VIA ELECTRONIC MAIL

February 02, 2018

Erich Weissbart, P.G.
Remedial Project Manager
Land and Chemicals Division
U.S. Environmental Protection Agency, Region III
701 Mapes Road
Fort Meade, MD 20755

Subject: **Quarterly Progress Report No. 5**
Former Kop-Flex Facility Site, Hanover, Maryland
Administrative Order on Consent, Docket No. RCRA-03-2016-0170 CA

Dear Erich:

On behalf of EMERSUB 16, LLC, a subsidiary of Emerson Electric Co., WSP USA, Inc. (WSP) is submitting this quarterly progress report describing the remedial and groundwater monitoring activities conducted in the fourth quarter of calendar year 2017 (October 1 through December 31) as part of the corrective measures implementation at the former Kop-Flex, Inc. facility property located at 7555 and 7565 Harmans Road (Site) in Hanover, Maryland. The Site is identical to the area described as the "Facility" in the Administrative Order on Consent, Docket No. RCRA-03-2016-0170 CA for the Site (Consent Order). The report also describes the activities planned for the first quarter of calendar year 2018 (January 1 through March 31). This progress report is being submitted to the U.S. Environmental Protection Agency (EPA) pursuant to Section IV.C.3 of the Consent Order.

This submittal also fulfills the quarterly operation and maintenance (O&M) reporting requirement for the onsite groundwater remedial system specified in Section 14.2 of the October 2015 Response Action Plan (RAP). The inclusion of information pertaining to the system OM&M in this progress report was approved by the Maryland Department of the Environment (MDE) in an October 10, 2017, email communication, in which EPA was included as a recipient. Please note that, in addition to performing the work conducted on the Consent Order, EMERSUB 16 continues to fulfill its remedial obligations under the October 2015 RAP approved by the MDE Voluntary Cleanup Program, and that EMERSUB 16 copies EPA on all submittals required under that program.

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Herndon, VA 20171

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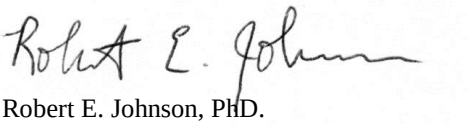
wsp.com

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

Kind regards,



Robert E. Johnson, PhD.
Senior Technical Manager

REJ:rlo
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Encl.

cc: Mr. Stephen Clarke, Emerson Electric Co.
Ms. Richelle Hanson, Maryland Department of the Environment
Mr. Raymond Goins, Trammell Crow Company

CERTIFICATION

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

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

Signature: 

Name: Stephen L. Clarke

Title: President of EMERSUB 16, LLC

Quarterly Progress Report No. 5

Former Kop-Flex Facility Site

October 2017 through December 2017

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

1.0 ACTIVITIES COMPLETED DURING OCTOBER 2017 – DECEMBER 2017 REPORTING PERIOD

1.1 REPORTING

- The Maryland Department of Environment (MDE) provided comments on the Corrective Measures Implementation (CMI) Report for the onsite area in an October 2, 2017, electronic mail correspondence to WSP and EMERSUB 16, LLC (EMERSUB 16). WSP and EMERSUB 16 reviewed the comments and revised the CMI Report in response to these comments. The revised CMI Report (Revision 1.0), which included responses to each specific comment, was submitted to MDE and U.S. Environmental Protection Agency (EPA), Region III on December 15, 2017.

- MDE also provided comments on the draft Response Action Completion Report (RACR), submitted on behalf of Harmans Road Associates, LLC by its consultant ECS Mid-Atlantic, LLC (ECS), which included a draft Site Maintenance Plan (SMP) for activities completed in conjunction with the redevelopment of the property. ECS submitted a RACR Addendum to MDE on October 25, 2017, which contained additional information concerning the soil-related response activities.

  On December 21, 2017, ECS submitted a revised version of the SMP, which contains information regarding the inspection and maintenance of the engineering controls implemented as part of the corrective measures. The updated version of the plan incorporates responses to comments previously provided to ECS by MDE. As of the end of the reporting period, MDE is still reviewing the revised SMP for the Site. EMERSUB 16 will incorporate elements of the SMP into the Use Restriction Implementation Plan required under the Consent Order.

1.2 HYDRAULIC CONTAINMENT SYSTEM OPERATION

- The hydraulic containment system operated continuously from October 1, 2017 through December 31, 2017, with a very brief down period in mid-October to enable resetting of the regeneration cycle for the resin vessels. During the reporting period, a total of approximately 8.13 million gallons of volatile organic compound (VOC)-containing groundwater was recovered and treated by the system, with a combined average withdrawal rate of approximately 69 gallons per minute (GPM) from the shallow and deep recovery wells.

- During system operation, water samples were regularly collected for chemical analysis to monitor and evaluate VOC concentrations in the treatment system influent and effluent. Total concentrations of VOCs (including 1,4-dioxane) for the system influent were generally consistent during the reporting period, with levels ranging from 443 micrograms per liter (µg/l) to 483 µg/l. Analysis of the treated water samples indicated non-detect concentrations of chlorinated VOCs and 1,4-dioxane. Additional information concerning the system performance is provided in the Operation and Maintenance (O&M) Report included in Enclosure A.

- Samples of the treated effluent were collected for chemical analysis in accordance with State Discharge Permit Number 15-DP-3442 and National Pollutant Discharge Elimination System (NPDES) Permit MD 0069094 (Permit) issued by the MDE. The

analytical results indicate compliance with the effluent limitations specified in the Permit. Additionally, Whole Effluent Toxicity (WET) testing of the treated effluent was conducted in accordance with the revised Biomonitoring Study Plan. The third quarterly biomonitoring event was completed in mid-December 2017. Evaluation of the test results with respect to information provided by the MDE Water Management Administration indicates no adverse toxicity associated with the treated water discharge. Additional information concerning the system monitoring is provided in the O&M Report included in Enclosure A.

- Since the initiation of continuous system operation in late March, the specific capacity, or yield per foot of drawdown, has exhibited a slight decrease in recovery wells RW-1D and RW-2D. The reduction in this hydraulic parameter is common for wells undergoing continuous pumping and is believed to have contributed to the decrease in the groundwater withdrawals from these recovery wells during the third quarter of 2017. WSP adjusted the system settings the week of October 16, 2017, to allow for the re-establishment of the desired pumping rates for the deep recovery wells. Given the possibility of further minor reductions in the specific capacities, WSP will closely monitor this well performance metric and, if necessary, make further modifications to the system operational parameters to ensure attainment of the necessary withdrawal rates for groundwater capture.

- On October 23, 2017, MDE emailed WSP comments on the Operations, Maintenance and Monitoring (OM&M) Manual for the groundwater extraction and treatment system. WSP had submitted a copy of this document to EPA and USEPA, Region III, on September 13, 2017, in accordance with the requirements of the Consent Order and RAP. WSP reviewed the comments and revised the OM&M Manual in response to these comments. The revised OM&M Manual (Revision 1.0), which included responses to each specific comment, was submitted to USEPA, Region III and MDE on December 15, 2017.

1.3 GROUNDWATER LEVEL MONITORING

- Quarterly groundwater level monitoring is conducted to gather data to evaluate the hydraulic response to remedial pumping in both the unconfined and confined portions of the aquifer system. During the reporting period, water level measurements were collected from the deep monitoring wells the week of October 23, 2017, following adjustment of the pumping rates for the deep recovery wells which was implemented after the resin vessel reset. Water level data was also obtained from all monitoring wells (except MW-09) and recovery well piezometers the week of November 13, 2017, as part of the semi-annual groundwater monitoring event. The data for this and previous measurement rounds from December 2016 to the present are provided in Table 1.

- Water level contour maps depicting hydraulic head conditions in the shallow, unconfined zone after 8 months of continuous groundwater withdrawal are provided in Figures 1 and 2. The water table contour map (Figure 1) indicates a slight localized depression in the groundwater surface around well MW-38R in response to groundwater extraction. The most pronounced head changes (i.e., drawdown) occurred within the permeable sand deposits comprising the lower portion of the unconfined zone, with a well-developed cone of depression centered around the shallow recovery wells and extending in the downgradient direction toward monitoring wells MW-39 and MW-43 (Figure 2). Based on the spatial head variations, VOC-containing groundwater in the upper portion of the unconfined zone will tend to migrate downward through the clayey deposits as flow paths move toward the recovery wells. This downward seepage would mix with VOCs migrating through the predominately sand deposits in the lower portion of the shallow zone and be captured as part of the inflow to the recovery wells. The groundwater capture area for the shallow recovery well system encompasses the width of the downgradient portion of the VOC plume as defined by the baseline sampling data from monitoring wells MW-44, MW-18, and MW-43.

- Given the adjustment in the pumping rates for the deep recovery wells in mid-October, a synoptic round of water level measurements was collected from the monitoring wells screened in this portion of the aquifer system on October 25, 2017. Figure 3 depicts the potentiometric surface for the confined portion of the Lower Patapsco aquifer using this water level data. Comparison of the hydraulic gradients and flow paths based on the late August and late October measurements indicates a re-establishment of the groundwater inflow area around recovery well RW-1D to a condition similar to that observed during the initial months of system operation. The inferred groundwater inflow area for the deep recovery wells resulting from the adjustments in the well extraction rates appears to fully capture the onsite portion of the VOC plume in the confined Lower Patapsco aquifer.

