VIA ELECTRONIC MAIL

June 23, 2021

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

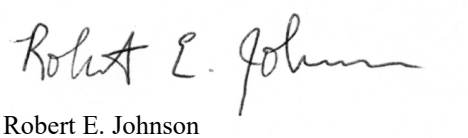
Subject: **Quarterly Status Report No. 18 - Offsite Area**
Former Kop-Flex Facility Site, Hanover, Maryland

Dear Richelle:

On behalf of EMERSUB 16 LLC, a subsidiary of Emerson Electric Co., WSP USA Inc. (WSP) is submitting this quarterly status report describing the investigation and remediation activities conducted in the First Quarter of 2021 in the offsite portion of the Former Kop-Flex Facility Site in Hanover, Maryland. In addition to this electronic version, a hard copy of the status report is being submitted to the Maryland Department of Environment (MDE) under separate cover. .

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

Kind regards,



Robert E. Johnson
Senior Technical Manager

REJ :MML:rlo
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Encl.

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

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13530 Dulles Technology Drive
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QUARTERLY STATUS REPORT NO. 18 – OFFSITE AREA

FORMER KOP-FLEX FACILITY SITE

January 2021 through March 2021

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 Kelly, WSP USA

1.0 OFFSITE ACTIVITIES CONDUCTED DURING JANUARY 2021 THROUGH MARCH 2021

1.1 RESIDENTIAL WELL SAMPLING – 7932 ANDORICK DRIVE

- Based on the results for the October 2020 re-sampling of the replacement well at 7932 Andorick Drive, MDE requested that EMERSUB 16 and WSP collect water samples for an additional two months to determine whether the 1,4-dioxane detection in the July 2020 sample collected by the homeowner was erroneous or reflected natural variability in the water quality in the portion of the aquifer screened by the well. The first sampling event was conducted in early December 2020, and the laboratory results showed that no site-related contaminants of concern (COCs) were detected in the water samples (This sampling data was previously reported in Quarterly Status Report No. 17). The second sampling event was conducted on January 6, 2021, and involved the collection of pre- and post-treatment water samples using methods consistent with those from the October 2020 and December 2020 sampling rounds.

- The analytical results for the January 2021 samples, along with those from July, October, and December 2020 and the initial sample collected following installation of the replacement well in April 2017, are summarized in Table 1. The January 2021 laboratory analytical report is provided in Enclosure A. As with the December 2020 sampling event, no site-related COCs were detected in either the pre- or post-treatment water samples collected from the well in January 2021. The January 2021 sample results were provided to the homeowner and MDE after receiving the laboratory analytical report. The sampling results transmittal letter to the homeowner stated that further sampling or other actions were not deemed necessary in light of the data for the recent (October 2020 through Januart 2021) well sampling events.

1.2 SEMI-ANNUAL GROUNDWATER MONITORING

No groundwater monitoring activities were conducted in the offsite area of the Former Kop-Flex Facility Site (Site) during the 1st Quarter of 2021.

In accordance with the approved Offsite Groundwater Monitoring Plan (dated September 15, 2015), long-term groundwater monitoring to assess the hydraulic head conditions (and inferred flow paths) and concentrations of site-related contaminants in the deep (confined) zone of the Lower Patapsco aquifer (LPA) is currently being conducted on a semi-annual schedule at the Site. The next monitoring event for the offsite well network will be performed in mid-May 2021.

2.0 PLANNED OFFSITE ACTIVITIES FOR NEXT REPORTING PERIOD (APRIL 2021 THROUGH JUNE 2021)

- Collect a synoptic round of water level measurements from the monitoring wells screened in the confined deep zone of the LPA and Patuxent aquifer in mid-May 2021.

- Perform sampling of the offsite groundwater monitoring wells in the deep zone of the LPA and underlying Patuxent aquifer in mid-May 2021.

- Submit the 2020 Offsite Groundwater Monitoring Report to MDE and the U.S. Environmental Protection Agency (EPA), Region III.

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

3.0 KEY PERSONNEL/FACILITY CHANGES

There were no changes to either key project personnel or conditions relevant to the performance of the ongoing work at the site.

TABLE

Table 1

Summary of Sampling Results for Replacement Well
7932 Andorick Drive
Severn, Maryland

		Parameter	Acetone	2-Butanone	1,1-Dichloroethane	1,1-Dichloroethylene	1,1,1-Trichloroethane	Toluene	1,4-Dioxane
		Units	µg/L	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
		MCL	1,400 (a)	560 (a)	2.8 (a)	7	200	1,000	4.6 (b)
Address	**Sample Type**	**Date**							
7932 Andorick Drive Well Depth: 158'	Post-Treatment (c)	4/19/2017	37 (e)	18 (e)	ND	ND	ND	2.7 (e)	ND
	Post-Treatment (d)	7/27/2020	ND	ND	ND	ND	ND	ND	**5.0**
	Pre-Treatment	10/21/2020	ND	ND	ND	ND	ND	ND	ND
	Post-Treatment	10/21/2020	ND	ND	ND	ND	ND	ND	ND
	Pre-Treatment	12/8/2020	ND	ND	ND	ND	ND	ND	ND
	Post-Treatment	12/8/2020	ND	ND	ND	ND	ND	ND	ND
	Pre-Treatment	1/6/2021	ND	ND	ND	ND	ND	ND	ND
	Post-Treatment	1/6/2021	ND	ND	ND	ND	ND	ND	ND

(a) Maryland Department of Environment Groundwater Standard (October 2018)
(b) Maryland Risk Based Action Level.
(c) Sample collected after installation of the replacement well in February 2017
(d) Sample collected by homeowner.
(e) The detected concentration of this parameter is associated with adhesive materials used to assemble the PVC piping from the newly installed replacement well to the water treatment system in the basement of the house. The presence of these constituents in glues and other adhesives can result in their detection in samples of water moving through newly installed or repaired PVC piping.

Notes:
MCL = US Environmental Protection Agency Maximum Contaminant Level
µg/L = micrograms per liter
ND = Not detected at a concentration above the respective method detection limit for the constituent.
Bold indicates a concentration above the applicable water quality standard at the time of sampling.
Well depth indicates the bottom of the screened interval.

ENCLOSURE A – LABORATORY ANALYTICAL REPORT FOR JANUARY 2021 RESIDENTIAL WELL SAMPLE, 7932 ANDORICK DRIVE, SEVERN, MARYLAND)

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

e-Hardcopy 2.0
Automated Report

Technical Report for

WSP Environment & Energy

Kop-Flex, Hanover, VA

31401545.011/1

SGS Job Number: JD18705

Sampling Date: 01/06/21

Report to:

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

ATTN: Eric Johnson

Total number of pages in report: 56

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.

Caitlin Brice, M.S.
General Manager

Client Service contact: Tammy McCloskey 732-329-0200

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

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SGS North America Inc.

Sample Summary

WSP Environment & Energy

Job No: JD18705

Kop-Flex, Hanover, VA
Project No: 31401545.011/1

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
This report contains results reported as ND = Not detected. The following applies:							
Organics ND	= Not detected above the MDL						
JD18705-1	01/06/21	10:55	ML	01/07/21	AQ	Ground Water	RW-7932AND-010621
JD18705-2	01/06/21	11:15	ML	01/07/21	AQ	Ground Water	RW-7932AND-010621-F
JD18705-3	01/06/21	11:15	ML	01/07/21	AQ	Trip Blank Water	TRIP BLANK

Summary of Hits

Job Number: JD18705
Account: WSP Environment & Energy
Project: Kop-Flex, Hanover, VA
Collected: 01/06/21

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method

JD18705-1 **RW-7932AND-010621**

No hits reported in this sample.

