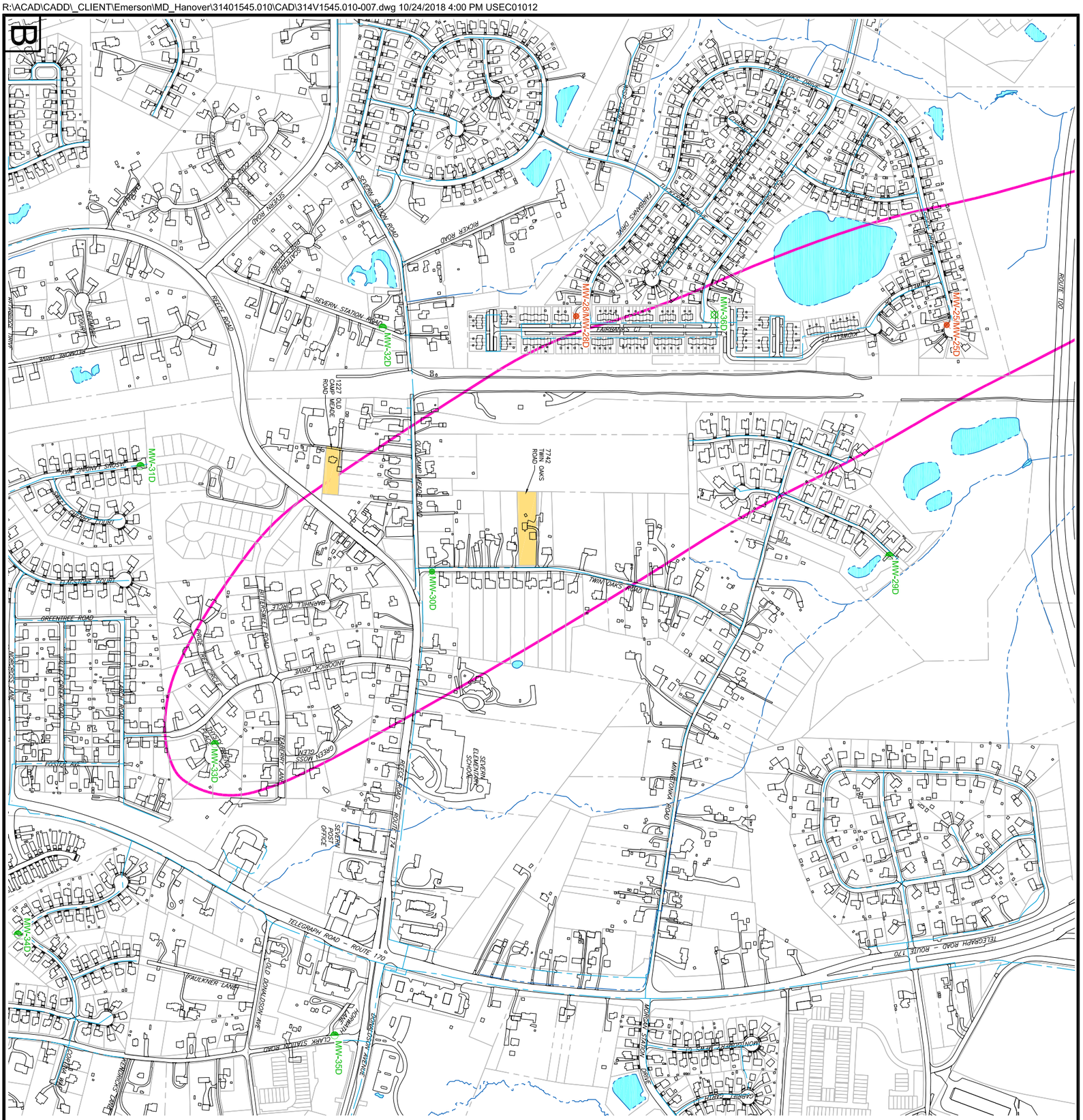

REFERENCE:
PARCEL INFORMATION OBTAINED FROM ANNE ARUNDEL COUNTY, DEPARTMENT OF PUBLIC WORKS http://gis-world2.aacounty.org/DPWcounter/countermap.html

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
- 1,4-DIOXANE PLUME BOUNDARY
- PROPERTY WITH POTABLE WELL IDENTIFIED FOR SAMPLING

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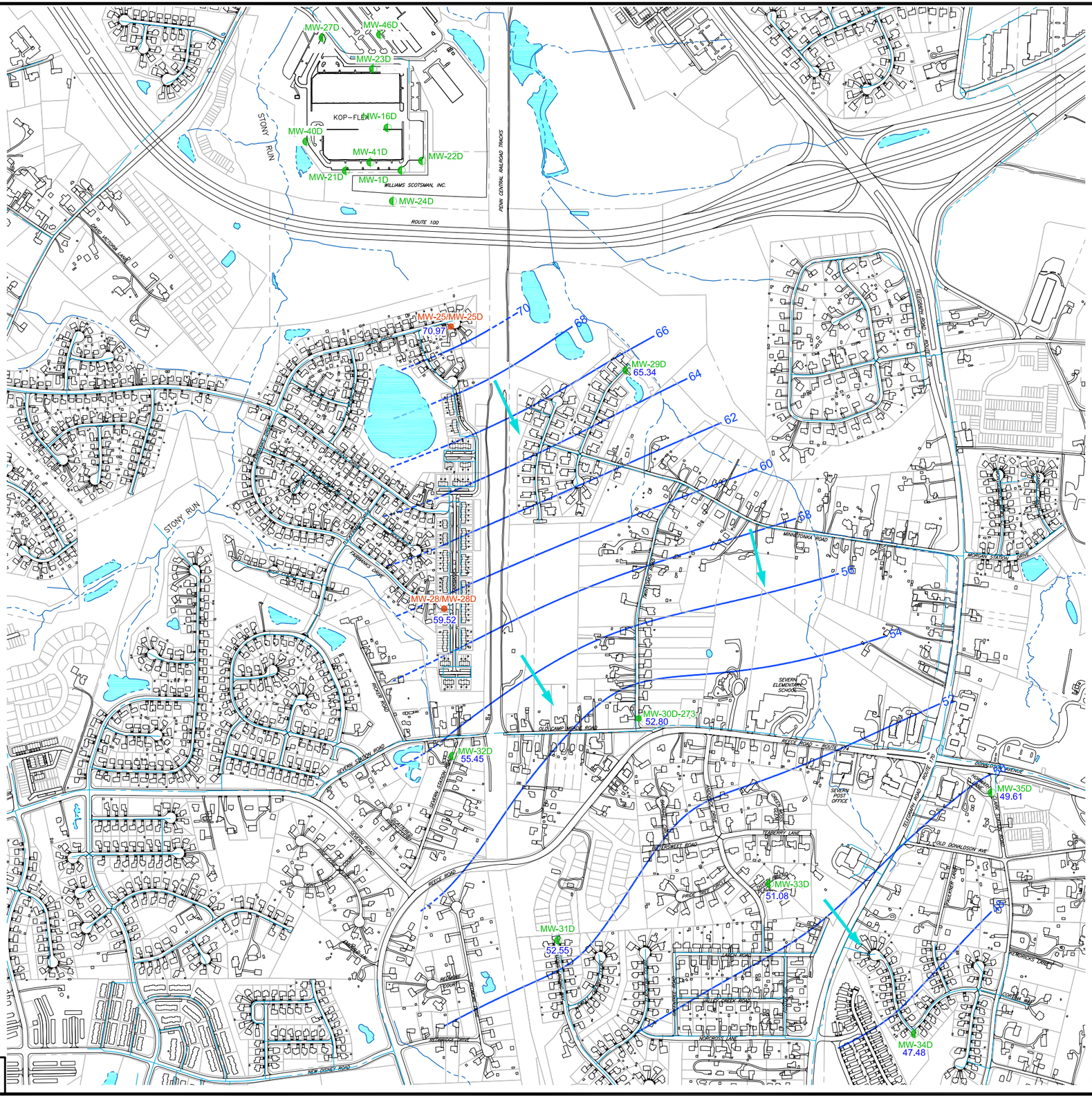
Figure 1

PROPERTIES IDENTIFIED FOR RESIDENTIAL WELL SAMPLING

FORMER KOP-FLEX FACILITY
HANOVER, MARYLAND

PREPARED FOR
EMERSUB 16 LLC
ST. LOUIS, MISSOURI

Drawn By: EGC 10/24/2018
Checked: MML
Approved: RAG
DWG Name: 314V1545.010-007



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LEGEND

- PROPERTY LINE
- WATER MAIN
- STREAM
- WATER BODY
- UNCONFINED AND CONFINED LOWER PATAPSCO AQUIFER MONITORING WELL
- CONFINED LOWER PATAPSCO AQUIFER MONITORING WELL
- CONFINED LOWER PATAPSCO AQUIFER AND PATUXENT AQUIFER MONITORING WELLS
- 78.16 GROUNDWATER SURFACE ELEVATION (FEET MSL)
- GROUNDWATER SURFACE CONTOUR
- INERRED GROUNDWATER FLOW

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

Drawn By: EGC 10/24/2018
Checked: CC
Approved: RG
DWG Name: 314V1545.011-001

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

Figure 2

POTENTIOMETRIC SURFACE CONTOUR MAP
FOR CONFINED ZONE IN THE LOWER
PATAPSCO AQUIFER – AUGUST 2018

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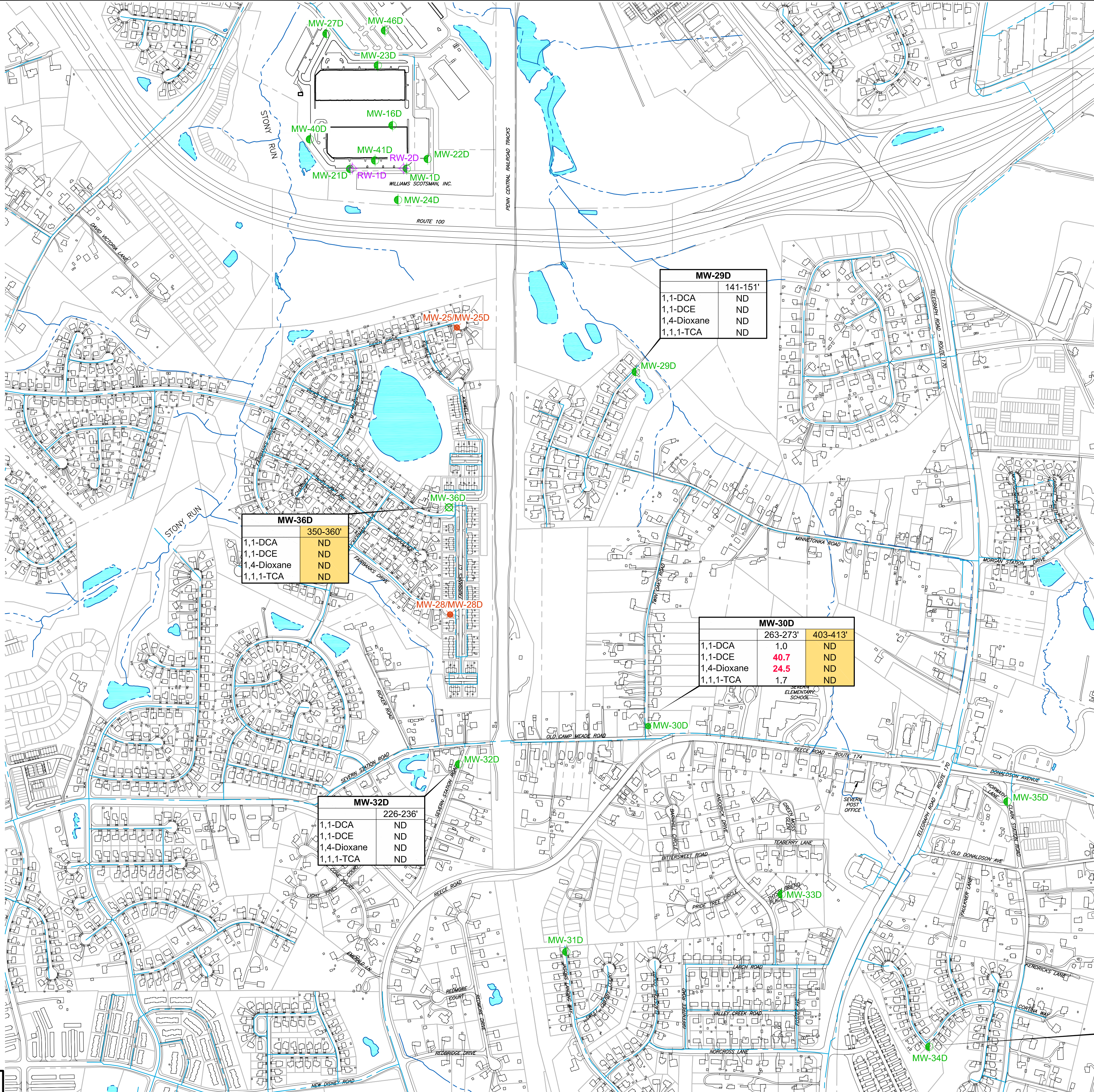

MW-29D

	141-151'
1,1-DCA	ND
1,1-DCE	ND
1,4-Dioxane	ND
1,1,1-TCA	ND

MW-36D

	350-360'
1,1-DCA	ND
1,1-DCE	ND
1,4-Dioxane	ND
1,1,1-TCA	ND

MW-30D

	263-273'	403-413'
1,1-DCA	1.0	ND
1,1-DCE	40.7	ND
1,4-Dioxane	24.5	ND
1,1,1-TCA	1.7	ND

MW-32D

	226-236'
1,1-DCA	ND
1,1-DCE	ND
1,4-Dioxane	ND
1,1,1-TCA	ND

MW-34D

	375-385'
1,1-DCA	ND
1,1-DCE	ND
1,4-Dioxane	ND
1,1,1-TCA	ND

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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 ← WELL IDENTIFICATION

	263-273'	403-413'
1,1-DCA	1.0	ND
1,1-DCE	40.7	ND
1,4-Dioxane	24.5	ND
1,1,1-TCA	1.7	ND

SCREENED INTERVAL (FT-BGS)

SAMPLE RESULTS IN ppb (RED INDICATE RESULTS ABOVE MDE CLEANUP STANDARDS)

CONSTITUENTS

DCA	DICHLOROETHANE
DCE	DICHLOROETHENE
TCA	TRICHLOROETHANE
ND	NOT DETECTED

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

Drawn By: EGC
Checked: CR 9/21/2018
Approved: RJ
DWG Name: 314V0390-115

FORMER KOP-FLEX FACILITY
HANOVER, MARYLAND

PREPARED FOR
EMERSUB 16 LLC
ST. LOUIS, MISSOURI

Figure 3

GROUNDWATER MONITORING RESULTS
LOWER PATAPSCO AQUIFER AND PATUXENT AQUIFER
MONITORING WELLS – AUGUST 2018

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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

(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
Bold value indicates concentration above the comparative criterion.
Gray shaded rows represent pre-treatment water samples.

Table 2

Historical Water Sampling Results
Residential Well - 7742 Twin Oaks Road
Former Kop-Flex Facility Site
Hanover, Maryland

Parameter	1,1-Dichloroethane	1,1-Dichloroethene	1,1,1-Trichloroethane	1,4-Dioxane
Units	µg/l	µg/l	ug/L	ug/L
Sample Date MCL	90 (a)	7 (a)	200 (a)	4.6 (b)
1/9/2013	0.5 U	0.32 J	0.072 J	2 U
7/9/2013	0.5 U	0.25 J	0.15 J	2 U
2/12/2014	0.5 U	1.6	0.14 J	2 U
5/29/2014	0.5 U	0.89	0.15 J	2 U
9/11/2014	0.5 U	0.62	0.13 J	2 U
12/18/2014	0.5 U	0.57	0.18 J	2 U
10/18/2017	0.5 U	2.8	0.18 J	1.3
2/13/2018	0.5 U	2.8	0.21 J	1.7
5/31/2018	0.5 U	0.97	0.14 J	0.94
9/6/2018	0.5 U	3.6	0.25 J	1.5

(a) Maryland Department of Environment Action Level

(b) Maryland Risk Based 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

Table 3

Offsite Monitoring Well Sample Results
Former Kop-Flex Facility Site
Hanover, Maryland
August 2018

Parameters (a)	Groundwater Quality Standards (µg/L) (b)		LOWER PATAPSCO AQUIFER				PATUXENT AQUIFER	
		Well ID:	**MW-29D**	**MW-30D-273**	**MW-32D**	**MW-34D**	**MW-30D-413**	**MW-36D**
		Sampling Date:	23-Aug-18	23-Aug-18	23-Aug-18	23-Aug-18	23-Aug-18	23-Aug-18
1,1-Dichloroethane	90		1.0 U	1.0	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	7		1.0 U	**40.7**	1.0 U	1.0 U	1.0 U	1.0 U
1,4-Dioxane	4.6 (c)		2.0 U	**24.5**	2.0 U	2.0 U	2.0 U	2.0 U
1,1,1-Trichloroethane	200		1.0 U	1.7	1.0 U	1.0 U	1.0 U	1.0 U
	Total CVOCs & 1,4-Dioxane		-	67.9	-	-	-	-

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 new MDE risk-based action level.

ENCLOSURE A – LABORATORY ANALYTICAL REPORTS FOR RESIDENTIAL WELL SAMPLES

JULY 2018

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

31400389/6

SGS Job Number: JC69900

Sampling Date: 07/12/18

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.

A. Paul Ioannidis
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: JC69900

Kop-Flex, Hanover, VA
Project No: 31400389/6

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
JC69900-1	07/12/18	10:37	SB/MK	07/13/18	AQ	Ground Water	RW-12270CM-071218-F
JC69900-2	07/12/18	10:45	SB/MK	07/13/18	AQ	Ground Water	RW-12270CM-071218
JC69900-3	07/12/18	10:45	SB/MK	07/13/18	AQ	Trip Blank Water	TRIP BLANK

Summary of Hits

Job Number: JC69900
Account: WSP Environment & Energy
Project: Kop-Flex, Hanover, VA
Collected: 07/12/18

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JC69900-1	**RW-12270CM-071218-F**					
1,4-Dioxane		2.1	0.40	0.095	ug/l	SW846 8260C BY SIM
JC69900-2	**RW-12270CM-071218**					
1,1-Dichloroethylene [a]		5.2	0.50	0.19	ug/l	EPA 524.2 REV 4.1
1,4-Dioxane		2.2	0.40	0.095	ug/l	SW846 8260C BY SIM
JC69900-3	**TRIP BLANK**					
No hits reported in this sample.						

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

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	RW-12270CM-071218-F		
Lab Sample ID:	JC69900-1	**Date Sampled:**	07/12/18
Matrix:	AQ - Ground Water	**Date Received:**	07/13/18
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]	1B115768.D	1	07/16/18 12:07	CSF	n/a	n/a	V1B5564
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA List

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

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

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

Report of Analysis

Client Sample ID:	RW-12270CM-071218-F		
Lab Sample ID:	JC69900-1	**Date Sampled:**	07/12/18
Matrix:	AQ - Ground Water	**Date Received:**	07/13/18
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	90%		70-130%
460-00-4	4-Bromofluorobenzene	92%		70-130%

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

Report of Analysis

Client Sample ID:	RW-12270CM-071218-F		
Lab Sample ID:	JC69900-1	**Date Sampled:**	07/12/18
Matrix:	AQ - Ground Water	**Date Received:**	07/13/18
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-071218-F		
Lab Sample ID:	JC69900-1	**Date Sampled:**	07/12/18
Matrix:	AQ - Ground Water	**Date Received:**	07/13/18
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	3A160455.D	1	07/19/18 13:54	HT	n/a	n/a	V3A6924
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	104%		51-175%

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-071218		
Lab Sample ID:	JC69900-2	**Date Sampled:**	07/12/18
Matrix:	AQ - Ground Water	**Date Received:**	07/13/18
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]	1B115769.D	1	07/16/18 12:38	CSF	n/a	n/a	V1B5564
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	2.5	ug/l	
78-93-3	2-Butanone	ND	5.0	0.43	ug/l	
71-43-2	Benzene	ND	0.50	0.16	ug/l	
108-86-1	Bromobenzene	ND	0.50	0.12	ug/l	
74-97-5	Bromochloromethane	ND	0.50	0.17	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.13	ug/l	
75-25-2	Bromoform	ND	0.50	0.27	ug/l	
74-83-9	Bromomethane	ND	0.50	0.18	ug/l	
104-51-8	n-Butylbenzene	ND	0.50	0.068	ug/l	
135-98-8	sec-Butylbenzene	ND	0.50	0.43	ug/l	
98-06-6	tert-Butylbenzene	ND	0.50	0.057	ug/l	
75-15-0	Carbon disulfide	ND	0.50	0.18	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.093	ug/l	
75-00-3	Chloroethane	ND	0.50	0.080	ug/l	
67-66-3	Chloroform	ND	0.50	0.17	ug/l	
74-87-3	Chloromethane	ND	0.50	0.13	ug/l	
95-49-8	o-Chlorotoluene	ND	0.50	0.098	ug/l	
106-43-4	p-Chlorotoluene	ND	0.50	0.075	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.24	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.22	ug/l	
75-35-4	1,1-Dichloroethylene	5.2	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-071218		
Lab Sample ID:	JC69900-2	**Date Sampled:**	07/12/18
Matrix:	AQ - Ground Water	**Date Received:**	07/13/18
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	93%		70-130%

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

Report of Analysis

Client Sample ID:	RW-12270CM-071218		
Lab Sample ID:	JC69900-2	**Date Sampled:**	07/12/18
Matrix:	AQ - Ground Water	**Date Received:**	07/13/18
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-071218		
Lab Sample ID:	JC69900-2	**Date Sampled:**	07/12/18
Matrix:	AQ - Ground Water	**Date Received:**	07/13/18
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	3A160456.D	1	07/19/18 14:20	HT	n/a	n/a	V3A6924
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

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

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17647-74-4	1,4-Dioxane-d8	99%		51-175%

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:	JC69900-3	**Date Sampled:**	07/12/18
Matrix:	AQ - Trip Blank Water	**Date Received:**	07/13/18
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]	1B115773.D	1	07/16/18 14:45	CSF	n/a	n/a	V1B5564
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:	JC69900-3	**Date Sampled:**	07/12/18
Matrix:	AQ - Trip Blank Water	**Date Received:**	07/13/18
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	89%		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:	TRIP BLANK		
Lab Sample ID:	JC69900-3	**Date Sampled:**	07/12/18
Matrix:	AQ - Trip Blank Water	**Date Received:**	07/13/18
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:	JC69900-3	**Date Sampled:**	07/12/18
Matrix:	AQ - Trip Blank Water	**Date Received:**	07/13/18
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	3A160462.D	1	07/19/18 16:54	HT	n/a	n/a	V3A6924
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%		51-175%

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

JC69900 Page 1 of 1

WSP USA Office Address	13530 Dulles Technology Dr Suite 300, Herndon, VA
Project Name	Kop Flex
~~Project Location~~	Hanover, MD
Project Number & Task	31400389 / 6
Sampler(s) Name(s)	Shannon Burke Maria Kaplan
WSP USA Contact Name	Eric Johnson
WSP USA Contact E-mail	eric.johnson @wsp.com
WSP USA Contact Phone	703-709-6500
Sampler(s) Signature(s)	Shannon Burke
No.	008048
Laboratory Name & Location	SGS Accutest ~~Dayton, NJ~~
Laboratory Project Manager	Rocus Peters
Requested Turn-Around-Time	☑ Standard ☐ 24 HR ☐ 48 HR ☐ 72 HR ☐ ___ HR
Sample Comments	SW-04318.29

Requested Analyses & Preservatives

	Sample Identification	Matrix	Collection Start* Date	Collection Start* Time	Collection Stop* Date	Collection Stop* Time	Number of Containers	VOCs 8260	1,4 dioxane
1	RW-12270cm-071218-F	GW	7/12/18		10:37		6	X	X
2	RW-12270cm-071218	GW	7/12/18		10:45		6	X	X
3	Trip Blank						4	X	X

v1036

INITIAL ASESSMENT JR 3A

LABEL VERIFICATION ____

Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Shipment Method	Tracking Number(s)
Shannon Burke	7/12/18	11:30	FX			FX	8094 7536 8347
FX	7/13/18	9:30		7/13/18	930	Number of Packages	Custody Seal Number(s)
							3.2

*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)

JC69900: Chain of Custody
Page 1 of 2

SGS Sample Receipt Summary

Job Number: JC69900 **Client:** WSP **Project:** KOP-FLEX, HANOVER, VA

Date / Time Received: 7/13/2018 9:30:00 AM **Delivery Method:** **Airbill #'s:**

Cooler Temps (Raw Measured) °C: Cooler 1: (3.2);

Cooler Temps (Corrected) °C: Cooler 1: (3.2);

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

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

Quality Control Preservation	Y	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	N
1. Sample labels present on bottles:	☑	☐
2. Container labeling complete:	☑	☐
3. Sample container label / COC agree:	☑	☐

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

Sample Integrity - Instructions	Y	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: 216017 pH 12+: 208717 Other: (Specify)

Comments

SM089-03
Rev. Date 12/7/17

JC69900: 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: JC69900
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5564-MB	1B115763.D	1	07/16/18	CSF	n/a	n/a	V1B5564

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

JC69900-1, JC69900-2, JC69900-3

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: JC69900
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5564-MB	1B115763.D	1	07/16/18	CSF	n/a	n/a	V1B5564

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

JC69900-1, JC69900-2, JC69900-3

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

Method Blank Summary

Job Number: JC69900
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5564-MB	1B115763.D	1	07/16/18	CSF	n/a	n/a	V1B5564

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

JC69900-1, JC69900-2, JC69900-3

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

Method Blank Summary

Job Number: JC69900
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3A6924-MB	3A160451.D	1	07/19/18	HT	n/a	n/a	V3A6924

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

JC69900-1, JC69900-2, JC69900-3

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	102%	51-175%

Blank Spike Summary

Job Number: JC69900
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5564-BS	1B115762.D	1	07/16/18	CSF	n/a	n/a	V1B5564

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

JC69900-1, JC69900-2, JC69900-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	20	18.8	94	70-130
78-93-3	2-Butanone	20	19.9	100	70-130
71-43-2	Benzene	5	4.9	98	70-130
108-86-1	Bromobenzene	5	5.3	106	70-130
74-97-5	Bromochloromethane	5	5.1	102	70-130
75-27-4	Bromodichloromethane	5	5.2	104	70-130
75-25-2	Bromoform	5	5.7	114	70-130
74-83-9	Bromomethane	5	4.9	98	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	5.1	102	70-130
108-90-7	Chlorobenzene	5	5.0	100	70-130
75-00-3	Chloroethane	5	5.0	100	70-130
67-66-3	Chloroform	5	4.9	98	70-130
74-87-3	Chloromethane	5	4.9	98	70-130
95-49-8	o-Chlorotoluene	5	5.1	102	70-130
106-43-4	p-Chlorotoluene	5	5.0	100	70-130
56-23-5	Carbon tetrachloride	5	5.4	108	70-130
75-34-3	1,1-Dichloroethane	5	4.9	98	70-130
75-35-4	1,1-Dichloroethylene	5	5.2	104	70-130
563-58-6	1,1-Dichloropropene	5	5.0	100	70-130
96-12-8	1,2-Dibromo-3-chloropropane	5	5.4	108	70-130
106-93-4	1,2-Dibromoethane	5	5.2	104	70-130
107-06-2	1,2-Dichloroethane	5	5.1	102	70-130
78-87-5	1,2-Dichloropropane	5	4.9	98	70-130
142-28-9	1,3-Dichloropropane	5	5.1	102	70-130
594-20-7	2,2-Dichloropropane	5	5.7	114	70-130
124-48-1	Dibromochloromethane	5	5.4	108	70-130
74-95-3	Dibromomethane	5	5.1	102	70-130
75-71-8	Dichlorodifluoromethane	5	5.2	104	70-130
541-73-1	m-Dichlorobenzene	5	5.1	102	70-130
95-50-1	o-Dichlorobenzene	5	5.1	102	70-130
106-46-7	p-Dichlorobenzene	5	5.1	102	70-130
156-60-5	trans-1,2-Dichloroethylene	5	5.0	100	70-130
156-59-2	cis-1,2-Dichloroethylene	5	4.9	98	70-130

* = Outside of Control Limits.