- The potentiometric surface contour map for the confined Lower Patapsco aquifer generated from the mid-November 2017 water level data is provided in Figure 4. The head distribution, which reflects a steady state pumping condition, shows the development of an elongate hydraulic sink along the southern property boundary in response to groundwater withdrawals from the deep recovery wells. Evaluation of the head distribution indicates drawdown of the potentiometric surface extending approximately 300 feet south, or hydraulically downgradient, onto the adjoining Williams Scotsman property. Based on the flow paths in response to the hydraulic gradients created during pumping, the groundwater inflow area for the deep recovery wells appears to encompass the inferred width of the VOC plume in the confined portion of the Lower Patapsco aquifer in the southern portion of the Site as defined by the VOC distribution from the baseline sampling data and the 5+ feet of observed drawdown in monitoring wells MW-40D and MW-22D.

1.4 GROUNDWATER QUALITY MONITORING

- In accordance with the Groundwater Monitoring Plan, groundwater quality samples were collected from the shallow and deep recovery wells and all monitoring wells, except MW-43, selected for semi-annual sampling during the week of November 13, 2017. The groundwater sample from MW-43 had to be collected on a later date (November 30th) because damage to the previously deployed passive sampling device required the placement and equilibration of another sampler in the well. Samples from the shallow and deep monitoring wells were collected using the HydraSleeve passive sampler. The sampling devices were deployed to the same depths as the samplers for the baseline monitoring event (see Table 1 in Quarterly Progress Report No. 1, dated February 15, 2017). Following the minimum 2-week equilibration period, samples were obtained by continuously pulling upward on each HydraSleeve until full, and then immediately decanting a representative portion of the collected water into the laboratory-supplied containers. For the recovery wells, the samples were collected directly from an in-line sampling port located at the well-head. The samples were submitted to Pace Analytical Services laboratory in Huntersville, North Carolina, and analyzed for VOCs using USEPA SW-846 Test Method 8260B and 1,4-dioxane using modified USEPA Method 8260B with selective ion monitoring.

  The analytical results for the primary VOCs detected in the monitoring and recovery well samples are summarized in Table 2. A copy of the certified laboratory analytical reports for the samples is included in Enclosure B. A small number of monitoring well samples associated with one shipment to the laboratory had low to very low detections of methylene chloride that were slightly above the MDE Groundwater Quality Standard of 5 micrograms per liter (µg/l). A very low concentration of this compound (2.5 µg/l) was also found in the trip blank associated with this sample shipment. Given the methylene chloride detection in this field quality control sample and its sporadic presence in the well samples, it is highly likely this compound is an artifact whose detection does not reflect actual groundwater quality conditions. A footnote has been included in Table 2 to indicate the detection of methylene chloride in the trip blank.

- For the shallow (unconfined) zone, total concentrations of chlorinated VOCs + 1,4-dioxane were above 1 milligram per liter in the RW-1S and RW-2S samples (Figure 5). The total VOC + 1,4-dioxane concentration in the RW-3S sample was two orders of magnitude lower than the other samples, with no compounds detected above the Groundwater Cleanup Standards. For monitoring wells in the western portion of the site, the chlorinated VOC and 1,4-dioxane concentration for the November 2017 samples are generally similar to levels detected in the May 2017 samples. Comparison of these data indicate an increase in the 1,4-dioxane concentrations in samples from wells MW-42 and MW-18 screened in the upper clayey and lower sand deposits, respectively. Although additional sampling data is needed to better discern changes in the VOC distribution, the higher 1,4-dioxane levels in this area may reflect the mobilization of residual mass present around the southwest portion of the Site. No VOCs were detected at concentrations above the cleanup criteria in the November 2017 sample from well MW-39 situated northwest of the recovery well system.

- In the deep recovery well samples, 1,1-DCE and 1,4-dioxane remain at concentrations above the Groundwater Cleanup Standards (Figure 6; Table 2). The sample results indicate higher VOC levels in the discharge from well RW-2D in the southeastern portion of the Site compared to RW-1D, although concentrations in the November 2017 sample from RW-1D continue to exhibit an increasing trend since the start of groundwater extraction. Overall, the concentrations of the primary VOCs are consistently lower in the November 2017 samples from on-property monitoring wells in the southern portion of the Site compared to the levels detected in the May 2017 event. This includes samples collected from wells located near the eastern (MW-22D) and western (MW-40D) boundaries of the VOC plume in the confined hydrogeologic unit. VOC and 1,4-dioxane concentrations in the November 2017 sample from MW-24D are similar to previously collected samples from this well (Figure 6). (The laboratory

analytical results for this sample are included in the Quarterly Status Report No. 5 for the offsite area, which is provided as a separate submittal.)

2.0 PLANNED ONSITE ACTIVITIES FOR NEXT REPORTING PERIOD (JANUARY 2018 – MARCH 2018)

- Continue with the operation and maintenance activities for the hydraulic containment system.
- Conduct the necessary effluent monitoring and reporting activities for the system discharge pursuant to the Permit and revised Biomonitoring Study Plan.
- Perform water level measurements, as needed, to assess the aquifer response to remedial pumping and capture of the VOC plumes in the unconfined and confined zones.

3.0 KEY PERSONNEL/FACILITY CHANGES

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

FIGURES

STONY RUN

POND

WILLIAMS SCOTSMAN, INC.

NORTH WAREHOUSE

SOUTH WAREHOUSE

MW-03

MW-09

MW-43

MW-39

MW-38R
105.47

RW-1S

MW-42
106.08

RW-2S

MW-18

MW-5R
106.72

RW-3S

MW-16

MW-44

MW-45
112.92

MW-20

MW-04
113.43

RW-1D

RW-2D

MW-01
115.63

106
107
108
109
110
111
112
113
114
115

N

LEGEND

- PROPERTY LINE
- STREAM/EDGE OF WATER
- FENCE LINE
- SHALLOW MONITORING WELL
- SHALLOW EXTRACTION WELL
- DEEP EXTRACTION WELL
- 113.74 GROUNDWATER SURFACE ELEVATION (FEET MSL)
- GROUNDWATER SURFACE CONTOUR (DASHED WHERE INFERRED)
- GROUNDWATER FLOW PATH

0 140 280
SCALE IN FEET

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B

Drawn By: EGC
Checked: MNL 1/10/2018
Approved: RGD
DWG Name: 314V0390-079

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

FIGURE 1

WATER TABLE CONTOUR MAP
NOVEMBER 14, 2017

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

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STONY RUN

POND

WILLIAMS SCOTSMAN, INC.

NORTH WAREHOUSE

SOUTH WAREHOUSE

MW-03 106.33

MW-43 101.14

MW-39 100.67

MW-38R

RW-1S 100.92

MW-42

MW-18 100.69

RW-2S 92.74

MW-5R

RW-3S 96.93

MW-44 110.10

MW-09

MW-16 112.00

MW-04

MW-20 113.42

RW-1D

RW-2D

MW-01

104 106 108 110 112 114 96 98 100 102

POND

LEGEND

- PROPERTY LINE
- STREAM/EDGE OF WATER
- FENCE LINE
- SHALLOW MONITORING WELL
- SHALLOW EXTRACTION WELL
- DEEP EXTRACTION WELL
- 101.14 PIEZOMETRIC SURFACE ELEVATION (FEET MSL)
- PIEZOMETRIC SURFACE CONTOUR (DASHED WHERE INFERRED)
- GROUNDWATER FLOW PATH
- 1,1-DCE PLUME BOUNDARY (DASHED WHERE INFERRED)

0 140 280

SCALE IN FEET

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Drawn By: EGC
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Approved: RGD
DWG Name: 314V0390-080

FORMER KOP-FLEX FACILITY SITE
HANOVER, MARYLAND

PREPARED FOR
EMERSUB 16 LLC
ST. LOUIS, MISSOURI

FIGURE 2

PIEZOMETRIC SURFACE CONTOUR MAP
FOR LOWER PORTION OF SHALLOW ZONE
NOVEMBER 14, 2017

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

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STONY RUN

MW-27D
86.68

MW-23D
85.99

NORTH WAREHOUSE

POND

WILLIAMS
SCOTSMAN, INC.

RW-1S

RW-2S

RW-3S

MW-16D
83.39

MW-40D
83.35

SOUTH WAREHOUSE

MW-22D
82.11

MW-41D

MW-01D
71.23

MW-21D
75.69

RW-1D

RW-2D

MW-24D
76.95

POND

86
85
84
83
82
81
80
79
78
77
76
75
74
73

N

LEGEND

- PROPERTY LINE
- STREAM/EDGE OF WATER
- FENCE LINE
- DEEP MONITORING WELL
- SHALLOW EXTRACTION WELL
- DEEP EXTRACTION WELL
- 85.99 POTENTIOMETRIC SURFACE ELEVATION (FEET MSL)
- POTENTIOMETRIC SURFACE CONTOUR (DASHED WHERE INFERRED)
- GROUNDWATER FLOW PATH
- INFERRED EXTENT OF 1,1-DICHLOROETHENE PLUME

0 140 280
SCALE IN FEET

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DWG Name: 314V0390-086

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

FIGURE 3

POTENTIOMETRIC SURFACE CONTOUR MAP
FOR CONFINED ZONE OF LOWER
PATAPSCO AQUIFER – OCTOBER 25, 2017

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

STONY RUN

MW-27D
86.86

MW-23D
86.16

NORTH WAREHOUSE

SOUTH WAREHOUSE

POND

WILLIAMS
SCOTSMAN, INC.