JD18705-2 **RW-7932AND-010621-F**

No hits reported in this sample.

JD18705-3 **TRIP BLANK**

No hits reported in this sample.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	RW-7932AND-010621		
Lab Sample ID:	JD18705-1	**Date Sampled:**	01/06/21
Matrix:	AQ - Ground Water	**Date Received:**	01/07/21
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]	1B125974.D	1	01/11/21 12:49	BK	n/a	n/a	V1B6117
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 [b]	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 [c]	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-7932AND-010621		
Lab Sample ID:	JD18705-1	**Date Sampled:**	01/06/21
Matrix:	AQ - Ground Water	**Date Received:**	01/07/21
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	83%		70-130%
460-00-4	4-Bromofluorobenzene	81%		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-7932AND-010621		
Lab Sample ID:	JD18705-1	**Date Sampled:**	01/06/21
Matrix:	AQ - Ground Water	**Date Received:**	01/07/21
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	RL	MDL	Units	Q

(a) EPA 524.2 is not a certified method for non-potable water samples.
(b) This compound in blank spike is outside in house QC limits bias high.
(c) Associated CCV outside of control limits high, sample was ND. This compound in blank spike is outside in house QC limits bias high.

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

Report of Analysis

Client Sample ID:	RW-7932AND-010621		
Lab Sample ID:	JD18705-1	**Date Sampled:**	01/06/21
Matrix:	AQ - Ground Water	**Date Received:**	01/07/21
Method:	SW846 8270E BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	4P42723.D	1	01/18/21 14:19	KLS	01/15/21 07:00	OP31522A	E4P2236
Run #2 [b]	4M98359.D	1	01/11/21 18:37	KLS	01/10/21 10:00	OP31434A	E4M4549

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2	1040 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane [c]	ND	0.10	0.050	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	81%	0% [d]	29-124%
321-60-8	2-Fluorobiphenyl	68%	0% [d]	23-122%
1718-51-0	Terphenyl-d14	80%	0% [d]	22-130%

(a) Reextract due to surrogate not spiked in the original extract. Original prep date within holding time. Sample extarcted outside the holding time.
(b) Confirmation run.
(c) Associated CCV outside of control limits low. Low-level verification was analyzed to demonstrate system suitability to detect affected analytes. Sample was ND.
(d) Refer to re-extract.

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

Report of Analysis

Client Sample ID:	RW-7932AND-010621-F		
Lab Sample ID:	JD18705-2	**Date Sampled:**	01/06/21
Matrix:	AQ - Ground Water	**Date Received:**	01/07/21
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]	1B125975.D	1	01/11/21 13:20	BK	n/a	n/a	V1B6117
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 [b]	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 [c]	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-7932AND-010621-F		
Lab Sample ID:	JD18705-2	**Date Sampled:**	01/06/21
Matrix:	AQ - Ground Water	**Date Received:**	01/07/21
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	92%		70-130%
460-00-4	4-Bromofluorobenzene	83%		70-130%

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

Report of Analysis

Client Sample ID:	RW-7932AND-010621-F		
Lab Sample ID:	JD18705-2	**Date Sampled:**	01/06/21
Matrix:	AQ - Ground Water	**Date Received:**	01/07/21
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	RL	MDL	Units	Q

(a) EPA 524.2 is not a certified method for non-potable water samples.
(b) This compound in blank spike is outside in house QC limits bias high.
(c) Associated CCV outside of control limits high, sample was ND. This compound in blank spike is outside in house QC limits bias high.

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

Report of Analysis

Client Sample ID:	RW-7932AND-010621-F		
Lab Sample ID:	JD18705-2	**Date Sampled:**	01/06/21
Matrix:	AQ - Ground Water	**Date Received:**	01/07/21
Method:	SW846 8270E BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4M98360.D	1	01/11/21 18:58	KLS	01/10/21 10:00	OP31434A	E4M4549
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.10	0.050	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	89%		29-124%
321-60-8	2-Fluorobiphenyl	71%		23-122%
1718-51-0	Terphenyl-d14	81%		22-130%

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:	JD18705-3	**Date Sampled:**	01/06/21
Matrix:	AQ - Trip Blank Water	**Date Received:**	01/07/21
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]	1B125973.D	1	01/11/21 12:18	BK	n/a	n/a	V1B6117
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 [b]	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 [c]	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:	JD18705-3	**Date Sampled:**	01/06/21
Matrix:	AQ - Trip Blank Water	**Date Received:**	01/07/21
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	78%		70-130%
460-00-4	4-Bromofluorobenzene	99%		70-130%

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

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	JD18705-3	**Date Sampled:**	01/06/21
Matrix:	AQ - Trip Blank Water	**Date Received:**	01/07/21
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	RL	MDL	Units	Q

(a) EPA 524.2 is not a certified method for non-potable water samples.
(b) This compound in blank spike is outside in house QC limits bias high.
(c) Associated CCV outside of control limits high, sample was ND. This compound in blank spike is outside in house QC limits bias high.

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

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

CHAIN-OF-CUSTODY RECORD JD18705 MB-11690-22 Page 1 of 1

WSP USA Office Address	13535 Dulles Technology Dr. Ste 300 Herndon, VA 20171
Project Name	Kapflex
WSP USA Contact Name	Molly Long
Project Location	Maryland
WSP USA Contact E-mail	molly.long@wsp.com
Project Number & Task	31401545.011/1
WSP USA Contact Phone	703 709 6500
Sampler(s) Name(s)	Molly Long
Sampler(s) Signature(s)	MM

Requested Analyses & Preservatives

	Sample Identification	Matrix	Collection Start Date	Collection Start Time	Collection Stop Date	Collection Stop Time	Number of Containers	VOC 524.2	1,4-dioxane-USEPA 8270E	5 PFAS SIMS
1	RW-7432AND-010621	AQ	1/6/2021		10	55	5	X	X	
2	RW-7432AND-010621-F	AQ	1/6/2021		11	15	5	X	X	
3	Trip Blank		lab provided				2	X		

INITIAL ASESSMENT KS 2A

LABEL VERIFICATION

No. 10578 wsp

Laboratory Name & Location: SGS Accutest

Laboratory Project Manager: Tammy M.

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

Sample Comments: E83 V932

Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Shipment Method	Tracking Number(s)
	1/6/2021	1530	fedex				8127 8179 4674
fedex	10:00	1/7/21					

Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Number of Packages	Custody Seal Number(s)
							08059

*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

JD18705: Chain of Custody
Page 1 of 2

SGS Sample Receipt Summary

Job Number: JD18705 **Client:** WSP **Project:** KOP-FLEX, HANOVER, VA

Date / Time Received: 1/7/2021 10:00:00 AM **Delivery Method:** Fed Ex **Airbill #'s:** 8127 8179 4674

Cooler Temps (Raw Measured) °C: Cooler 1: (3.8);

Cooler Temps (Corrected) °C: Cooler 1: (3.3);

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: 212820 pH 12+: 203117A Other: (Specify) _____ _____

Comments

SM089-03
Rev. Date 12/7/17

JD18705: 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: JD18705
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B6117-MB	1B125972.D	1	01/11/21	BK	n/a	n/a	V1B6117

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

JD18705-1, JD18705-2, JD18705-3

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: JD18705
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B6117-MB	1B125972.D	1	01/11/21	BK	n/a	n/a	V1B6117

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

JD18705-1, JD18705-2, JD18705-3

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

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

Method Blank Summary

Job Number: JD18705
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B6117-MB	1B125972.D	1	01/11/21	BK	n/a	n/a	V1B6117