Blank Spike Summary

Job Number: JC69900
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5564-BS	1B115762.D	1	07/16/18	CSF	n/a	n/a	V1B5564

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

JC69900-1, JC69900-2, JC69900-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
10061-01-5	cis-1,3-Dichloropropene	5	5.2	104	70-130
10061-02-6	trans-1,3-Dichloropropene	5	5.1	102	70-130
100-41-4	Ethylbenzene	5	5.0	100	70-130
87-68-3	Hexachlorobutadiene	5	5.2	104	70-130
591-78-6	2-Hexanone	20	20.0	100	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	5.0	100	70-130
1634-04-4	Methyl Tert Butyl Ether	5	4.9	98	70-130
108-10-1	4-Methyl-2-pentanone	20	20.0	100	70-130
91-20-3	Naphthalene	5	4.8	96	70-130
103-65-1	n-Propylbenzene	5	5.0	100	70-130
100-42-5	Styrene	5	4.9	98	70-130
630-20-6	1,1,1,2-Tetrachloroethane	5	5.2	104	70-130
71-55-6	1,1,1-Trichloroethane	5	5.3	106	70-130
79-34-5	1,1,2,2-Tetrachloroethane	5	5.1	102	70-130
79-00-5	1,1,2-Trichloroethane	5	5.1	102	70-130
87-61-6	1,2,3-Trichlorobenzene	5	4.9	98	70-130
96-18-4	1,2,3-Trichloropropane	5	5.2	104	70-130
120-82-1	1,2,4-Trichlorobenzene	5	5.0	100	70-130
95-63-6	1,2,4-Trimethylbenzene	5	5.0	100	70-130
108-67-8	1,3,5-Trimethylbenzene	5	5.0	100	70-130
127-18-4	Tetrachloroethylene	5	4.7	94	70-130
108-88-3	Toluene	5	4.9	98	70-130
79-01-6	Trichloroethylene	5	4.9	98	70-130
75-69-4	Trichlorofluoromethane	5	5.4	108	70-130
75-01-4	Vinyl chloride	5	5.1	102	70-130
	m,p-Xylene	10	10.0	100	70-130
95-47-6	o-Xylene	5	5.0	100	70-130
1330-20-7	Xylenes (total)	15	15.1	101	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
2199-69-1	1,2-Dichlorobenzene-d4	100%	70-130%
460-00-4	4-Bromofluorobenzene	101%	70-130%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: JC69900
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3A6924-BS	3A160449.D	1	07/19/18	HT	n/a	n/a	V3A6924

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

JC69900-1, JC69900-2, JC69900-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
123-91-1	1,4-Dioxane	20	16.0	80	58-138

CAS No.	Surrogate Recoveries	BSP	Limits
17647-74-4	1,4-Dioxane-d8	86%	51-175%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: JC69900
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC69303-3MS	1B115770.D	1	07/16/18	CSF	n/a	n/a	V1B5564
JC69303-3	1B115765.D	1	07/16/18	CSF	n/a	n/a	V1B5564

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

JC69900-1, JC69900-2, JC69900-3

CAS No.	Compound	JC69303-3 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
67-64-1	Acetone	3.0	J	20	19.8	84	41-142
78-93-3	2-Butanone	ND		20	19.7	99	55-129
71-43-2	Benzene	ND		5	4.5	90	53-138
108-86-1	Bromobenzene	ND		5	4.8	96	54-138
74-97-5	Bromochloromethane	ND		5	4.8	96	55-140
75-27-4	Bromodichloromethane	0.14	J	5	4.8	93	57-147
75-25-2	Bromoform	59.7		5	66.5	136	47-137
74-83-9	Bromomethane	ND		5	5.3	106	40-162
104-51-8	n-Butylbenzene	ND		5	4.5	90	45-144
135-98-8	sec-Butylbenzene	ND		5	4.5	90	46-145
98-06-6	tert-Butylbenzene	ND		5	4.4	88	48-141
75-15-0	Carbon disulfide	ND		5	4.5	90	35-127
108-90-7	Chlorobenzene	0.15	J	5	4.8	93	54-135
75-00-3	Chloroethane	ND		5	5.4	108	38-153
67-66-3	Chloroform	ND		5	4.4	88	57-151
74-87-3	Chloromethane	ND		5	5.0	100	39-165
95-49-8	o-Chlorotoluene	ND		5	4.4	88	55-142
106-43-4	p-Chlorotoluene	ND		5	4.5	90	55-139
56-23-5	Carbon tetrachloride	ND		5	4.9	98	49-170
75-34-3	1,1-Dichloroethane	ND		5	4.5	90	55-149
75-35-4	1,1-Dichloroethylene	ND		5	4.8	96	42-142
563-58-6	1,1-Dichloropropene	ND		5	4.6	92	46-151
96-12-8	1,2-Dibromo-3-chloropropane	ND		5	5.4	108	48-141
106-93-4	1,2-Dibromoethane	ND		5	4.8	96	57-135
107-06-2	1,2-Dichloroethane	ND		5	4.8	96	59-166
78-87-5	1,2-Dichloropropane	ND		5	4.6	92	53-142
142-28-9	1,3-Dichloropropane	ND		5	4.9	98	58-143
594-20-7	2,2-Dichloropropane	ND		5	4.9	98	38-165
124-48-1	Dibromochloromethane	1.5		5	6.5	100	55-138
74-95-3	Dibromomethane	ND		5	4.9	98	61-144
75-71-8	Dichlorodifluoromethane	ND		5	6.2	124	23-172
541-73-1	m-Dichlorobenzene	ND		5	4.7	94	53-138
95-50-1	o-Dichlorobenzene	ND		5	4.6	92	54-140
106-46-7	p-Dichlorobenzene	ND		5	4.6	92	53-137
156-60-5	trans-1,2-Dichloroethylene	ND		5	4.5	90	47-148
156-59-2	cis-1,2-Dichloroethylene	ND		5	4.4	88	51-146

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: JC69900
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC69303-3MS	1B115770.D	1	07/16/18	CSF	n/a	n/a	V1B5564
JC69303-3	1B115765.D	1	07/16/18	CSF	n/a	n/a	V1B5564

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

JC69900-1, JC69900-2, JC69900-3

CAS No.	Compound	JC69303-3 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
10061-01-5	cis-1,3-Dichloropropene	ND		5	4.6	92	51-136
10061-02-6	trans-1,3-Dichloropropene	ND		5	4.7	94	54-142
100-41-4	Ethylbenzene	ND		5	4.5	90	51-138
87-68-3	Hexachlorobutadiene	ND		5	5.0	100	40-154
591-78-6	2-Hexanone	ND		20	19.6	98	53-128
98-82-8	Isopropylbenzene	ND		5	4.4	88	49-139
99-87-6	p-Isopropyltoluene	ND		5	4.4	88	45-141
75-09-2	Methylene chloride	ND		5	4.5	90	54-137
1634-04-4	Methyl Tert Butyl Ether	ND		5	4.5	90	53-143
108-10-1	4-Methyl-2-pentanone	ND		20	19.4	97	58-127
91-20-3	Naphthalene	ND		5	4.5	90	44-140
103-65-1	n-Propylbenzene	ND		5	4.4	88	50-142
100-42-5	Styrene	ND		5	4.5	90	23-130
630-20-6	1,1,1,2-Tetrachloroethane	ND		5	4.7	94	57-144
71-55-6	1,1,1-Trichloroethane	ND		5	4.7	94	52-164
79-34-5	1,1,2,2-Tetrachloroethane	ND		5	4.9	98	58-138
79-00-5	1,1,2-Trichloroethane	ND		5	4.9	98	59-139
87-61-6	1,2,3-Trichlorobenzene	ND		5	4.7	94	47-141
96-18-4	1,2,3-Trichloropropane	ND		5	4.9	98	56-148
120-82-1	1,2,4-Trichlorobenzene	ND		5	4.8	96	46-137
95-63-6	1,2,4-Trimethylbenzene	ND		5	4.4	88	41-138
108-67-8	1,3,5-Trimethylbenzene	ND		5	4.3	86	45-138
127-18-4	Tetrachloroethylene	ND		5	4.3	86	45-145
108-88-3	Toluene	ND		5	4.5	90	52-134
79-01-6	Trichloroethylene	ND		5	4.5	90	54-143
75-69-4	Trichlorofluoromethane	ND		5	6.2	124	36-167
75-01-4	Vinyl chloride	ND		5	5.7	114	35-162
	m,p-Xylene	ND		10	8.9	89	49-135
95-47-6	o-Xylene	ND		5	4.4	88	49-134
1330-20-7	Xylenes (total)	ND		15	13.3	89	50-134

CAS No.	Surrogate Recoveries	MS	JC69303-3	Limits
2199-69-1	1,2-Dichlorobenzene-d4	100%	94%	70-130%
460-00-4	4-Bromofluorobenzene	99%	93%	70-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JC69900
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC69708-17MS	3A160457.D	1	07/19/18	HT	n/a	n/a	V3A6924
JC69708-17MSD	3A160458.D	1	07/19/18	HT	n/a	n/a	V3A6924
JC69708-17	3A160452.D	1	07/19/18	HT	n/a	n/a	V3A6924

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

JC69900-1, JC69900-2, JC69900-3

CAS No.	Compound	JC69708-17 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	1.1		20	13.6	63	20	11.4	52	18	36-166/26

CAS No.	Surrogate Recoveries	MS	MSD	JC69708-17	Limits
17647-74-4	1,4-Dioxane-d8	97%	72%	125%	51-175%

* = Outside of Control Limits.

Duplicate Summary

Job Number: JC69900
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC69272-1DUP	1B115771.D	1	07/16/18	CSF	n/a	n/a	V1B5564
JC69272-1	1B115764.D	1	07/16/18	CSF	n/a	n/a	V1B5564

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

JC69900-1, JC69900-2, JC69900-3

CAS No.	Compound	JC69272-1 ug/l	Q	DUP ug/l	Q	RPD	Limits
67-64-1	Acetone	ND		ND		nc	10
78-93-3	2-Butanone	ND		ND		nc	12
71-43-2	Benzene	ND		ND		nc	10
108-86-1	Bromobenzene	ND		ND		nc	10
74-97-5	Bromochloromethane	ND		ND		nc	10
75-27-4	Bromodichloromethane	ND		ND		nc	10
75-25-2	Bromoform	ND		ND		nc	10
74-83-9	Bromomethane	ND		ND		nc	10
104-51-8	n-Butylbenzene	ND		ND		nc	10
135-98-8	sec-Butylbenzene	ND		ND		nc	10
98-06-6	tert-Butylbenzene	ND		ND		nc	10
75-15-0	Carbon disulfide	ND		ND		nc	19
108-90-7	Chlorobenzene	ND		ND		nc	10
75-00-3	Chloroethane	ND		ND		nc	10
67-66-3	Chloroform	ND		ND		nc	12
74-87-3	Chloromethane	ND		ND		nc	10
95-49-8	o-Chlorotoluene	ND		ND		nc	10
106-43-4	p-Chlorotoluene	ND		ND		nc	10
56-23-5	Carbon tetrachloride	ND		ND		nc	10
75-34-3	1,1-Dichloroethane	ND		ND		nc	10
75-35-4	1,1-Dichloroethylene	ND		ND		nc	10
563-58-6	1,1-Dichloropropene	ND		ND		nc	10
96-12-8	1,2-Dibromo-3-chloropropane	ND		ND		nc	10
106-93-4	1,2-Dibromoethane	ND		ND		nc	10
107-06-2	1,2-Dichloroethane	ND		ND		nc	10
78-87-5	1,2-Dichloropropane	ND		ND		nc	10
142-28-9	1,3-Dichloropropane	ND		ND		nc	10
594-20-7	2,2-Dichloropropane	ND		ND		nc	10
124-48-1	Dibromochloromethane	ND		ND		nc	10
74-95-3	Dibromomethane	ND		ND		nc	10
75-71-8	Dichlorodifluoromethane	ND		ND		nc	10
541-73-1	m-Dichlorobenzene	ND		ND		nc	10
95-50-1	o-Dichlorobenzene	ND		ND		nc	10
106-46-7	p-Dichlorobenzene	ND		ND		nc	10
156-60-5	trans-1,2-Dichloroethylene	ND		ND		nc	10
156-59-2	cis-1,2-Dichloroethylene	ND		ND		nc	10

* = Outside of Control Limits.

Duplicate Summary

Job Number: JC69900
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC69272-1DUP	1B115771.D	1	07/16/18	CSF	n/a	n/a	V1B5564
JC69272-1	1B115764.D	1	07/16/18	CSF	n/a	n/a	V1B5564

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

JC69900-1, JC69900-2, JC69900-3

CAS No.	Compound	JC69272-1 ug/l	Q	DUP ug/l	Q	RPD	Limits
10061-01-5	cis-1,3-Dichloropropene	ND		ND		nc	10
10061-02-6	trans-1,3-Dichloropropene	ND		ND		nc	10
100-41-4	Ethylbenzene	ND		ND		nc	10
87-68-3	Hexachlorobutadiene	ND		ND		nc	10
591-78-6	2-Hexanone	ND		ND		nc	10
98-82-8	Isopropylbenzene	ND		ND		nc	10
99-87-6	p-Isopropyltoluene	ND		ND		nc	10
75-09-2	Methylene chloride	ND		ND		nc	10
1634-04-4	Methyl Tert Butyl Ether	ND		ND		nc	10
108-10-1	4-Methyl-2-pentanone	ND		ND		nc	10
91-20-3	Naphthalene	ND		ND		nc	10
103-65-1	n-Propylbenzene	ND		ND		nc	10
100-42-5	Styrene	ND		ND		nc	10
630-20-6	1,1,1,2-Tetrachloroethane	ND		ND		nc	10
71-55-6	1,1,1-Trichloroethane	ND		ND		nc	10
79-34-5	1,1,2,2-Tetrachloroethane	ND		ND		nc	10
79-00-5	1,1,2-Trichloroethane	ND		ND		nc	10
87-61-6	1,2,3-Trichlorobenzene	ND		ND		nc	10
96-18-4	1,2,3-Trichloropropane	ND		ND		nc	10
120-82-1	1,2,4-Trichlorobenzene	ND		ND		nc	10
95-63-6	1,2,4-Trimethylbenzene	ND		ND		nc	10
108-67-8	1,3,5-Trimethylbenzene	ND		ND		nc	10
127-18-4	Tetrachloroethylene	ND		ND		nc	10
108-88-3	Toluene	ND		ND		nc	10
79-01-6	Trichloroethylene	ND		ND		nc	10
75-69-4	Trichlorofluoromethane	ND		ND		nc	10
75-01-4	Vinyl chloride	ND		ND		nc	10
	m,p-Xylene	ND		ND		nc	10
95-47-6	o-Xylene	ND		ND		nc	10
1330-20-7	Xylenes (total)	ND		ND		nc	10

CAS No.	Surrogate Recoveries	DUP	JC69272-1	Limits
2199-69-1	1,2-Dichlorobenzene-d4	91%	93%	70-130%
460-00-4	4-Bromofluorobenzene	90%	92%	70-130%

* = Outside of Control Limits.

Instrument Performance Check (BFB)

Job Number: JC69900
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample: V1B5563-BFB
Lab File ID: 1B115746.D
Instrument ID: GCMS1B
Injection Date: 07/13/18
Injection Time: 16:04

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	14.99 - 40.0% of mass 95	3001	20.0		Pass
75	30.0 - 80.0% of mass 95	7597	50.6		Pass
95	Base peak, 100% relative abundance	15012	100.0		Pass
96	5.0 - 9.0% of mass 95	1085	7.23		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	11638	77.5		Pass
175	5.0 - 9.0% of mass 174	871	5.80	(7.48) [a]	Pass
176	95.0 - 101.0% of mass 174	11090	73.9	(95.3) [a]	Pass
177	5.0 - 9.0% of mass 176	754	5.02	(6.80) [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
V1B5563-IC5563	1B115748.D	07/13/18	16:53	00:49	Initial cal 0.2
V1B5563-IC5563	1B115749.D	07/13/18	17:25	01:21	Initial cal 0.5
V1B5563-IC5563	1B115750.D	07/13/18	17:56	01:52	Initial cal 1
V1B5563-IC5563	1B115751.D	07/13/18	18:28	02:24	Initial cal 2
V1B5563-IC5563	1B115752.D	07/13/18	19:00	02:56	Initial cal 5
V1B5563-ICC5563	1B115753.D	07/13/18	19:31	03:27	Initial cal 10
V1B5563-IC5563	1B115754.D	07/13/18	20:03	03:59	Initial cal 20
V1B5563-IC5563	1B115755.D	07/13/18	20:34	04:30	Initial cal 40
V1B5563-IC5563	1B115756.D	07/13/18	21:06	05:02	Initial cal 80
V1B5563-ICV5563	1B115759.D	07/13/18	22:41	06:37	Initial cal verification 10

Instrument Performance Check (BFB)

Job Number: JC69900
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample: V1B5564-BFB
Lab File ID: 1B115761.D
Instrument ID: GCMS1B
Injection Date: 07/16/18
Injection Time: 07:50

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	14.99 - 40.0% of mass 95	3003	20.0		Pass
75	30.0 - 80.0% of mass 95	7348	49.0		Pass
95	Base peak, 100% relative abundance	15006	100.0		Pass
96	5.0 - 9.0% of mass 95	1072	7.14		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	11805	78.7		Pass
175	5.0 - 9.0% of mass 174	871	5.80	(7.38) [a]	Pass
176	95.0 - 101.0% of mass 174	11347	75.6	(96.1) [a]	Pass
177	5.0 - 9.0% of mass 176	752	5.01	(6.63) [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
V1B5564-CC5563	1B115762.D	07/16/18	08:24	00:34	Continuing cal 5
V1B5564-BS	1B115762.D	07/16/18	08:24	00:34	Blank Spike
V1B5564-MB	1B115763.D	07/16/18	09:01	01:11	Method Blank
JC69272-1	1B115764.D	07/16/18	09:42	01:52	(used for QC only; not part of job JC69900)
JC69303-3	1B115765.D	07/16/18	10:14	02:24	(used for QC only; not part of job JC69900)
ZZZZZZ	1B115766.D	07/16/18	10:54	03:04	(unrelated sample)
ZZZZZZ	1B115767.D	07/16/18	11:25	03:35	(unrelated sample)
JC69900-1	1B115768.D	07/16/18	12:07	04:17	RW-12270CM-071218-F
JC69900-2	1B115769.D	07/16/18	12:38	04:48	RW-12270CM-071218
JC69303-3MS	1B115770.D	07/16/18	13:10	05:20	Matrix Spike
JC69272-1DUP	1B115771.D	07/16/18	13:41	05:51	Duplicate
ZZZZZZ	1B115772.D	07/16/18	14:13	06:23	(unrelated sample)
JC69900-3	1B115773.D	07/16/18	14:45	06:55	TRIP BLANK
ZZZZZZ	1B115774.D	07/16/18	15:16	07:26	(unrelated sample)
ZZZZZZ	1B115775.D	07/16/18	15:48	07:58	(unrelated sample)
ZZZZZZ	1B115776.D	07/16/18	16:20	08:30	(unrelated sample)
ZZZZZZ	1B115777.D	07/16/18	16:52	09:02	(unrelated sample)
ZZZZZZ	1B115778.D	07/16/18	17:23	09:33	(unrelated sample)
ZZZZZZ	1B115779.D	07/16/18	17:55	10:05	(unrelated sample)
ZZZZZZ	1B115780.D	07/16/18	18:26	10:36	(unrelated sample)

Instrument Performance Check (BFB)

Job Number: JC69900
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

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

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

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

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

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

Instrument Performance Check (BFB)

Job Number: JC69900
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample: V3A6924-BFB
Lab File ID: 3A160447.D
Instrument ID: GCMS3A
Injection Date: 07/19/18
Injection Time: 09:36

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	21456	20.3		Pass
75	30.0 - 60.0% of mass 95	52445	49.7		Pass
95	Base peak, 100% relative abundance	105618	100.0		Pass
96	5.0 - 9.0% of mass 95	7130	6.75		Pass
173	Less than 2.0% of mass 174	1042	0.99	(1.16) [a]	Pass
174	50.0 - 120.0% of mass 95	89496	84.7		Pass
175	5.0 - 9.0% of mass 174	6672	6.32	(7.46) [a]	Pass
176	95.0 - 101.0% of mass 174	86754	82.1	(96.9) [a]	Pass
177	5.0 - 9.0% of mass 176	5761	5.45	(6.64) [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
V3A6924-CC6923	3A160448.D	07/19/18	10:50	01:14	Continuing cal 20
V3A6924-BS	3A160449.D	07/19/18	11:21	01:45	Blank Spike
V3A6924-MB	3A160451.D	07/19/18	12:12	02:36	Method Blank
JC69708-17	3A160452.D	07/19/18	12:38	03:02	(used for QC only; not part of job JC69900)
ZZZZZZ	3A160453.D	07/19/18	13:03	03:27	(unrelated sample)
ZZZZZZ	3A160454.D	07/19/18	13:29	03:53	(unrelated sample)
JC69900-1	3A160455.D	07/19/18	13:54	04:18	RW-12270CM-071218-F
JC69900-2	3A160456.D	07/19/18	14:20	04:44	RW-12270CM-071218
JC69708-17MS	3A160457.D	07/19/18	14:45	05:09	Matrix Spike
JC69708-17MSD	3A160458.D	07/19/18	15:11	05:35	Matrix Spike Duplicate
ZZZZZZ	3A160460.D	07/19/18	16:02	06:26	(unrelated sample)
ZZZZZZ	3A160461.D	07/19/18	16:28	06:52	(unrelated sample)
JC69900-3	3A160462.D	07/19/18	16:54	07:18	TRIP BLANK

Surrogate Recovery Summary

Job Number: JC69900
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
JC69900-1	1B115768.D	90	92
JC69900-2	1B115769.D	96	93
JC69900-3	1B115773.D	89	90
JC69272-1DUP	1B115771.D	91	90
JC69303-3MS	1B115770.D	100	99
V1B5564-BS	1B115762.D	100	101
V1B5564-MB	1B115763.D	93	93

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

Surrogate Recovery Summary

Job Number: JC69900
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
JC69900-1	3A160455.D	104
JC69900-2	3A160456.D	99
JC69900-3	3A160462.D	83
JC69708-17MS	3A160457.D	97
JC69708-17MSD	3A160458.D	72
V3A6924-BS	3A160449.D	86
V3A6924-MB	3A160451.D	102

Surrogate Compounds	Recovery Limits
S1 = 1,4-Dioxane-d8	51-175%

AUGUST 2018

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

31400389-06

SGS Job Number: JC71671

Sampling Date: 08/09/18

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.