RW-1S
RW-2S
RW-3S
RW-1D
RW-2D

MW-16D
83.47
MW-40D
83.60
MW-41D
MW-21D
75.77
MW-01D
71.31
MW-22D
82.60
MW-24D
77.11

86
84
82
80
78
76
74

N

LEGEND

- PROPERTY LINE
- STREAM/EDGE OF WATER
- FENCE LINE
- DEEP MONITORING WELL
- SHALLOW EXTRACTION WELL
- DEEP EXTRACTION WELL
- 85.30 POTENTIOMETRIC SURFACE ELEVATION (FEET MSL)
- POTENTIOMETRIC SURFACE CONTOUR (DASHED WHERE INFERRED)
- GROUNDWATER FLOW PATH
- INFERRED EXTENT OF 1,1-DICHLOROETHENE PLUME

0 140 280
SCALE IN FEET

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Approved: PGD
DWG Name: 314V0390-085

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

FIGURE 4

POTENTIOMETRIC SURFACE CONTOUR MAP
FOR CONFINED ZONE OF LOWER
PATAPSCO AQUIFER – NOVEMBER 14, 2017

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

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VERIZON

POND

STONY RUN

NORTH WAREHOUSE

SOUTH WAREHOUSE

SCO

MW-27D

MW-23D

MW-03

MW-43

MW-09

MW-39

MW-38R

RW-1S

MW-16D

MW-16

MW-04

MW-20

MW-45

MW-42

MW-18

MW-5R

RW-2S

MW-40D

RW-3S

MW-44

MW-41D

MW-22D

MW-21D

RW-1D

RW-2D

MW-01D

MW-01

MW-24D

MW-39		
	5/1/17	11/14/17
1,1-DCA	ND	ND
1,2-DCA	ND	ND
1,1-DCE	1.1	0.563J
1,4-Dioxane	3	2.2
PCE	ND	ND
1,1,1-TCA	ND	ND
TCE	ND	ND

MW-43		
	5/1/17	11/30/17
1,1-DCA	21.3	15.9
1,2-DCA	2.1	1.3
1,1-DCE	***177***	***159***
1,4-Dioxane	***206***	***165***
PCE	ND	ND
1,1,1-TCA	ND	1.2
TCE	ND	ND

RW-1S			
	5/1/17	8/31/17	11/14/17
1,1-DCA	***711***	***192***	***196***
1,2-DCA	ND	ND	2.59
1,1-DCE	***1,210***	***434***	***544***
1,4-Dioxane	***1,370***	***586***	***580***
PCE	ND	ND	0.445J
1,1,1-TCA	35.5	18.4	34.6
TCE	ND	ND	4.1

MW-16		
	5/2/17	11/15/17
1,1-DCA	***7,910***	***7,110***
1,2-DCA	ND	***21.8***
1,1-DCE	***10,500***	***7,740***
1,4-Dioxane	***971***	***836***
PCE	ND	***18.4***
1,1,1-TCA	***8,930***	***5,590***
TCE	ND	***68.9***

MW-09		
	5/2/17	11/15/17
1,1-DCA	2.9	3.06
1,2-DCA	ND	0.366J
1,1-DCE	***63.8***	***60.2***
1,4-Dioxane	***20.8***	***32.4***
PCE	ND	ND
1,1,1-TCA	ND	0.744J
TCE	ND	ND

MW-03	
	5/1/17
1,1-DCA	ND
1,2-DCA	ND
1,1-DCE	ND
1,4-Dioxane	ND
PCE	ND
1,1,1-TCA	ND
TCE	ND

MW-04		
	5/2/17	11/15/17
1,1-DCA	***103***	29.2
1,2-DCA	ND	0.997J
1,1-DCE	***459***	***151***
1,4-Dioxane	***252***	***121***
PCE	ND	0.687J
1,1,1-TCA	13	4.31
TCE	ND	1.43

MW-38R		
	5/1/17	11/15/17
1,1-DCA	6	8.33
1,2-DCA	ND	ND
1,1-DCE	ND	ND
1,4-Dioxane	***42.6***	***62.5***
PCE	ND	ND
1,1,1-TCA	ND	ND
TCE	ND	ND

MW-20		
	5/2/17	11/15/17
1,1-DCA	***161***	***136***
1,2-DCA	***7.3***	***5.69***
1,1-DCE	***286***	***223***
1,4-Dioxane	***967***	***969***
PCE	ND	ND
1,1,1-TCA	ND	ND
TCE	ND	1.05

MW-42		
	5/1/17	11/14/17
1,1-DCA	ND	ND
1,2-DCA	ND	ND
1,1-DCE	ND	ND
1,4-Dioxane	8	***19.3***
PCE	ND	ND
1,1,1-TCA	ND	ND
TCE	ND	ND

MW-18		
	5/1/17	11/14/17
1,1-DCA	ND	ND
1,2-DCA	ND	ND
1,1-DCE	ND	ND
1,4-Dioxane	ND	***24.9***
PCE	ND	ND
1,1,1-TCA	ND	ND
TCE	ND	ND

RW-2S			
	5/1/17	8/31/17	11/14/17
1,1-DCA	***96***	71.7	83.5
1,2-DCA	ND	ND	1.7
1,1-DCE	***622***	***390***	***401***
1,4-Dioxane	***949***	***482***	***549***
PCE	ND	ND	ND
1,1,1-TCA	***426***	***491***	***458***
TCE	***5.3***	ND	***5.13***

MW-5R		
	5/1/17	11/15/17
1,1-DCA	1.4	1.56
1,2-DCA	ND	ND
1,1-DCE	1.4	2.46
1,4-Dioxane	***16.5***	11.1
PCE	ND	ND
1,1,1-TCA	2.7	1.73
TCE	ND	ND

RW-3S			
	5/1/17	8/31/17	11/14/17
1,1-DCA	ND	1.1	1.78
1,2-DCA	ND	ND	ND
1,1-DCE	1.2	1.7	1.78
1,4-Dioxane	3.8	5.9	10.6
PCE	ND	ND	ND
1,1,1-TCA	ND	4.2	7.4
TCE	ND	ND	ND

MW-44	
	5/1/17
1,1-DCA	6.6
1,2-DCA	ND
1,1-DCE	5.9
1,4-Dioxane	***49.1***
PCE	ND
1,1,1-TCA	27.7
TCE	ND

LEGEND

- PROPERTY LINE
- STREAM/EDGE OF WATER
- FENCE LINE
- SHALLOW MONITORING WELL
- DEEP MONITORING WELL
- SHALLOW EXTRACTION WELL
- DEEP EXTRACTION WELL

MW-20		
	5/2/17	11/15/17
1,1-DCA	***161***	***136***
1,2-DCA	***7.3***	***5.69***
1,1-DCE	***286***	***223***
1,4-Dioxane	***967***	***969***
PCE	ND	ND
1,1,1-TCA	ND	ND
TCE	ND	1.05

WELL ID
SAMPLE DATE
CONCENTRATION (ug/l) (BOLD ITALIC EXCEEDS CLEANUP LEVELS)
CONSTITUENT

ND	NON DETECT
J	ESTIMATED CONCENTRATION
1,1-DCA	1,1–DICHLOROETHANE
1,2-DCA	1,2–DICHLOROETHANE
1,1-DCE	1,1–DICHLOROETHENE
PCE	TETRACHLOROETHENE
1,1,1-TCA	1,1,1–TRICHLOROETHANE
TCE	TRICHLOROETHENE

Cleanup Levels	
	µg/l
1,1-DCA	90
1,2-DCA	5
1,1-DCE	7
1,4-Dioxane	15
PCE	5
1,1,1-TCA	200
TCE	5

0 140 280
SCALE IN FEET

B

Drawn By: EGC
Checked: MML 1/18/2018
Approved: RJH
DWG Name: 314V0390-083

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

FIGURE 5

SAMPLING RESULTS FOR GROUNDWATER RECOVERY AND MONITORING WELLS SCREENED IN THE SHALLOW AQUIFER – 2017

WSP USA Inc.
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VERIZON

STONY RUN

POND

WILLIAMS SCOTSMAN, INC.

NORTH WAREHOUSE

SOUTH WAREHOUSE

MW-03 MW-43 MW-09 MW-39 MW-38R RW-1S MW-42 MW-18 MW-5R RW-2S RW-3S MW-40D MW-44 MW-41D MW-21D RW-1D MW-01D MW-01 RW-2D MW-22D MW-16 MW-16D MW-04 MW-20 MW-45 MW-24D MW-27D MW-23D

MW-27D	
	5/1/17
1,1-DCA	ND
1,2-DCA	ND
1,1-DCE	ND
1,4-Dioxane	3.6
PCE	ND
1,1,1-TCA	ND
TCE	ND

MW-23D		
	5/1/17	11/15/17
1,1-DCA	39.1	31.1
1,2-DCA	2.4	1.86
1,1-DCE	***208***	***179***
1,4-Dioxane	***177***	***158***
PCE	ND	0.417J
1,1,1-TCA	19.9	19.3
TCE	ND	0.946J

MW-40D		
	5/1/17	11/15/17
1,1-DCA	3.1	0.934J
1,2-DCA	ND	ND
1,1-DCE	***17.4***	5.24
1,4-Dioxane	8.5	5.2
PCE	ND	ND
1,1,1-TCA	ND	ND
TCE	ND	ND

MW-16D		
	5/2/17	11/15/17
1,1-DCA	43.7	29.7
1,2-DCA	2.9	1.9
1,1-DCE	***235***	***179***
1,4-Dioxane	***182***	***192***
PCE	ND	ND
1,1,1-TCA	16.4	15.1
TCE	ND	0.856J