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

JD18705-1, JD18705-2, JD18705-3

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

Blank Spike Summary

Job Number: JD18705
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B6117-BS	1B125971.D	1	01/11/21	BK	n/a	n/a	V1B6117

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

JD18705-1, JD18705-2, JD18705-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	20	16.0	80	70-130
78-93-3	2-Butanone	20	15.5	78	70-130
71-43-2	Benzene	5	4.8	96	70-130
108-86-1	Bromobenzene	5	4.9	98	70-130
74-97-5	Bromochloromethane	5	4.7	94	70-130
75-27-4	Bromodichloromethane	5	5.1	102	70-130
75-25-2	Bromoform	5	5.5	110	70-130
74-83-9	Bromomethane	5	5.1	102	70-130
104-51-8	n-Butylbenzene	5	5.3	106	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	5.4	108	70-130
108-90-7	Chlorobenzene	5	4.7	94	70-130
75-00-3	Chloroethane	5	6.3	126	70-130
67-66-3	Chloroform	5	4.8	96	70-130
74-87-3	Chloromethane	5	6.7	134* [a]	70-130
95-49-8	o-Chlorotoluene	5	4.8	96	70-130
106-43-4	p-Chlorotoluene	5	4.9	98	70-130
56-23-5	Carbon tetrachloride	5	5.1	102	70-130
75-34-3	1,1-Dichloroethane	5	5.0	100	70-130
75-35-4	1,1-Dichloroethylene	5	5.5	110	70-130
563-58-6	1,1-Dichloropropene	5	5.0	100	70-130
96-12-8	1,2-Dibromo-3-chloropropane	5	4.6	92	70-130
106-93-4	1,2-Dibromoethane	5	4.8	96	70-130
107-06-2	1,2-Dichloroethane	5	5.1	102	70-130
78-87-5	1,2-Dichloropropane	5	5.1	102	70-130
142-28-9	1,3-Dichloropropane	5	4.7	94	70-130
594-20-7	2,2-Dichloropropane	5	5.4	108	70-130
124-48-1	Dibromochloromethane	5	4.8	96	70-130
74-95-3	Dibromomethane	5	4.8	96	70-130
75-71-8	Dichlorodifluoromethane	5	7.1	142* [a]	70-130
541-73-1	m-Dichlorobenzene	5	5.3	106	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	4.8	96	70-130
156-59-2	cis-1,2-Dichloroethylene	5	5.0	100	70-130

* = Outside of Control Limits.

Blank Spike Summary

Job Number: JD18705
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B6117-BS	1B125971.D	1	01/11/21	BK	n/a	n/a	V1B6117

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

JD18705-1, JD18705-2, JD18705-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
10061-01-5	cis-1,3-Dichloropropene	5	5.1	102	70-130
10061-02-6	trans-1,3-Dichloropropene	5	5.0	100	70-130
100-41-4	Ethylbenzene	5	4.7	94	70-130
87-68-3	Hexachlorobutadiene	5	5.0	100	70-130
591-78-6	2-Hexanone	20	15.0	75	70-130
98-82-8	Isopropylbenzene	5	4.8	96	70-130
99-87-6	p-Isopropyltoluene	5	5.2	104	70-130
75-09-2	Methylene chloride	5	5.2	104	70-130
1634-04-4	Methyl Tert Butyl Ether	5	5.0	100	70-130
108-10-1	4-Methyl-2-pentanone	20	16.8	84	70-130
91-20-3	Naphthalene	5	4.6	92	70-130
103-65-1	n-Propylbenzene	5	5.0	100	70-130
100-42-5	Styrene	5	4.3	86	70-130
630-20-6	1,1,1,2-Tetrachloroethane	5	4.9	98	70-130
71-55-6	1,1,1-Trichloroethane	5	5.0	100	70-130
79-34-5	1,1,2,2-Tetrachloroethane	5	4.8	96	70-130
79-00-5	1,1,2-Trichloroethane	5	4.6	92	70-130
87-61-6	1,2,3-Trichlorobenzene	5	4.9	98	70-130
96-18-4	1,2,3-Trichloropropane	5	4.8	96	70-130
120-82-1	1,2,4-Trichlorobenzene	5	4.9	98	70-130
95-63-6	1,2,4-Trimethylbenzene	5	5.1	102	70-130
108-67-8	1,3,5-Trimethylbenzene	5	4.8	96	70-130
127-18-4	Tetrachloroethylene	5	4.1	82	70-130
108-88-3	Toluene	5	4.4	88	70-130
79-01-6	Trichloroethylene	5	4.9	98	70-130
75-69-4	Trichlorofluoromethane	5	5.6	112	70-130
75-01-4	Vinyl chloride	5	6.5	130	70-130
	m,p-Xylene	10	9.2	92	70-130
95-47-6	o-Xylene	5	4.6	92	70-130
1330-20-7	Xylenes (total)	15	13.8	92	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
2199-69-1	1,2-Dichlorobenzene-d4	111%	70-130%
460-00-4	4-Bromofluorobenzene	103%	70-130%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: JD18705
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B6117-BS	1B125971.D	1	01/11/21	BK	n/a	n/a	V1B6117

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

JD18705-1, JD18705-2, JD18705-3

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

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: JD18705
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JD18705-2MS	1B125977.D	1	01/11/21	BK	n/a	n/a	V1B6117
JD18705-2 [a]	1B125975.D	1	01/11/21	BK	n/a	n/a	V1B6117

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

JD18705-1, JD18705-2, JD18705-3

CAS No.	Compound	JD18705-2 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
67-64-1	Acetone	ND		20	14.2	71	41-142
78-93-3	2-Butanone	ND		20	15.3	77	55-129
71-43-2	Benzene	ND		5	5.4	108	53-138
108-86-1	Bromobenzene	ND		5	5.0	100	54-138
74-97-5	Bromochloromethane	ND		5	5.1	102	55-140
75-27-4	Bromodichloromethane	ND		5	5.5	110	57-147
75-25-2	Bromoform	ND		5	5.6	112	47-137
74-83-9	Bromomethane	ND		5	6.2	124	40-162
104-51-8	n-Butylbenzene	ND		5	5.1	102	45-144
135-98-8	sec-Butylbenzene	ND		5	5.2	104	46-145
98-06-6	tert-Butylbenzene	ND		5	4.8	96	48-141
75-15-0	Carbon disulfide	ND		5	5.6	112	35-127
108-90-7	Chlorobenzene	ND		5	5.3	106	54-135
75-00-3	Chloroethane	ND		5	7.9	158* [b]	38-153
67-66-3	Chloroform	ND		5	5.3	106	57-151
74-87-3	Chloromethane	ND		5	7.5	150	39-165
95-49-8	o-Chlorotoluene	ND		5	4.8	96	55-142
106-43-4	p-Chlorotoluene	ND		5	4.8	96	55-139
56-23-5	Carbon tetrachloride	ND		5	6.2	124	49-170
75-34-3	1,1-Dichloroethane	ND		5	5.4	108	55-149
75-35-4	1,1-Dichloroethylene	ND		5	5.4	108	42-142
563-58-6	1,1-Dichloropropene	ND		5	5.8	116	46-151
96-12-8	1,2-Dibromo-3-chloropropane	ND		5	4.2	84	48-141
106-93-4	1,2-Dibromoethane	ND		5	5.4	108	57-135
107-06-2	1,2-Dichloroethane	ND		5	5.5	110	59-166
78-87-5	1,2-Dichloropropane	ND		5	5.4	108	53-142
142-28-9	1,3-Dichloropropane	ND		5	5.3	106	58-143
594-20-7	2,2-Dichloropropane	ND		5	5.7	114	38-165
124-48-1	Dibromochloromethane	ND		5	5.6	112	55-138
74-95-3	Dibromomethane	ND		5	5.3	106	61-144
75-71-8	Dichlorodifluoromethane	ND		5	8.5	170	23-172
541-73-1	m-Dichlorobenzene	ND		5	4.8	96	53-138
95-50-1	o-Dichlorobenzene	ND		5	4.8	96	54-140
106-46-7	p-Dichlorobenzene	ND		5	4.7	94	53-137
156-60-5	trans-1,2-Dichloroethylene	ND		5	5.3	106	47-148
156-59-2	cis-1,2-Dichloroethylene	ND		5	5.0	100	51-146