A. Paul Ioannidis
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: JC71671

Kop-Flex, Hanover, VA
Project No: 31400389-06

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
JC71671-1	08/09/18	10:10	MK/MH	08/10/18	DW	Drinking Water	RW-1227PCM-080919
JC71671-2	08/09/18	10:05	MK/MH	08/10/18	DW	Drinking Water	RW-1227PCM-080919-F
JC71671-3	08/09/18	10:10	MK/MH	08/10/18	DW	Drinking Water TB	TB-080919

Summary of Hits

Job Number: JC71671
Account: WSP Environment & Energy
Project: Kop-Flex, Hanover, VA
Collected: 08/09/18

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JC71671-1	**RW-1227PCM-080919**					
1,1-Dichloroethylene		6.0	0.50	0.19	ug/l	EPA 524.2 REV 4.1
1,1,1-Trichloroethane		0.26 J	0.50	0.22	ug/l	EPA 524.2 REV 4.1
1,4-Dioxane		2.1	0.40	0.095	ug/l	SW846 8260C BY SIM
JC71671-2	**RW-1227PCM-080919-F**					
1,1-Dichloroethylene		4.0	0.50	0.19	ug/l	EPA 524.2 REV 4.1
1,1,1-Trichloroethane		0.27 J	0.50	0.22	ug/l	EPA 524.2 REV 4.1
1,4-Dioxane		2.0	0.40	0.095	ug/l	SW846 8260C BY SIM
JC71671-3	**TB-080919**					

No hits reported in this sample.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	RW-1227PCM-080919		
Lab Sample ID:	JC71671-1	**Date Sampled:**	08/09/18
Matrix:	DW - Drinking Water	**Date Received:**	08/10/18
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	1B116040.D	1	08/13/18 20:10	CSF	n/a	n/a	V1B5581
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA List

CAS No.	Compound	Result	MCL	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	5.0	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	100	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 [a]	ND	5.0	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	6.0	7.0	0.50	0.19	ug/l	
563-58-6	1,1-Dichloropropene	ND		0.50	0.14	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.20	1.0	0.14	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.050	0.50	0.15	ug/l	
107-06-2	1,2-Dichloroethane	ND	5.0	0.50	0.18	ug/l	
78-87-5	1,2-Dichloropropane	ND	5.0	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
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-1227PCM-080919		
Lab Sample ID:	JC71671-1	**Date Sampled:**	08/09/18
Matrix:	DW - Drinking Water	**Date Received:**	08/10/18
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	MCL	RL	MDL	Units	Q
95-50-1	o-Dichlorobenzene	ND	600	0.50	0.14	ug/l	
106-46-7	p-Dichlorobenzene	ND	75	0.50	0.10	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	100	0.50	0.21	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	70	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	700	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	5.0	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	100	0.50	0.069	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND		0.50	0.20	ug/l	
71-55-6	1,1,1-Trichloroethane	0.26	200	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	5.0	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	70	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	5.0	0.50	0.23	ug/l	
108-88-3	Toluene	ND	1000	0.50	0.11	ug/l	
79-01-6	Trichloroethylene	ND	5.0	0.50	0.20	ug/l	
75-69-4	Trichlorofluoromethane	ND		1.0	0.19	ug/l	
75-01-4	Vinyl chloride	ND	2.0	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	10000	0.50	0.076	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	93%		70-130%
460-00-4	4-Bromofluorobenzene	86%		70-130%

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-1227PCM-080919		
Lab Sample ID:	JC71671-1	**Date Sampled:**	08/09/18
Matrix:	DW - Drinking Water	**Date Received:**	08/10/18
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	MCL	RL	MDL	Units	Q

(a) Associated CCV and BS 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-1227PCM-080919		
Lab Sample ID:	JC71671-1	**Date Sampled:**	08/09/18
Matrix:	DW - Drinking Water	**Date Received:**	08/10/18
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	3A160621.D	1	08/13/18 18:24	RS	n/a	n/a	V3A6934
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	2.1		0.40	0.095	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17647-74-4	1,4-Dioxane-d8	101%		51-175%

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-1227PCM-080919-F		
Lab Sample ID:	JC71671-2	**Date Sampled:**	08/09/18
Matrix:	DW - Drinking Water	**Date Received:**	08/10/18
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	1B116041.D	1	08/13/18 20:43	CSF	n/a	n/a	V1B5581
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA List

CAS No.	Compound	Result	MCL	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	5.0	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	100	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 [a]	ND	5.0	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	4.0	7.0	0.50	0.19	ug/l	
563-58-6	1,1-Dichloropropene	ND		0.50	0.14	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.20	1.0	0.14	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.050	0.50	0.15	ug/l	
107-06-2	1,2-Dichloroethane	ND	5.0	0.50	0.18	ug/l	
78-87-5	1,2-Dichloropropane	ND	5.0	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
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-1227PCM-080919-F		
Lab Sample ID:	JC71671-2	**Date Sampled:**	08/09/18
Matrix:	DW - Drinking Water	**Date Received:**	08/10/18
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	MCL	RL	MDL	Units	Q
95-50-1	o-Dichlorobenzene	ND	600	0.50	0.14	ug/l	
106-46-7	p-Dichlorobenzene	ND	75	0.50	0.10	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	100	0.50	0.21	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	70	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	700	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	5.0	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	100	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	0.27	200	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	5.0	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	70	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	5.0	0.50	0.23	ug/l	
108-88-3	Toluene	ND	1000	0.50	0.11	ug/l	
79-01-6	Trichloroethylene	ND	5.0	0.50	0.20	ug/l	
75-69-4	Trichlorofluoromethane	ND		1.0	0.19	ug/l	
75-01-4	Vinyl chloride	ND	2.0	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	10000	0.50	0.076	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	91%		70-130%
460-00-4	4-Bromofluorobenzene	86%		70-130%

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-1227PCM-080919-F		
Lab Sample ID:	JC71671-2	**Date Sampled:**	08/09/18
Matrix:	DW - Drinking Water	**Date Received:**	08/10/18
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	MCL	RL	MDL	Units	Q

(a) Associated CCV and BS 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-1227PCM-080919-F		
Lab Sample ID:	JC71671-2	**Date Sampled:**	08/09/18
Matrix:	DW - Drinking Water	**Date Received:**	08/10/18
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	3A160622.D	1	08/13/18 18:52	RS	n/a	n/a	V3A6934
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	2.0		0.40	0.095	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17647-74-4	1,4-Dioxane-d8	91%		51-175%

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-080919		
Lab Sample ID:	JC71671-3	**Date Sampled:**	08/09/18
Matrix:	DW - Drinking Water TB	**Date Received:**	08/10/18
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	1B116039.D	1	08/13/18 19:39	CSF	n/a	n/a	V1B5581
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA List

CAS No.	Compound	Result	MCL	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	5.0	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	100	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 [a]	ND	5.0	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	7.0	0.50	0.19	ug/l	
563-58-6	1,1-Dichloropropene	ND		0.50	0.14	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.20	1.0	0.14	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.050	0.50	0.15	ug/l	
107-06-2	1,2-Dichloroethane	ND	5.0	0.50	0.18	ug/l	
78-87-5	1,2-Dichloropropane	ND	5.0	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
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-080919		
Lab Sample ID:	JC71671-3	**Date Sampled:**	08/09/18
Matrix:	DW - Drinking Water TB	**Date Received:**	08/10/18
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	MCL	RL	MDL	Units	Q
95-50-1	o-Dichlorobenzene	ND	600	0.50	0.14	ug/l	
106-46-7	p-Dichlorobenzene	ND	75	0.50	0.10	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	100	0.50	0.21	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	70	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	700	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	5.0	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	100	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	200	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	5.0	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	70	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	5.0	0.50	0.23	ug/l	
108-88-3	Toluene	ND	1000	0.50	0.11	ug/l	
79-01-6	Trichloroethylene	ND	5.0	0.50	0.20	ug/l	
75-69-4	Trichlorofluoromethane	ND		1.0	0.19	ug/l	
75-01-4	Vinyl chloride	ND	2.0	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	10000	0.50	0.076	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	90%		70-130%
460-00-4	4-Bromofluorobenzene	87%		70-130%

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-080919		
Lab Sample ID:	JC71671-3	**Date Sampled:**	08/09/18
Matrix:	DW - Drinking Water TB	**Date Received:**	08/10/18
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	MCL	RL	MDL	Units	Q

(a) Associated CCV and BS 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-080919		
Lab Sample ID:	JC71671-3	**Date Sampled:**	08/09/18
Matrix:	DW - Drinking Water TB	**Date Received:**	08/10/18
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	3A160623.D	1	08/13/18 19:19	RS	n/a	n/a	V3A6934
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	80%		51-175%

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 DTB

CHAIN-OF-CUSTODY RECORD

SW-04318-29 JC71671 Page 1 of 1

WSP | Parsons Brinckerhoff Office Address	13530 Dulles Technology Drive St 300 Herndon VA 20171
Project Name	Kopflex - offsite.
Project Location	Hanover MD
Project Number & Task	31400389 - 06
Sampler(s) Name(s)	Maria Kayton, Molly Long
WSP | Parsons Brinckerhoff Contact Name	Eric Johnson
WSP | Parsons Brinckerhoff Contact E-mail	eric.johnson@wspgroup.com
WSP | Parsons Brinckerhoff Contact Phone	(703) 709-6500
Sampler(s) Signature(s)	

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

No. 004567 WSP | PARSONS BRINCKERHOFF

Laboratory Name & Location: SGS Accutest Dayton NJ

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 Date	Collection Stop Time	Number of Containers	VOCs (524)	1,4-Dioxane (8260 SIM)	VOA @ 4c via 1	Sample Comments
1	RW-12270CM-080918	DW	8/9/18	10	10		6	X	X		
2	RW-12270CM-080918-F	DW	8/9/18	10	05		6	X	X		
3	TB-080918	DW	—		—		4	X	X		Trip Blank

V48

INITIAL ASESSMENT 38 Dm

LABEL VERIFICATION

Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Shipment Method	Tracking Number(s)
	8/9/18	1630	Fedex				8913 4126 9005
FX	8/10/18	9:50				Number of Packages	Custody Seal Number(s)
							03962

*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)

2.4°C - IP

JC71671: Chain of Custody
Page 1 of 2

SGS Sample Receipt Summary

Job Number: JC71671 **Client:** WSP **Project:** KOP-FLEX, HANOVER, VA

Date / Time Received: 8/10/2018 9:50:00 AM **Delivery Method:** **Airbill #'s:**

Cooler Temps (Raw Measured) °C: Cooler 1: (2.4);

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: 216017 pH 12+: 208717 Other: (Specify)

Comments

SM089-03
Rev. Date 12/7/17

JC71671: 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: JC71671
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5581-MB	1B116023.D	1	08/13/18	CSF	n/a	n/a	V1B5581

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

JC71671-1, JC71671-2, JC71671-3

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: JC71671
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5581-MB	1B116023.D	1	08/13/18	CSF	n/a	n/a	V1B5581

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

JC71671-1, JC71671-2, JC71671-3

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	92%	70-130%
460-00-4	4-Bromofluorobenzene	90%	70-130%

Method Blank Summary

Job Number: JC71671
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5581-MB	1B116023.D	1	08/13/18	CSF	n/a	n/a	V1B5581

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

JC71671-1, JC71671-2, JC71671-3

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

Method Blank Summary

Job Number: JC71671
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3A6934-MB	3A160607.D	1	08/13/18	RS	n/a	n/a	V3A6934

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

JC71671-1, JC71671-2, JC71671-3

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	66%	51-175%

Blank Spike Summary

Job Number: JC71671
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3A6934-BS	3A160605.D	1	08/13/18	RS	n/a	n/a	V3A6934

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

JC71671-1, JC71671-2, JC71671-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
123-91-1	1,4-Dioxane	20	16.8	84	58-138

CAS No.	Surrogate Recoveries	BSP	Limits
17647-74-4	1,4-Dioxane-d8	88%	51-175%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JC71671
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5581-BS	1B116021.D	1	08/13/18	CSF	n/a	n/a	V1B5581
V1B5581-BSD	1B116022.D	1	08/13/18	CSF	n/a	n/a	V1B5581

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

JC71671-1, JC71671-2, JC71671-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	20	20.5	103	20.6	103	0	70-130/30
78-93-3	2-Butanone	20	19.4	97	19.7	99	2	70-130/30
71-43-2	Benzene	5	4.9	98	4.8	96	2	70-130/30
108-86-1	Bromobenzene	5	4.9	98	4.7	94	4	70-130/30
74-97-5	Bromochloromethane	5	5.0	100	4.7	94	6	70-130/30
75-27-4	Bromodichloromethane	5	5.4	108	5.3	106	2	70-130/30
75-25-2	Bromoform	5	6.0	120	5.8	116	3	70-130/30
74-83-9	Bromomethane	5	4.7	94	4.5	90	4	70-130/30
104-51-8	n-Butylbenzene	5	4.7	94	4.7	94	0	70-130/30
135-98-8	sec-Butylbenzene	5	4.8	96	4.7	94	2	70-130/30
98-06-6	tert-Butylbenzene	5	4.7	94	4.6	92	2	70-130/30
75-15-0	Carbon disulfide	5	5.0	100	4.9	98	2	70-130/30
108-90-7	Chlorobenzene	5	4.9	98	4.9	98	0	70-130/30
75-00-3	Chloroethane	5	4.6	92	4.4	88	4	70-130/30
67-66-3	Chloroform	5	4.9	98	4.9	98	0	70-130/30
74-87-3	Chloromethane	5	4.6	92	4.5	90	2	70-130/30
95-49-8	o-Chlorotoluene	5	4.8	96	4.8	96	0	70-130/30
106-43-4	p-Chlorotoluene	5	4.8	96	4.7	94	2	70-130/30
56-23-5	Carbon tetrachloride	5	6.6	132* [a]	6.4	128	3	70-130/30
75-34-3	1,1-Dichloroethane	5	5.1	102	5.0	100	2	70-130/30
75-35-4	1,1-Dichloroethylene	5	5.0	100	4.9	98	2	70-130/30
563-58-6	1,1-Dichloropropene	5	4.9	98	4.9	98	0	70-130/30
96-12-8	1,2-Dibromo-3-chloropropane	5	5.4	108	5.3	106	2	70-130/30
106-93-4	1,2-Dibromoethane	5	5.0	100	5.0	100	0	70-130/30
107-06-2	1,2-Dichloroethane	5	5.4	108	5.3	106	2	70-130/30
78-87-5	1,2-Dichloropropane	5	5.0	100	5.0	100	0	70-130/30
142-28-9	1,3-Dichloropropane	5	5.0	100	5.0	100	0	70-130/30
594-20-7	2,2-Dichloropropane	5	5.3	106	5.4	108	2	70-130/30
124-48-1	Dibromochloromethane	5	5.5	110	5.5	110	0	70-130/30
74-95-3	Dibromomethane	5	5.1	102	5.0	100	2	70-130/30
75-71-8	Dichlorodifluoromethane	5	5.3	106	5.1	102	4	70-130/30
541-73-1	m-Dichlorobenzene	5	4.8	96	4.8	96	0	70-130/30
95-50-1	o-Dichlorobenzene	5	4.8	96	4.8	96	0	70-130/30
106-46-7	p-Dichlorobenzene	5	4.9	98	4.8	96	2	70-130/30
156-60-5	trans-1,2-Dichloroethylene	5	4.9	98	4.8	96	2	70-130/30
156-59-2	cis-1,2-Dichloroethylene	5	4.9	98	4.9	98	0	70-130/30

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JC71671
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5581-BS	1B116021.D	1	08/13/18	CSF	n/a	n/a	V1B5581
V1B5581-BSD	1B116022.D	1	08/13/18	CSF	n/a	n/a	V1B5581

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

JC71671-1, JC71671-2, JC71671-3

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	4.9	98	4.7	94	4	70-130/30
10061-02-6	trans-1,3-Dichloropropene	5	4.9	98	4.9	98	0	70-130/30
100-41-4	Ethylbenzene	5	4.8	96	4.7	94	2	70-130/30
87-68-3	Hexachlorobutadiene	5	5.0	100	4.9	98	2	70-130/30
591-78-6	2-Hexanone	20	18.9	95	18.9	95	0	70-130/30
98-82-8	Isopropylbenzene	5	4.7	94	4.7	94	0	70-130/30
99-87-6	p-Isopropyltoluene	5	4.8	96	4.7	94	2	70-130/30
75-09-2	Methylene chloride	5	4.9	98	4.9	98	0	70-130/30
1634-04-4	Methyl Tert Butyl Ether	5	4.7	94	4.7	94	0	70-130/30
108-10-1	4-Methyl-2-pentanone	20	20.1	101	20.2	101	0	70-130/30
91-20-3	Naphthalene	5	4.5	90	4.5	90	0	70-130/30
103-65-1	n-Propylbenzene	5	4.8	96	4.7	94	2	70-130/30
100-42-5	Styrene	5	4.7	94	4.7	94	0	70-130/30
630-20-6	1,1,1,2-Tetrachloroethane	5	5.2	104	5.1	102	2	70-130/30
71-55-6	1,1,1-Trichloroethane	5	5.3	106	5.2	104	2	70-130/30
79-34-5	1,1,2,2-Tetrachloroethane	5	5.1	102	5.0	100	2	70-130/30
79-00-5	1,1,2-Trichloroethane	5	5.0	100	5.0	100	0	70-130/30
87-61-6	1,2,3-Trichlorobenzene	5	4.8	96	4.8	96	0	70-130/30
96-18-4	1,2,3-Trichloropropane	5	5.2	104	5.2	104	0	70-130/30
120-82-1	1,2,4-Trichlorobenzene	5	4.7	94	4.7	94	0	70-130/30
95-63-6	1,2,4-Trimethylbenzene	5	4.7	94	4.7	94	0	70-130/30
108-67-8	1,3,5-Trimethylbenzene	5	4.8	96	4.7	94	2	70-130/30
127-18-4	Tetrachloroethylene	5	4.1	82	4.5	90	9	70-130/30
108-88-3	Toluene	5	4.7	94	4.7	94	0	70-130/30
79-01-6	Trichloroethylene	5	4.6	92	4.6	92	0	70-130/30
75-69-4	Trichlorofluoromethane	5	5.2	104	5.1	102	2	70-130/30
75-01-4	Vinyl chloride	5	4.9	98	4.8	96	2	70-130/30
	m,p-Xylene	10	9.5	95	9.4	94	1	70-130/30
95-47-6	o-Xylene	5	4.8	96	4.7	94	2	70-130/30
1330-20-7	Xylenes (total)	15	14.3	95	14.1	94	1	70-130/30

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
2199-69-1	1,2-Dichlorobenzene-d4	101%	99%	70-130%
460-00-4	4-Bromofluorobenzene	98%	96%	70-130%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JC71671
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5581-BS	1B116021.D	1	08/13/18	CSF	n/a	n/a	V1B5581
V1B5581-BSD	1B116022.D	1	08/13/18	CSF	n/a	n/a	V1B5581

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

JC71671-1, JC71671-2, JC71671-3

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

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: JC71671
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC71542-1MS	1B116033.D	1	08/13/18	CSF	n/a	n/a	V1B5581
JC71542-1	1B116026.D	1	08/13/18	CSF	n/a	n/a	V1B5581

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

JC71671-1, JC71671-2, JC71671-3

CAS No.	Compound	JC71542-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
67-64-1	Acetone	ND		20	23.0	115	41-142
78-93-3	2-Butanone	ND		20	18.2	91	55-129
71-43-2	Benzene	0.29		5	5.1	96	53-138
108-86-1	Bromobenzene	ND		5	4.6	92	54-138
74-97-5	Bromochloromethane	ND		5	4.7	94	55-140
75-27-4	Bromodichloromethane	ND		5	5.0	100	57-147
75-25-2	Bromoform	ND		5	5.4	108	47-137
74-83-9	Bromomethane	ND		5	5.0	100	40-162
104-51-8	n-Butylbenzene	ND		5	4.6	92	45-144
135-98-8	sec-Butylbenzene	ND		5	4.7	94	46-145
98-06-6	tert-Butylbenzene	ND		5	4.5	90	48-141
75-15-0	Carbon disulfide	ND		5	5.0	100	35-127
108-90-7	Chlorobenzene	ND		5	4.7	94	54-135
75-00-3	Chloroethane	ND		5	5.0	100	38-153
67-66-3	Chloroform	ND		5	4.8	96	57-151
74-87-3	Chloromethane	ND		5	4.8	96	39-165
95-49-8	o-Chlorotoluene	ND		5	4.7	94	55-142
106-43-4	p-Chlorotoluene	ND		5	4.5	90	55-139
56-23-5	Carbon tetrachloride	ND		5	6.7	134	49-170
75-34-3	1,1-Dichloroethane	ND		5	4.9	98	55-149
75-35-4	1,1-Dichloroethylene	ND		5	5.1	102	42-142
563-58-6	1,1-Dichloropropene	ND		5	5.0	100	46-151
96-12-8	1,2-Dibromo-3-chloropropane	ND		5	4.8	96	48-141
106-93-4	1,2-Dibromoethane	ND		5	4.8	96	57-135
107-06-2	1,2-Dichloroethane	ND		5	5.2	104	59-166
78-87-5	1,2-Dichloropropane	ND		5	4.9	98	53-142
142-28-9	1,3-Dichloropropane	ND		5	4.7	94	58-143
594-20-7	2,2-Dichloropropane	ND		5	5.4	108	38-165
124-48-1	Dibromochloromethane	ND		5	5.0	100	55-138
74-95-3	Dibromomethane	ND		5	4.9	98	61-144
75-71-8	Dichlorodifluoromethane	ND		5	5.9	118	23-172
541-73-1	m-Dichlorobenzene	ND		5	4.6	92	53-138
95-50-1	o-Dichlorobenzene	ND		5	4.6	92	54-140
106-46-7	p-Dichlorobenzene	ND		5	4.6	92	53-137
156-60-5	trans-1,2-Dichloroethylene	ND		5	4.9	98	47-148
156-59-2	cis-1,2-Dichloroethylene	ND		5	4.7	94	51-146

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: JC71671
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC71542-1MS	1B116033.D	1	08/13/18	CSF	n/a	n/a	V1B5581
JC71542-1	1B116026.D	1	08/13/18	CSF	n/a	n/a	V1B5581

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

JC71671-1, JC71671-2, JC71671-3

CAS No.	Compound	JC71542-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
10061-01-5	cis-1,3-Dichloropropene	ND		5	4.4	88	51-136
10061-02-6	trans-1,3-Dichloropropene	ND		5	4.6	92	54-142
100-41-4	Ethylbenzene	ND		5	4.6	92	51-138
87-68-3	Hexachlorobutadiene	ND		5	5.1	102	40-154
591-78-6	2-Hexanone	ND		20	17.3	87	53-128
98-82-8	Isopropylbenzene	ND		5	4.6	92	49-139
99-87-6	p-Isopropyltoluene	ND		5	4.7	94	45-141
75-09-2	Methylene chloride	ND		5	4.8	96	54-137
1634-04-4	Methyl Tert Butyl Ether	0.38		5	4.9	90	53-143
108-10-1	4-Methyl-2-pentanone	ND		20	18.7	94	58-127
91-20-3	Naphthalene	ND		5	4.1	82	44-140
103-65-1	n-Propylbenzene	ND		5	4.7	94	50-142
100-42-5	Styrene	ND		5	4.4	88	23-130
630-20-6	1,1,1,2-Tetrachloroethane	ND		5	5.0	100	57-144
71-55-6	1,1,1-Trichloroethane	ND		5	5.3	106	52-164
79-34-5	1,1,2,2-Tetrachloroethane	ND		5	4.7	94	58-138
79-00-5	1,1,2-Trichloroethane	ND		5	4.7	94	59-139
87-61-6	1,2,3-Trichlorobenzene	ND		5	4.6	92	47-141
96-18-4	1,2,3-Trichloropropane	ND		5	4.9	98	56-148
120-82-1	1,2,4-Trichlorobenzene	ND		5	4.5	90	46-137
95-63-6	1,2,4-Trimethylbenzene	ND		5	4.6	92	41-138
108-67-8	1,3,5-Trimethylbenzene	ND		5	4.6	92	45-138
127-18-4	Tetrachloroethylene	ND		5	4.2	84	45-145
108-88-3	Toluene	ND		5	4.6	92	52-134
79-01-6	Trichloroethylene	ND		5	4.6	92	54-143
75-69-4	Trichlorofluoromethane	ND		5	5.9	118	36-167
75-01-4	Vinyl chloride	ND		5	5.4	108	35-162
	m,p-Xylene	ND		10	9.2	92	49-135
95-47-6	o-Xylene	ND		5	4.6	92	49-134
1330-20-7	Xylenes (total)	ND		15	13.7	91	50-134

CAS No.	Surrogate Recoveries	MS	JC71542-1	Limits
2199-69-1	1,2-Dichlorobenzene-d4	100%	93%	70-130%
460-00-4	4-Bromofluorobenzene	96%	89%	70-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JC71671
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC71627-1MS	3A160612.D	1	08/13/18	RS	n/a	n/a	V3A6934
JC71627-1MSD	3A160613.D	1	08/13/18	RS	n/a	n/a	V3A6934
JC71627-1	3A160608.D	1	08/13/18	RS	n/a	n/a	V3A6934

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

JC71671-1, JC71671-2, JC71671-3

CAS No.	Compound	JC71627-1 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	10.5		20	31.9	107	20	37.7	136	17	36-166/26

CAS No.	Surrogate Recoveries	MS	MSD	JC71627-1	Limits
17647-74-4	1,4-Dioxane-d8	103%	119%	85%	51-175%

* = Outside of Control Limits.

Duplicate Summary

Job Number: JC71671
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC71541-1DUP	1B116034.D	1	08/13/18	CSF	n/a	n/a	V1B5581
JC71541-1	1B116025.D	1	08/13/18	CSF	n/a	n/a	V1B5581

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

JC71671-1, JC71671-2, JC71671-3

CAS No.	Compound	JC71541-1 ug/l	Q	DUP ug/l	Q	RPD	Limits
67-64-1	Acetone	ND		ND		nc	10
78-93-3	2-Butanone	ND		ND		nc	12
71-43-2	Benzene	ND		ND		nc	10
108-86-1	Bromobenzene	ND		ND		nc	10
74-97-5	Bromochloromethane	ND		ND		nc	10
75-27-4	Bromodichloromethane	ND		ND		nc	10
75-25-2	Bromoform	ND		ND		nc	10
74-83-9	Bromomethane	ND		ND		nc	10
104-51-8	n-Butylbenzene	ND		ND		nc	10
135-98-8	sec-Butylbenzene	ND		ND		nc	10
98-06-6	tert-Butylbenzene	ND		ND		nc	10
75-15-0	Carbon disulfide	ND		ND		nc	19
108-90-7	Chlorobenzene	ND		ND		nc	10
75-00-3	Chloroethane	ND		ND		nc	10
67-66-3	Chloroform	ND		ND		nc	12
74-87-3	Chloromethane	ND		ND		nc	10
95-49-8	o-Chlorotoluene	ND		ND		nc	10
106-43-4	p-Chlorotoluene	ND		ND		nc	10
56-23-5	Carbon tetrachloride	ND		ND		nc	10
75-34-3	1,1-Dichloroethane	ND		ND		nc	10
75-35-4	1,1-Dichloroethylene	ND		ND		nc	10
563-58-6	1,1-Dichloropropene	ND		ND		nc	10
96-12-8	1,2-Dibromo-3-chloropropane	ND		ND		nc	10
106-93-4	1,2-Dibromoethane	ND		ND		nc	10
107-06-2	1,2-Dichloroethane	ND		ND		nc	10
78-87-5	1,2-Dichloropropane	ND		ND		nc	10
142-28-9	1,3-Dichloropropane	ND		ND		nc	10
594-20-7	2,2-Dichloropropane	ND		ND		nc	10
124-48-1	Dibromochloromethane	ND		ND		nc	10
74-95-3	Dibromomethane	ND		ND		nc	10
75-71-8	Dichlorodifluoromethane	ND		ND		nc	10
541-73-1	m-Dichlorobenzene	ND		ND		nc	10
95-50-1	o-Dichlorobenzene	ND		ND		nc	10
106-46-7	p-Dichlorobenzene	ND		ND		nc	10
156-60-5	trans-1,2-Dichloroethylene	ND		ND		nc	10
156-59-2	cis-1,2-Dichloroethylene	ND		ND		nc	10

* = Outside of Control Limits.

Duplicate Summary

Job Number: JC71671
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC71541-1DUP	1B116034.D	1	08/13/18	CSF	n/a	n/a	V1B5581
JC71541-1	1B116025.D	1	08/13/18	CSF	n/a	n/a	V1B5581

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

JC71671-1, JC71671-2, JC71671-3

CAS No.	Compound	JC71541-1 ug/l	Q	DUP ug/l	Q	RPD	Limits
10061-01-5	cis-1,3-Dichloropropene	ND		ND		nc	10
10061-02-6	trans-1,3-Dichloropropene	ND		ND		nc	10
100-41-4	Ethylbenzene	ND		ND		nc	10
87-68-3	Hexachlorobutadiene	ND		ND		nc	10
591-78-6	2-Hexanone	ND		ND		nc	10
98-82-8	Isopropylbenzene	ND		ND		nc	10
99-87-6	p-Isopropyltoluene	ND		ND		nc	10
75-09-2	Methylene chloride	ND		ND		nc	10
1634-04-4	Methyl Tert Butyl Ether	ND		ND		nc	10
108-10-1	4-Methyl-2-pentanone	ND		ND		nc	10
91-20-3	Naphthalene	ND		ND		nc	10
103-65-1	n-Propylbenzene	ND		ND		nc	10
100-42-5	Styrene	ND		ND		nc	10
630-20-6	1,1,1,2-Tetrachloroethane	ND		ND		nc	10
71-55-6	1,1,1-Trichloroethane	ND		ND		nc	10
79-34-5	1,1,2,2-Tetrachloroethane	ND		ND		nc	10
79-00-5	1,1,2-Trichloroethane	ND		ND		nc	10
87-61-6	1,2,3-Trichlorobenzene	ND		ND		nc	10
96-18-4	1,2,3-Trichloropropane	ND		ND		nc	10
120-82-1	1,2,4-Trichlorobenzene	ND		ND		nc	10
95-63-6	1,2,4-Trimethylbenzene	ND		ND		nc	10
108-67-8	1,3,5-Trimethylbenzene	ND		ND		nc	10
127-18-4	Tetrachloroethylene	ND		ND		nc	10
108-88-3	Toluene	ND		ND		nc	10
79-01-6	Trichloroethylene	ND		ND		nc	10
75-69-4	Trichlorofluoromethane	ND		ND		nc	10
75-01-4	Vinyl chloride	ND		ND		nc	10
	m,p-Xylene	ND		ND		nc	10
95-47-6	o-Xylene	ND		ND		nc	10
1330-20-7	Xylenes (total)	ND		ND		nc	10

CAS No.	Surrogate Recoveries	DUP	JC71541-1	Limits
2199-69-1	1,2-Dichlorobenzene-d4	92%	92%	70-130%
460-00-4	4-Bromofluorobenzene	87%	88%	70-130%

* = Outside of Control Limits.