MW-22D		
	5/2/17	11/14/17
1,1-DCA	***2.5***	***1.72***
1,2-DCA	ND	ND
1,1-DCE	***36.9***	***24.4***
1,4-Dioxane	***24.6***	***19.6***
PCE	ND	ND
1,1,1-TCA	3.7	2.82
TCE	ND	ND

MW-1D		
	5/1/17	11/14/17
1,1-DCA	***105***	80.4
1,2-DCA	***5.7***	3.78
1,1-DCE	***407***	***277***
1,4-Dioxane	***329***	***243***
PCE	ND	0.519J
1,1,1-TCA	37.1	29.8
TCE	ND	1.66

MW-21D		
	5/1/17	11/14/17
1,1-DCA	6.9	2.04
1,2-DCA	1.4	ND
1,1-DCE	***111***	***14.4***
1,4-Dioxane	***57.5***	***18.5***
PCE	ND	ND
1,1,1-TCA	2.3	0.696J
TCE	ND	ND

RW-1D			
	5/1/17	8/31/17	11/14/17
1,1-DCA	10.4	15.7	30.4
1,2-DCA	ND	ND	1.19
1,1-DCE	***88.9***	***99.7***	***174***
1,4-Dioxane	***51.9***	***52.8***	***65.5***
PCE	ND	ND	ND
1,1,1-TCA	1	1.6	3.02
TCE	ND	ND	0.881J

MW-41D	
	5/1/17
1,1-DCA	ND
1,2-DCA	ND
1,1-DCE	ND
1,4-Dioxane	2.4
PCE	ND
1,1,1-TCA	ND
TCE	ND

MW-24D		
	5/1/17	11/14/17
1,1-DCA	40.4	28.1
1,2-DCA	***5.6***	3.43
1,1-DCE	***830***	***803***
1,4-Dioxane	***246***	***212***
PCE	ND	ND
1,1,1-TCA	10.2	10.5
TCE	ND	***5.85***

RW-2D			
	5/1/17	8/31/17	11/14/17
1,1-DCA	57	42.4	44
1,2-DCA	4.5	2.7	2.5
1,1-DCE	***486***	***306***	***295***
1,4-Dioxane	***214***	***149***	***172***
PCE	ND	ND	0.436J
1,1,1-TCA	15	11.2	12.6
TCE	ND	ND	1.62

Cleanup Levels	
	µg/l
1,1-DCA	90
1,2-DCA	5
1,1-DCE	7
1,4-Dioxane	15(a)
PCE	5
1,1,1-TCA	200
TCE	5

(a) NUMERIC CLEANUP STANDARDS FROM WSP's OCTOBER 2, 2015 RESPONSE ACTION PLAN, REVISION 2.

LEGEND

- PROPERTY LINE
- STREAM/EDGE OF WATER
- FENCE LINE
- SHALLOW MONITORING WELL
- DEEP MONITORING WELL
- SHALLOW EXTRACTION WELL
- DEEP EXTRACTION WELL

MW-16D		
	5/2/17	11/15/17
1,1-DCA	43.7	29.7
1,2-DCA	2.9	1.9
1,1-DCE	***235***	***179***
1,4-Dioxane	***182***	***192***
PCE	ND	ND
1,1,1-TCA	16.4	15.1
TCE	ND	0.856J

WELL ID
SAMPLE DATE
CONCENTRATION (ug/l) (BOLD ITALIC EXCEEDS CLEANUP LEVELS)
CONSTITUENT

ND	NON DETECT
J	ESTIMATED CONCENTRATION
1,1-DCA	1,1-DICHLOROETHANE
1,2-DCA	1,2-DICHLOROETHANE
1,1-DCE	1,1-DICHLOROETHENE
PCE	TETRACHLOROETHENE
1,1,1-TCA	1,1,1-TRICHLOROETHANE
TCE	TRICHLOROETHENE

0 140 280
SCALE IN FEET

B

Drawn By: EGC
Checked: MML 1/18/2018
Approved: RJG
DWG Name: 314V0390-083

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

FIGURE 6

GROUNDWATER RECOVERY AND MONITORING WELL RESULTS FOR THE CONFINED ZONE OF THE LOWER PATAPSCO AQUIFER – 2017

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TABLES

Table 1

Historical Water Level Measurements in Monitoring Wells
and Recovery Well Piezometers
Former Kop-Flex Facility Site
Hanover, Maryland
(December 2016 through December 2017) (a)

Well ID	Zone	TOC elevation	12/7/2016 (b)		3/21/2017		4/7/2017		4/10/2017		4/13/2017		4/17/2017		5/1/2017		5/8/2017		8/31/2017		10/25/2017		11/14/2017	
			Depth to Water	*Groundwater Elevation*	*Depth to Water*	*Groundwater Elevation*	*Depth to Water*	*Groundwater Elevation*	*Depth to Water*	*Groundwater Elevation*	*Depth to Water*	*Groundwater Elevation*	*Depth to Water*	*Groundwater Elevation*	*Depth to Water*	*Groundwater Elevation*	*Depth to Water*	*Groundwater Elevation*	*Depth to Water*	*Groundwater Elevation*	*Depth to Water*	*Groundwater Elevation*	*Depth to Water*	*Groundwater Elevation*
MW-01	Shallow	129.8	NM	-	16.16	113.64	15.93	113.87	15.95	113.85	15.94	113.86	15.90	113.90	15.92	113.88	15.81	113.99	15.49	114.31	NM	NM	14.17	115.63
MW-03	Shallow	113.6	6.78	106.82	6.79	106.81	6.41	107.19	6.76	106.84	6.91	106.69	6.90	106.70	6.96	106.64	6.87	106.73	7.59	106.01	NM	NM	7.27	106.33
MW-04	Shallow	124.4	12.28	112.12	11.17	113.23	11.05	113.35	11.09	113.31	11.06	113.34	11.13	113.27	10.95	113.45	10.91	113.49	10.66	113.74	NM	NM	10.97	113.43
MW-5R	Shallow	123.5	15.87	107.63	15.98	107.52	16.15	107.35	16.38	107.12	16.45	107.05	16.47	107.03	16.60	106.90	16.60	106.90	16.90	106.60	NM	NM	16.78	106.72
MW-09	Shallow	125.1	10.84	114.26	11.51	113.59	11.41	113.69	11.41	113.69	11.51	113.59	11.48	113.62	11.41	113.69	11.34	113.76	11.09	114.01	NM	NM	NM	NM
MW-16	Shallow	124.0	10.92	113.08	11.66	112.34	11.74	112.26	11.81	112.19	11.82	112.18	12.08	111.92	11.99	112.01	11.81	112.19	11.90	112.10	NM	NM	12.00	112.00
MW-18	Shallow	125.1	20.77	104.33	22.85	102.25	22.85	102.25	23.11	101.99	23.18	101.92	23.19	101.91	23.30	101.80	23.28	101.82	24.63	100.47	NM	NM	24.41	100.69
MW-20	Shallow	125.4	NM	-	12.5	112.90	12.33	113.07	12.31	113.09	12.3	113.10	13.38	112.02	13.01	112.39	12.24	113.16	12.39	113.01	NM	NM	11.98	113.42
MW-38R	Shallow	125.4	15.58	109.82	19.64	105.76	19.6	105.80	20.81	104.59	19.81	105.59	19.84	105.56	19.94	105.46	19.96	105.44	20.16	105.24	NM	NM	19.93	105.47
MW-39	Shallow	124.6	NM	-	22.64	101.96	22.55	102.05	21.86	102.74	23	101.60	23.01	101.59	23.05	101.55	23.00	101.60	24.51	100.09	NM	NM	23.93	100.67
MW-42	Shallow	125.9	16.18	109.72	19.28	106.62	19.33	106.57	19.52	106.38	19.49	106.41	19.55	106.35	19.68	106.22	19.67	106.23	19.95	105.95	NM	NM	19.82	106.08
MW-43	Shallow	122.8	19.25	103.55	20.68	102.12	20.31	102.49	20.61	102.19	21.81	100.99	20.92	101.88	21.11	101.69	20.90	101.90	21.73	101.07	NM	NM	21.66	101.14
MW-44	Shallow	127.1	14.93	112.17	17.7	109.40	17.08	110.02	17.18	109.92	17.35	109.75	17.23	109.87	17.31	109.79	17.27	109.83	17.18	109.92	NM	NM	17.00	110.10
MW-45	Shallow	126.7	NA	-	14.1	112.62	13.85	112.87	13.85	112.87	13.85	112.87	13.75	112.97	13.67	113.05	13.60	113.12	13.20	113.52	NM	NM	13.80	112.92
RW-1S	Shallow	122.9	12.96	109.94	12.96	109.94	20.36	102.54	20.6	102.30	20.56	102.34	20.60	102.30	20.80	102.10	20.79	102.11	21.49	101.41	NM	NM	21.98	100.92
RW-2S	Shallow	123.5	14.12	109.38	28.55	94.95	28.88	94.62	29.81	93.69	29	94.50	29.14	94.36	29.61	93.89	29.74	93.76	32.10	91.40	NM	NM	30.76	92.74
RW-3S	Shallow	125.4	14.29	111.11	20.34	105.06	23.49	101.91	23.59	101.81	23.69	101.71	23.73	101.67	24.32	101.08	24.46	100.94	26.20	99.20	NM	NM	28.47	96.93
MW-1D	Deep	129.4	42.81	86.59	56.15	73.25	56.06	73.34	56.22	73.18	56.44	72.96	56.37	73.03	56.40	73.00	56.29	73.11	56.70	72.70	58.17	71.23	58.09	71.31
MW-16D	Deep	124.1	34.91	89.19	37.55	86.55	37.6	86.50	38.02	86.08	38.1	86.00	37.94	86.16	37.98	86.12	38.08	86.02	41.1	83.00	40.71	83.39	40.63	83.47
MW-21D	Deep	126.3	37.8	88.50	47.12	79.18	47.26	79.04	47.57	78.73	47.61	78.69	47.58	78.72	47.54	78.76	47.61	78.69	56.7	69.60	50.61	75.69	50.53	75.77
MW-22D	Deep	128.9	40.78	88.07	43.28	85.57	43.3	85.55	43.59	85.26	43.76	85.09	43.73	85.12	43.82	85.03	43.81	85.04	46.71	82.14	46.74	82.11	46.25	82.60
MW-23D	Deep	125.2	35.14	90.06	36.33	88.87	36.29	88.91	36.72	88.48	36.81	88.39	36.61	88.59	36.71	88.49	36.77	88.43	39.9	85.30	39.21	85.99	39.04	86.16
MW-24D	Deep	129.1	46.3	82.80	47.44	81.66	47.71	81.39	48	81.10	48.16	80.94	48.29	80.81	48.35	80.75	48.37	80.73	55.82	73.28	52.15	76.95	51.99	77.11
MW-27D	Deep	117.2	29.66	87.54	27.73	89.47	27.68	89.52	28.18	89.02	28.3	88.90	28.03	89.17	28.21	88.99	28.21	88.99	31.11	86.09	30.52	86.68	30.34	86.86
MW-40D	Deep	124.1	35.14	88.96	37.19	86.91	37.51	86.59	37.98	86.12	37.98	86.12	37.85	86.25	38.01	86.09	38.04	86.06	41.00	83.10	40.75	83.35	40.50	83.60
MW-41D	Deep	127.1	41.98	85.12	44.00	83.10	44.06	83.04	44.48	82.62	44.56	82.54	44.43	82.67	44.61	82.49	44.62	82.48	49.18	77.92	47.94	79.16	47.71	79.39
RW-1D	Deep	126.9	38.53	88.37	58.69	68.21	59.02	67.88	59.06	67.84	59.02	67.88	59.26	67.64	58.88	68.02	58.99	67.91	60.23	66.67	62.62	64.28	63.62	63.28
RW-2D	Deep	127.4	42.31	85.09	68.82	58.58	68.51	58.89	68.39	59.01	68.78	58.62	68.63	58.77	68.70	58.70	68.44	58.96	70.11	57.29	68.90	58.50	68.95	58.45