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: JD18705
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JD18705-2MS	1B125977.D	1	01/11/21	BK	n/a	n/a	V1B6117
JD18705-2 [a]	1B125975.D	1	01/11/21	BK	n/a	n/a	V1B6117

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

JD18705-1, JD18705-2, JD18705-3

CAS No.	Compound	JD18705-2 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
10061-01-5	cis-1,3-Dichloropropene	ND		5	5.3	106	51-136
10061-02-6	trans-1,3-Dichloropropene	ND		5	5.5	110	54-142
100-41-4	Ethylbenzene	ND		5	5.3	106	51-138
87-68-3	Hexachlorobutadiene	ND		5	4.8	96	40-154
591-78-6	2-Hexanone	ND		20	16.4	82	53-128
98-82-8	Isopropylbenzene	ND		5	5.2	104	49-139
99-87-6	p-Isopropyltoluene	ND		5	4.8	96	45-141
75-09-2	Methylene chloride	ND		5	5.0	100	54-137
1634-04-4	Methyl Tert Butyl Ether	ND		5	5.0	100	53-143
108-10-1	4-Methyl-2-pentanone	ND		20	17.3	87	58-127
91-20-3	Naphthalene	ND		5	4.1	82	44-140
103-65-1	n-Propylbenzene	ND		5	5.2	104	50-142
100-42-5	Styrene	ND		5	4.9	98	23-130
630-20-6	1,1,1,2-Tetrachloroethane	ND		5	5.5	110	57-144
71-55-6	1,1,1-Trichloroethane	ND		5	5.6	112	52-164
79-34-5	1,1,2,2-Tetrachloroethane	ND		5	4.8	96	58-138
79-00-5	1,1,2-Trichloroethane	ND		5	5.2	104	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	4.6	92	46-137
95-63-6	1,2,4-Trimethylbenzene	ND		5	4.9	98	41-138
108-67-8	1,3,5-Trimethylbenzene	ND		5	4.8	96	45-138
127-18-4	Tetrachloroethylene	ND		5	5.5	110	45-145
108-88-3	Toluene	ND		5	5.4	108	52-134
79-01-6	Trichloroethylene	ND		5	5.4	108	54-143
75-69-4	Trichlorofluoromethane	ND		5	7.0	140	36-167
75-01-4	Vinyl chloride	ND		5	7.6	152	35-162
	m,p-Xylene	ND		10	10.4	104	49-135
95-47-6	o-Xylene	ND		5	5.1	102	49-134
1330-20-7	Xylenes (total)	ND		15	15.5	103	50-134

CAS No.	Surrogate Recoveries	MS	JD18705-2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	101%	92%	70-130%
460-00-4	4-Bromofluorobenzene	102%	83%	70-130%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: JD18705
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JD18705-2MS	1B125977.D	1	01/11/21	BK	n/a	n/a	V1B6117
JD18705-2 [a]	1B125975.D	1	01/11/21	BK	n/a	n/a	V1B6117

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

JD18705-1, JD18705-2, JD18705-3

(a) EPA 524.2 is not a certified method for non-potable water samples.
(b) Outside in house control limits.

* = Outside of Control Limits.

Duplicate Summary

Job Number: JD18705
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JD18705-1DUP	1B125976.D	1	01/11/21	BK	n/a	n/a	V1B6117
JD18705-1 [a]	1B125974.D	1	01/11/21	BK	n/a	n/a	V1B6117

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

JD18705-1, JD18705-2, JD18705-3

CAS No.	Compound	JD18705-1 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: JD18705
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JD18705-1DUP	1B125976.D	1	01/11/21	BK	n/a	n/a	V1B6117
JD18705-1 [a]	1B125974.D	1	01/11/21	BK	n/a	n/a	V1B6117

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

JD18705-1, JD18705-2, JD18705-3

CAS No.	Compound	JD18705-1 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	JD18705-1	Limits
2199-69-1	1,2-Dichlorobenzene-d4	98%	83%	70-130%
460-00-4	4-Bromofluorobenzene	96%	81%	70-130%

* = Outside of Control Limits.

Duplicate Summary

Job Number: JD18705
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JD18705-1DUP	1B125976.D	1	01/11/21	BK	n/a	n/a	V1B6117
JD18705-1 [a]	1B125974.D	1	01/11/21	BK	n/a	n/a	V1B6117

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

JD18705-1, JD18705-2, JD18705-3

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

* = Outside of Control Limits.

Instrument Performance Check (BFB)

Job Number: JD18705
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample: V1B6106-BFB
Lab File ID: 1B125768.D
Instrument ID: GCMS1B
Injection Date: 12/17/20
Injection Time: 16:34

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	14.99 - 40.0% of mass 95	3383	21.2		Pass
75	30.0 - 80.0% of mass 95	8531	53.3		Pass
95	Base peak, 100% relative abundance	15994	100.0		Pass
96	5.0 - 9.0% of mass 95	1056	6.60		Pass
173	Less than 2.0% of mass 174	69	0.43	(0.53) [a]	Pass
174	50.0 - 120.0% of mass 95	13129	82.1		Pass
175	5.0 - 9.0% of mass 174	912	5.70	(6.95) [a]	Pass
176	95.0 - 101.0% of mass 174	12701	79.4	(96.7) [a]	Pass
177	5.0 - 9.0% of mass 176	830	5.19	(6.53) [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
V1B6106-IC6106	1B125769.D	12/17/20	17:06	00:32	Initial cal 0.2
V1B6106-IC6106	1B125770.D	12/17/20	17:38	01:04	Initial cal 0.5
V1B6106-IC6106	1B125771.D	12/17/20	18:09	01:35	Initial cal 1
V1B6106-IC6106	1B125772.D	12/17/20	18:40	02:06	Initial cal 2
V1B6106-IC6106	1B125773.D	12/17/20	19:11	02:37	Initial cal 5
V1B6106-ICC6106	1B125774.D	12/17/20	19:43	03:09	Initial cal 10
V1B6106-IC6106	1B125775.D	12/17/20	20:14	03:40	Initial cal 20
V1B6106-IC6106	1B125776.D	12/17/20	20:45	04:11	Initial cal 40
V1B6106-IC6106	1B125777.D	12/17/20	21:16	04:42	Initial cal 80
V1B6106-ICV6106	1B125780.D	12/17/20	22:50	06:16	Initial cal verification 10

Instrument Performance Check (BFB)

Job Number: JD18705
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample: V1B6106-BFB2
Lab File ID: 1B125782.D
Instrument ID: GCMS1B
Injection Date: 12/18/20
Injection Time: 10:23

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	14.99 - 40.0% of mass 95	3647	21.1		Pass
75	30.0 - 80.0% of mass 95	9037	52.3		Pass
95	Base peak, 100% relative abundance	17274	100.0		Pass
96	5.0 - 9.0% of mass 95	1338	7.75		Pass
173	Less than 2.0% of mass 174	71	0.41	(0.51) [a]	Pass
174	50.0 - 120.0% of mass 95	13898	80.5		Pass
175	5.0 - 9.0% of mass 174	960	5.56	(6.91) [a]	Pass
176	95.0 - 101.0% of mass 174	13367	77.4	(96.2) [a]	Pass
177	5.0 - 9.0% of mass 176	916	5.30	(6.85) [b]	Pass