Instrument Performance Check (BFB)

Job Number: JC71671
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample: V1B5576-BFB
Lab File ID: 1B115941.D
Instrument ID: GCMS1B
Injection Date: 08/02/18
Injection Time: 08:15

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	14.99 - 40.0% of mass 95	3949	16.6		Pass
75	30.0 - 80.0% of mass 95	10839	45.6		Pass
95	Base peak, 100% relative abundance	23757	100.0		Pass
96	5.0 - 9.0% of mass 95	1723	7.25		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	19052	80.2		Pass
175	5.0 - 9.0% of mass 174	1339	5.64	(7.03) [a]	Pass
176	95.0 - 101.0% of mass 174	18401	77.5	(96.6) [a]	Pass
177	5.0 - 9.0% of mass 176	1250	5.26	(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
V1B5576-IC5576	1B115942.D	08/02/18	08:56	00:41	Initial cal 0.2
V1B5576-IC5576	1B115943.D	08/02/18	09:28	01:13	Initial cal 0.5
V1B5576-IC5576	1B115944.D	08/02/18	09:59	01:44	Initial cal 1
V1B5576-IC5576	1B115945.D	08/02/18	10:31	02:16	Initial cal 2
V1B5576-IC5576	1B115946.D	08/02/18	11:02	02:47	Initial cal 5
V1B5576-ICC5576	1B115947.D	08/02/18	11:34	03:19	Initial cal 10
V1B5576-IC5576	1B115948.D	08/02/18	12:05	03:50	Initial cal 20
V1B5576-IC5576	1B115949.D	08/02/18	12:37	04:22	Initial cal 40
V1B5576-IC5576	1B115950.D	08/02/18	13:08	04:53	Initial cal 80
V1B5576-ICV5576	1B115952.D	08/02/18	14:11	05:56	Initial cal verification 10

Instrument Performance Check (BFB)

Job Number: JC71671
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample: V1B5581-BFB
Lab File ID: 1B116020.D
Instrument ID: GCMS1B
Injection Date: 08/13/18
Injection Time: 09:19

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	14.99 - 40.0% of mass 95	3176	19.2		Pass
75	30.0 - 80.0% of mass 95	8151	49.2		Pass
95	Base peak, 100% relative abundance	16579	100.0		Pass
96	5.0 - 9.0% of mass 95	1185	7.15		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	13423	81.0		Pass
175	5.0 - 9.0% of mass 174	1024	6.18	(7.63) [a]	Pass
176	95.0 - 101.0% of mass 174	12993	78.4	(96.8) [a]	Pass
177	5.0 - 9.0% of mass 176	963	5.81	(7.41) [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
V1B5581-CC5576	1B116021.D	08/13/18	10:07	00:48	Continuing cal 5
V1B5581-BS	1B116021.D	08/13/18	10:07	00:48	Blank Spike
V1B5581-BSD	1B116022.D	08/13/18	10:39	01:20	Blank Spike Duplicate
V1B5581-MB	1B116023.D	08/13/18	11:11	01:52	Method Blank
ZZZZZZ	1B116024.D	08/13/18	11:43	02:24	(unrelated sample)
JC71541-1	1B116025.D	08/13/18	12:14	02:55	(used for QC only; not part of job JC71671)
JC71542-1	1B116026.D	08/13/18	12:46	03:27	(used for QC only; not part of job JC71671)
ZZZZZZ	1B116027.D	08/13/18	13:18	03:59	(unrelated sample)
ZZZZZZ	1B116028.D	08/13/18	13:49	04:30	(unrelated sample)
ZZZZZZ	1B116029.D	08/13/18	14:21	05:02	(unrelated sample)
ZZZZZZ	1B116030.D	08/13/18	14:53	05:34	(unrelated sample)
ZZZZZZ	1B116031.D	08/13/18	15:25	06:06	(unrelated sample)
ZZZZZZ	1B116032.D	08/13/18	15:56	06:37	(unrelated sample)
JC71542-1MS	1B116033.D	08/13/18	16:28	07:09	Matrix Spike
JC71541-1DUP	1B116034.D	08/13/18	17:00	07:41	Duplicate
ZZZZZZ	1B116035.D	08/13/18	17:31	08:12	(unrelated sample)
ZZZZZZ	1B116036.D	08/13/18	18:03	08:44	(unrelated sample)
ZZZZZZ	1B116037.D	08/13/18	18:35	09:16	(unrelated sample)
ZZZZZZ	1B116038.D	08/13/18	19:07	09:48	(unrelated sample)
JC71671-3	1B116039.D	08/13/18	19:39	10:20	TB-080919
JC71671-1	1B116040.D	08/13/18	20:10	10:51	RW-1227PCM-080919
JC71671-2	1B116041.D	08/13/18	20:43	11:24	RW-1227PCM-080919-F
ZZZZZZ	1B116042.D	08/13/18	21:14	11:55	(unrelated sample)

Instrument Performance Check (BFB)

Job Number: JC71671
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

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

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

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

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

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

Instrument Performance Check (BFB)

Job Number: JC71671
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample: V3A6934-BFB
Lab File ID: 3A160603.D
Instrument ID: GCMS3A
Injection Date: 08/13/18
Injection Time: 09:34

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	9714	20.6		Pass
75	30.0 - 60.0% of mass 95	22893	48.7		Pass
95	Base peak, 100% relative abundance	47050	100.0		Pass
96	5.0 - 9.0% of mass 95	3072	6.53		Pass
173	Less than 2.0% of mass 174	252	0.54	(0.65) [a]	Pass
174	50.0 - 120.0% of mass 95	38906	82.7		Pass
175	5.0 - 9.0% of mass 174	2722	5.79	(7.00) [a]	Pass
176	95.0 - 101.0% of mass 174	38258	81.3	(98.3) [a]	Pass
177	5.0 - 9.0% of mass 176	2675	5.69	(6.99) [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
V3A6934-CC6923	3A160604.D	08/13/18	10:06	00:32	Continuing cal 20
V3A6934-BS	3A160605.D	08/13/18	10:54	01:20	Blank Spike
V3A6934-MB	3A160607.D	08/13/18	11:51	02:17	Method Blank
JC71627-1	3A160608.D	08/13/18	12:23	02:49	(used for QC only; not part of job JC71671)
ZZZZZZ	3A160609.D	08/13/18	12:52	03:18	(unrelated sample)
ZZZZZZ	3A160610.D	08/13/18	13:20	03:46	(unrelated sample)
ZZZZZZ	3A160611.D	08/13/18	13:47	04:13	(unrelated sample)
JC71627-1MS	3A160612.D	08/13/18	14:15	04:41	Matrix Spike
JC71627-1MSD	3A160613.D	08/13/18	14:43	05:09	Matrix Spike Duplicate
ZZZZZZ	3A160615.D	08/13/18	15:38	06:04	(unrelated sample)
ZZZZZZ	3A160616.D	08/13/18	16:06	06:32	(unrelated sample)
ZZZZZZ	3A160617.D	08/13/18	16:33	06:59	(unrelated sample)
ZZZZZZ	3A160618.D	08/13/18	17:01	07:27	(unrelated sample)
ZZZZZZ	3A160619.D	08/13/18	17:29	07:55	(unrelated sample)
ZZZZZZ	3A160620.D	08/13/18	17:57	08:23	(unrelated sample)
JC71671-1	3A160621.D	08/13/18	18:24	08:50	RW-1227PCM-080919
JC71671-2	3A160622.D	08/13/18	18:52	09:18	RW-1227PCM-080919-F
JC71671-3	3A160623.D	08/13/18	19:19	09:45	TB-080919
ZZZZZZ	3A160624.D	08/13/18	19:47	10:13	(unrelated sample)
ZZZZZZ	3A160625.D	08/13/18	20:15	10:41	(unrelated sample)

Surrogate Recovery Summary

Job Number: JC71671
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
JC71671-1	1B116040.D	93	86
JC71671-2	1B116041.D	91	86
JC71671-3	1B116039.D	90	87
JC71541-1DUP	1B116034.D	92	87
JC71542-1MS	1B116033.D	100	96
V1B5581-BS	1B116021.D	101	98
V1B5581-BSD	1B116022.D	99	96
V1B5581-MB	1B116023.D	92	90

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

Surrogate Recovery Summary

Job Number: JC71671
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
JC71671-1	3A160621.D	101
JC71671-2	3A160622.D	91
JC71671-3	3A160623.D	80
JC71627-1MS	3A160612.D	103
JC71627-1MSD	3A160613.D	119
V3A6934-BS	3A160605.D	88
V3A6934-MB	3A160607.D	66

Surrogate Compounds	Recovery Limits
S1 = 1,4-Dioxane-d8	51-175%

SEPTEMBER 2018

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

31400389/9

SGS Job Number: JC73365

Sampling Date: 09/06/18

Report to:

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ATTN: Eric Johnson

Total number of pages in report: **46**

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.

A. Paul Ioannidis
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: JC73365

Kop-Flex, Hanover, VA
Project No: 31400389/9

Sample Number	Collected Date	Time	By	Received	Matrix Code	Matrix Type	Client Sample ID
JC73365-1	09/06/18	10:30	MK/HQ	09/07/18	DW	Drinking Water	RW-7742TO-090618
JC73365-2	09/06/18	12:25	MK/HQ	09/07/18	DW	Drinking Water TB	TB-090618
JC73365-3	09/06/18	12:20	MK/HQ	09/07/18	DW	Drinking Water	RW-1227OCM-090618-F
JC73365-4	09/06/18	12:25	MK/HQ	09/07/18	DW	Drinking Water	RW-1227OCM-090618

Summary of Hits

Job Number: JC73365
Account: WSP Environment & Energy
Project: Kop-Flex, Hanover, VA
Collected: 09/06/18

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JC73365-1	**RW-7742TO-090618**					
1,1-Dichloroethylene		3.6	0.50	0.19	ug/l	EPA 524.2 REV 4.1
1,1,1-Trichloroethane		0.25 J	0.50	0.22	ug/l	EPA 524.2 REV 4.1
1,4-Dioxane		1.5	0.40	0.095	ug/l	SW846 8260C BY SIM
JC73365-2	**TB-090618**					
Acetone		35.9	5.0	2.5	ug/l	EPA 524.2 REV 4.1
2-Butanone		12.2	5.0	0.43	ug/l	EPA 524.2 REV 4.1
Toluene		0.28 J	0.50	0.11	ug/l	EPA 524.2 REV 4.1
JC73365-3	**RW-1227OCM-090618-F**					
Acetone		2.8 J	5.0	2.5	ug/l	EPA 524.2 REV 4.1
1,1-Dichloroethylene		3.5	0.50	0.19	ug/l	EPA 524.2 REV 4.1
1,1,1-Trichloroethane		0.33 J	0.50	0.22	ug/l	EPA 524.2 REV 4.1
1,4-Dioxane		1.7	0.40	0.095	ug/l	SW846 8260C BY SIM
JC73365-4	**RW-1227OCM-090618**					
1,1-Dichloroethylene		6.9	0.50	0.19	ug/l	EPA 524.2 REV 4.1
1,1,1-Trichloroethane		0.28 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

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	RW-7742TO-090618		
Lab Sample ID:	JC73365-1	**Date Sampled:**	09/06/18
Matrix:	DW - Drinking Water	**Date Received:**	09/07/18
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	1B116349.D	1	09/11/18 14:53	CSF	n/a	n/a	V1B5601
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA List

CAS No.	Compound	Result	MCL	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	5.0	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	100	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 [a]	ND	5.0	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	3.6	7.0	0.50	0.19	ug/l	
563-58-6	1,1-Dichloropropene	ND		0.50	0.14	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.20	1.0	0.14	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.050	0.50	0.15	ug/l	
107-06-2	1,2-Dichloroethane	ND	5.0	0.50	0.18	ug/l	
78-87-5	1,2-Dichloropropane	ND	5.0	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
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-7742TO-090618		
Lab Sample ID:	JC73365-1	**Date Sampled:**	09/06/18
Matrix:	DW - Drinking Water	**Date Received:**	09/07/18
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	MCL	RL	MDL	Units	Q
95-50-1	o-Dichlorobenzene	ND	600	0.50	0.14	ug/l	
106-46-7	p-Dichlorobenzene	ND	75	0.50	0.10	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	100	0.50	0.21	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	70	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	700	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	5.0	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	100	0.50	0.069	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND		0.50	0.20	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25	200	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	5.0	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	70	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	5.0	0.50	0.23	ug/l	
108-88-3	Toluene	ND	1000	0.50	0.11	ug/l	
79-01-6	Trichloroethylene	ND	5.0	0.50	0.20	ug/l	
75-69-4	Trichlorofluoromethane	ND		1.0	0.19	ug/l	
75-01-4	Vinyl chloride	ND	2.0	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	10000	0.50	0.076	ug/l	

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

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-7742TO-090618		
Lab Sample ID:	JC73365-1	**Date Sampled:**	09/06/18
Matrix:	DW - Drinking Water	**Date Received:**	09/07/18
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	MCL	RL	MDL	Units	Q

(a) 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-7742TO-090618		
Lab Sample ID:	JC73365-1	**Date Sampled:**	09/06/18
Matrix:	DW - Drinking Water	**Date Received:**	09/07/18
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	3A160799.D	1	09/10/18 15:40	RS	n/a	n/a	V3A6943
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	1.5		0.40	0.095	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17647-74-4	1,4-Dioxane-d8	85%		51-175%

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-090618		
Lab Sample ID:	JC73365-2	**Date Sampled:**	09/06/18
Matrix:	DW - Drinking Water TB	**Date Received:**	09/07/18
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	1B116357.D	1	09/11/18 19:05	CSF	n/a	n/a	V1B5601
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA List

CAS No.	Compound	Result	MCL	RL	MDL	Units	Q
67-64-1	Acetone	35.9		5.0	2.5	ug/l	
78-93-3	2-Butanone	12.2		5.0	0.43	ug/l	
71-43-2	Benzene	ND	5.0	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	100	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 [a]	ND	5.0	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	7.0	0.50	0.19	ug/l	
563-58-6	1,1-Dichloropropene	ND		0.50	0.14	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.20	1.0	0.14	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.050	0.50	0.15	ug/l	
107-06-2	1,2-Dichloroethane	ND	5.0	0.50	0.18	ug/l	
78-87-5	1,2-Dichloropropane	ND	5.0	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
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-090618		
Lab Sample ID:	JC73365-2	**Date Sampled:**	09/06/18
Matrix:	DW - Drinking Water TB	**Date Received:**	09/07/18
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	MCL	RL	MDL	Units	Q
95-50-1	o-Dichlorobenzene	ND	600	0.50	0.14	ug/l	
106-46-7	p-Dichlorobenzene	ND	75	0.50	0.10	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	100	0.50	0.21	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	70	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	700	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	5.0	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	100	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	200	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	5.0	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	70	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	5.0	0.50	0.23	ug/l	
108-88-3	Toluene	0.28	1000	0.50	0.11	ug/l	J
79-01-6	Trichloroethylene	ND	5.0	0.50	0.20	ug/l	
75-69-4	Trichlorofluoromethane	ND		1.0	0.19	ug/l	
75-01-4	Vinyl chloride	ND	2.0	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	10000	0.50	0.076	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	74%		70-130%
460-00-4	4-Bromofluorobenzene	76%		70-130%

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-090618		
Lab Sample ID:	JC73365-2	**Date Sampled:**	09/06/18
Matrix:	DW - Drinking Water TB	**Date Received:**	09/07/18
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	MCL	RL	MDL	Units	Q

(a) 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-090618		
Lab Sample ID:	JC73365-2	**Date Sampled:**	09/06/18
Matrix:	DW - Drinking Water TB	**Date Received:**	09/07/18
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	3A160798.D	1	09/10/18 15:12	RS	n/a	n/a	V3A6943
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	80%		51-175%

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-090618-F		
Lab Sample ID:	JC73365-3	**Date Sampled:**	09/06/18
Matrix:	DW - Drinking Water	**Date Received:**	09/07/18
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	1B116350.D	1	09/11/18 15:24	CSF	n/a	n/a	V1B5601
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA List

CAS No.	Compound	Result	MCL	RL	MDL	Units	Q
67-64-1	Acetone	2.8		5.0	2.5	ug/l	J
78-93-3	2-Butanone	ND		5.0	0.43	ug/l	
71-43-2	Benzene	ND	5.0	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	100	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 [a]	ND	5.0	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	3.5	7.0	0.50	0.19	ug/l	
563-58-6	1,1-Dichloropropene	ND		0.50	0.14	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.20	1.0	0.14	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.050	0.50	0.15	ug/l	
107-06-2	1,2-Dichloroethane	ND	5.0	0.50	0.18	ug/l	
78-87-5	1,2-Dichloropropane	ND	5.0	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
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-090618-F		
Lab Sample ID:	JC73365-3	**Date Sampled:**	09/06/18
Matrix:	DW - Drinking Water	**Date Received:**	09/07/18
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	MCL	RL	MDL	Units	Q
95-50-1	o-Dichlorobenzene	ND	600	0.50	0.14	ug/l	
106-46-7	p-Dichlorobenzene	ND	75	0.50	0.10	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	100	0.50	0.21	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	70	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	700	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	5.0	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	100	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	0.33	200	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	5.0	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	70	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	5.0	0.50	0.23	ug/l	
108-88-3	Toluene	ND	1000	0.50	0.11	ug/l	
79-01-6	Trichloroethylene	ND	5.0	0.50	0.20	ug/l	
75-69-4	Trichlorofluoromethane	ND		1.0	0.19	ug/l	
75-01-4	Vinyl chloride	ND	2.0	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	10000	0.50	0.076	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	83%		70-130%
460-00-4	4-Bromofluorobenzene	81%		70-130%

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-090618-F		
Lab Sample ID:	JC73365-3	**Date Sampled:**	09/06/18
Matrix:	DW - Drinking Water	**Date Received:**	09/07/18
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	MCL	RL	MDL	Units	Q

(a) 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-090618-F		
Lab Sample ID:	JC73365-3	**Date Sampled:**	09/06/18
Matrix:	DW - Drinking Water	**Date Received:**	09/07/18
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	3A160800.D	1	09/10/18 16:07	RS	n/a	n/a	V3A6943
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	1.7		0.40	0.095	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17647-74-4	1,4-Dioxane-d8	86%		51-175%

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-090618		
Lab Sample ID:	JC73365-4	**Date Sampled:**	09/06/18
Matrix:	DW - Drinking Water	**Date Received:**	09/07/18
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	1B116351.D	1	09/11/18 15:56	CSF	n/a	n/a	V1B5601
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA List

CAS No.	Compound	Result	MCL	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	5.0	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	100	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 [a]	ND	5.0	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	6.9	7.0	0.50	0.19	ug/l	
563-58-6	1,1-Dichloropropene	ND		0.50	0.14	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.20	1.0	0.14	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.050	0.50	0.15	ug/l	
107-06-2	1,2-Dichloroethane	ND	5.0	0.50	0.18	ug/l	
78-87-5	1,2-Dichloropropane	ND	5.0	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
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-090618		
Lab Sample ID:	JC73365-4	**Date Sampled:**	09/06/18
Matrix:	DW - Drinking Water	**Date Received:**	09/07/18
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	MCL	RL	MDL	Units	Q
95-50-1	o-Dichlorobenzene	ND	600	0.50	0.14	ug/l	
106-46-7	p-Dichlorobenzene	ND	75	0.50	0.10	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	100	0.50	0.21	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	70	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	700	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	5.0	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	100	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	200	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	5.0	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	70	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	5.0	0.50	0.23	ug/l	
108-88-3	Toluene	ND	1000	0.50	0.11	ug/l	
79-01-6	Trichloroethylene	ND	5.0	0.50	0.20	ug/l	
75-69-4	Trichlorofluoromethane	ND		1.0	0.19	ug/l	
75-01-4	Vinyl chloride	ND	2.0	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	10000	0.50	0.076	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	85%		70-130%
460-00-4	4-Bromofluorobenzene	82%		70-130%

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-090618		
Lab Sample ID:	JC73365-4	**Date Sampled:**	09/06/18
Matrix:	DW - Drinking Water	**Date Received:**	09/07/18
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	MCL	RL	MDL	Units	Q

(a) 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-090618		
Lab Sample ID:	JC73365-4	**Date Sampled:**	09/06/18
Matrix:	DW - Drinking Water	**Date Received:**	09/07/18
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	3A160801.D	1	09/10/18 16:35	RS	n/a	n/a	V3A6943
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	1.6		0.40	0.095	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17647-74-4	1,4-Dioxane-d8	85%		51-175%

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

GW

CHAIN-OF-CUSTODY RECORD 8094 75368378 JC73365 Page 1 of 1

No. 009922 wsp

WSP USA Office Address			
13530 Dulles Technology Drive Suite 300 Herndon VA			
Project Name: KopFlex	WSP USA Contact Name: Eric Johnson	Laboratory Name & Location: Accutest	
Project Location: Hanover MD	WSP USA Contact Phone: 703 709 6500	Laboratory Project Manager: Rokas Peters	
Project Number & Task: 31400389/9	WSP USA Contact E-mail: eric.johnson@wsp.com	Requested Turn-Around-Time: [X] Standard [ ] 24 HR [ ] 48 HR [ ] 72 HR [ ] ___ HR	
Sampler(s) Name(s): Maria Kaplan, Hunter Quintal	Sampler(s) Signature(s): [signature]		

Requested Analyses & Preservatives: VOCs (524); 1,4 Dioxane (8260 Sim)

	Sample Identification	Matrix	Collection Start Date	Collection Start Time	Collection Stop Date	Collection Stop Time	Number of Containers	VOCs (524)	1,4 Dioxane (8260 Sim)	Sample Comments
1	RW-7742TO-090618	GW	9/06/18	—		1930	6	X	X	
2	TB-090618	—	—		—	—	4	X	X	Trip blank
3	RW-12270CM-090618	GW	9/06/18	1220	—		6	X	X	
4	RW-12270CM-090618	GW	9/16/18	1225	—		6	X	X	

V452

INITIAL ASSESSMENT [initials]

LABEL VERIFICATION ______

Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Shipment Method	Tracking Number(s)
[signature]	9/6/18	1400	FedEx				8094 7536 8378

Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Number of Packages	Custody Seal Number(s)
FX	9/7/18	9:30	[signature]				03964

3.1°C

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

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

4.1

4

JC73365: Chain of Custody

Page 1 of 3

SGS Sample Receipt Summary

Job Number: JC73365 **Client:** WSP **Project:** Kopflex

Date / Time Received: 9/7/2018 9:30:00 AM **Delivery Method:** FedEx **Airbill #'s:**

Cooler Temps (Raw Measured) °C: Cooler 1: (3.1);

Cooler Temps (Corrected) °C: Cooler 1: (2.5);

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

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

Quality Control Preservation	Y	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	N
1. Sample labels present on bottles:	☑	☐
2. Container labeling complete:	☑	☐
3. Sample container label / COC agree:	☑	☐

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

Sample Integrity - Instructions	Y	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: 216017 pH 12+: 208717 Other: (Specify)

Comments: All samples: Analysis requested is 524. Please verify as COC states GW.

SM089-02 Rev. Date 12/1/16

Responded to by: Rocus Peters Response Date: 9/7

Per client matrix for these samples should be "DW"

per E. Johnson

JC73365: Chain of Custody
Page 3 of 3

MS Volatiles

QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Job Number: JC73365
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5601-MB	1B116347.D	1	09/11/18	CSF	n/a	n/a	V1B5601

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

JC73365-1, JC73365-2, JC73365-3, JC73365-4

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: JC73365
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5601-MB	1B116347.D	1	09/11/18	CSF	n/a	n/a	V1B5601

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

JC73365-1, JC73365-2, JC73365-3, JC73365-4

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	86%	70-130%
460-00-4	4-Bromofluorobenzene	84%	70-130%

Method Blank Summary

Job Number: JC73365
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5601-MB	1B116347.D	1	09/11/18	CSF	n/a	n/a	V1B5601

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

JC73365-1, JC73365-2, JC73365-3, JC73365-4

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

Method Blank Summary

Job Number: JC73365
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3A6943-MB	3A160789.D	1	09/10/18	RS	n/a	n/a	V3A6943

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

JC73365-1, JC73365-2, JC73365-3, JC73365-4

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	90%	51-175%

Blank Spike Summary

Job Number: JC73365
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5601-BS	1B116346.D	1	09/11/18	CSF	n/a	n/a	V1B5601

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

JC73365-1, JC73365-2, JC73365-3, JC73365-4

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	20	23.0	115	70-130
78-93-3	2-Butanone	20	22.7	114	70-130
71-43-2	Benzene	5	5.8	116	70-130
108-86-1	Bromobenzene	5	5.5	110	70-130
74-97-5	Bromochloromethane	5	5.5	110	70-130
75-27-4	Bromodichloromethane	5	5.9	118	70-130
75-25-2	Bromoform	5	6.0	120	70-130
74-83-9	Bromomethane	5	4.4	88	70-130
104-51-8	n-Butylbenzene	5	4.6	92	70-130
135-98-8	sec-Butylbenzene	5	5.2	104	70-130
98-06-6	tert-Butylbenzene	5	4.9	98	70-130
75-15-0	Carbon disulfide	5	5.9	118	70-130
108-90-7	Chlorobenzene	5	5.6	112	70-130
75-00-3	Chloroethane	5	5.0	100	70-130
67-66-3	Chloroform	5	5.2	104	70-130
74-87-3	Chloromethane	5	4.6	92	70-130
95-49-8	o-Chlorotoluene	5	5.3	106	70-130
106-43-4	p-Chlorotoluene	5	5.5	110	70-130
56-23-5	Carbon tetrachloride	5	7.4	148* [a]	70-130
75-34-3	1,1-Dichloroethane	5	5.5	110	70-130
75-35-4	1,1-Dichloroethylene	5	5.4	108	70-130
563-58-6	1,1-Dichloropropene	5	5.6	112	70-130
96-12-8	1,2-Dibromo-3-chloropropane	5	5.2	104	70-130
106-93-4	1,2-Dibromoethane	5	5.7	114	70-130
107-06-2	1,2-Dichloroethane	5	5.5	110	70-130
78-87-5	1,2-Dichloropropane	5	5.7	114	70-130
142-28-9	1,3-Dichloropropane	5	5.9	118	70-130
594-20-7	2,2-Dichloropropane	5	5.5	110	70-130
124-48-1	Dibromochloromethane	5	6.0	120	70-130
74-95-3	Dibromomethane	5	5.5	110	70-130
75-71-8	Dichlorodifluoromethane	5	5.6	112	70-130
541-73-1	m-Dichlorobenzene	5	5.4	108	70-130
95-50-1	o-Dichlorobenzene	5	5.2	104	70-130
106-46-7	p-Dichlorobenzene	5	5.3	106	70-130
156-60-5	trans-1,2-Dichloroethylene	5	5.3	106	70-130
156-59-2	cis-1,2-Dichloroethylene	5	5.3	106	70-130

* = Outside of Control Limits.