a/ Vertical datum is NAVD-88
NM = not measured
TOC = top of casing
NA = not available because the well had not been installed
Gray shading denotes wells screened in the shallow (unconfined) zone; blue shading denotes wells screened in the deep (confined) zone
Continuous pumping of the groundwater recovery well system started on March 29, 2017
Water levels from both shallow and deep recoverys were measured in piezometers co-located with the wells
b/ Water level measurements representative of non-pumping conditions in the aquifer system.

Table 2

Semi-Annual Groundwater Monitoring Event (November 2017)
Former Kop Flex Facility Site
Hanover, MD

		Shallow Monitoring Wells											Shallow Recovery Wells		
	Well ID:	MW-04	MW-5R	MW-09	MW-16	MW-600 (c)	MW-18	MW-20	MW-38R	MW-39	MW-42	MW-43	RW-1S	RW-2S	RW-3S
Parameters	Groundwater Cleanup Standards (µg/L) (b)	11/15/2017	11/15/2017	11/15/2017	11/15/2017	11/15/2017	11/14/2017	11/15/2017	11/15/2017	11/14/2017	11/14/2017	11/30/2017	11/14/2017	11/14/2017	11/14/2017
Volatile Organic Compounds (US EPA Method 8260)															
1,1,1-Trichloroethane	200	4.3	1.7	0.7 J	**5,590**	**5,230**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.2	34.6	**458**	7.4
1,1,2-Trichloroethane	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.9	1.0 U	1.0 U	1.0 U	1.0 U	1.00 U	1.0 U	1.0 U
1,1-Dichloroethane	90	29.2	1.6	3.1	**7,110**	**6,850**	1.0 U	**136**	8.3	1.0 U	1.0 U	15.9	**196**	83.5	1.8
1,1-Dichloroethene	7	**151**	2.5	**60.2**	**7,740**	**7,080**	1.0 U	**223**	1.0 U	0.6 J	1.0 U	**159**	**544**	**401**	1.8
1,2-Dichloroethane	5	1.0 J	1.0 U	0.4 J	**22**	**21**	1.0 U	**5.7**	1.0 U	1.0 U	1.0 U	1.3	2.6	1.7	1.0 U
Methylene chloride	5	**10.5** (d)	**10.2** (d)	5.0 U	**11** (d)	**11** (d)	5.0 U	5.0 U	**8.1** (d)	5.0 U	5.0 U	5.0 U	5.0 U	3.8 J	5.0 U
Chloroethane	3.6	5.0 U	5.0 U	5.0 U	**732**	**708**	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**28.8**	1.4 J	5.0 U
cis-1,2-Dichloroethene	70	1.0 U	1.0 U	1.0 U	46	46	1.0 U	1.4 U	1.0 U	1.0 U	1.0 U	1.0 U	2.9	1.0	1.0 U
Tetrachloroethene	5	0.7 J	1.0 U	1.0 U	**18.4**	**18.5**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.4 J	1.00 U	1.0 U
Trichloroethene	5	1.4	1.0 U	1.0 U	**69**	**69**	1.0 U	1.1 U	1.0 U	1.0 U	1.0 U	1.0 U	4.1	**5.13**	1.0 U
Vinyl chloride	2	1.0 U	1.0 U	1.0 U	**19**	**18**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.8	1.0 U	1.0 U
Volatile Organic Compounds (US EPA Method 8260 - SIM)															
1,4-Dioxane	15	**121**	11.1	**32.4**	**836**	**770**	**24.9**	**969**	**62.5**	2.2	**19.3**	**165**	**580**	**549**	10.6

		Deep Monitoring Wells						Deep Recovery Wells		
		MW-1D	MW-16D	MW-21D	MW-22D	MW-23D	MW-40D	RW-1D	RW-2D	MW-200 (c)
Parameters	Groundwater Cleanup Standards (µg/L) (b)	11/14/2017	11/15/2017	11/14/2017	11/15/2017	11/15/2017	11/15/2017	11/14/2017	11/14/2017	11/14/2017
Volatile Organic Compounds (US EPA Method 8260)										
1,1,1-Trichloroethane	200	29.8	15.1	0.7 J	2.8	19.3	1.0 U	3.0	12.6	13.4
1,1,2-Trichloroethane	5	0.8 J	0.5 J	1.0 U	1.0 U	0.4 J	1.0 U	1.0 U	0.4 J	0.4 J
1,1-Dichloroethane	90	80	29.7	2.0	1.7	31.1	0.9 J	30.4	44.0	45.9
1,1-Dichloroethene	7	**277**	**179**	**14**	**24.4**	**179**	5.2	**174.0**	**295**	**255**
1,2-Dichloroethane	5	3.8	1.9	1.0 U	1.0 U	1.9	1.0 U	1.2	2.5	2.6
Methylene chloride	5	5.0 U	**10.0** (d)	5.0 U	5.0 U	5.0 U	**9.7** (d)	1.0 J	5.0 U	5.0 U
Chloroethane	3.6	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.2 J	1.2 J	1.1 J
cis-1,2-Dichloroethene	70	0.6 J	0.3 J	1.0 U	1.0 U	0.3 J	1.0 U	1.2	1.3	1.5
Tetrachloroethene	5	0.5 J	1.0 U	1.0 U	1.0 U	0.4 J	1.0 U	1.0 U	0.4 J	0.4 J
Trichloroethene	5	1.7	0.9 J	1.0 U	1.0 U	0.9 J	1.0 U	0.9 J	1.6	1.7
Vinyl chloride	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U
Volatile Organic Compounds (US EPA Method 8260 - SIM)										
1,4-Dioxane	15	**243**	**192**	**18.5**	**19.6**	**158**	5.2	**65.5**	**172**	**257**

a/ ug/L = micrograms per liter; U = not detected above method detection limits; J = estimated concentration above the adjusted method detection limit and below the adjusted reporting limit, EPA = Environmental Protection Agency; SIM = selected ion method; VOCs= volatile organic compounds; SIM = selected ion method.
Results shown in **bold** and highlight exceed the comparison standard.
b/ Numeric cleanup standards from WSP's October 2, 2015, Response Action Plan, Revision 2.
c/ MW-600 is a duplicate of MW-16; MW-200 is a duplicate of RW-2D.
d/ Compound detected at a concentration of 2.5 µg/l in the trip blank associated with the 11/15/2017 sample shipment to the laboratory.

ENCLOSURE A – FOURTH QUARTER 2017 OPERATION AND MAINTENANCE REPORT

FOURTH QUARTER 2017 OPERATION AND MAINTENANCE REPORT
GROUNDWATER EXTRACTION AND TREATMENT SYSTEM
FORMER KOP-FLEX FACILITY SITE
HANOVER, MARYLAND

INTRODUCTION

WSP USA Inc. has prepared this Quarterly Operation and Maintenance (O&M) Report for the groundwater extraction and treatment system (System) at the Former Kop-Flex Facility Site (Site) located in Hanover, Maryland. The System start-up was initiated on March 10, 2017, with continuous operation beginning on March 29, 2017. This O&M Report was prepared in accordance with the requirement specified in Chapter 14 of the October 2015 Response Action Plan (RAP), and covers the period of October 1, 2017, through December 31, 2017.