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

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

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V1B6106-ICV6106	1B125783.D	12/18/20	10:55	00:32	Initial cal verification 10

Instrument Performance Check (BFB)

Job Number: JD18705
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample: V1B6117-BFB
Lab File ID: 1B125969.D
Instrument ID: GCMS1B
Injection Date: 01/11/21
Injection Time: 09:58

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	14.99 - 40.0% of mass 95	4208	22.2		Pass
75	30.0 - 80.0% of mass 95	10027	53.0		Pass
95	Base peak, 100% relative abundance	18931	100.0		Pass
96	5.0 - 9.0% of mass 95	1492	7.88		Pass
173	Less than 2.0% of mass 174	60	0.32	(0.41) [a]	Pass
174	50.0 - 120.0% of mass 95	14721	77.8		Pass
175	5.0 - 9.0% of mass 174	1099	5.81	(7.47) [a]	Pass
176	95.0 - 101.0% of mass 174	14352	75.8	(97.5) [a]	Pass
177	5.0 - 9.0% of mass 176	969	5.12	(6.75) [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
V1B6117-CC6106	1B125970.D	01/11/21	10:38	00:40	Continuing cal 5
V1B6117-BS	1B125971.D	01/11/21	11:14	01:16	Blank Spike
V1B6117-MB	1B125972.D	01/11/21	11:46	01:48	Method Blank
JD18705-3	1B125973.D	01/11/21	12:18	02:20	TRIP BLANK
JD18705-1	1B125974.D	01/11/21	12:49	02:51	RW-7932AND-010621
JD18705-2	1B125975.D	01/11/21	13:20	03:22	RW-7932AND-010621-F
JD18705-1DUP	1B125976.D	01/11/21	13:59	04:01	Duplicate
JD18705-2MS	1B125977.D	01/11/21	14:30	04:32	Matrix Spike

Surrogate Recovery Summary

Job Number: JD18705
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
JD18705-1	1B125974.D	83	81
JD18705-2	1B125975.D	92	83
JD18705-3	1B125973.D	78	99
JD18705-1DUP	1B125976.D	98	96
JD18705-2MS	1B125977.D	101	102
V1B6117-BS	1B125971.D	111	103
V1B6117-MB	1B125972.D	85	86

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

MS Semi-volatiles

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QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Job Number: JD18705
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP31434A-MB1	4M98342.D	1	01/11/21	KLS	01/10/21	OP31434A	E4M4549

The QC reported here applies to the following samples: **Method:** SW846 8270E BY SIM

JD18705-2

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.10	0.050	ug/l	

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	52%	15-110%
4165-62-2	Phenol-d5	38%	12-110%
118-79-6	2,4,6-Tribromophenol	75%	32-143%
4165-60-0	Nitrobenzene-d5	79%	29-124%
321-60-8	2-Fluorobiphenyl	64%	23-122%
1718-51-0	Terphenyl-d14	74%	22-130%

Method Blank Summary

Job Number: JD18705
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP31434A-MB1	4M98477.D	1	01/15/21	CS	01/10/21	OP31434A	E4M4558

The QC reported here applies to the following samples: **Method:** SW846 8270E BY SIM

JD18705-2

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.10	0.050	ug/l	

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	43%	15-110%
4165-62-2	Phenol-d5	32%	12-110%
118-79-6	2,4,6-Tribromophenol	80%	32-143%
4165-60-0	Nitrobenzene-d5	79%	29-124%
321-60-8	2-Fluorobiphenyl	62%	23-122%
1718-51-0	Terphenyl-d14	71%	22-130%

Method Blank Summary

Job Number: JD18705
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP31434A-MB1	4P42717.D	1	01/18/21	KLS	01/10/21	OP31434A	E4P2236

The QC reported here applies to the following samples: **Method:** SW846 8270E BY SIM

JD18705-2

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.10	0.050	ug/l	

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	42%	15-110%
4165-62-2	Phenol-d5	37%	12-110%
118-79-6	2,4,6-Tribromophenol	67%	32-143%
4165-60-0	Nitrobenzene-d5	89%	29-124%
321-60-8	2-Fluorobiphenyl	74%	23-122%
1718-51-0	Terphenyl-d14	93%	22-130%

Method Blank Summary

Job Number: JD18705
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP31522A-MB1	4P42720.D	1	01/18/21	KLS	01/15/21	OP31522A	E4P2236

The QC reported here applies to the following samples: **Method:** SW846 8270E BY SIM

JD18705-1

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.10	0.050	ug/l	

CAS No.	Surrogate Recoveries		Limits
4165-60-0	Nitrobenzene-d5	82%	29-124%
321-60-8	2-Fluorobiphenyl	70%	23-122%
1718-51-0	Terphenyl-d14	79%	22-130%

Blank Spike/Blank Spike Duplicate Summary

Job Number: JD18705
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP31434A-BS12	4M98347.D	1	01/11/21	KLS	01/10/21	OP31434A	E4M4549
OP31434A-BSD12	4M98348.D	1	01/11/21	KLS	01/10/21	OP31434A	E4M4549

The QC reported here applies to the following samples: **Method:** SW846 8270E BY SIM

JD18705-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
123-91-1	1,4-Dioxane	1	0.456	46	0.445	45	2	10-110/40

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
367-12-4	2-Fluorophenol	54%	54%	15-110%
4165-62-2	Phenol-d5	38%	37%	12-110%
118-79-6	2,4,6-Tribromophenol	101%	103%	32-143%
4165-60-0	Nitrobenzene-d5	80%	85%	29-124%
321-60-8	2-Fluorobiphenyl	62%	67%	23-122%
1718-51-0	Terphenyl-d14	76%	77%	22-130%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JD18705
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP31434A-BS12	4M98347.D	1	01/11/21	KLS	01/10/21	OP31434A	E4M4549
OP31434A-BSD12	4M98479.D	1	01/16/21	CS	01/10/21	OP31434A	E4M4558

The QC reported here applies to the following samples: **Method:** SW846 8270E BY SIM

JD18705-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
123-91-1	1,4-Dioxane	1	0.456	46	0.436	44	4	10-110/40

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
367-12-4	2-Fluorophenol	54%	51%	15-110%
4165-62-2	Phenol-d5	38%	33%	12-110%
118-79-6	2,4,6-Tribromophenol	101%	128%	32-143%
4165-60-0	Nitrobenzene-d5	80%	87%	29-124%
321-60-8	2-Fluorobiphenyl	62%	66%	23-122%
1718-51-0	Terphenyl-d14	76%	75%	22-130%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JD18705
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP31522A-BS12	4P42721.D	1	01/18/21	KLS	01/15/21	OP31522A	E4P2236
OP31522A-BSD12	4P42722.D	1	01/18/21	KLS	01/15/21	OP31522A	E4P2236

The QC reported here applies to the following samples: **Method:** SW846 8270E BY SIM

JD18705-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
123-91-1	1,4-Dioxane	1	0.399	40	0.427	43	7	10-110/40

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
4165-60-0	Nitrobenzene-d5	73%	78%	29-124%
321-60-8	2-Fluorobiphenyl	60%	65%	23-122%
1718-51-0	Terphenyl-d14	79%	75%	22-130%

* = Outside of Control Limits.