Blank Spike Summary

Job Number: JC73365
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5601-BS	1B116346.D	1	09/11/18	CSF	n/a	n/a	V1B5601

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

JC73365-1, JC73365-2, JC73365-3, JC73365-4

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
10061-01-5	cis-1,3-Dichloropropene	5	5.5	110	70-130
10061-02-6	trans-1,3-Dichloropropene	5	5.6	112	70-130
100-41-4	Ethylbenzene	5	5.6	112	70-130
87-68-3	Hexachlorobutadiene	5	5.0	100	70-130
591-78-6	2-Hexanone	20	23.2	116	70-130
98-82-8	Isopropylbenzene	5	5.1	102	70-130
99-87-6	p-Isopropyltoluene	5	5.0	100	70-130
75-09-2	Methylene chloride	5	5.5	110	70-130
1634-04-4	Methyl Tert Butyl Ether	5	5.1	102	70-130
108-10-1	4-Methyl-2-pentanone	20	23.7	119	70-130
91-20-3	Naphthalene	5	4.6	92	70-130
103-65-1	n-Propylbenzene	5	5.4	108	70-130
100-42-5	Styrene	5	5.4	108	70-130
630-20-6	1,1,1,2-Tetrachloroethane	5	5.9	118	70-130
71-55-6	1,1,1-Trichloroethane	5	5.4	108	70-130
79-34-5	1,1,2,2-Tetrachloroethane	5	5.8	116	70-130
79-00-5	1,1,2-Trichloroethane	5	5.8	116	70-130
87-61-6	1,2,3-Trichlorobenzene	5	4.5	90	70-130
96-18-4	1,2,3-Trichloropropane	5	5.6	112	70-130
120-82-1	1,2,4-Trichlorobenzene	5	4.4	88	70-130
95-63-6	1,2,4-Trimethylbenzene	5	5.2	104	70-130
108-67-8	1,3,5-Trimethylbenzene	5	5.3	106	70-130
127-18-4	Tetrachloroethylene	5	4.6	92	70-130
108-88-3	Toluene	5	5.5	110	70-130
79-01-6	Trichloroethylene	5	5.1	102	70-130
75-69-4	Trichlorofluoromethane	5	5.3	106	70-130
75-01-4	Vinyl chloride	5	4.7	94	70-130
	m,p-Xylene	10	11.3	113	70-130
95-47-6	o-Xylene	5	5.4	108	70-130
1330-20-7	Xylenes (total)	15	16.7	111	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
2199-69-1	1,2-Dichlorobenzene-d4	92%	70-130%
460-00-4	4-Bromofluorobenzene	99%	70-130%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: JC73365
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5601-BS	1B116346.D	1	09/11/18	CSF	n/a	n/a	V1B5601

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

JC73365-1, JC73365-2, JC73365-3, JC73365-4

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

* = Outside of Control Limits.

Blank Spike Summary

Job Number: JC73365
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3A6943-BS	3A160788.D	1	09/10/18	RS	n/a	n/a	V3A6943

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

JC73365-1, JC73365-2, JC73365-3, JC73365-4

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
123-91-1	1,4-Dioxane	20	18.0	90	58-138

CAS No.	Surrogate Recoveries	BSP	Limits
17647-74-4	1,4-Dioxane-d8	93%	51-175%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: JC73365
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC73365-1MS	1B116352.D	1	09/11/18	CSF	n/a	n/a	V1B5601
JC73365-1	1B116349.D	1	09/11/18	CSF	n/a	n/a	V1B5601

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

JC73365-1, JC73365-2, JC73365-3, JC73365-4

CAS No.	Compound	JC73365-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
67-64-1	Acetone	ND		20	21.6	108	41-142
78-93-3	2-Butanone	ND		20	21.0	105	55-129
71-43-2	Benzene	ND		5	5.2	104	53-138
108-86-1	Bromobenzene	ND		5	4.6	92	54-138
74-97-5	Bromochloromethane	ND		5	4.7	94	55-140
75-27-4	Bromodichloromethane	ND		5	5.1	102	57-147
75-25-2	Bromoform	ND		5	5.1	102	47-137
74-83-9	Bromomethane	ND		5	4.0	80	40-162
104-51-8	n-Butylbenzene	ND		5	3.7	74	45-144
135-98-8	sec-Butylbenzene	ND		5	4.3	86	46-145
98-06-6	tert-Butylbenzene	ND		5	4.0	80	48-141
75-15-0	Carbon disulfide	ND		5	5.4	108	35-127
108-90-7	Chlorobenzene	ND		5	4.9	98	54-135
75-00-3	Chloroethane	ND		5	4.5	90	38-153
67-66-3	Chloroform	ND		5	4.6	92	57-151
74-87-3	Chloromethane	ND		5	4.3	86	39-165
95-49-8	o-Chlorotoluene	ND		5	4.5	90	55-142
106-43-4	p-Chlorotoluene	ND		5	4.6	92	55-139
56-23-5	Carbon tetrachloride	ND		5	6.8	136	49-170
75-34-3	1,1-Dichloroethane	ND		5	5.0	100	55-149
75-35-4	1,1-Dichloroethylene	3.6		5	7.6	80	42-142
563-58-6	1,1-Dichloropropene	ND		5	5.0	100	46-151
96-12-8	1,2-Dibromo-3-chloropropane	ND		5	4.6	92	48-141
106-93-4	1,2-Dibromoethane	ND		5	5.0	100	57-135
107-06-2	1,2-Dichloroethane	ND		5	4.9	98	59-166
78-87-5	1,2-Dichloropropane	ND		5	5.1	102	53-142
142-28-9	1,3-Dichloropropane	ND		5	5.3	106	58-143
594-20-7	2,2-Dichloropropane	ND		5	5.0	100	38-165
124-48-1	Dibromochloromethane	ND		5	5.2	104	55-138
74-95-3	Dibromomethane	ND		5	5.0	100	61-144
75-71-8	Dichlorodifluoromethane	ND		5	5.4	108	23-172
541-73-1	m-Dichlorobenzene	ND		5	4.6	92	53-138
95-50-1	o-Dichlorobenzene	ND		5	4.4	88	54-140
106-46-7	p-Dichlorobenzene	ND		5	4.5	90	53-137
156-60-5	trans-1,2-Dichloroethylene	ND		5	4.8	96	47-148
156-59-2	cis-1,2-Dichloroethylene	ND		5	4.8	96	51-146

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: JC73365
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC73365-1MS	1B116352.D	1	09/11/18	CSF	n/a	n/a	V1B5601
JC73365-1	1B116349.D	1	09/11/18	CSF	n/a	n/a	V1B5601

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

JC73365-1, JC73365-2, JC73365-3, JC73365-4

CAS No.	Compound	JC73365-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
10061-01-5	cis-1,3-Dichloropropene	ND		5	4.7	94	51-136
10061-02-6	trans-1,3-Dichloropropene	ND		5	4.7	94	54-142
100-41-4	Ethylbenzene	ND		5	4.9	98	51-138
87-68-3	Hexachlorobutadiene	ND		5	4.3	86	40-154
591-78-6	2-Hexanone	ND		20	20.6	103	53-128
98-82-8	Isopropylbenzene	ND		5	4.2	84	49-139
99-87-6	p-Isopropyltoluene	ND		5	4.0	80	45-141
75-09-2	Methylene chloride	ND		5	4.9	98	54-137
1634-04-4	Methyl Tert Butyl Ether	ND		5	4.4	88	53-143
108-10-1	4-Methyl-2-pentanone	ND		20	20.6	103	58-127
91-20-3	Naphthalene	ND		5	3.7	74	44-140
103-65-1	n-Propylbenzene	ND		5	4.6	92	50-142
100-42-5	Styrene	ND		5	4.5	90	23-130
630-20-6	1,1,1,2-Tetrachloroethane	ND		5	5.1	102	57-144
71-55-6	1,1,1-Trichloroethane	0.25	J	5	5.2	99	52-164
79-34-5	1,1,2,2-Tetrachloroethane	ND		5	5.0	100	58-138
79-00-5	1,1,2-Trichloroethane	ND		5	5.1	102	59-139
87-61-6	1,2,3-Trichlorobenzene	ND		5	3.7	74	47-141
96-18-4	1,2,3-Trichloropropane	ND		5	4.9	98	56-148
120-82-1	1,2,4-Trichlorobenzene	ND		5	3.6	72	46-137
95-63-6	1,2,4-Trimethylbenzene	ND		5	4.3	86	41-138
108-67-8	1,3,5-Trimethylbenzene	ND		5	4.4	88	45-138
127-18-4	Tetrachloroethylene	ND		5	4.1	82	45-145
108-88-3	Toluene	ND		5	4.9	98	52-134
79-01-6	Trichloroethylene	ND		5	4.6	92	54-143
75-69-4	Trichlorofluoromethane	ND		5	5.2	104	36-167
75-01-4	Vinyl chloride	ND		5	4.2	84	35-162
	m,p-Xylene	ND		10	9.8	98	49-135
95-47-6	o-Xylene	ND		5	4.5	90	49-134
1330-20-7	Xylenes (total)	ND		15	14.3	95	50-134

CAS No.	Surrogate Recoveries	MS	JC73365-1	Limits
2199-69-1	1,2-Dichlorobenzene-d4	90%	83%	70-130%
460-00-4	4-Bromofluorobenzene	94%	83%	70-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JC73365
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC73223-7MS	3A160794.D	1	09/10/18	RS	n/a	n/a	V3A6943
JC73223-7MSD	3A160795.D	1	09/10/18	RS	n/a	n/a	V3A6943
JC73223-7	3A160790.D	1	09/10/18	RS	n/a	n/a	V3A6943

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

JC73365-1, JC73365-2, JC73365-3, JC73365-4

CAS No.	Compound	JC73223-7 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	2.9		20	24.3	107	20	21.2	92	14	36-166/26

CAS No.	Surrogate Recoveries	MS	MSD	JC73223-7	Limits
17647-74-4	1,4-Dioxane-d8	116%	103%	127%	51-175%

* = Outside of Control Limits.

Duplicate Summary

Job Number: JC73365
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC73365-2DUP	1B116353.D	1	09/11/18	CSF	n/a	n/a	V1B5601
JC73365-2	1B116357.D	1	09/11/18	CSF	n/a	n/a	V1B5601

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

JC73365-1, JC73365-2, JC73365-3, JC73365-4

CAS No.	Compound	JC73365-2 ug/l	Q	DUP ug/l	Q	RPD	Limits
67-64-1	Acetone	35.9		4.6	J	155* [a]	10
78-93-3	2-Butanone	12.2		ND		200* [a]	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		0.17	J	200* [a]	10
95-49-8	o-Chlorotoluene	ND		ND		nc	10
106-43-4	p-Chlorotoluene	ND		ND		nc	10
56-23-5	Carbon tetrachloride	ND		ND		nc	10
75-34-3	1,1-Dichloroethane	ND		ND		nc	10
75-35-4	1,1-Dichloroethylene	ND		2.0		200* [a]	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: JC73365
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC73365-2DUP	1B116353.D	1	09/11/18	CSF	n/a	n/a	V1B5601
JC73365-2	1B116357.D	1	09/11/18	CSF	n/a	n/a	V1B5601

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

JC73365-1, JC73365-2, JC73365-3, JC73365-4

CAS No.	Compound	JC73365-2 ug/l	Q	DUP ug/l	Q	RPD	Limits
10061-01-5	cis-1,3-Dichloropropene	ND		ND		nc	10
10061-02-6	trans-1,3-Dichloropropene	ND		ND		nc	10
100-41-4	Ethylbenzene	ND		ND		nc	10
87-68-3	Hexachlorobutadiene	ND		ND		nc	10
591-78-6	2-Hexanone	ND		ND		nc	10
98-82-8	Isopropylbenzene	ND		ND		nc	10
99-87-6	p-Isopropyltoluene	ND		ND		nc	10
75-09-2	Methylene chloride	ND		ND		nc	10
1634-04-4	Methyl Tert Butyl Ether	ND		ND		nc	10
108-10-1	4-Methyl-2-pentanone	ND		ND		nc	10
91-20-3	Naphthalene	ND		ND		nc	10
103-65-1	n-Propylbenzene	ND		ND		nc	10
100-42-5	Styrene	ND		ND		nc	10
630-20-6	1,1,1,2-Tetrachloroethane	ND		ND		nc	10
71-55-6	1,1,1-Trichloroethane	ND		0.33	J	200* [a]	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	0.28	J	ND		200* [a]	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	JC73365-2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	83%	74%	70-130%
460-00-4	4-Bromofluorobenzene	80%	76%	70-130%

* = Outside of Control Limits.

Duplicate Summary

Job Number: JC73365
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC73365-2DUP	1B116353.D	1	09/11/18	CSF	n/a	n/a	V1B5601
JC73365-2	1B116357.D	1	09/11/18	CSF	n/a	n/a	V1B5601

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

JC73365-1, JC73365-2, JC73365-3, JC73365-4

(a) RPD acceptable due to low DUP and sample concentrations.

* = Outside of Control Limits.

Instrument Performance Check (BFB)

Job Number: JC73365
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample: V1B5590-BFB
Lab File ID: 1B116161.D
Instrument ID: GCMS1B
Injection Date: 08/23/18
Injection Time: 19:15

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	14.99 - 40.0% of mass 95	2648	20.2		Pass
75	30.0 - 80.0% of mass 95	6871	52.4		Pass
95	Base peak, 100% relative abundance	13118	100.0		Pass
96	5.0 - 9.0% of mass 95	865	6.59		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	11203	85.4		Pass
175	5.0 - 9.0% of mass 174	883	6.73	(7.88) [a]	Pass
176	95.0 - 101.0% of mass 174	10827	82.5	(96.6) [a]	Pass
177	5.0 - 9.0% of mass 176	804	6.13	(7.43) [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
V1B5590-IC5590	1B116162.D	08/23/18	19:50	00:35	Initial cal 0.2
V1B5590-IC5590	1B116163.D	08/23/18	20:21	01:06	Initial cal 0.5
V1B5590-IC5590	1B116164.D	08/23/18	20:53	01:38	Initial cal 1
V1B5590-IC5590	1B116165.D	08/23/18	21:25	02:10	Initial cal 2
V1B5590-IC5590	1B116166.D	08/23/18	21:56	02:41	Initial cal 5
V1B5590-ICC5590	1B116167.D	08/23/18	22:27	03:12	Initial cal 10
V1B5590-IC5590	1B116168.D	08/23/18	22:59	03:44	Initial cal 20
V1B5590-IC5590	1B116169.D	08/23/18	23:30	04:15	Initial cal 40
V1B5590-IC5590	1B116170.D	08/24/18	00:02	04:47	Initial cal 80
V1B5590-ICV5590	1B116172.D	08/24/18	01:05	05:50	Initial cal verification 10

Instrument Performance Check (BFB)

Job Number: JC73365
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample: V1B5601-BFB
Lab File ID: 1B116345.D
Instrument ID: GCMS1B
Injection Date: 09/11/18
Injection Time: 12:19

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	14.99 - 40.0% of mass 95	3836	17.8		Pass
75	30.0 - 80.0% of mass 95	10138	46.9		Pass
95	Base peak, 100% relative abundance	21595	100.0		Pass
96	5.0 - 9.0% of mass 95	1388	6.43		Pass
173	Less than 2.0% of mass 174	130	0.60	(0.77) [a]	Pass
174	50.0 - 120.0% of mass 95	16927	78.4		Pass
175	5.0 - 9.0% of mass 174	1243	5.76	(7.34) [a]	Pass
176	95.0 - 101.0% of mass 174	16387	75.9	(96.8) [a]	Pass
177	5.0 - 9.0% of mass 176	1022	4.73	(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
V1B5601-CC5590	1B116346.D	09/11/18	13:09	00:50	Continuing cal 5
V1B5601-BS	1B116346.D	09/11/18	13:09	00:50	Blank Spike
V1B5601-MB	1B116347.D	09/11/18	13:49	01:30	Method Blank
ZZZZZZ	1B116348.D	09/11/18	14:21	02:02	(unrelated sample)
JC73365-1	1B116349.D	09/11/18	14:53	02:34	RW-7742TO-090618
JC73365-3	1B116350.D	09/11/18	15:24	03:05	RW-1227OCM-090618-F
JC73365-4	1B116351.D	09/11/18	15:56	03:37	RW-1227OCM-090618
JC73365-1MS	1B116352.D	09/11/18	16:28	04:09	Matrix Spike
JC73365-2DUP	1B116353.D	09/11/18	16:59	04:40	Duplicate
ZZZZZZ	1B116354.D	09/11/18	17:31	05:12	(unrelated sample)
ZZZZZZ	1B116356.D	09/11/18	18:34	06:15	(unrelated sample)
JC73365-2	1B116357.D	09/11/18	19:05	06:46	TB-090618
ZZZZZZ	1B116358.D	09/11/18	19:37	07:18	(unrelated sample)
ZZZZZZ	1B116359.D	09/11/18	20:09	07:50	(unrelated sample)
ZZZZZZ	1B116360.D	09/11/18	20:40	08:21	(unrelated sample)
ZZZZZZ	1B116361.D	09/11/18	21:12	08:53	(unrelated sample)
ZZZZZZ	1B116362.D	09/11/18	21:44	09:25	(unrelated sample)
ZZZZZZ	1B116363.D	09/11/18	22:16	09:57	(unrelated sample)

Instrument Performance Check (BFB)

Job Number: JC73365
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

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

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

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

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

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

Instrument Performance Check (BFB)

Job Number: JC73365
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample: V3A6943-BFB
Lab File ID: 3A160786.D
Instrument ID: GCMS3A
Injection Date: 09/10/18
Injection Time: 08:46

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	9302	19.9		Pass
75	30.0 - 60.0% of mass 95	23346	49.9		Pass
95	Base peak, 100% relative abundance	46744	100.0		Pass
96	5.0 - 9.0% of mass 95	3101	6.63		Pass
173	Less than 2.0% of mass 174	604	1.29	(1.56) [a]	Pass
174	50.0 - 120.0% of mass 95	38818	83.0		Pass
175	5.0 - 9.0% of mass 174	3026	6.47	(7.80) [a]	Pass
176	95.0 - 101.0% of mass 174	37248	79.7	(96.0) [a]	Pass
177	5.0 - 9.0% of mass 176	2576	5.51	(6.92) [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
V3A6943-CC6923	3A160787.D	09/10/18	09:15	00:29	Continuing cal 5
V3A6943-BS	3A160788.D	09/10/18	10:21	01:35	Blank Spike
V3A6943-MB	3A160789.D	09/10/18	10:51	02:05	Method Blank
JC73223-7	3A160790.D	09/10/18	11:32	02:46	(used for QC only; not part of job JC73365)
ZZZZZZ	3A160791.D	09/10/18	12:00	03:14	(unrelated sample)
ZZZZZZ	3A160792.D	09/10/18	12:28	03:42	(unrelated sample)
ZZZZZZ	3A160793.D	09/10/18	12:55	04:09	(unrelated sample)
JC73223-7MS	3A160794.D	09/10/18	13:23	04:37	Matrix Spike
JC73223-7MSD	3A160795.D	09/10/18	13:50	05:04	Matrix Spike Duplicate
ZZZZZZ	3A160797.D	09/10/18	14:45	05:59	(unrelated sample)
JC73365-2	3A160798.D	09/10/18	15:12	06:26	TB-090618
JC73365-1	3A160799.D	09/10/18	15:40	06:54	RW-7742TO-090618
JC73365-3	3A160800.D	09/10/18	16:07	07:21	RW-1227OCM-090618-F
JC73365-4	3A160801.D	09/10/18	16:35	07:49	RW-1227OCM-090618

Surrogate Recovery Summary

Job Number: JC73365
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
JC73365-1	1B116349.D	83	83
JC73365-2	1B116357.D	74	76
JC73365-3	1B116350.D	83	81
JC73365-4	1B116351.D	85	82
JC73365-1MS	1B116352.D	90	94
JC73365-2DUP	1B116353.D	83	80
V1B5601-BS	1B116346.D	92	99
V1B5601-MB	1B116347.D	86	84

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

Surrogate Recovery Summary

Job Number: JC73365
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
JC73365-1	3A160799.D	85
JC73365-2	3A160798.D	80
JC73365-3	3A160800.D	86
JC73365-4	3A160801.D	85
JC73223-7MS	3A160794.D	116
JC73223-7MSD	3A160795.D	103
V3A6943-BS	3A160788.D	93
V3A6943-MB	3A160789.D	90

Surrogate Compounds	Recovery Limits
S1 = 1,4-Dioxane-d8	51-175%

ENCLOSURE B – LABORATORY ANALYTICAL REPORT FOR OFFSITE GROUNDWATER MONITORING WELL SAMPLES (AUGUST 2018)

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

August 30, 2018

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

RE: Project: Kopflex
Pace Project No.: 92397044

Dear Eric Johnson:
Enclosed are the analytical results for sample(s) received by the laboratory on August 24, 2018. 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
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CERTIFICATIONS

Project: Kopflex
Pace Project No.: 92397044

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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SAMPLE SUMMARY

Project: Kopflex
Pace Project No.: 92397044

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92397044001	**TRIP BLANK**	Water	08/23/18 00:00	08/24/18 09:30
92397044002	**MW-34D**	Water	08/23/18 08:55	08/24/18 09:30
92397044003	**MW-30D-273**	Water	08/23/18 09:55	08/24/18 09:30
92397044004	**MW-30D-413**	Water	08/23/18 09:40	08/24/18 09:30
92397044005	**MW-29D**	Water	08/23/18 10:05	08/24/18 09:30
92397044006	**MW-32D**	Water	08/23/18 10:25	08/24/18 09:30
92397044007	**MW-36D**	Water	08/23/18 10:45	08/24/18 09:30

Pace Analytical Services, LLC
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SAMPLE ANALYTE COUNT

Project: Kopflex
Pace Project No.: 92397044

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92397044001	**TRIP BLANK**	EPA 8260B	GAW	63	PASI-C
		EPA 8260B Mod.	DLK	3	PASI-C
92397044002	**MW-34D**	EPA 8260B	GAW	63	PASI-C
		EPA 8260B Mod.	DLK	3	PASI-C
92397044003	**MW-30D-273**	EPA 8260B	GAW	63	PASI-C
		EPA 8260B Mod.	DLK	3	PASI-C
92397044004	**MW-30D-413**	EPA 8260B	GAW	63	PASI-C
		EPA 8260B Mod.	DLK	3	PASI-C
92397044005	**MW-29D**	EPA 8260B	GAW	63	PASI-C
		EPA 8260B Mod.	DLK	3	PASI-C
92397044006	**MW-32D**	EPA 8260B	GAW	63	PASI-C
		EPA 8260B Mod.	DLK	3	PASI-C
92397044007	**MW-36D**	EPA 8260B	GAW	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.: 92397044

Sample: TRIP BLANK **Lab ID: 92397044001** Collected: 08/23/18 00:00 Received: 08/24/18 09:30 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		08/28/18 12:20	67-64-1	
Benzene	ND	ug/L	1.0	1		08/28/18 12:20	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		08/28/18 12:20	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		08/28/18 12:20	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		08/28/18 12:20	75-27-4	
Bromoform	ND	ug/L	1.0	1		08/28/18 12:20	75-25-2	
Bromomethane	ND	ug/L	2.0	1		08/28/18 12:20	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		08/28/18 12:20	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	1		08/28/18 12:20	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		08/28/18 12:20	108-90-7	
Chloroethane	ND	ug/L	1.0	1		08/28/18 12:20	75-00-3	
Chloroform	ND	ug/L	1.0	1		08/28/18 12:20	67-66-3	
Chloromethane	ND	ug/L	1.0	1		08/28/18 12:20	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		08/28/18 12:20	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		08/28/18 12:20	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.0	1		08/28/18 12:20	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		08/28/18 12:20	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		08/28/18 12:20	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		08/28/18 12:20	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		08/28/18 12:20	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		08/28/18 12:20	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		08/28/18 12:20	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		08/28/18 12:20	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		08/28/18 12:20	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		08/28/18 12:20	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		08/28/18 12:20	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		08/28/18 12:20	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		08/28/18 12:20	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		08/28/18 12:20	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		08/28/18 12:20	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		08/28/18 12:20	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		08/28/18 12:20	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		08/28/18 12:20	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		08/28/18 12:20	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	1		08/28/18 12:20	108-20-3	
Ethylbenzene	ND	ug/L	1.0	1		08/28/18 12:20	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		08/28/18 12:20	87-68-3	
2-Hexanone	ND	ug/L	5.0	1		08/28/18 12:20	591-78-6	
p-Isopropyltoluene	ND	ug/L	1.0	1		08/28/18 12:20	99-87-6	
Methylene Chloride	ND	ug/L	2.0	1		08/28/18 12:20	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		08/28/18 12:20	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		08/28/18 12:20	1634-04-4	
Naphthalene	ND	ug/L	1.0	1		08/28/18 12:20	91-20-3	
Styrene	ND	ug/L	1.0	1		08/28/18 12:20	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		08/28/18 12:20	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		08/28/18 12:20	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		08/28/18 12:20	127-18-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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(704)875-9092

ANALYTICAL RESULTS

Project: Kopflex
Pace Project No.: 92397044

Sample: TRIP BLANK **Lab ID: 92397044001** Collected: 08/23/18 00:00 Received: 08/24/18 09:30 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		08/28/18 12:20	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		08/28/18 12:20	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		08/28/18 12:20	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		08/28/18 12:20	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		08/28/18 12:20	79-00-5	
Trichloroethene	ND	ug/L	1.0	1		08/28/18 12:20	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		08/28/18 12:20	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	1		08/28/18 12:20	96-18-4	
Vinyl acetate	ND	ug/L	2.0	1		08/28/18 12:20	108-05-4	
Vinyl chloride	ND	ug/L	1.0	1		08/28/18 12:20	75-01-4	
Xylene (Total)	ND	ug/L	1.0	1		08/28/18 12:20	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	1		08/28/18 12:20	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		08/28/18 12:20	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	104	%	70-130	1		08/28/18 12:20	460-00-4	
1,2-Dichloroethane-d4 (S)	95	%	70-130	1		08/28/18 12:20	17060-07-0	
Toluene-d8 (S)	111	%	70-130	1		08/28/18 12:20	2037-26-5	
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	ND	ug/L	2.0	1		08/28/18 11:20	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	91	%	50-150	1		08/28/18 11:20	17060-07-0	
Toluene-d8 (S)	87	%	50-150	1		08/28/18 11:20	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.: 92397044