Groundwater is extracted from a network of three shallow extraction wells (RW-1S through RW-3S), screened within the Surficial aquifer, and two deep extraction wells (RW-1D and RW-2D), screened in the confined portion of the Lower Patapsco aquifer. The extracted groundwater is routed via underground piping to the treatment system building. Treatment equipment is comprised of an equalization tank to regulate flow, a metering pump for the addition of an iron sequestering agent, bag filters for suspended solids removal, synthetic resin (AMBERSORBTM 560) for the removal of volatile organic compounds (VOCs) and 1,4-dioxane, a metering pump for the addition of caustic soda for pH buffering, and two in-line aerators to increase dissolved oxygen levels in the water.

The synthetic resin is regenerated onsite using steam process equipment, including a boiler, super-heater, and re-heater, to remove the adsorbed organic constituents. The two synthetic resin vessels (T-1100 and T-1200) are arranged in a lead-lag configuration until the lead vessel reaches its adsorption capacity for organic constituents, which is based on the volume of processed water. At that time, the lag vessel is switched into the lead position, and the contaminant-loaded vessel is taken out of operation. The loaded vessel undergoes steam regeneration to remove the adsorbed organic constituents from the resin. The steam (or gas) containing the desorbed organic constituents is discharged to the atmosphere through the re-heater. Once the regeneration process is completed, the vessel is returned to operation as the lag vessel, and the cycle is repeated.

SYSTEM OPERATION AND MAINTENANCE

During the fourth quarter of 2017, WSP subcontracted the O&M of the System to a local contractor, S&S Technologies, Inc. of Elkton, Maryland. Subcontractor oversight was provided by WSP engineer Maria Kaplan, working under the direction of Steve Kretschman, P.E., the engineer of record for the System. Routine O&M activities performed during the reporting period included the following:

- regeneration of the resin (as discussed below)
- replacement of bag filters
- replenishment of caustic
- cleaning and recalibration of the inline pH probe

Spent bag filters were managed offsite as non-hazardous waste.

The system operated continuously with 97% uptime during the reporting period. The system was shut down on October 16th through October 18th to allow for resetting the regeneration cycle for the resin vessels, which is further described in the next section. The inline pH probe was replaced with an identical, new probe in December 2017.

The total monthly volumes of treated groundwater discharged since start up in March 2017 are shown in the following table.

Month	Total Discharged Volume (gal)
March 2017	809,756
April 2017	3,084,170
May 2017	3,287,318
June 2017	3,039,318
July 2017	2,711,979
August 2017	2,801,937
September 2017	2,737,836
October 2017	2,569,224
November 2017	2,592,294
December 2017	2,972,524

A total of approximately 8.13 million gallons of extracted groundwater was treated by the System in the fourth quarter of 2017. Since start-up, the System has treated approximately 26.6 million gallons of contaminated groundwater. The combined flows throughout the reporting period from the shallow recovery wells screened in the surficial aquifer and deep recovery wells screened in the confined Lower Patapsco Aquifer are provided below.

Extraction Zone	Q4 2017 Minimum Flow Rate (GPM)	Q4 2017 Maximum Flow Rate (GPM)	Q4 2017 Average Flow Rate (GPM)
Surficial (unconfined) Aquifer	9.32	10.23	9.78
Confined Lower Patapsco Aquifer	55.30	60.64	59.21

GPM = gallons per minute

When the system was restarted on October 19, 2017 after the resin regeneration reset, the pumping rate for the deep well, RW-1D was increased from approximately 25 GPM to approximately 30 GPM. A graph of the extraction rate from the five recovery wells is found in Figure A-1.

RESIN VESSEL REGENERATION

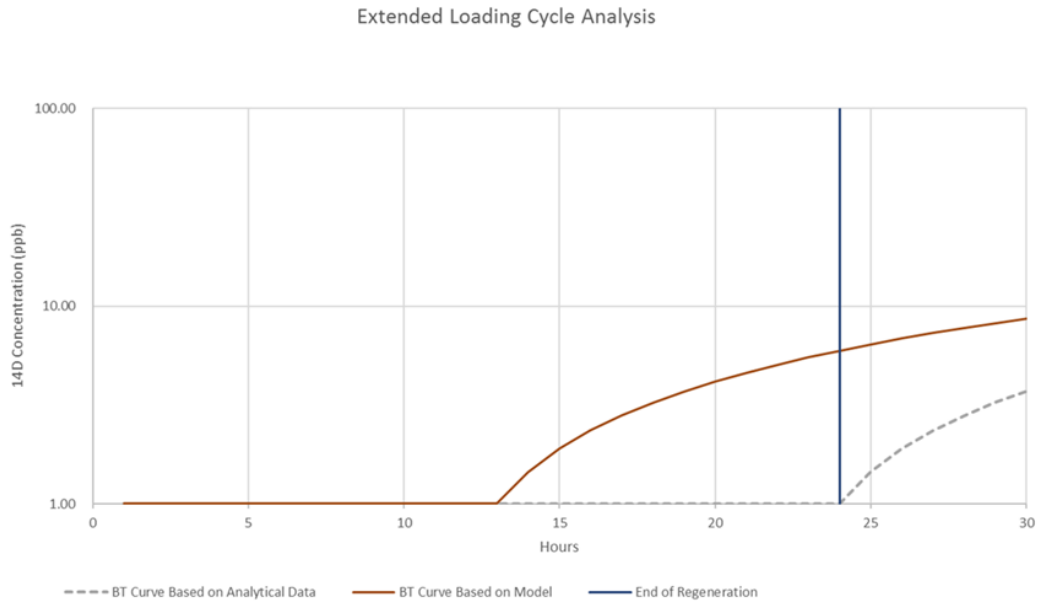
HOLIDAY REGENERATION SCHEDULE

The synthetic resin in the lead vessel must be regenerated after treating approximately 400,000 gallons of contaminated groundwater. Since this process is performed over a two-day period, the regeneration schedule requires that flow volumes be monitored throughout the week and adjustments made in the regeneration timing to account for holiday periods. Given the total extraction rate and mass loading, each resin vessel was regenerated once per week during the reporting period. Under the current operating conditions, regeneration normally occurs each week on Monday-Tuesday and Thursday-Friday. For weeks when a holiday falls during one of the regeneration periods, the regeneration schedule will be shifted by one day (as shown on the table below) to maintain continuous groundwater extraction from the recovery well network as requested by the Voluntary Clean-up Program in response to the third quarter O&M report. The holiday regeneration schedule has been incorporated into the December 2017 revision of the Operations, Maintenance and Monitoring (OM&M) Manual.

Regeneration Schedule

		Monday	Tuesday	Wednesday	Thursday	Friday
Normal Schedule		Regen	Quench		Regen	Quench
Holiday	Monday		Regen	Quench	Regen	Quench
	Tuesday	Regen		Quench	Regen	Quench
	Wednesday	Regen	Quench		Regen	Quench
	Thursday	Regen	Quench	Regen		Quench
	Friday	Regen	Quench	Regen	Quench	

The shift in the regeneration schedule to account for a holiday will result in a condition known as preloading. Preloading occurs when breakthrough of the lead resin vessel occurs and contaminants begin to load the lag vessel resin. WSP modelled the extended loading cycle resulting from 24 hours of preloading followed by temporary single vessel operation once the delayed regeneration begins. As shown in the plot below, the resulting breakthrough (BT) curve based on the model indicates that 1,4-dioxane will not exceed the discharge criteria (15 micrograms per liter, µg/L) as a result of the holiday regeneration schedule.



REGENERATION CYCLE RESET

Given the detection of 1,4-dioxane in the September 2017 System effluent sample, a reset of the resin regeneration cycle was conducted on October 16 through October 18, 2017. The reset entailed stopping groundwater extraction from the recovery wells and performing the steam regeneration process on the lead vessel immediately followed by steam regeneration on the lag vessel.

Since startup in March 2017, the T-1100 vessel had operated as the lead vessel for four days followed by the T-1200 vessel as the lead vessel for three days. After the reset, the resin vessels were switched with T-1200 placed online as the lead vessel for four days followed by T-1100 as lead for three days. Samples were collected from the lead vessel effluent and System effluent before and after the regeneration reset to determine the effectiveness of resetting the regeneration cycle. The water samples were analyzed for VOCs

using US Environmental Protection Agency (EPA) SW-846 Test Method 8260B and 1,4-dioxane using modified USEPA SW-846 Test Method 8260B with selective ion monitoring (SIM). The laboratory analytical reports for samples collected during the regeneration reset are provided in Attachment 1.

A comparison of the analytical results for the before and after samples suggest the reset may not have been necessary. The lead vessel detections for 1,4-dioxane before and after the reset ranged from 1.0 µg/L to 2.1 µg/L after two days as lead vessel and 12 µg/L to 16 µg/L after four or more days as lead vessel (Table A-1). 1,4-dioxane was not detected in the effluent after the low level detection of 1.2 µg/L in September, 2017. The primary VOCs were not detected in any samples which was expected as the resin has a higher affinity for VOCs than 1,4-dioxane. However, due to unequal resin loading, it is recommended that the four-day lead resin vessel position should be alternated between the T-1100 and T-1200 vessels semi-annually through the reset process described above. The OM&M manual will be updated to include directions for a semi-annual resin reset process.