Instrument Performance Check (DFTPP)

Job Number: JD18705
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample: E4M4546-DFTPP
Lab File ID: 4M98267.D
Instrument ID: GCMS4M
Injection Date: 01/07/21
Injection Time: 00:39

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
51	30.0 - 60.0% of mass 198	47827	39.9		Pass
68	Less than 2.0% of mass 69	638	0.53	(1.34) [a]	Pass
69	Mass 69 relative abundance	47778	39.9		Pass
70	Less than 2.0% of mass 69	352	0.29	(0.74) [a]	Pass
127	40.0 - 60.0% of mass 198	57912	48.4		Pass
197	Less than 1.0% of mass 198	788	0.66		Pass
198	Base peak, 100% relative abundance	119757	100.0		Pass
199	5.0 - 9.0% of mass 198	7510	6.27		Pass
275	10.0 - 30.0% of mass 198	27242	22.7		Pass
365	1.0 - 100.0% of mass 198	3184	2.66		Pass
441	Present, but less than mass 443	11083	9.25	(83.1) [b]	Pass
442	40.0 - 100.0% of mass 198	73992	61.8		Pass
443	17.0 - 23.0% of mass 442	13335	11.1	(18.0) [c]	Pass

(a) Value is % of mass 69
(b) Value is % of mass 443
(c) Value is % of mass 442

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
E4M4546-ICC4546	4M98268.D	01/07/21	00:55	00:16	Initial cal 1
E4M4546-IC4546	4M98269.D	01/07/21	01:15	00:36	Initial cal 0.5
E4M4546-IC4546	4M98270.D	01/07/21	01:36	00:57	Initial cal 0.01
E4M4546-IC4546	4M98271.D	01/07/21	01:56	01:17	Initial cal 0.02
E4M4546-IC4546	4M98272.D	01/07/21	02:17	01:38	Initial cal 0.05
E4M4546-IC4546	4M98273.D	01/07/21	02:38	01:59	Initial cal 0.1
E4M4546-IC4546	4M98274.D	01/07/21	03:01	02:22	Initial cal 0.2
E4M4546-IC4546	4M98275.D	01/07/21	03:21	02:42	Initial cal 2.5
E4M4546-IC4546	4M98276.D	01/07/21	03:42	03:03	Initial cal 5
E4M4546-ICV4546	4M98277.D	01/07/21	04:03	03:24	Initial cal verification 1
E4M4546-ICV4546	4M98278.D	01/07/21	04:23	03:44	Initial cal verification 5
OP31378A-MB1	4M98279.D	01/07/21	04:44	04:05	Method Blank
OP31378A-BS1	4M98280.D	01/07/21	05:04	04:25	Blank Spike
OP31378A-BSD	4M98281.D	01/07/21	05:25	04:46	Blank Spike Duplicate
OP31378A-MSA	4M98282.D	01/07/21	05:45	05:06	Matrix Spike
OP31378A-MSDA	4M98283.D	01/07/21	06:06	05:27	Matrix Spike Duplicate
JD18467-4	4M98284.D	01/07/21	06:26	05:47	(used for QC only; not part of job JD18705)
ZZZZZZ	4M98285.D	01/07/21	06:47	06:08	(unrelated sample)
ZZZZZZ	4M98286.D	01/07/21	07:07	06:28	(unrelated sample)

Instrument Performance Check (DFTPP)

Job Number: JD18705
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample:	E4M4546-DFTPP	**Injection Date:**	01/07/21
Lab File ID:	4M98267.D	**Injection Time:**	00:39
Instrument ID:	GCMS4M		

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
ZZZZZZ	4M98287.D	01/07/21	07:28	06:49	(unrelated sample)
ZZZZZZ	4M98288.D	01/07/21	07:48	07:09	(unrelated sample)
ZZZZZZ	4M98289.D	01/07/21	08:08	07:29	(unrelated sample)
ZZZZZZ	4M98290.D	01/07/21	08:29	07:50	(unrelated sample)

Instrument Performance Check (DFTPP)

Job Number: JD18705
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample: E4M4549-DFTPP
Lab File ID: 4M98339.D
Instrument ID: GCMS4M
Injection Date: 01/11/21
Injection Time: 11:16

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
51	30.0 - 60.0% of mass 198	50616	37.9		Pass
68	Less than 2.0% of mass 69	878	0.66	(1.72) [a]	Pass
69	Mass 69 relative abundance	51149	38.3		Pass
70	Less than 2.0% of mass 69	352	0.26	(0.69) [a]	Pass
127	40.0 - 60.0% of mass 198	62824	47.1		Pass
197	Less than 1.0% of mass 198	573	0.43		Pass
198	Base peak, 100% relative abundance	133515	100.0		Pass
199	5.0 - 9.0% of mass 198	9226	6.91		Pass
275	10.0 - 30.0% of mass 198	32627	24.4		Pass
365	1.0 - 100.0% of mass 198	4275	3.20		Pass
441	Present, but less than mass 443	14434	10.8	(80.4) [b]	Pass
442	40.0 - 100.0% of mass 198	97584	73.1		Pass
443	17.0 - 23.0% of mass 442	17942	13.4	(18.4) [c]	Pass

(a) Value is % of mass 69
(b) Value is % of mass 443
(c) Value is % of mass 442

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
E4M4549-CC4546	4M98340.D	01/11/21	11:52	00:36	Continuing cal 1
OP31435A-MB1	4M98341.D	01/11/21	12:25	01:09	Method Blank
OP31434A-MB1	4M98342.D	01/11/21	12:46	01:30	Method Blank
ZZZZZZ	4M98343.D	01/11/21	13:06	01:50	(unrelated sample)
ZZZZZZ	4M98344.D	01/11/21	13:27	02:11	(unrelated sample)
OP31435A-BS12	4M98345.D	01/11/21	13:47	02:31	Blank Spike
OP31435A-BSD12	4M98346.D	01/11/21	14:08	02:52	Blank Spike Duplicate
OP31434A-BS12	4M98347.D	01/11/21	14:29	03:13	Blank Spike
OP31434A-BSD12	4M98348.D	01/11/21	14:49	03:33	Blank Spike Duplicate
ZZZZZZ	4M98349.D	01/11/21	15:10	03:54	(unrelated sample)
ZZZZZZ	4M98350.D	01/11/21	15:30	04:14	(unrelated sample)
ZZZZZZ	4M98351.D	01/11/21	15:51	04:35	(unrelated sample)
ZZZZZZ	4M98352.D	01/11/21	16:11	04:55	(unrelated sample)
ZZZZZZ	4M98353.D	01/11/21	16:33	05:17	(unrelated sample)
ZZZZZZ	4M98354.D	01/11/21	16:53	05:37	(unrelated sample)
ZZZZZZ	4M98355.D	01/11/21	17:14	05:58	(unrelated sample)
ZZZZZZ	4M98356.D	01/11/21	17:35	06:19	(unrelated sample)
ZZZZZZ	4M98357.D	01/11/21	17:56	06:40	(unrelated sample)
ZZZZZZ	4M98358.D	01/11/21	18:17	07:01	(unrelated sample)

Instrument Performance Check (DFTPP)

Job Number: JD18705
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample:	E4M4549-DFTPP	**Injection Date:**	01/11/21
Lab File ID:	4M98339.D	**Injection Time:**	11:16
Instrument ID:	GCMS4M		

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
JD18705-1	4M98359.D	01/11/21	18:37	07:21	RW-7932AND-010621
JD18705-2	4M98360.D	01/11/21	18:58	07:42	RW-7932AND-010621-F

Instrument Performance Check (DFTPP)