Sample: MW-34D **Lab ID: 92397044002** Collected: 08/23/18 08:55 Received: 08/24/18 09:30 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		08/29/18 18:03	67-64-1	
Benzene	ND	ug/L	1.0	1		08/29/18 18:03	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		08/29/18 18:03	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		08/29/18 18:03	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		08/29/18 18:03	75-27-4	
Bromoform	ND	ug/L	1.0	1		08/29/18 18:03	75-25-2	
Bromomethane	ND	ug/L	2.0	1		08/29/18 18:03	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		08/29/18 18:03	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	1		08/29/18 18:03	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		08/29/18 18:03	108-90-7	
Chloroethane	ND	ug/L	1.0	1		08/29/18 18:03	75-00-3	
Chloroform	ND	ug/L	1.0	1		08/29/18 18:03	67-66-3	
Chloromethane	ND	ug/L	1.0	1		08/29/18 18:03	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		08/29/18 18:03	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		08/29/18 18:03	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.0	1		08/29/18 18:03	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		08/29/18 18:03	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		08/29/18 18:03	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		08/29/18 18:03	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		08/29/18 18:03	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		08/29/18 18:03	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		08/29/18 18:03	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		08/29/18 18:03	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		08/29/18 18:03	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		08/29/18 18:03	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		08/29/18 18:03	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		08/29/18 18:03	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		08/29/18 18:03	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		08/29/18 18:03	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		08/29/18 18:03	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		08/29/18 18:03	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		08/29/18 18:03	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		08/29/18 18:03	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		08/29/18 18:03	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	1		08/29/18 18:03	108-20-3	
Ethylbenzene	ND	ug/L	1.0	1		08/29/18 18:03	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		08/29/18 18:03	87-68-3	
2-Hexanone	ND	ug/L	5.0	1		08/29/18 18:03	591-78-6	
p-Isopropyltoluene	ND	ug/L	1.0	1		08/29/18 18:03	99-87-6	
Methylene Chloride	ND	ug/L	2.0	1		08/29/18 18:03	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		08/29/18 18:03	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		08/29/18 18:03	1634-04-4	
Naphthalene	ND	ug/L	1.0	1		08/29/18 18:03	91-20-3	
Styrene	ND	ug/L	1.0	1		08/29/18 18:03	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		08/29/18 18:03	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		08/29/18 18:03	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		08/29/18 18:03	127-18-4	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: Kopflex
Pace Project No.: 92397044

Sample: MW-34D **Lab ID: 92397044002** Collected: 08/23/18 08:55 Received: 08/24/18 09:30 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		08/29/18 18:03	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		08/29/18 18:03	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		08/29/18 18:03	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		08/29/18 18:03	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		08/29/18 18:03	79-00-5	
Trichloroethene	ND	ug/L	1.0	1		08/29/18 18:03	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		08/29/18 18:03	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	1		08/29/18 18:03	96-18-4	
Vinyl acetate	ND	ug/L	2.0	1		08/29/18 18:03	108-05-4	
Vinyl chloride	ND	ug/L	1.0	1		08/29/18 18:03	75-01-4	
Xylene (Total)	ND	ug/L	1.0	1		08/29/18 18:03	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	1		08/29/18 18:03	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		08/29/18 18:03	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	101	%	70-130	1		08/29/18 18:03	460-00-4	
1,2-Dichloroethane-d4 (S)	96	%	70-130	1		08/29/18 18:03	17060-07-0	
Toluene-d8 (S)	106	%	70-130	1		08/29/18 18:03	2037-26-5	
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	ND	ug/L	2.0	1		08/28/18 14:56	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	91	%	50-150	1		08/28/18 14:56	17060-07-0	
Toluene-d8 (S)	78	%	50-150	1		08/28/18 14:56	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.: 92397044

Sample: MW-30D-273 **Lab ID: 92397044003** Collected: 08/23/18 09:55 Received: 08/24/18 09:30 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		08/29/18 04:38	67-64-1	
Benzene	ND	ug/L	1.0	1		08/29/18 04:38	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		08/29/18 04:38	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		08/29/18 04:38	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		08/29/18 04:38	75-27-4	
Bromoform	ND	ug/L	1.0	1		08/29/18 04:38	75-25-2	
Bromomethane	ND	ug/L	2.0	1		08/29/18 04:38	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		08/29/18 04:38	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	1		08/29/18 04:38	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		08/29/18 04:38	108-90-7	
Chloroethane	ND	ug/L	1.0	1		08/29/18 04:38	75-00-3	
Chloroform	ND	ug/L	1.0	1		08/29/18 04:38	67-66-3	
Chloromethane	ND	ug/L	1.0	1		08/29/18 04:38	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		08/29/18 04:38	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		08/29/18 04:38	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.0	1		08/29/18 04:38	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		08/29/18 04:38	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		08/29/18 04:38	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		08/29/18 04:38	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		08/29/18 04:38	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		08/29/18 04:38	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		08/29/18 04:38	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		08/29/18 04:38	75-71-8	
1,1-Dichloroethane	**1.0**	ug/L	1.0	1		08/29/18 04:38	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		08/29/18 04:38	107-06-2	
1,1-Dichloroethene	**40.7**	ug/L	1.0	1		08/29/18 04:38	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		08/29/18 04:38	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		08/29/18 04:38	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		08/29/18 04:38	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		08/29/18 04:38	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		08/29/18 04:38	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		08/29/18 04:38	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		08/29/18 04:38	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		08/29/18 04:38	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	1		08/29/18 04:38	108-20-3	
Ethylbenzene	ND	ug/L	1.0	1		08/29/18 04:38	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		08/29/18 04:38	87-68-3	
2-Hexanone	ND	ug/L	5.0	1		08/29/18 04:38	591-78-6	
p-Isopropyltoluene	ND	ug/L	1.0	1		08/29/18 04:38	99-87-6	
Methylene Chloride	ND	ug/L	2.0	1		08/29/18 04:38	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		08/29/18 04:38	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		08/29/18 04:38	1634-04-4	
Naphthalene	ND	ug/L	1.0	1		08/29/18 04:38	91-20-3	
Styrene	ND	ug/L	1.0	1		08/29/18 04:38	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		08/29/18 04:38	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		08/29/18 04:38	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		08/29/18 04:38	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.: 92397044

Sample: MW-30D-273 **Lab ID: 92397044003** Collected: 08/23/18 09:55 Received: 08/24/18 09:30 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		08/29/18 04:38	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		08/29/18 04:38	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		08/29/18 04:38	120-82-1	
1,1,1-Trichloroethane	**1.7**	ug/L	1.0	1		08/29/18 04:38	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		08/29/18 04:38	79-00-5	
Trichloroethene	ND	ug/L	1.0	1		08/29/18 04:38	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		08/29/18 04:38	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	1		08/29/18 04:38	96-18-4	
Vinyl acetate	ND	ug/L	2.0	1		08/29/18 04:38	108-05-4	
Vinyl chloride	ND	ug/L	1.0	1		08/29/18 04:38	75-01-4	
Xylene (Total)	ND	ug/L	1.0	1		08/29/18 04:38	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	1		08/29/18 04:38	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		08/29/18 04:38	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	103	%	70-130	1		08/29/18 04:38	460-00-4	
1,2-Dichloroethane-d4 (S)	97	%	70-130	1		08/29/18 04:38	17060-07-0	
Toluene-d8 (S)	114	%	70-130	1		08/29/18 04:38	2037-26-5	
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	**24.5**	ug/L	2.0	1		08/28/18 11:59	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	91	%	50-150	1		08/28/18 11:59	17060-07-0	
Toluene-d8 (S)	84	%	50-150	1		08/28/18 11:59	2037-26-5	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: Kopflex
Pace Project No.: 92397044

Sample: MW-30D-413 **Lab ID: 92397044004** Collected: 08/23/18 09:40 Received: 08/24/18 09:30 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		08/29/18 16:55	67-64-1	
Benzene	ND	ug/L	1.0	1		08/29/18 16:55	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		08/29/18 16:55	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		08/29/18 16:55	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		08/29/18 16:55	75-27-4	
Bromoform	ND	ug/L	1.0	1		08/29/18 16:55	75-25-2	
Bromomethane	ND	ug/L	2.0	1		08/29/18 16:55	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		08/29/18 16:55	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	1		08/29/18 16:55	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		08/29/18 16:55	108-90-7	
Chloroethane	ND	ug/L	1.0	1		08/29/18 16:55	75-00-3	
Chloroform	ND	ug/L	1.0	1		08/29/18 16:55	67-66-3	
Chloromethane	ND	ug/L	1.0	1		08/29/18 16:55	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		08/29/18 16:55	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		08/29/18 16:55	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.0	1		08/29/18 16:55	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		08/29/18 16:55	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		08/29/18 16:55	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		08/29/18 16:55	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		08/29/18 16:55	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		08/29/18 16:55	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		08/29/18 16:55	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		08/29/18 16:55	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		08/29/18 16:55	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		08/29/18 16:55	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		08/29/18 16:55	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		08/29/18 16:55	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		08/29/18 16:55	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		08/29/18 16:55	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		08/29/18 16:55	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		08/29/18 16:55	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		08/29/18 16:55	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		08/29/18 16:55	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		08/29/18 16:55	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	1		08/29/18 16:55	108-20-3	
Ethylbenzene	ND	ug/L	1.0	1		08/29/18 16:55	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		08/29/18 16:55	87-68-3	
2-Hexanone	ND	ug/L	5.0	1		08/29/18 16:55	591-78-6	
p-Isopropyltoluene	ND	ug/L	1.0	1		08/29/18 16:55	99-87-6	
Methylene Chloride	ND	ug/L	2.0	1		08/29/18 16:55	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		08/29/18 16:55	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		08/29/18 16:55	1634-04-4	
Naphthalene	ND	ug/L	1.0	1		08/29/18 16:55	91-20-3	
Styrene	ND	ug/L	1.0	1		08/29/18 16:55	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		08/29/18 16:55	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		08/29/18 16:55	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		08/29/18 16:55	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.: 92397044

Sample: MW-30D-413 **Lab ID: 92397044004** Collected: 08/23/18 09:40 Received: 08/24/18 09:30 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		08/29/18 16:55	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		08/29/18 16:55	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		08/29/18 16:55	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		08/29/18 16:55	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		08/29/18 16:55	79-00-5	
Trichloroethene	ND	ug/L	1.0	1		08/29/18 16:55	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		08/29/18 16:55	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	1		08/29/18 16:55	96-18-4	
Vinyl acetate	ND	ug/L	2.0	1		08/29/18 16:55	108-05-4	
Vinyl chloride	ND	ug/L	1.0	1		08/29/18 16:55	75-01-4	
Xylene (Total)	ND	ug/L	1.0	1		08/29/18 16:55	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	1		08/29/18 16:55	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		08/29/18 16:55	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	102	%	70-130	1		08/29/18 16:55	460-00-4	
1,2-Dichloroethane-d4 (S)	94	%	70-130	1		08/29/18 16:55	17060-07-0	
Toluene-d8 (S)	112	%	70-130	1		08/29/18 16:55	2037-26-5	
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	ND	ug/L	2.0	1		08/28/18 16:21	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	87	%	50-150	1		08/28/18 16:21	17060-07-0	
Toluene-d8 (S)	77	%	50-150	1		08/28/18 16:21	2037-26-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Kopflex
Pace Project No.: 92397044

Sample: MW-29D **Lab ID: 92397044005** Collected: 08/23/18 10:05 Received: 08/24/18 09:30 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		08/29/18 18:20	67-64-1	
Benzene	ND	ug/L	1.0	1		08/29/18 18:20	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		08/29/18 18:20	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		08/29/18 18:20	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		08/29/18 18:20	75-27-4	
Bromoform	ND	ug/L	1.0	1		08/29/18 18:20	75-25-2	
Bromomethane	ND	ug/L	2.0	1		08/29/18 18:20	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		08/29/18 18:20	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	1		08/29/18 18:20	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		08/29/18 18:20	108-90-7	
Chloroethane	ND	ug/L	1.0	1		08/29/18 18:20	75-00-3	
Chloroform	ND	ug/L	1.0	1		08/29/18 18:20	67-66-3	
Chloromethane	ND	ug/L	1.0	1		08/29/18 18:20	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		08/29/18 18:20	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		08/29/18 18:20	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.0	1		08/29/18 18:20	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		08/29/18 18:20	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		08/29/18 18:20	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		08/29/18 18:20	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		08/29/18 18:20	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		08/29/18 18:20	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		08/29/18 18:20	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		08/29/18 18:20	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		08/29/18 18:20	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		08/29/18 18:20	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		08/29/18 18:20	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		08/29/18 18:20	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		08/29/18 18:20	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		08/29/18 18:20	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		08/29/18 18:20	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		08/29/18 18:20	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		08/29/18 18:20	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		08/29/18 18:20	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		08/29/18 18:20	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	1		08/29/18 18:20	108-20-3	
Ethylbenzene	ND	ug/L	1.0	1		08/29/18 18:20	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		08/29/18 18:20	87-68-3	
2-Hexanone	ND	ug/L	5.0	1		08/29/18 18:20	591-78-6	
p-Isopropyltoluene	ND	ug/L	1.0	1		08/29/18 18:20	99-87-6	
Methylene Chloride	ND	ug/L	2.0	1		08/29/18 18:20	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		08/29/18 18:20	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		08/29/18 18:20	1634-04-4	
Naphthalene	ND	ug/L	1.0	1		08/29/18 18:20	91-20-3	
Styrene	ND	ug/L	1.0	1		08/29/18 18:20	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		08/29/18 18:20	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		08/29/18 18:20	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		08/29/18 18:20	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.: 92397044

Sample: MW-29D **Lab ID: 92397044005** Collected: 08/23/18 10:05 Received: 08/24/18 09:30 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		08/29/18 18:20	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		08/29/18 18:20	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		08/29/18 18:20	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		08/29/18 18:20	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		08/29/18 18:20	79-00-5	
Trichloroethene	ND	ug/L	1.0	1		08/29/18 18:20	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		08/29/18 18:20	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	1		08/29/18 18:20	96-18-4	
Vinyl acetate	ND	ug/L	2.0	1		08/29/18 18:20	108-05-4	
Vinyl chloride	ND	ug/L	1.0	1		08/29/18 18:20	75-01-4	
Xylene (Total)	ND	ug/L	1.0	1		08/29/18 18:20	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	1		08/29/18 18:20	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		08/29/18 18:20	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	97	%	70-130	1		08/29/18 18:20	460-00-4	
1,2-Dichloroethane-d4 (S)	91	%	70-130	1		08/29/18 18:20	17060-07-0	
Toluene-d8 (S)	104	%	70-130	1		08/29/18 18:20	2037-26-5	
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	ND	ug/L	2.0	1		08/28/18 16:41	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	87	%	50-150	1		08/28/18 16:41	17060-07-0	
Toluene-d8 (S)	77	%	50-150	1		08/28/18 16:41	2037-26-5	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: Kopflex
Pace Project No.: 92397044

Sample: MW-32D **Lab ID: 92397044006** Collected: 08/23/18 10:25 Received: 08/24/18 09:30 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		08/29/18 17:12	67-64-1	
Benzene	ND	ug/L	1.0	1		08/29/18 17:12	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		08/29/18 17:12	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		08/29/18 17:12	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		08/29/18 17:12	75-27-4	
Bromoform	ND	ug/L	1.0	1		08/29/18 17:12	75-25-2	
Bromomethane	ND	ug/L	2.0	1		08/29/18 17:12	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		08/29/18 17:12	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	1		08/29/18 17:12	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		08/29/18 17:12	108-90-7	
Chloroethane	ND	ug/L	1.0	1		08/29/18 17:12	75-00-3	
Chloroform	ND	ug/L	1.0	1		08/29/18 17:12	67-66-3	
Chloromethane	ND	ug/L	1.0	1		08/29/18 17:12	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		08/29/18 17:12	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		08/29/18 17:12	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.0	1		08/29/18 17:12	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		08/29/18 17:12	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		08/29/18 17:12	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		08/29/18 17:12	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		08/29/18 17:12	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		08/29/18 17:12	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		08/29/18 17:12	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		08/29/18 17:12	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		08/29/18 17:12	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		08/29/18 17:12	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		08/29/18 17:12	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		08/29/18 17:12	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		08/29/18 17:12	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		08/29/18 17:12	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		08/29/18 17:12	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		08/29/18 17:12	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		08/29/18 17:12	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		08/29/18 17:12	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		08/29/18 17:12	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	1		08/29/18 17:12	108-20-3	
Ethylbenzene	ND	ug/L	1.0	1		08/29/18 17:12	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		08/29/18 17:12	87-68-3	
2-Hexanone	ND	ug/L	5.0	1		08/29/18 17:12	591-78-6	
p-Isopropyltoluene	ND	ug/L	1.0	1		08/29/18 17:12	99-87-6	
Methylene Chloride	ND	ug/L	2.0	1		08/29/18 17:12	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		08/29/18 17:12	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		08/29/18 17:12	1634-04-4	
Naphthalene	ND	ug/L	1.0	1		08/29/18 17:12	91-20-3	
Styrene	ND	ug/L	1.0	1		08/29/18 17:12	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		08/29/18 17:12	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		08/29/18 17:12	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		08/29/18 17:12	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.: 92397044

Sample: MW-32D **Lab ID: 92397044006** Collected: 08/23/18 10:25 Received: 08/24/18 09:30 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		08/29/18 17:12	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		08/29/18 17:12	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		08/29/18 17:12	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		08/29/18 17:12	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		08/29/18 17:12	79-00-5	
Trichloroethene	ND	ug/L	1.0	1		08/29/18 17:12	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		08/29/18 17:12	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	1		08/29/18 17:12	96-18-4	
Vinyl acetate	ND	ug/L	2.0	1		08/29/18 17:12	108-05-4	
Vinyl chloride	ND	ug/L	1.0	1		08/29/18 17:12	75-01-4	
Xylene (Total)	ND	ug/L	1.0	1		08/29/18 17:12	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	1		08/29/18 17:12	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		08/29/18 17:12	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	100	%	70-130	1		08/29/18 17:12	460-00-4	
1,2-Dichloroethane-d4 (S)	98	%	70-130	1		08/29/18 17:12	17060-07-0	
Toluene-d8 (S)	107	%	70-130	1		08/29/18 17:12	2037-26-5	
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	ND	ug/L	2.0	1		08/28/18 13:57	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	88	%	50-150	1		08/28/18 13:57	17060-07-0	
Toluene-d8 (S)	79	%	50-150	1		08/28/18 13:57	2037-26-5	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: Kopflex
Pace Project No.: 92397044

Sample: MW-36D **Lab ID: 92397044007** Collected: 08/23/18 10:45 Received: 08/24/18 09:30 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		08/29/18 17:46	67-64-1	
Benzene	ND	ug/L	1.0	1		08/29/18 17:46	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		08/29/18 17:46	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		08/29/18 17:46	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		08/29/18 17:46	75-27-4	
Bromoform	ND	ug/L	1.0	1		08/29/18 17:46	75-25-2	
Bromomethane	ND	ug/L	2.0	1		08/29/18 17:46	74-83-9	M1
2-Butanone (MEK)	ND	ug/L	5.0	1		08/29/18 17:46	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	1		08/29/18 17:46	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		08/29/18 17:46	108-90-7	
Chloroethane	ND	ug/L	1.0	1		08/29/18 17:46	75-00-3	
Chloroform	ND	ug/L	1.0	1		08/29/18 17:46	67-66-3	
Chloromethane	ND	ug/L	1.0	1		08/29/18 17:46	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		08/29/18 17:46	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		08/29/18 17:46	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.0	1		08/29/18 17:46	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		08/29/18 17:46	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		08/29/18 17:46	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		08/29/18 17:46	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		08/29/18 17:46	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		08/29/18 17:46	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		08/29/18 17:46	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		08/29/18 17:46	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		08/29/18 17:46	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		08/29/18 17:46	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		08/29/18 17:46	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		08/29/18 17:46	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		08/29/18 17:46	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		08/29/18 17:46	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		08/29/18 17:46	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		08/29/18 17:46	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		08/29/18 17:46	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		08/29/18 17:46	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		08/29/18 17:46	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	1		08/29/18 17:46	108-20-3	
Ethylbenzene	ND	ug/L	1.0	1		08/29/18 17:46	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		08/29/18 17:46	87-68-3	
2-Hexanone	ND	ug/L	5.0	1		08/29/18 17:46	591-78-6	
p-Isopropyltoluene	ND	ug/L	1.0	1		08/29/18 17:46	99-87-6	
Methylene Chloride	ND	ug/L	2.0	1		08/29/18 17:46	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		08/29/18 17:46	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		08/29/18 17:46	1634-04-4	
Naphthalene	ND	ug/L	1.0	1		08/29/18 17:46	91-20-3	
Styrene	ND	ug/L	1.0	1		08/29/18 17:46	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		08/29/18 17:46	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		08/29/18 17:46	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		08/29/18 17:46	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.: 92397044

Sample: MW-36D **Lab ID: 92397044007** Collected: 08/23/18 10:45 Received: 08/24/18 09:30 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		08/29/18 17:46	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		08/29/18 17:46	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		08/29/18 17:46	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		08/29/18 17:46	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		08/29/18 17:46	79-00-5	
Trichloroethene	ND	ug/L	1.0	1		08/29/18 17:46	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		08/29/18 17:46	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	1		08/29/18 17:46	96-18-4	
Vinyl acetate	ND	ug/L	2.0	1		08/29/18 17:46	108-05-4	
Vinyl chloride	ND	ug/L	1.0	1		08/29/18 17:46	75-01-4	
Xylene (Total)	ND	ug/L	1.0	1		08/29/18 17:46	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	1		08/29/18 17:46	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		08/29/18 17:46	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	101	%	70-130	1		08/29/18 17:46	460-00-4	
1,2-Dichloroethane-d4 (S)	94	%	70-130	1		08/29/18 17:46	17060-07-0	
Toluene-d8 (S)	108	%	70-130	1		08/29/18 17:46	2037-26-5	
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	ND	ug/L	2.0	1		08/28/18 14:17	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	86	%	50-150	1		08/28/18 14:17	17060-07-0	
Toluene-d8 (S)	78	%	50-150	1		08/28/18 14:17	2037-26-5	

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.: 92397044

QC Batch: 427452 Analysis Method: EPA 8260B
QC Batch Method: EPA 8260B Analysis Description: 8260 MSV Low Level
Associated Lab Samples: 92397044001

METHOD BLANK: 2361339 Matrix: Water
Associated Lab Samples: 92397044001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	08/28/18 11:29	
1,1,1-Trichloroethane	ug/L	ND	1.0	08/28/18 11:29	
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	08/28/18 11:29	
1,1,2-Trichloroethane	ug/L	ND	1.0	08/28/18 11:29	
1,1-Dichloroethane	ug/L	ND	1.0	08/28/18 11:29	
1,1-Dichloroethene	ug/L	ND	1.0	08/28/18 11:29	
1,1-Dichloropropene	ug/L	ND	1.0	08/28/18 11:29	
1,2,3-Trichlorobenzene	ug/L	ND	1.0	08/28/18 11:29	
1,2,3-Trichloropropane	ug/L	ND	1.0	08/28/18 11:29	
1,2,4-Trichlorobenzene	ug/L	ND	1.0	08/28/18 11:29	
1,2-Dibromo-3-chloropropane	ug/L	ND	2.0	08/28/18 11:29	
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	08/28/18 11:29	
1,2-Dichlorobenzene	ug/L	ND	1.0	08/28/18 11:29	
1,2-Dichloroethane	ug/L	ND	1.0	08/28/18 11:29	
1,2-Dichloropropane	ug/L	ND	1.0	08/28/18 11:29	
1,3-Dichlorobenzene	ug/L	ND	1.0	08/28/18 11:29	
1,3-Dichloropropane	ug/L	ND	1.0	08/28/18 11:29	
1,4-Dichlorobenzene	ug/L	ND	1.0	08/28/18 11:29	
2,2-Dichloropropane	ug/L	ND	1.0	08/28/18 11:29	
2-Butanone (MEK)	ug/L	ND	5.0	08/28/18 11:29	
2-Chlorotoluene	ug/L	ND	1.0	08/28/18 11:29	
2-Hexanone	ug/L	ND	5.0	08/28/18 11:29	
4-Chlorotoluene	ug/L	ND	1.0	08/28/18 11:29	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	5.0	08/28/18 11:29	
Acetone	ug/L	ND	25.0	08/28/18 11:29	
Benzene	ug/L	ND	1.0	08/28/18 11:29	
Bromobenzene	ug/L	ND	1.0	08/28/18 11:29	
Bromochloromethane	ug/L	ND	1.0	08/28/18 11:29	
Bromodichloromethane	ug/L	ND	1.0	08/28/18 11:29	
Bromoform	ug/L	ND	1.0	08/28/18 11:29	
Bromomethane	ug/L	ND	2.0	08/28/18 11:29	
Carbon tetrachloride	ug/L	ND	1.0	08/28/18 11:29	
Chlorobenzene	ug/L	ND	1.0	08/28/18 11:29	
Chloroethane	ug/L	ND	1.0	08/28/18 11:29	
Chloroform	ug/L	ND	1.0	08/28/18 11:29	
Chloromethane	ug/L	ND	1.0	08/28/18 11:29	
cis-1,2-Dichloroethene	ug/L	ND	1.0	08/28/18 11:29	
cis-1,3-Dichloropropene	ug/L	ND	1.0	08/28/18 11:29	
Dibromochloromethane	ug/L	ND	1.0	08/28/18 11:29	
Dibromomethane	ug/L	ND	1.0	08/28/18 11:29	
Dichlorodifluoromethane	ug/L	ND	1.0	08/28/18 11:29	

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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.: 92397044

METHOD BLANK: 2361339 Matrix: Water
Associated Lab Samples: 92397044001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diisopropyl ether	ug/L	ND	1.0	08/28/18 11:29	
Ethylbenzene	ug/L	ND	1.0	08/28/18 11:29	
Hexachloro-1,3-butadiene	ug/L	ND	1.0	08/28/18 11:29	
m&p-Xylene	ug/L	ND	2.0	08/28/18 11:29	
Methyl-tert-butyl ether	ug/L	ND	1.0	08/28/18 11:29	
Methylene Chloride	ug/L	ND	2.0	08/28/18 11:29	
Naphthalene	ug/L	ND	1.0	08/28/18 11:29	
o-Xylene	ug/L	ND	1.0	08/28/18 11:29	
p-Isopropyltoluene	ug/L	ND	1.0	08/28/18 11:29	
Styrene	ug/L	ND	1.0	08/28/18 11:29	
Tetrachloroethene	ug/L	ND	1.0	08/28/18 11:29	
Toluene	ug/L	ND	1.0	08/28/18 11:29	
trans-1,2-Dichloroethene	ug/L	ND	1.0	08/28/18 11:29	
trans-1,3-Dichloropropene	ug/L	ND	1.0	08/28/18 11:29	
Trichloroethene	ug/L	ND	1.0	08/28/18 11:29	
Trichlorofluoromethane	ug/L	ND	1.0	08/28/18 11:29	
Vinyl acetate	ug/L	ND	2.0	08/28/18 11:29	
Vinyl chloride	ug/L	ND	1.0	08/28/18 11:29	
Xylene (Total)	ug/L	ND	1.0	08/28/18 11:29	
1,2-Dichloroethane-d4 (S)	%	92	70-130	08/28/18 11:29	
4-Bromofluorobenzene (S)	%	103	70-130	08/28/18 11:29	
Toluene-d8 (S)	%	113	70-130	08/28/18 11:29	