TREATMENT SYSTEM PERFORMANCE MONITORING

Performance of the System treatment equipment was monitored by collecting and analyzing influent and effluent water samples from in-line sample ports located at the treatment building. Effluent samples were also collected to fulfill the monitoring requirements specified in the state discharge and National Pollutant Discharge Elimination System (NPDES) permit. The treatment system samples were collected monthly throughout the reporting period. The water samples were analyzed for VOCs using USEPA SW-846 Test Method 8260B (for influent samples) or USEPA Method 624 (for effluent samples) and 1,4-dioxane using modified USEPA SW-846 Test Method 8260B with SIM.

The historical analytical results for the treatment system influent and effluent samples are summarized in Tables A-2 and A-3, respectively. (Certified laboratory analytical reports for the October 2017 through December 2017 influent and effluent samples are included in Attachment 1). Influent VOC and 1,4-dioxane results were compared to the cleanup criteria, identified as the groundwater cleanup levels for Type I/II aquifers specified in Table 1 of the MDE Cleanup Standards and stated in the October 2015 Response Action Plan. Based on the analytical results, 1,1-DCE and 1,4-dioxane were the only constituents detected above their respective cleanup criteria in the influent samples collected during the reporting period. Other chlorinated VOCs detected in the treatment system influent include trichloroethene, 1,1-dichloroethane (DCA), 1,1,1-trichloroethane (TCA), cis-1,2-DCE, 1,2-DCA and chloroethane. All of these compounds, except for 1,1,1-TCA and 1,1-DCA, were present at very low concentrations (<5 µg/l). The total chlorinated VOC concentrations, excluding 1,4-dioxane, in the influent ranged from 283.0 µg/l (October 2017) to 333.2 µg/l (December 2017). The 1,4-dioxane concentrations in the influent for the fourth quarter 2017 ranged from 150 µg/l (November 2017 and December 2017) to 160 µg/l (October 2017). The total chlorinated VOC and 1,4-dioxane concentrations are below anticipated concentrations used for the design of the treatment system. Figure A-2 plots the concentration of VOCs and 1,4-dioxane in the treatment system influent from start-up (March 2017) through December 2017.

No VOCs or 1,4-dioxane were detected at concentrations above the method reporting limits in the effluent water samples collected during this reporting period. Based on the sampling results, the removal efficiencies for both chlorinated VOCs and 1,4-dioxane were 100%.

During the fourth quarter of 2017, the System removed an estimated 20.8 pounds of the primary chlorinated VOCs and 10.4 pounds of 1,4-dioxane. A breakdown of the mass removal for the primary chlorinated VOCs is provided below.

1,1,1-TCA	2.0 pounds
1,1-DCA	3.1 pounds
1,1-DCE	15.5 pounds

From March 2017 through December 2017, the System has removed a total of approximately 86.8 pounds of chlorinated VOCs and 43.1 pounds of 1,4-dioxane (Figure A-3). The monthly removal breakdown is shown in the following table:

Month	Estimated VOCs Removed (lbs)	Estimated 1,4-dioxane Removed (lbs)
March 2017	3.99	2.30
April 2017	15.01	7.71
May 2017	13.94	6.38
June 2017	10.35	4.80
July 2017	7.94	3.85
August 2017	7.48	3.98
September 2017	7.20	3.66
October 2017	5.92	3.43
November 2017	6.90	3.25
December 2017	8.04	3.72
Total	**86.77**	**43.07**

The monthly sampling results for the treatment system effluent indicates the current regeneration frequency for the resin vessels is sufficient to ensure compliance with the discharge limits specified in the NPDES permit and other applicable treatment criteria. NPDES discharge monitoring reports (DMRs) are submitted to MDE monthly through the electronic data reporting system. As indicated in the October 2017 through December 2017 DMRs, the analytical results for the monitoring parameters demonstrate compliance with the permit limitations.

ANTICIPATED ACTIVITIES FOR FIRST QUARTER 2018

WSP and its O&M contractor will perform routine monthly and quarterly O&M activities during the next reporting period (January 2018 through March 2018). In addition, annual O&M activities will be conducted in March 2018. Annual maintenance activities include but are not limited to: equalization tank draining and cleaning, cleaning steam separators, water level transducer accuracy check (pulling and cleaning as needed), bag filter housing cleaning, leak inspection, wye-strainer removal and cleaning, inspect and clean well vaults, t-boxes and outfall.

To reduce operating costs, the resin regeneration process will be automated. It is anticipated that the engineering, planning, and equipment procurement will be conducted during the first quarter of 2018 and the automation modification completed in the second quarter of 2018. The OM&M manual will be updated to reflect the automation changes when they are complete and fully functioning.

FIGURES

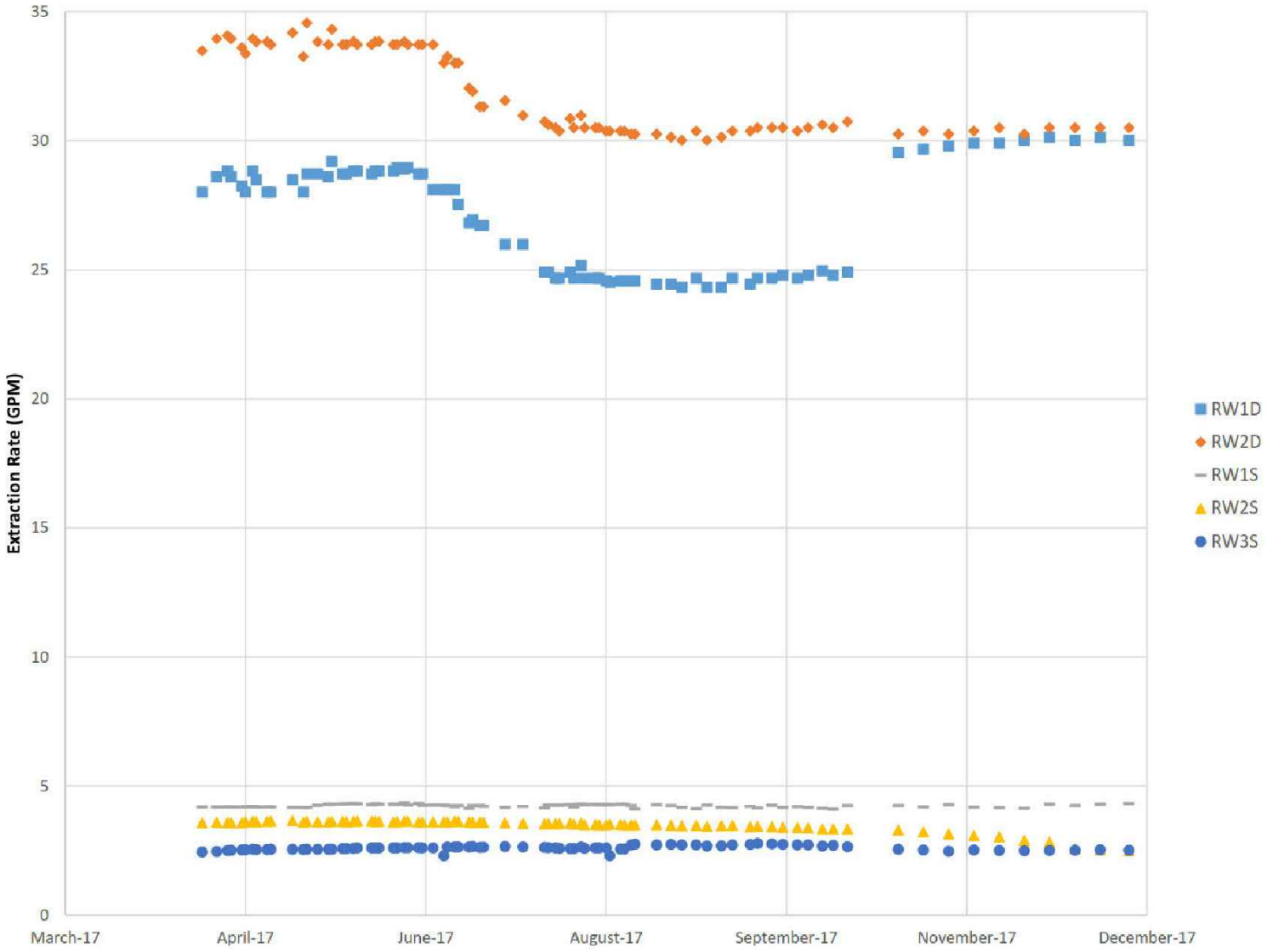


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Figure A–1

EXTRACTION RATE OF RECOVERY WELLS
(MARCH 2017 THROUGH DECEMBER 2017)