Job Number: JD18705
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample:	E4M4557-DFTPP	**Injection Date:**	01/15/21
Lab File ID:	4M98456.D	**Injection Time:**	14:15
Instrument ID:	GCMS4M		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
51	30.0 - 60.0% of mass 198	47391	32.1		Pass
68	Less than 2.0% of mass 69	532	0.36	(0.91) [a]	Pass
69	Mass 69 relative abundance	58335	39.5		Pass
70	Less than 2.0% of mass 69	164	0.11	(0.28) [a]	Pass
127	40.0 - 60.0% of mass 198	72853	49.3		Pass
197	Less than 1.0% of mass 198	758	0.51		Pass
198	Base peak, 100% relative abundance	147680	100.0		Pass
199	5.0 - 9.0% of mass 198	9775	6.62		Pass
275	10.0 - 30.0% of mass 198	34056	23.1		Pass
365	1.0 - 100.0% of mass 198	4165	2.82		Pass
441	Present, but less than mass 443	14230	9.64	(80.6) [b]	Pass
442	40.0 - 100.0% of mass 198	93949	63.6		Pass
443	17.0 - 23.0% of mass 442	17654	12.0	(18.8) [c]	Pass

(a) Value is % of mass 69
(b) Value is % of mass 443
(c) Value is % of mass 442

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
E4M4557-ICC4557	4M98459.D	01/15/21	14:55	00:40	Initial cal 1
E4M4557-IC4557	4M98460.D	01/15/21	15:16	01:01	Initial cal 5
E4M4557-IC4557	4M98461.D	01/15/21	15:37	01:22	Initial cal 0.01
E4M4557-IC4557	4M98462.D	01/15/21	15:58	01:43	Initial cal 2.5
E4M4557-IC4557	4M98463.D	01/15/21	16:19	02:04	Initial cal 0.02
E4M4557-IC4557	4M98464.D	01/15/21	16:40	02:25	Initial cal 0.5
E4M4557-IC4557	4M98465.D	01/15/21	17:01	02:46	Initial cal 0.05
E4M4557-IC4557	4M98466.D	01/15/21	17:22	03:07	Initial cal 0.2
E4M4557-IC4557	4M98467.D	01/15/21	17:42	03:27	Initial cal 0.1
E4M4557-ICV4557	4M98468.D	01/15/21	18:03	03:48	Initial cal verification 1

Instrument Performance Check (DFTPP)

Job Number: JD18705
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample: E4M4558-DFTPP
Lab File ID: 4M98470.D
Instrument ID: GCMS4M
Injection Date: 01/15/21
Injection Time: 20:52

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
51	30.0 - 60.0% of mass 198	41720	31.0		Pass
68	Less than 2.0% of mass 69	536	0.40	(1.06) [a]	Pass
69	Mass 69 relative abundance	50800	37.7		Pass
70	Less than 2.0% of mass 69	349	0.26	(0.69) [a]	Pass
127	40.0 - 60.0% of mass 198	65808	48.9		Pass
197	Less than 1.0% of mass 198	673	0.50		Pass
198	Base peak, 100% relative abundance	134621	100.0		Pass
199	5.0 - 9.0% of mass 198	8535	6.34		Pass
275	10.0 - 30.0% of mass 198	30779	22.9		Pass
365	1.0 - 100.0% of mass 198	3926	2.92		Pass
441	Present, but less than mass 443	12391	9.20	(75.4) [b]	Pass
442	40.0 - 100.0% of mass 198	89040	66.1		Pass
443	17.0 - 23.0% of mass 442	16431	12.2	(18.5) [c]	Pass

(a) Value is % of mass 69
(b) Value is % of mass 443
(c) Value is % of mass 442

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
E4M4558-ICV4557	4M98471.D	01/15/21	21:03	00:11	Initial cal verification 5
E4M4558-CC4557	4M98472.D	01/15/21	21:29	00:37	Continuing cal 1
OP31434A-MB1	4M98477.D	01/15/21	23:44	02:52	Method Blank
OP31434A-BS12	4M98478.D	01/16/21	00:05	03:13	Blank Spike
OP31434A-BSD12	4M98479.D	01/16/21	00:25	03:33	Blank Spike Duplicate
OP31457A-MB1	4M98480.D	01/16/21	00:46	03:54	Method Blank
OP31457A-BS12	4M98481.D	01/16/21	01:07	04:15	Blank Spike
OP31457A-BSD12	4M98482.D	01/16/21	01:28	04:36	Blank Spike Duplicate
OP31525A-MB1	4M98483.D	01/16/21	01:49	04:57	Method Blank
OP31525A-BS12	4M98484.D	01/16/21	02:10	05:18	Blank Spike
OP31525A-BSD12	4M98485.D	01/16/21	02:30	05:38	Blank Spike Duplicate
ZZZZZZ	4M98486.D	01/16/21	02:51	05:59	(unrelated sample)
OP31457A-MSA	4M98487.D	01/16/21	03:12	06:20	Matrix Spike
OP31457A-MSDA	4M98488.D	01/16/21	03:33	06:41	Matrix Spike Duplicate
JD18810-6	4M98489.D	01/16/21	03:53	07:01	(used for QC only; not part of job JD18705)
ZZZZZZ	4M98490.D	01/16/21	04:14	07:22	(unrelated sample)
ZZZZZZ	4M98491.D	01/16/21	04:35	07:43	(unrelated sample)
ZZZZZZ	4M98492.D	01/16/21	04:56	08:04	(unrelated sample)
ZZZZZZ	4M98493.D	01/16/21	05:16	08:24	(unrelated sample)

Instrument Performance Check (DFTPP)

Job Number: JD18705
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample:	E4M4558-DFTPP	**Injection Date:**	01/15/21
Lab File ID:	4M98470.D	**Injection Time:**	20:52
Instrument ID:	GCMS4M		

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
ZZZZZZ	4M98494.D	01/16/21	05:37	08:45	(unrelated sample)
ZZZZZZ	4M98495.D	01/16/21	05:58	09:06	(unrelated sample)
ZZZZZZ	4M98496.D	01/16/21	06:19	09:27	(unrelated sample)
ZZZZZZ	4M98497.D	01/16/21	06:39	09:47	(unrelated sample)
ZZZZZZ	4M98498.D	01/16/21	07:00	10:08	(unrelated sample)
ZZZZZZ	4M98499.D	01/16/21	07:21	10:29	(unrelated sample)
ZZZZZZ	4M98500.D	01/16/21	07:42	10:50	(unrelated sample)
ZZZZZZ	4M98501.D	01/16/21	08:02	11:10	(unrelated sample)
ZZZZZZ	4M98502.D	01/16/21	08:23	11:31	(unrelated sample)
ZZZZZZ	4M98503.D	01/16/21	08:44	11:52	(unrelated sample)

Instrument Performance Check (DFTPP)

Job Number: JD18705
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample:	E4P2211-DFTPP	**Injection Date:**	12/21/20
Lab File ID:	4P41961.D	**Injection Time:**	11:24
Instrument ID:	GCMS4P		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
51	30.0 - 60.0% of mass 198	40022	41.9		Pass
68	Less than 2.0% of mass 69	381	0.40	(0.59) [a]	Pass
69	Mass 69 relative abundance	64467	67.5		Pass
70	Less than 2.0% of mass 69	117	0.12	(0.18) [a]	Pass
127	40.0 - 60.0% of mass 198	46341	48.5		Pass
197	Less than 1.0% of mass 198	0	0.00		Pass
198	Base peak, 100% relative abundance	95554	100.0		Pass
199	5.0 - 9.0% of mass 198	5964	6.24		Pass
275	10.0 - 30.0% of mass 198	22742	23.8		Pass
365	1.0 - 100.0% of mass 198	2367	2.48		Pass
441	Present, but less than mass 443	7845	8.21	(74.6) [b]	Pass
442	40.0 - 100.0% of mass 198	50581	52.9		Pass
443	17.0 - 23.0% of mass 442	10518	11.0	(20.8) [c]	Pass