LABORATORY CONTROL SAMPLE: 2361340

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	50	48.7	97	80-125	
1,1,1-Trichloroethane	ug/L	50	46.6	93	71-129	
1,1,2,2-Tetrachloroethane	ug/L	50	47.0	94	79-124	
1,1,2-Trichloroethane	ug/L	50	51.3	103	85-125	
1,1-Dichloroethane	ug/L	50	43.6	87	73-126	
1,1-Dichloroethene	ug/L	50	49.7	99	66-135	
1,1-Dichloropropene	ug/L	50	52.1	104	74-135	
1,2,3-Trichlorobenzene	ug/L	50	46.3	93	73-135	
1,2,3-Trichloropropane	ug/L	50	46.5	93	75-130	
1,2,4-Trichlorobenzene	ug/L	50	48.0	96	75-134	
1,2-Dibromo-3-chloropropane	ug/L	50	47.5	95	71-133	
1,2-Dibromoethane (EDB)	ug/L	50	49.9	100	83-124	
1,2-Dichlorobenzene	ug/L	50	46.2	92	80-133	
1,2-Dichloroethane	ug/L	50	44.3	89	67-128	
1,2-Dichloropropane	ug/L	50	48.5	97	75-132	
1,3-Dichlorobenzene	ug/L	50	46.4	93	77-130	
1,3-Dichloropropane	ug/L	50	49.0	98	76-131	
1,4-Dichlorobenzene	ug/L	50	45.8	92	78-130	

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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.: 92397044

LABORATORY CONTROL SAMPLE: 2361340

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,2-Dichloropropane	ug/L	50	46.1	92	40-160	
2-Butanone (MEK)	ug/L	100	101	101	61-144	
2-Chlorotoluene	ug/L	50	45.0	90	74-132	
2-Hexanone	ug/L	100	91.0	91	68-143	
4-Chlorotoluene	ug/L	50	44.8	90	76-133	
4-Methyl-2-pentanone (MIBK)	ug/L	100	89.6	90	72-135	
Acetone	ug/L	100	90.9	91	48-146	
Benzene	ug/L	50	48.8	98	80-125	
Bromobenzene	ug/L	50	46.8	94	75-125	
Bromochloromethane	ug/L	50	58.8	118	71-125	
Bromodichloromethane	ug/L	50	46.5	93	78-124	
Bromoform	ug/L	50	46.4	93	71-128	
Bromomethane	ug/L	50	38.8	78	40-160	
Carbon tetrachloride	ug/L	50	46.2	92	69-131	
Chlorobenzene	ug/L	50	46.3	93	81-122	
Chloroethane	ug/L	50	43.4	87	39-148	
Chloroform	ug/L	50	46.7	93	73-127	
Chloromethane	ug/L	50	37.8	76	44-146	
cis-1,2-Dichloroethene	ug/L	50	44.7	89	74-124	
cis-1,3-Dichloropropene	ug/L	50	50.1	100	72-132	
Dibromochloromethane	ug/L	50	45.4	91	78-125	
Dibromomethane	ug/L	50	47.4	95	82-120	
Dichlorodifluoromethane	ug/L	50	54.4	109	34-157	
Diisopropyl ether	ug/L	50	47.2	94	69-135	
Ethylbenzene	ug/L	50	45.6	91	79-121	
Hexachloro-1,3-butadiene	ug/L	50	46.7	93	72-131	
m&p-Xylene	ug/L	100	91.2	91	81-124	
Methyl-tert-butyl ether	ug/L	50	50.0	100	74-131	
Methylene Chloride	ug/L	50	49.3	99	64-133	
Naphthalene	ug/L	50	47.1	94	73-133	
o-Xylene	ug/L	50	47.3	95	79-131	
p-Isopropyltoluene	ug/L	50	46.8	94	80-131	
Styrene	ug/L	50	45.6	91	84-126	
Tetrachloroethene	ug/L	50	45.9	92	78-122	
Toluene	ug/L	50	44.3	89	80-121	
trans-1,2-Dichloroethene	ug/L	50	45.7	91	71-127	
trans-1,3-Dichloropropene	ug/L	50	50.6	101	69-141	
Trichloroethene	ug/L	50	50.9	102	78-122	
Trichlorofluoromethane	ug/L	50	46.1	92	53-137	
Vinyl acetate	ug/L	100	91.8	92	40-160	
Vinyl chloride	ug/L	50	53.1	106	58-137	
Xylene (Total)	ug/L	150	138	92	81-126	
1,2-Dichloroethane-d4 (S)	%			92	70-130	
4-Bromofluorobenzene (S)	%			98	70-130	
Toluene-d8 (S)	%			95	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.: 92397044

MATRIX SPIKE SAMPLE: 2362445

Parameter	Units	92396999004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	20	21.4	107	70-130	
1,1,1-Trichloroethane	ug/L	ND	20	22.1	111	70-130	
1,1,2,2-Tetrachloroethane	ug/L	ND	20	20.4	102	70-130	
1,1,2-Trichloroethane	ug/L	ND	20	20.0	100	70-130	
1,1-Dichloroethane	ug/L	ND	20	20.2	101	70-130	
1,1-Dichloroethene	ug/L	ND	20	24.6	123	70-166	
1,1-Dichloropropene	ug/L	ND	20	21.6	108	70-130	
1,2,3-Trichlorobenzene	ug/L	ND	20	19.8	99	70-130	
1,2,3-Trichloropropane	ug/L	ND	20	21.6	108	70-130	
1,2,4-Trichlorobenzene	ug/L	ND	20	19.2	96	70-130	
1,2-Dibromo-3-chloropropane	ug/L	ND	20	19.1	95	70-130	
1,2-Dibromoethane (EDB)	ug/L	ND	20	20.0	100	70-130	
1,2-Dichlorobenzene	ug/L	ND	20	21.5	107	70-130	
1,2-Dichloroethane	ug/L	ND	20	21.6	108	70-130	
1,2-Dichloropropane	ug/L	ND	20	23.6	118	70-130	
1,3-Dichlorobenzene	ug/L	ND	20	22.0	110	70-130	
1,3-Dichloropropane	ug/L	ND	20	20.5	102	70-130	
1,4-Dichlorobenzene	ug/L	ND	20	21.9	109	70-130	
2,2-Dichloropropane	ug/L	ND	20	23.0	115	70-130	
2-Butanone (MEK)	ug/L	ND	40	36.5	91	70-130	
2-Chlorotoluene	ug/L	ND	20	22.3	111	70-130	
2-Hexanone	ug/L	ND	40	39.0	97	70-130	
4-Chlorotoluene	ug/L	ND	20	22.8	114	70-130	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	40	36.5	91	70-130	
Acetone	ug/L	ND	40	40.2	101	70-130	
Benzene	ug/L	ND	20	23.5	117	70-148	
Bromobenzene	ug/L	ND	20	22.7	114	70-130	
Bromochloromethane	ug/L	ND	20	22.4	112	70-130	
Bromodichloromethane	ug/L	ND	20	21.8	109	70-130	
Bromoform	ug/L	ND	20	17.4	87	70-130	
Bromomethane	ug/L	ND	20	22.5	113	70-130	
Carbon tetrachloride	ug/L	ND	20	23.5	117	70-130	
Chlorobenzene	ug/L	ND	20	22.6	113	70-146	
Chloroethane	ug/L	ND	20	23.5	118	70-130	
Chloroform	ug/L	ND	20	20.2	101	70-130	
Chloromethane	ug/L	ND	20	16.7	83	70-130	
cis-1,2-Dichloroethene	ug/L	ND	20	21.7	109	70-130	
cis-1,3-Dichloropropene	ug/L	ND	20	21.5	108	70-130	
Dibromochloromethane	ug/L	ND	20	18.9	94	70-130	
Dibromomethane	ug/L	ND	20	20.6	103	70-130	
Dichlorodifluoromethane	ug/L	ND	20	23.8	119	70-130	
Diisopropyl ether	ug/L	ND	20	18.3	91	70-130	
Ethylbenzene	ug/L	ND	20	22.8	114	70-130	
Hexachloro-1,3-butadiene	ug/L	ND	20	20.5	103	70-130	
m&p-Xylene	ug/L	ND	40	46.0	115	70-130	
Methyl-tert-butyl ether	ug/L	ND	20	18.6	93	70-130	
Methylene Chloride	ug/L	ND	20	18.7	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.: 92397044

MATRIX SPIKE SAMPLE: 2362445

Parameter	Units	92396999004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Naphthalene	ug/L	ND	20	19.7	98	70-130	
o-Xylene	ug/L	ND	20	23.0	115	70-130	
p-Isopropyltoluene	ug/L	ND	20	21.7	109	70-130	
Styrene	ug/L	ND	20	21.9	110	70-130	
Tetrachloroethene	ug/L	ND	20	22.2	111	70-130	
Toluene	ug/L	ND	20	23.1	115	70-155	
trans-1,2-Dichloroethene	ug/L	ND	20	22.9	114	70-130	
trans-1,3-Dichloropropene	ug/L	ND	20	20.9	104	70-130	
Trichloroethene	ug/L	ND	20	22.4	112	69-151	
Trichlorofluoromethane	ug/L	ND	20	23.9	119	70-130	
Vinyl acetate	ug/L	ND	40	34.2	85	70-130	
Vinyl chloride	ug/L	ND	20	24.4	122	70-130	
Xylene (Total)	ug/L	ND	60	69.0	115	70-130	
1,2-Dichloroethane-d4 (S)	%				100	70-130	
4-Bromofluorobenzene (S)	%				100	70-130	
Toluene-d8 (S)	%				98	70-130	

SAMPLE DUPLICATE: 2362444

Parameter	Units	92396999003 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	ND		30	
1,1,1-Trichloroethane	ug/L	ND	ND		30	
1,1,2,2-Tetrachloroethane	ug/L	ND	ND		30	
1,1,2-Trichloroethane	ug/L	ND	ND		30	
1,1-Dichloroethane	ug/L	ND	ND		30	
1,1-Dichloroethene	ug/L	ND	ND		30	
1,1-Dichloropropene	ug/L	ND	ND		30	
1,2,3-Trichlorobenzene	ug/L	ND	ND		30	
1,2,3-Trichloropropane	ug/L	ND	ND		30	
1,2,4-Trichlorobenzene	ug/L	ND	ND		30	
1,2-Dibromo-3-chloropropane	ug/L	ND	ND		30	
1,2-Dibromoethane (EDB)	ug/L	ND	ND		30	
1,2-Dichlorobenzene	ug/L	ND	ND		30	
1,2-Dichloroethane	ug/L	ND	ND		30	
1,2-Dichloropropane	ug/L	ND	ND		30	
1,3-Dichlorobenzene	ug/L	ND	ND		30	
1,3-Dichloropropane	ug/L	ND	ND		30	
1,4-Dichlorobenzene	ug/L	ND	ND		30	
2,2-Dichloropropane	ug/L	ND	ND		30	
2-Butanone (MEK)	ug/L	ND	ND		30	
2-Chlorotoluene	ug/L	ND	ND		30	
2-Hexanone	ug/L	ND	ND		30	
4-Chlorotoluene	ug/L	ND	ND		30	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	ND		30	
Acetone	ug/L	ND	ND		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.: 92397044

SAMPLE DUPLICATE: 2362444

Parameter	Units	92396999003 Result	Dup Result	RPD	Max RPD	Qualifiers
Benzene	ug/L	ND	ND		30	
Bromobenzene	ug/L	ND	ND		30	
Bromochloromethane	ug/L	ND	ND		30	
Bromodichloromethane	ug/L	ND	ND		30	
Bromoform	ug/L	ND	ND		30	
Bromomethane	ug/L	ND	ND		30	
Carbon tetrachloride	ug/L	ND	ND		30	
Chlorobenzene	ug/L	ND	ND		30	
Chloroethane	ug/L	ND	ND		30	
Chloroform	ug/L	ND	ND		30	
Chloromethane	ug/L	ND	ND		30	
cis-1,2-Dichloroethene	ug/L	ND	ND		30	
cis-1,3-Dichloropropene	ug/L	ND	ND		30	
Dibromochloromethane	ug/L	ND	ND		30	
Dibromomethane	ug/L	ND	ND		30	
Dichlorodifluoromethane	ug/L	ND	ND		30	
Diisopropyl ether	ug/L	ND	ND		30	
Ethylbenzene	ug/L	ND	ND		30	
Hexachloro-1,3-butadiene	ug/L	ND	ND		30	
m&p-Xylene	ug/L	ND	ND		30	
Methyl-tert-butyl ether	ug/L	ND	ND		30	
Methylene Chloride	ug/L	ND	ND		30	
Naphthalene	ug/L	ND	ND		30	
o-Xylene	ug/L	ND	ND		30	
p-Isopropyltoluene	ug/L	ND	ND		30	
Styrene	ug/L	ND	ND		30	
Tetrachloroethene	ug/L	ND	ND		30	
Toluene	ug/L	ND	ND		30	
trans-1,2-Dichloroethene	ug/L	ND	ND		30	
trans-1,3-Dichloropropene	ug/L	ND	ND		30	
Trichloroethene	ug/L	ND	ND		30	
Trichlorofluoromethane	ug/L	ND	ND		30	
Vinyl acetate	ug/L	ND	ND		30	
Vinyl chloride	ug/L	ND	ND		30	
Xylene (Total)	ug/L	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%	92	96	4		
4-Bromofluorobenzene (S)	%	103	107	4		
Toluene-d8 (S)	%	111	106	5		

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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.: 92397044

QC Batch: 427538 Analysis Method: EPA 8260B
QC Batch Method: EPA 8260B Analysis Description: 8260 MSV Low Level
Associated Lab Samples: 92397044003

METHOD BLANK: 2361819 Matrix: Water
Associated Lab Samples: 92397044003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	08/28/18 23:17	
1,1,1-Trichloroethane	ug/L	ND	1.0	08/28/18 23:17	
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	08/28/18 23:17	
1,1,2-Trichloroethane	ug/L	ND	1.0	08/28/18 23:17	
1,1-Dichloroethane	ug/L	ND	1.0	08/28/18 23:17	
1,1-Dichloroethene	ug/L	ND	1.0	08/28/18 23:17	
1,1-Dichloropropene	ug/L	ND	1.0	08/28/18 23:17	
1,2,3-Trichlorobenzene	ug/L	ND	1.0	08/28/18 23:17	
1,2,3-Trichloropropane	ug/L	ND	1.0	08/28/18 23:17	
1,2,4-Trichlorobenzene	ug/L	ND	1.0	08/28/18 23:17	
1,2-Dibromo-3-chloropropane	ug/L	ND	2.0	08/28/18 23:17	
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	08/28/18 23:17	
1,2-Dichlorobenzene	ug/L	ND	1.0	08/28/18 23:17	
1,2-Dichloroethane	ug/L	ND	1.0	08/28/18 23:17	
1,2-Dichloropropane	ug/L	ND	1.0	08/28/18 23:17	
1,3-Dichlorobenzene	ug/L	ND	1.0	08/28/18 23:17	
1,3-Dichloropropane	ug/L	ND	1.0	08/28/18 23:17	
1,4-Dichlorobenzene	ug/L	ND	1.0	08/28/18 23:17	
2,2-Dichloropropane	ug/L	ND	1.0	08/28/18 23:17	
2-Butanone (MEK)	ug/L	ND	5.0	08/28/18 23:17	
2-Chlorotoluene	ug/L	ND	1.0	08/28/18 23:17	
2-Hexanone	ug/L	ND	5.0	08/28/18 23:17	
4-Chlorotoluene	ug/L	ND	1.0	08/28/18 23:17	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	5.0	08/28/18 23:17	
Acetone	ug/L	ND	25.0	08/28/18 23:17	
Benzene	ug/L	ND	1.0	08/28/18 23:17	
Bromobenzene	ug/L	ND	1.0	08/28/18 23:17	
Bromochloromethane	ug/L	ND	1.0	08/28/18 23:17	
Bromodichloromethane	ug/L	ND	1.0	08/28/18 23:17	
Bromoform	ug/L	ND	1.0	08/28/18 23:17	
Bromomethane	ug/L	ND	2.0	08/28/18 23:17	
Carbon tetrachloride	ug/L	ND	1.0	08/28/18 23:17	
Chlorobenzene	ug/L	ND	1.0	08/28/18 23:17	
Chloroethane	ug/L	ND	1.0	08/28/18 23:17	
Chloroform	ug/L	ND	1.0	08/28/18 23:17	
Chloromethane	ug/L	ND	1.0	08/28/18 23:17	
cis-1,2-Dichloroethene	ug/L	ND	1.0	08/28/18 23:17	
cis-1,3-Dichloropropene	ug/L	ND	1.0	08/28/18 23:17	
Dibromochloromethane	ug/L	ND	1.0	08/28/18 23:17	
Dibromomethane	ug/L	ND	1.0	08/28/18 23:17	
Dichlorodifluoromethane	ug/L	ND	1.0	08/28/18 23:17	

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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.: 92397044

METHOD BLANK: 2361819 Matrix: Water
Associated Lab Samples: 92397044003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diisopropyl ether	ug/L	ND	1.0	08/28/18 23:17	
Ethylbenzene	ug/L	ND	1.0	08/28/18 23:17	
Hexachloro-1,3-butadiene	ug/L	ND	1.0	08/28/18 23:17	
m&p-Xylene	ug/L	ND	2.0	08/28/18 23:17	
Methyl-tert-butyl ether	ug/L	ND	1.0	08/28/18 23:17	
Methylene Chloride	ug/L	ND	2.0	08/28/18 23:17	
Naphthalene	ug/L	ND	1.0	08/28/18 23:17	
o-Xylene	ug/L	ND	1.0	08/28/18 23:17	
p-Isopropyltoluene	ug/L	ND	1.0	08/28/18 23:17	
Styrene	ug/L	ND	1.0	08/28/18 23:17	
Tetrachloroethene	ug/L	ND	1.0	08/28/18 23:17	
Toluene	ug/L	ND	1.0	08/28/18 23:17	
trans-1,2-Dichloroethene	ug/L	ND	1.0	08/28/18 23:17	
trans-1,3-Dichloropropene	ug/L	ND	1.0	08/28/18 23:17	
Trichloroethene	ug/L	ND	1.0	08/28/18 23:17	
Trichlorofluoromethane	ug/L	ND	1.0	08/28/18 23:17	
Vinyl acetate	ug/L	ND	2.0	08/28/18 23:17	
Vinyl chloride	ug/L	ND	1.0	08/28/18 23:17	
Xylene (Total)	ug/L	ND	1.0	08/28/18 23:17	
1,2-Dichloroethane-d4 (S)	%	94	70-130	08/28/18 23:17	
4-Bromofluorobenzene (S)	%	104	70-130	08/28/18 23:17	
Toluene-d8 (S)	%	114	70-130	08/28/18 23:17	

LABORATORY CONTROL SAMPLE: 2361820

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	50	49.2	98	80-125	
1,1,1-Trichloroethane	ug/L	50	44.2	88	71-129	
1,1,2,2-Tetrachloroethane	ug/L	50	47.2	94	79-124	
1,1,2-Trichloroethane	ug/L	50	52.5	105	85-125	
1,1-Dichloroethane	ug/L	50	41.0	82	73-126	
1,1-Dichloroethene	ug/L	50	46.9	94	66-135	
1,1-Dichloropropene	ug/L	50	51.1	102	74-135	
1,2,3-Trichlorobenzene	ug/L	50	45.9	92	73-135	
1,2,3-Trichloropropane	ug/L	50	47.1	94	75-130	
1,2,4-Trichlorobenzene	ug/L	50	46.2	92	75-134	
1,2-Dibromo-3-chloropropane	ug/L	50	47.4	95	71-133	
1,2-Dibromoethane (EDB)	ug/L	50	50.1	100	83-124	
1,2-Dichlorobenzene	ug/L	50	45.4	91	80-133	
1,2-Dichloroethane	ug/L	50	43.0	86	67-128	
1,2-Dichloropropane	ug/L	50	48.9	98	75-132	
1,3-Dichlorobenzene	ug/L	50	45.7	91	77-130	
1,3-Dichloropropane	ug/L	50	49.3	99	76-131	
1,4-Dichlorobenzene	ug/L	50	45.4	91	78-130	

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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.: 92397044

LABORATORY CONTROL SAMPLE: 2361820

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,2-Dichloropropane	ug/L	50	41.4	83	40-160	
2-Butanone (MEK)	ug/L	100	99.5	99	61-144	
2-Chlorotoluene	ug/L	50	43.9	88	74-132	
2-Hexanone	ug/L	100	90.6	91	68-143	
4-Chlorotoluene	ug/L	50	44.0	88	76-133	
4-Methyl-2-pentanone (MIBK)	ug/L	100	94.4	94	72-135	
Acetone	ug/L	100	89.7	90	48-146	
Benzene	ug/L	50	49.6	99	80-125	
Bromobenzene	ug/L	50	46.4	93	75-125	
Bromochloromethane	ug/L	50	55.8	112	71-125	
Bromodichloromethane	ug/L	50	46.8	94	78-124	
Bromoform	ug/L	50	45.7	91	71-128	
Bromomethane	ug/L	50	38.4	77	40-160	
Carbon tetrachloride	ug/L	50	44.8	90	69-131	
Chlorobenzene	ug/L	50	44.6	89	81-122	
Chloroethane	ug/L	50	41.6	83	39-148	
Chloroform	ug/L	50	46.3	93	73-127	
Chloromethane	ug/L	50	36.8	74	44-146	
cis-1,2-Dichloroethene	ug/L	50	43.1	86	74-124	
cis-1,3-Dichloropropene	ug/L	50	49.6	99	72-132	
Dibromochloromethane	ug/L	50	44.2	88	78-125	
Dibromomethane	ug/L	50	48.2	96	82-120	
Dichlorodifluoromethane	ug/L	50	47.0	94	34-157	
Diisopropyl ether	ug/L	50	46.3	93	69-135	
Ethylbenzene	ug/L	50	44.5	89	79-121	
Hexachloro-1,3-butadiene	ug/L	50	44.2	88	72-131	
m&p-Xylene	ug/L	100	88.5	89	81-124	
Methyl-tert-butyl ether	ug/L	50	48.7	97	74-131	
Methylene Chloride	ug/L	50	51.5	103	64-133	
Naphthalene	ug/L	50	47.0	94	73-133	
o-Xylene	ug/L	50	46.4	93	79-131	
p-Isopropyltoluene	ug/L	50	44.6	89	80-131	
Styrene	ug/L	50	44.8	90	84-126	
Tetrachloroethene	ug/L	50	44.7	89	78-122	
Toluene	ug/L	50	45.3	91	80-121	
trans-1,2-Dichloroethene	ug/L	50	43.2	86	71-127	
trans-1,3-Dichloropropene	ug/L	50	51.3	103	69-141	
Trichloroethene	ug/L	50	51.9	104	78-122	
Trichlorofluoromethane	ug/L	50	42.0	84	53-137	
Vinyl acetate	ug/L	100	89.4	89	40-160	
Vinyl chloride	ug/L	50	48.5	97	58-137	
Xylene (Total)	ug/L	150	135	90	81-126	
1,2-Dichloroethane-d4 (S)	%			90	70-130	
4-Bromofluorobenzene (S)	%			96	70-130	
Toluene-d8 (S)	%			96	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.: 92397044

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2361991 2361992

Parameter	Units	92397163001 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	19.6	20.3	98	101	70-130	4	30	
1,1,1-Trichloroethane	ug/L	ND	20	20	18.8	19.1	94	96	70-130	1	30	
1,1,2,2-Tetrachloroethane	ug/L	ND	20	20	19.9	20.6	100	103	70-130	3	30	
1,1,2-Trichloroethane	ug/L	ND	20	20	20.7	20.0	103	100	70-130	4	30	
1,1-Dichloroethane	ug/L	ND	20	20	18.2	18.9	91	95	70-130	4	30	
1,1-Dichloroethene	ug/L	ND	20	20	21.2	20.8	106	104	70-166	2	30	
1,1-Dichloropropene	ug/L	ND	20	20	19.3	21.0	96	105	70-130	9	30	
1,2,3-Trichlorobenzene	ug/L	ND	20	20	19.6	19.4	98	97	70-130	1	30	
1,2,3-Trichloropropane	ug/L	ND	20	20	19.5	20.3	97	101	70-130	4	30	
1,2,4-Trichlorobenzene	ug/L	ND	20	20	19.9	19.2	100	96	70-130	4	30	
1,2-Dibromo-3-chloropropane	ug/L	ND	20	20	19.1	18.9	95	95	70-130	1	30	
1,2-Dibromoethane (EDB)	ug/L	ND	20	20	19.3	20.1	97	100	70-130	4	30	
1,2-Dichlorobenzene	ug/L	ND	20	20	21.4	20.9	107	105	70-130	2	30	
1,2-Dichloroethane	ug/L	ND	20	20	17.8	17.2	89	86	70-130	3	30	
1,2-Dichloropropane	ug/L	ND	20	20	21.4	20.3	107	102	70-130	5	30	
1,3-Dichlorobenzene	ug/L	ND	20	20	21.8	21.5	109	107	70-130	2	30	
1,3-Dichloropropane	ug/L	ND	20	20	19.8	20.9	99	104	70-130	5	30	
1,4-Dichlorobenzene	ug/L	ND	20	20	21.6	21.2	108	106	70-130	2	30	
2,2-Dichloropropane	ug/L	ND	20	20	18.1	18.1	91	91	70-130	0	30	
2-Butanone (MEK)	ug/L	ND	40	40	37.3	39.5	93	99	70-130	6	30	
2-Chlorotoluene	ug/L	ND	20	20	21.2	21.1	106	105	70-130	1	30	
2-Hexanone	ug/L	ND	40	40	37.5	39.9	94	100	70-130	6	30	
4-Chlorotoluene	ug/L	ND	20	20	21.0	20.6	105	103	70-130	2	30	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	40	40	37.2	37.3	93	93	70-130	0	30	
Acetone	ug/L	ND	40	40	34.8	35.6	87	89	70-130	2	30	
Benzene	ug/L	ND	20	20	21.3	20.2	106	101	70-148	5	30	
Bromobenzene	ug/L	ND	20	20	20.7	20.3	104	102	70-130	2	30	
Bromochloromethane	ug/L	ND	20	20	21.0	19.3	105	96	70-130	9	30	
Bromodichloromethane	ug/L	ND	20	20	20.5	19.0	103	95	70-130	8	30	
Bromoform	ug/L	ND	20	20	17.1	17.4	86	87	70-130	2	30	
Bromomethane	ug/L	ND	20	20	9.1	10.8	44	52	70-130	18	30	M1
Carbon tetrachloride	ug/L	ND	20	20	21.1	20.4	105	102	70-130	3	30	
Chlorobenzene	ug/L	ND	20	20	20.7	21.2	104	106	70-146	2	30	
Chloroethane	ug/L	ND	20	20	19.1	17.9	95	90	70-130	6	30	
Chloroform	ug/L	ND	20	20	18.4	18.2	92	91	70-130	1	30	
Chloromethane	ug/L	8.1	20	20	13.2	12.7	25	23	70-130	4	30	M1
cis-1,2-Dichloroethene	ug/L	ND	20	20	18.5	18.2	92	91	70-130	1	30	
cis-1,3-Dichloropropene	ug/L	ND	20	20	19.1	19.2	95	96	70-130	1	30	
Dibromochloromethane	ug/L	ND	20	20	18.3	18.6	91	93	70-130	2	30	
Dibromomethane	ug/L	ND	20	20	20.3	20.0	102	100	70-130	1	30	
Dichlorodifluoromethane	ug/L	ND	20	20	17.0	17.1	85	85	70-130	1	30	
Diisopropyl ether	ug/L	ND	20	20	16.9	17.9	84	90	70-130	6	30	
Ethylbenzene	ug/L	ND	20	20	20.9	20.9	104	105	70-130	0	30	
Hexachloro-1,3-butadiene	ug/L	ND	20	20	20.9	20.0	104	100	70-130	4	30	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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(704)875-9092