(a) Value is % of mass 69
(b) Value is % of mass 443
(c) Value is % of mass 442

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
E4P2211-IC2211	4P41962.D	12/21/20	11:38	00:14	Initial cal 0.5
E4P2211-IC2211	4P41963.D	12/21/20	12:18	00:54	Initial cal 5
E4P2211-IC2211	4P41964.D	12/21/20	12:41	01:17	Initial cal 2.5
E4P2211-ICC2211	4P41965.D	12/21/20	13:04	01:40	Initial cal 1
E4P2211-IC2211	4P41966A.D	12/21/20	14:01	02:37	Initial cal 0.2
E4P2211-IC2211	4P41967.D	12/21/20	14:22	02:58	Initial cal 0.1
E4P2211-IC2211	4P41968.D	12/21/20	14:45	03:21	Initial cal 0.05
E4P2211-IC2211	4P41969.D	12/21/20	15:07	03:43	Initial cal 0.02
E4P2211-IC2211	4P41970.D	12/21/20	15:30	04:06	Initial cal 0.01
E4P2211-ICV2211	4P41971.D	12/21/20	16:08	04:44	Initial cal verification 1
OP31050-MB1	4P41973.D	12/21/20	16:58	05:34	Method Blank
JD17638-30	4P41974.D	12/21/20	17:21	05:57	(used for QC only; not part of job JD18705)
ZZZZZZ	4P41975.D	12/21/20	17:44	06:20	(unrelated sample)
ZZZZZZ	4P41977.D	12/21/20	18:30	07:06	(unrelated sample)
ZZZZZZ	4P41978.D	12/21/20	18:52	07:28	(unrelated sample)
ZZZZZZ	4P41979.D	12/21/20	19:15	07:51	(unrelated sample)
ZZZZZZ	4P41980.D	12/21/20	19:37	08:13	(unrelated sample)
ZZZZZZ	4P41981.D	12/21/20	20:00	08:36	(unrelated sample)
ZZZZZZ	4P41982.D	12/21/20	20:23	08:59	(unrelated sample)

Instrument Performance Check (DFTPP)

Job Number: JD18705
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample:	E4P2211-DFTPP	**Injection Date:**	12/21/20
Lab File ID:	4P41961.D	**Injection Time:**	11:24
Instrument ID:	GCMS4P		

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
ZZZZZZ	4P41982R.D	12/21/20	20:23	08:59	(unrelated sample)
ZZZZZZ	4P41983.D	12/21/20	20:45	09:21	(unrelated sample)
ZZZZZZ	4P41984.D	12/21/20	21:08	09:44	(unrelated sample)
ZZZZZZ	4P41986.D	12/21/20	21:53	10:29	(unrelated sample)

Instrument Performance Check (DFTPP)

Job Number: JD18705
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample:	E4P2236-DFTPP	**Injection Date:**	01/18/21
Lab File ID:	4P42712.D	**Injection Time:**	10:00
Instrument ID:	GCMS4P		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
51	30.0 - 60.0% of mass 198	40378	36.8		Pass
68	Less than 2.0% of mass 69	0	0.00	(0.00) [a]	Pass
69	Mass 69 relative abundance	66459	60.6		Pass
70	Less than 2.0% of mass 69	127	0.12	(0.19) [a]	Pass
127	40.0 - 60.0% of mass 198	53024	48.3		Pass
197	Less than 1.0% of mass 198	0	0.00		Pass
198	Base peak, 100% relative abundance	109746	100.0		Pass
199	5.0 - 9.0% of mass 198	7999	7.29		Pass
275	10.0 - 30.0% of mass 198	27632	25.2		Pass
365	1.0 - 100.0% of mass 198	3188	2.90		Pass
441	Present, but less than mass 443	9189	8.37	(70.3) [b]	Pass
442	40.0 - 100.0% of mass 198	63160	57.6		Pass
443	17.0 - 23.0% of mass 442	13072	11.9	(20.7) [c]	Pass

(a) Value is % of mass 69
(b) Value is % of mass 443
(c) Value is % of mass 442

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
E4P2236-CC2211	4P42713.D	01/18/21	10:15	00:15	Continuing cal 1
OP31434A-MB1	4P42717.D	01/18/21	11:42	01:42	Method Blank
OP31463A-MB1	4P42718.D	01/18/21	12:05	02:05	Method Blank
ZZZZZZ	4P42731.D	01/18/21	12:27	02:27	(unrelated sample)
ZZZZZZ	4P42719.D	01/18/21	12:49	02:49	(unrelated sample)
OP31522A-MB1	4P42720.D	01/18/21	13:12	03:12	Method Blank
OP31522A-BS12	4P42721.D	01/18/21	13:34	03:34	Blank Spike
OP31522A-BSD12	4P42722.D	01/18/21	13:57	03:57	Blank Spike Duplicate
JD18705-1	4P42723.D	01/18/21	14:19	04:19	RW-7932AND-010621
OP31463A-BS12	4P42724.D	01/18/21	14:42	04:42	Blank Spike
OP31463A-BSD12	4P42725.D	01/18/21	15:04	05:04	Blank Spike Duplicate
ZZZZZZ	4P42726.D	01/18/21	15:26	05:26	(unrelated sample)
ZZZZZZ	4P42727.D	01/18/21	15:49	05:49	(unrelated sample)
ZZZZZZ	4P42728.D	01/18/21	16:11	06:11	(unrelated sample)
ZZZZZZ	4P42729.D	01/18/21	16:34	06:34	(unrelated sample)
ZZZZZZ	4P42730.D	01/18/21	16:56	06:56	(unrelated sample)
ZZZZZZ	4P42733.D	01/18/21	17:19	07:19	(unrelated sample)
ZZZZZZ	4P42734.D	01/18/21	17:41	07:41	(unrelated sample)
ZZZZZZ	4P42735.D	01/18/21	18:04	08:04	(unrelated sample)

Instrument Performance Check (DFTPP)

Job Number: JD18705
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample:	E4P2236-DFTPP	**Injection Date:**	01/18/21
Lab File ID:	4P42712.D	**Injection Time:**	10:00
Instrument ID:	GCMS4P		

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
ZZZZZZ	4P42732.D	01/18/21	18:26	08:26	(unrelated sample)

Surrogate Recovery Summary

Job Number: JD18705
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Method: SW846 8270E BY SIM **Matrix:** AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3
JD18705-1	4P42723.D	81	68	80
JD18705-1	4M98359.D	0* [a]	0* [a]	0* [a]
JD18705-2	4M98360.D	89	71	81
OP31434A-BS12	4M98347.D	80	62	76
OP31434A-BS12	4M98478.D	82	62	74
OP31434A-BSD12	4M98348.D	85	67	77
OP31434A-BSD12	4M98479.D	87	66	75
OP31434A-MB1	4M98342.D	79	64	74
OP31434A-MB1	4M98477.D	79	62	71
OP31434A-MB1	4P42717.D	89	74	93
OP31522A-BS12	4P42721.D	73	60	79
OP31522A-BSD12	4P42722.D	78	65	75
OP31522A-MB1	4P42720.D	82	70	79

Surrogate Compounds	Recovery Limits
S1 = Nitrobenzene-d5	29-124%
S2 = 2-Fluorobiphenyl	23-122%
S3 = Terphenyl-d14	22-130%

(a) Refer to re-extract.