QUALITY CONTROL DATA

Project: Kopflex
Pace Project No.: 92397044

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2361991 2361992

Parameter	Units	92397163001 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	42.1	42.1	105	105	70-130	0	30	
Methyl-tert-butyl ether	ug/L	ND	20	20	17.6	17.8	88	89	70-130	1	30	
Methylene Chloride	ug/L	ND	20	20	19.2	17.9	96	90	70-130	7	30	
Naphthalene	ug/L	ND	20	20	19.5	19.2	98	96	70-130	2	30	
o-Xylene	ug/L	ND	20	20	21.1	21.7	105	108	70-130	3	30	
p-Isopropyltoluene	ug/L	ND	20	20	22.1	21.6	111	108	70-130	3	30	
Styrene	ug/L	ND	20	20	20.3	20.3	101	102	70-130	0	30	
Tetrachloroethene	ug/L	ND	20	20	20.5	21.3	103	106	70-130	4	30	
Toluene	ug/L	ND	20	20	20.7	19.8	104	99	70-155	5	30	
trans-1,2-Dichloroethene	ug/L	ND	20	20	19.5	19.3	97	97	70-130	1	30	
trans-1,3-Dichloropropene	ug/L	ND	20	20	19.0	18.9	95	95	70-130	1	30	
Trichloroethene	ug/L	ND	20	20	21.6	22.0	108	110	69-151	2	30	
Trichlorofluoromethane	ug/L	ND	20	20	20.0	19.3	100	96	70-130	4	30	
Vinyl acetate	ug/L	ND	40	40	28.1	29.6	70	74	70-130	5	30	
Vinyl chloride	ug/L	ND	20	20	20.8	19.9	104	100	70-130	4	30	
Xylene (Total)	ug/L	ND	60	60	63.2	63.8	105	106	70-130	1	30	
1,2-Dichloroethane-d4 (S)	%						87	84	70-130			
4-Bromofluorobenzene (S)	%						94	95	70-130			
Toluene-d8 (S)	%						98	95	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.: 92397044

QC Batch: 427799 Analysis Method: EPA 8260B
QC Batch Method: EPA 8260B Analysis Description: 8260 MSV Low Level
Associated Lab Samples: 92397044002, 92397044004, 92397044005, 92397044006, 92397044007

METHOD BLANK: 2362919 Matrix: Water
Associated Lab Samples: 92397044002, 92397044004, 92397044005, 92397044006, 92397044007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	08/29/18 14:40	
1,1,1-Trichloroethane	ug/L	ND	1.0	08/29/18 14:40	
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	08/29/18 14:40	
1,1,2-Trichloroethane	ug/L	ND	1.0	08/29/18 14:40	
1,1-Dichloroethane	ug/L	ND	1.0	08/29/18 14:40	
1,1-Dichloroethene	ug/L	ND	1.0	08/29/18 14:40	
1,1-Dichloropropene	ug/L	ND	1.0	08/29/18 14:40	
1,2,3-Trichlorobenzene	ug/L	ND	1.0	08/29/18 14:40	
1,2,3-Trichloropropane	ug/L	ND	1.0	08/29/18 14:40	
1,2,4-Trichlorobenzene	ug/L	ND	1.0	08/29/18 14:40	
1,2-Dibromo-3-chloropropane	ug/L	ND	2.0	08/29/18 14:40	
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	08/29/18 14:40	
1,2-Dichlorobenzene	ug/L	ND	1.0	08/29/18 14:40	
1,2-Dichloroethane	ug/L	ND	1.0	08/29/18 14:40	
1,2-Dichloropropane	ug/L	ND	1.0	08/29/18 14:40	
1,3-Dichlorobenzene	ug/L	ND	1.0	08/29/18 14:40	
1,3-Dichloropropane	ug/L	ND	1.0	08/29/18 14:40	
1,4-Dichlorobenzene	ug/L	ND	1.0	08/29/18 14:40	
2,2-Dichloropropane	ug/L	ND	1.0	08/29/18 14:40	
2-Butanone (MEK)	ug/L	ND	5.0	08/29/18 14:40	
2-Chlorotoluene	ug/L	ND	1.0	08/29/18 14:40	
2-Hexanone	ug/L	ND	5.0	08/29/18 14:40	
4-Chlorotoluene	ug/L	ND	1.0	08/29/18 14:40	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	5.0	08/29/18 14:40	
Acetone	ug/L	ND	25.0	08/29/18 14:40	
Benzene	ug/L	ND	1.0	08/29/18 14:40	
Bromobenzene	ug/L	ND	1.0	08/29/18 14:40	
Bromochloromethane	ug/L	ND	1.0	08/29/18 14:40	
Bromodichloromethane	ug/L	ND	1.0	08/29/18 14:40	
Bromoform	ug/L	ND	1.0	08/29/18 14:40	
Bromomethane	ug/L	ND	2.0	08/29/18 14:40	
Carbon tetrachloride	ug/L	ND	1.0	08/29/18 14:40	
Chlorobenzene	ug/L	ND	1.0	08/29/18 14:40	
Chloroethane	ug/L	ND	1.0	08/29/18 14:40	
Chloroform	ug/L	ND	1.0	08/29/18 14:40	
Chloromethane	ug/L	ND	1.0	08/29/18 14:40	
cis-1,2-Dichloroethene	ug/L	ND	1.0	08/29/18 14:40	
cis-1,3-Dichloropropene	ug/L	ND	1.0	08/29/18 14:40	
Dibromochloromethane	ug/L	ND	1.0	08/29/18 14:40	
Dibromomethane	ug/L	ND	1.0	08/29/18 14:40	
Dichlorodifluoromethane	ug/L	ND	1.0	08/29/18 14:40	

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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.: 92397044

METHOD BLANK: 2362919 Matrix: Water
Associated Lab Samples: 92397044002, 92397044004, 92397044005, 92397044006, 92397044007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diisopropyl ether	ug/L	ND	1.0	08/29/18 14:40	
Ethylbenzene	ug/L	ND	1.0	08/29/18 14:40	
Hexachloro-1,3-butadiene	ug/L	ND	1.0	08/29/18 14:40	
m&p-Xylene	ug/L	ND	2.0	08/29/18 14:40	
Methyl-tert-butyl ether	ug/L	ND	1.0	08/29/18 14:40	
Methylene Chloride	ug/L	ND	2.0	08/29/18 14:40	
Naphthalene	ug/L	ND	1.0	08/29/18 14:40	
o-Xylene	ug/L	ND	1.0	08/29/18 14:40	
p-Isopropyltoluene	ug/L	ND	1.0	08/29/18 14:40	
Styrene	ug/L	ND	1.0	08/29/18 14:40	
Tetrachloroethene	ug/L	ND	1.0	08/29/18 14:40	
Toluene	ug/L	ND	1.0	08/29/18 14:40	
trans-1,2-Dichloroethene	ug/L	ND	1.0	08/29/18 14:40	
trans-1,3-Dichloropropene	ug/L	ND	1.0	08/29/18 14:40	
Trichloroethene	ug/L	ND	1.0	08/29/18 14:40	
Trichlorofluoromethane	ug/L	ND	1.0	08/29/18 14:40	
Vinyl acetate	ug/L	ND	2.0	08/29/18 14:40	
Vinyl chloride	ug/L	ND	1.0	08/29/18 14:40	
Xylene (Total)	ug/L	ND	1.0	08/29/18 14:40	
1,2-Dichloroethane-d4 (S)	%	96	70-130	08/29/18 14:40	
4-Bromofluorobenzene (S)	%	104	70-130	08/29/18 14:40	
Toluene-d8 (S)	%	115	70-130	08/29/18 14:40	

LABORATORY CONTROL SAMPLE: 2362920

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	50	51.4	103	80-125	
1,1,1-Trichloroethane	ug/L	50	50.1	100	71-129	
1,1,2,2-Tetrachloroethane	ug/L	50	49.2	98	79-124	
1,1,2-Trichloroethane	ug/L	50	55.1	110	85-125	
1,1-Dichloroethane	ug/L	50	47.2	94	73-126	
1,1-Dichloroethene	ug/L	50	52.2	104	66-135	
1,1-Dichloropropene	ug/L	50	55.7	111	74-135	
1,2,3-Trichlorobenzene	ug/L	50	43.7	87	73-135	
1,2,3-Trichloropropane	ug/L	50	48.5	97	75-130	
1,2,4-Trichlorobenzene	ug/L	50	45.5	91	75-134	
1,2-Dibromo-3-chloropropane	ug/L	50	44.8	90	71-133	
1,2-Dibromoethane (EDB)	ug/L	50	51.7	103	83-124	
1,2-Dichlorobenzene	ug/L	50	47.2	94	80-133	
1,2-Dichloroethane	ug/L	50	47.1	94	67-128	
1,2-Dichloropropane	ug/L	50	54.1	108	75-132	
1,3-Dichlorobenzene	ug/L	50	48.9	98	77-130	
1,3-Dichloropropane	ug/L	50	51.8	104	76-131	
1,4-Dichlorobenzene	ug/L	50	48.1	96	78-130	

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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.: 92397044

LABORATORY CONTROL SAMPLE: 2362920

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,2-Dichloropropane	ug/L	50	49.9	100	40-160	
2-Butanone (MEK)	ug/L	100	110	110	61-144	
2-Chlorotoluene	ug/L	50	47.0	94	74-132	
2-Hexanone	ug/L	100	98.1	98	68-143	
4-Chlorotoluene	ug/L	50	46.7	93	76-133	
4-Methyl-2-pentanone (MIBK)	ug/L	100	99.0	99	72-135	
Acetone	ug/L	100	101	101	48-146	
Benzene	ug/L	50	52.3	105	80-125	
Bromobenzene	ug/L	50	46.5	93	75-125	
Bromochloromethane	ug/L	50	62.7	125	71-125	
Bromodichloromethane	ug/L	50	50.6	101	78-124	
Bromoform	ug/L	50	49.3	99	71-128	
Bromomethane	ug/L	50	40.4	81	40-160	
Carbon tetrachloride	ug/L	50	49.7	99	69-131	
Chlorobenzene	ug/L	50	49.1	98	81-122	
Chloroethane	ug/L	50	42.4	85	39-148	
Chloroform	ug/L	50	53.8	108	73-127	
Chloromethane	ug/L	50	38.4	77	44-146	
cis-1,2-Dichloroethene	ug/L	50	47.7	95	74-124	
cis-1,3-Dichloropropene	ug/L	50	54.7	109	72-132	
Dibromochloromethane	ug/L	50	47.0	94	78-125	
Dibromomethane	ug/L	50	51.2	102	82-120	
Dichlorodifluoromethane	ug/L	50	50.3	101	34-157	
Diisopropyl ether	ug/L	50	51.0	102	69-135	
Ethylbenzene	ug/L	50	48.5	97	79-121	
Hexachloro-1,3-butadiene	ug/L	50	45.1	90	72-131	
m&p-Xylene	ug/L	100	96.8	97	81-124	
Methyl-tert-butyl ether	ug/L	50	52.2	104	74-131	
Methylene Chloride	ug/L	50	54.3	109	64-133	
Naphthalene	ug/L	50	46.5	93	73-133	
o-Xylene	ug/L	50	50.0	100	79-131	
p-Isopropyltoluene	ug/L	50	48.6	97	80-131	
Styrene	ug/L	50	48.1	96	84-126	
Tetrachloroethene	ug/L	50	49.1	98	78-122	
Toluene	ug/L	50	49.9	100	80-121	
trans-1,2-Dichloroethene	ug/L	50	49.6	99	71-127	
trans-1,3-Dichloropropene	ug/L	50	54.9	110	69-141	
Trichloroethene	ug/L	50	57.0	114	78-122	
Trichlorofluoromethane	ug/L	50	47.8	96	53-137	
Vinyl acetate	ug/L	100	102	102	40-160	
Vinyl chloride	ug/L	50	54.9	110	58-137	
Xylene (Total)	ug/L	150	147	98	81-126	
1,2-Dichloroethane-d4 (S)	%			89	70-130	
4-Bromofluorobenzene (S)	%			97	70-130	
Toluene-d8 (S)	%			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.: 92397044

MATRIX SPIKE SAMPLE: 2362922

Parameter	Units	92397044007 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	20	19.0	95	70-130	
1,1,1-Trichloroethane	ug/L	ND	20	19.1	96	70-130	
1,1,2,2-Tetrachloroethane	ug/L	ND	20	19.4	97	70-130	
1,1,2-Trichloroethane	ug/L	ND	20	20.8	104	70-130	
1,1-Dichloroethane	ug/L	ND	20	19.9	100	70-130	
1,1-Dichloroethene	ug/L	ND	20	22.2	111	70-166	
1,1-Dichloropropene	ug/L	ND	20	20.4	102	70-130	
1,2,3-Trichlorobenzene	ug/L	ND	20	17.9	90	70-130	
1,2,3-Trichloropropane	ug/L	ND	20	19.6	98	70-130	
1,2,4-Trichlorobenzene	ug/L	ND	20	18.0	90	70-130	
1,2-Dibromo-3-chloropropane	ug/L	ND	20	17.2	86	70-130	
1,2-Dibromoethane (EDB)	ug/L	ND	20	19.2	96	70-130	
1,2-Dichlorobenzene	ug/L	ND	20	20.9	104	70-130	
1,2-Dichloroethane	ug/L	ND	20	18.1	91	70-130	
1,2-Dichloropropane	ug/L	ND	20	20.9	104	70-130	
1,3-Dichlorobenzene	ug/L	ND	20	21.2	106	70-130	
1,3-Dichloropropane	ug/L	ND	20	19.5	97	70-130	
1,4-Dichlorobenzene	ug/L	ND	20	20.9	104	70-130	
2,2-Dichloropropane	ug/L	ND	20	17.0	85	70-130	
2-Butanone (MEK)	ug/L	ND	40	40.0	100	70-130	
2-Chlorotoluene	ug/L	ND	20	20.6	103	70-130	
2-Hexanone	ug/L	ND	40	37.4	93	70-130	
4-Chlorotoluene	ug/L	ND	20	21.0	105	70-130	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	40	37.0	93	70-130	
Acetone	ug/L	ND	40	41.5	104	70-130	
Benzene	ug/L	ND	20	21.8	109	70-148	
Bromobenzene	ug/L	ND	20	20.2	101	70-130	
Bromochloromethane	ug/L	ND	20	21.7	109	70-130	
Bromodichloromethane	ug/L	ND	20	19.9	99	70-130	
Bromoform	ug/L	ND	20	16.2	81	70-130	
Bromomethane	ug/L	ND	20	8.9	45	70-130	M1
Carbon tetrachloride	ug/L	ND	20	21.2	106	70-130	
Chlorobenzene	ug/L	ND	20	20.7	104	70-146	
Chloroethane	ug/L	ND	20	21.3	107	70-130	
Chloroform	ug/L	ND	20	19.8	99	70-130	
Chloromethane	ug/L	ND	20	17.3	86	70-130	
cis-1,2-Dichloroethene	ug/L	ND	20	19.0	95	70-130	
cis-1,3-Dichloropropene	ug/L	ND	20	19.0	95	70-130	
Dibromochloromethane	ug/L	ND	20	17.5	88	70-130	
Dibromomethane	ug/L	ND	20	20.6	103	70-130	
Dichlorodifluoromethane	ug/L	ND	20	22.9	115	70-130	
Diisopropyl ether	ug/L	ND	20	18.1	91	70-130	
Ethylbenzene	ug/L	ND	20	20.6	103	70-130	
Hexachloro-1,3-butadiene	ug/L	ND	20	18.2	91	70-130	
m&p-Xylene	ug/L	ND	40	42.0	105	70-130	
Methyl-tert-butyl ether	ug/L	ND	20	17.9	89	70-130	
Methylene Chloride	ug/L	ND	20	19.6	98	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.: 92397044

MATRIX SPIKE SAMPLE: 2362922

Parameter	Units	92397044007 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Naphthalene	ug/L	ND	20	18.0	90	70-130	
o-Xylene	ug/L	ND	20	21.0	105	70-130	
p-Isopropyltoluene	ug/L	ND	20	20.9	104	70-130	
Styrene	ug/L	ND	20	19.6	98	70-130	
Tetrachloroethene	ug/L	ND	20	20.6	101	70-130	
Toluene	ug/L	ND	20	20.7	104	70-155	
trans-1,2-Dichloroethene	ug/L	ND	20	20.1	100	70-130	
trans-1,3-Dichloropropene	ug/L	ND	20	18.8	94	70-130	
Trichloroethene	ug/L	ND	20	22.5	112	69-151	
Trichlorofluoromethane	ug/L	ND	20	21.1	105	70-130	
Vinyl acetate	ug/L	ND	40	28.1	70	70-130	
Vinyl chloride	ug/L	ND	20	22.7	114	70-130	
Xylene (Total)	ug/L	ND	60	63.0	105	70-130	
1,2-Dichloroethane-d4 (S)	%				88	70-130	
4-Bromofluorobenzene (S)	%				97	70-130	
Toluene-d8 (S)	%				97	70-130	

SAMPLE DUPLICATE: 2362921

Parameter	Units	92397044006 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	ND		30	
1,1,1-Trichloroethane	ug/L	ND	ND		30	
1,1,2,2-Tetrachloroethane	ug/L	ND	ND		30	
1,1,2-Trichloroethane	ug/L	ND	ND		30	
1,1-Dichloroethane	ug/L	ND	ND		30	
1,1-Dichloroethene	ug/L	ND	ND		30	
1,1-Dichloropropene	ug/L	ND	ND		30	
1,2,3-Trichlorobenzene	ug/L	ND	ND		30	
1,2,3-Trichloropropane	ug/L	ND	ND		30	
1,2,4-Trichlorobenzene	ug/L	ND	ND		30	
1,2-Dibromo-3-chloropropane	ug/L	ND	ND		30	
1,2-Dibromoethane (EDB)	ug/L	ND	ND		30	
1,2-Dichlorobenzene	ug/L	ND	ND		30	
1,2-Dichloroethane	ug/L	ND	ND		30	
1,2-Dichloropropane	ug/L	ND	ND		30	
1,3-Dichlorobenzene	ug/L	ND	ND		30	
1,3-Dichloropropane	ug/L	ND	ND		30	
1,4-Dichlorobenzene	ug/L	ND	ND		30	
2,2-Dichloropropane	ug/L	ND	ND		30	
2-Butanone (MEK)	ug/L	ND	ND		30	
2-Chlorotoluene	ug/L	ND	ND		30	
2-Hexanone	ug/L	ND	ND		30	
4-Chlorotoluene	ug/L	ND	ND		30	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	ND		30	
Acetone	ug/L	ND	ND		30	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: Kopflex
Pace Project No.: 92397044

SAMPLE DUPLICATE: 2362921

Parameter	Units	92397044006 Result	Dup Result	RPD	Max RPD	Qualifiers
Benzene	ug/L	ND	ND		30	
Bromobenzene	ug/L	ND	ND		30	
Bromochloromethane	ug/L	ND	ND		30	
Bromodichloromethane	ug/L	ND	ND		30	
Bromoform	ug/L	ND	ND		30	
Bromomethane	ug/L	ND	ND		30	
Carbon tetrachloride	ug/L	ND	ND		30	
Chlorobenzene	ug/L	ND	ND		30	
Chloroethane	ug/L	ND	ND		30	
Chloroform	ug/L	ND	ND		30	
Chloromethane	ug/L	ND	.16J		30	
cis-1,2-Dichloroethene	ug/L	ND	ND		30	
cis-1,3-Dichloropropene	ug/L	ND	ND		30	
Dibromochloromethane	ug/L	ND	ND		30	
Dibromomethane	ug/L	ND	ND		30	
Dichlorodifluoromethane	ug/L	ND	ND		30	
Diisopropyl ether	ug/L	ND	ND		30	
Ethylbenzene	ug/L	ND	ND		30	
Hexachloro-1,3-butadiene	ug/L	ND	ND		30	
m&p-Xylene	ug/L	ND	ND		30	
Methyl-tert-butyl ether	ug/L	ND	ND		30	
Methylene Chloride	ug/L	ND	ND		30	
Naphthalene	ug/L	ND	ND		30	
o-Xylene	ug/L	ND	ND		30	
p-Isopropyltoluene	ug/L	ND	ND		30	
Styrene	ug/L	ND	ND		30	
Tetrachloroethene	ug/L	ND	ND		30	
Toluene	ug/L	ND	ND		30	
trans-1,2-Dichloroethene	ug/L	ND	ND		30	
trans-1,3-Dichloropropene	ug/L	ND	ND		30	
Trichloroethene	ug/L	ND	ND		30	
Trichlorofluoromethane	ug/L	ND	ND		30	
Vinyl acetate	ug/L	ND	ND		30	
Vinyl chloride	ug/L	ND	ND		30	
Xylene (Total)	ug/L	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%	98	94	4		
4-Bromofluorobenzene (S)	%	100	101	1		
Toluene-d8 (S)	%	107	109	3		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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.: 92397044

QC Batch: 427265 Analysis Method: EPA 8260B Mod.
QC Batch Method: EPA 8260B Mod. Analysis Description: 8260 MSV SIM
Associated Lab Samples: 92397044001, 92397044002, 92397044003, 92397044004, 92397044005, 92397044006, 92397044007

METHOD BLANK: 2360519 Matrix: Water
Associated Lab Samples: 92397044001, 92397044002, 92397044003, 92397044004, 92397044005, 92397044006, 92397044007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	ND	2.0	08/28/18 11:00	
1,2-Dichloroethane-d4 (S)	%	90	50-150	08/28/18 11:00	
Toluene-d8 (S)	%	88	50-150	08/28/18 11:00	

LABORATORY CONTROL SAMPLE: 2360520

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	20	21.4	107	71-125	
1,2-Dichloroethane-d4 (S)	%			96	50-150	
Toluene-d8 (S)	%			90	50-150	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2360521 2360522

Parameter	Units	92397044003 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	24.5	40	40	71.1	71.0	117	116	50-150	0	30	
1,2-Dichloroethane-d4 (S)	%						93	94	50-150		30	
Toluene-d8 (S)	%						83	83	50-150		30	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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.: 92397044

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

ANALYTE QUALIFIERS

M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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.: 92397044

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92397044001	**TRIP BLANK**	EPA 8260B	427452		
92397044002	**MW-34D**	EPA 8260B	427799		
92397044003	**MW-30D-273**	EPA 8260B	427538		
92397044004	**MW-30D-413**	EPA 8260B	427799		
92397044005	**MW-29D**	EPA 8260B	427799		
92397044006	**MW-32D**	EPA 8260B	427799		
92397044007	**MW-36D**	EPA 8260B	427799		
92397044001	**TRIP BLANK**	EPA 8260B Mod.	427265		
92397044002	**MW-34D**	EPA 8260B Mod.	427265		
92397044003	**MW-30D-273**	EPA 8260B Mod.	427265		
92397044004	**MW-30D-413**	EPA 8260B Mod.	427265		
92397044005	**MW-29D**	EPA 8260B Mod.	427265		
92397044006	**MW-32D**	EPA 8260B Mod.	427265		
92397044007	**MW-36D**	EPA 8260B Mod.	427265		

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 Env.

Project #: WO# : 92397044

92397044

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

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

Date/Initials Person Examining Contents: CDM 8/24/18

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

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

Thermometer: ☑ IR Gun ID: 92T044 **Type of Ice:** ☑ Wet ☐ Blue ☐ None

Cooler Temp (°C): 3.8 **Correction Factor:** Add/Subtract (°C) -0.1

Cooler Temp Corrected (°C): 3.7

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 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: [signature] **Date:** 8/24

Project Manager SRF Review: [signature] **Date:** 8/24

***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# : 92397044**

PM: PTE Due Date: 08/31/18

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)
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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

WSP USA Office Address: 13530 Dulles Technology Dr. Ste 300 Herndon, VA 20171

Project Name: Kopflex	WSP USA Contact Name: Eric Johnson
Project Location: Hanover, Maryland	WSP USA Contact E-mail: Eric.Johnson@wsp.com
Project Number & Task: 31403891	WSP USA Contact Phone: 703 709 6500
Sampler(s) Name(s): Molly Long, Chris Cresci	Sampler(s) Signature(s):

No. 008263

Laboratory Name & Location: Pace Analytical

Laboratory Project Manager: Taylor Ezell

Requested Turn-Around-Time: [X] Standard [ ] 24 HR [ ] 48 HR [ ] 72 HR [ ] ___ HR 92397044

Requested Analyses & Preservatives

Sample Identification	Matrix	Collection Start* Date	Collection Start* Time	Collection Stop* Date	Collection Stop* Time	Number of Containers	1,4-dioxane (SIM)	VOCs (8260)	Sample Comments
Trip Blank	WT	lab provided				4	X	X	lab provided 001
MW-34D	WT	8/23/18		08	55	6	X	X	002
MW-30D-273	WT	8/23/18		09	55	6	X	X	003
MW-30D-413	WT	8/23/18		09	40	6	X	X	004
MW-29D	WT	8/23/18		10	05	6	X	X	005
MW-32D	WT	8/23/18		10	25	6	X	X	006
MW-36D	WT	8/23/18		10	45	6	X	X	007

Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Shipment Method	Tracking Number(s)
	8/23/18	1310	FedEx				813307470910
Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Number of Packages	Custody Seal Number(s)
				8/24/18	930		14

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

WT = water

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