FORMER KOP–FLEX FACILITY
HANOVER, MARYLAND

PREPARED FOR
EMERSON
ST. LOUIS, MISSOURI

Drawn By: EGC
Checked: MJK 1/5/2018
Approved: RKJ
DWG Name: 314V0390–077

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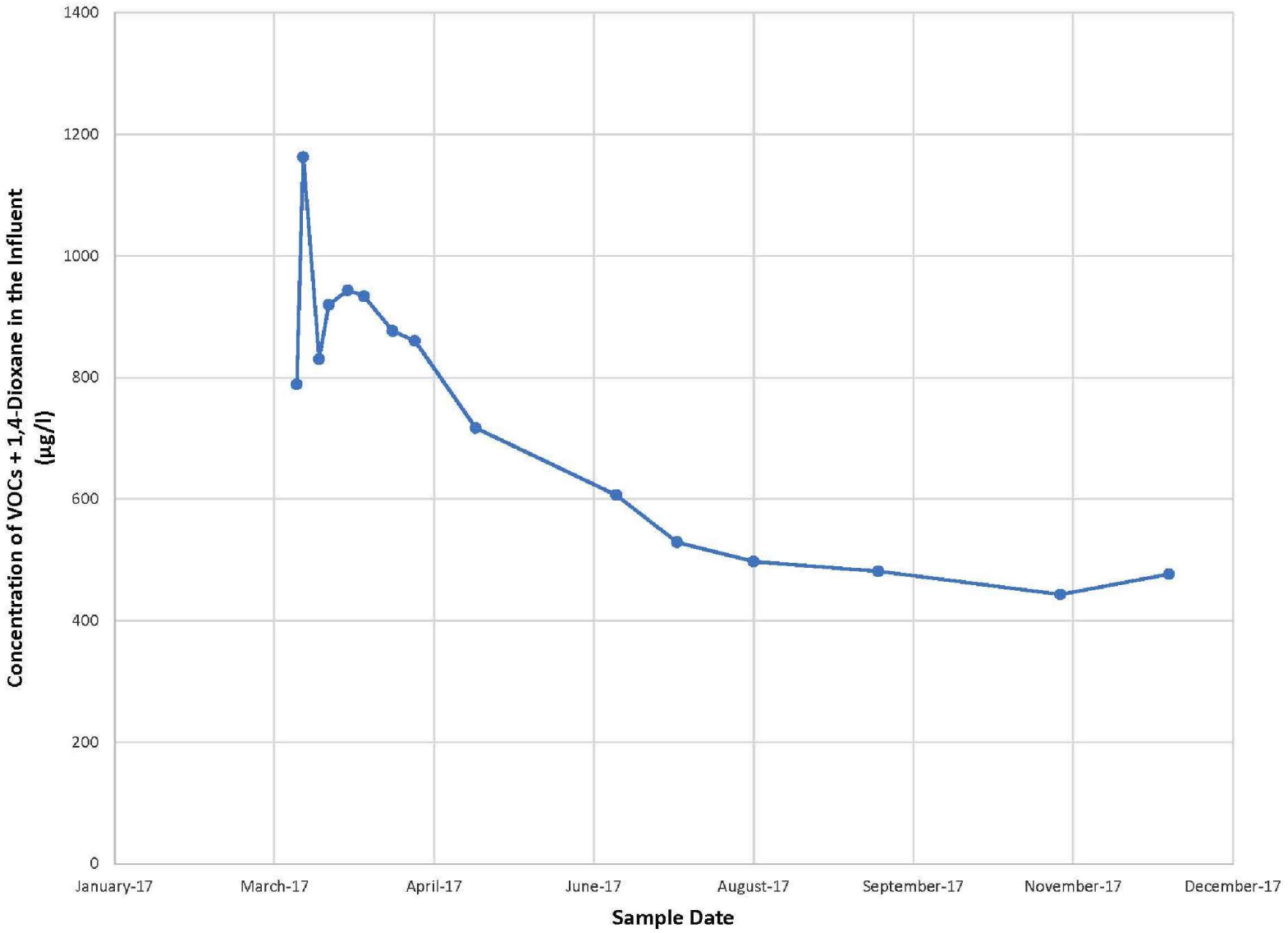

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Figure A–2

CONCENTRATION OF VOCs AND 1,4–DIOXANE IN TREATMENT SYSTEM INFLUENT (MARCH 2017 THROUGH DECEMBER 2017)

FORMER KOP–FLEX FACILITY
HANOVER, MARYLAND

PREPARED FOR
EMERSON
ST. LOUIS, MISSOURI

Drawn By: EGC
Checked: MJK 1/5/2018
Approved: RKJ
DWG Name: 314V0390–077

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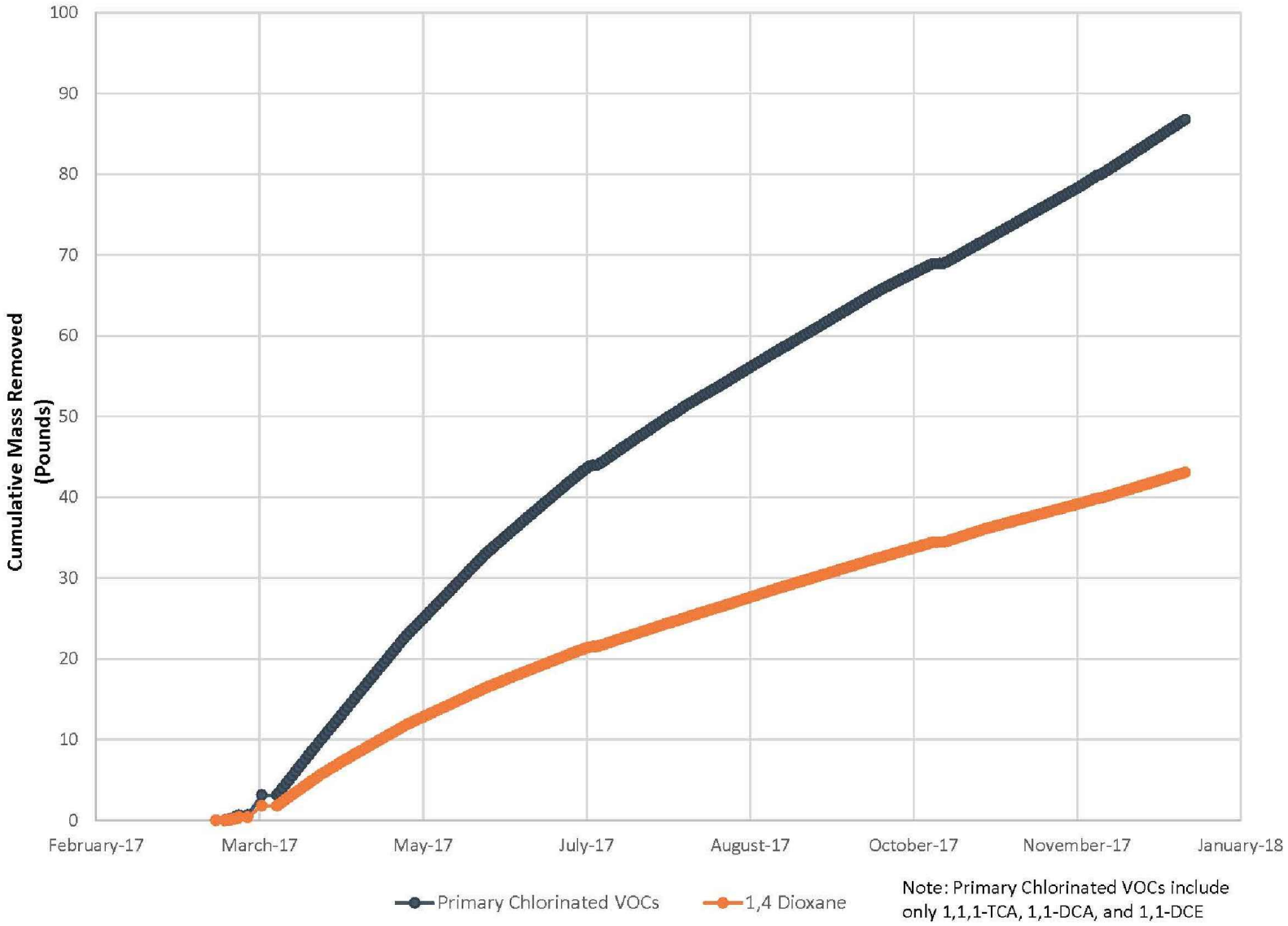

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Figure A–3

CUMULATIVE MASS REMOVAL
FOR THE PRIMARY CHLORINATED
VOCs AND 1,4–DIOXANE

FORMER KOP–FLEX FACILITY
HANOVER, MARYLAND

PREPARED FOR
EMERSON
ST. LOUIS, MISSOURI

Drawn By: EGC
Checked: MJK 1/5/2018
Approved: RKJ
DWG Name: 314V0390–077

TABLES

Table A-1

Resin Regeneration Reset Sample Data
Former Kop-Flex Facility Site
Hanover, MD

	Date	1,1-DCE (ug/l)			1,1-DCA (ug/l)		cis-1,2-DCE (ug/l)		1,1,1-TCA (ug/l)		TCE (ug/l)		1,4-Dioxane (ug/l)	
		Day as Lead vessel	Lead Ambersorb Effluent	Effluent VSP-4	Lead Ambersorb Effluent	Effluent VSP-4	Lead Ambersorb Effluent	Effluent VSP-4	Lead Ambersorb Effluent	Effluent VSP-4	Lead Ambersorb Effluent	Effluent VSP-4	Lead Ambersorb Effluent	Effluent VSP-4
	Numeric Cleanup Standard	**7**			**90**		**70**		**200**		**5**		**15**	
	Former Kop-Flex Water Treatment System													
Pre-Reset Samples	9/11/2017		NS	5.0 U	NS	5.0 U	NS	NA	NS	5.0 U	NS	5.0 U	NS	1.2
	10/6/2017	2	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	1.0 U	NS
	10/9/2017	5	1.0 U	5.0 U	1.0 U	5.0 U	1.0 U	NS	1.0 U	5.0 U	1.0 U	5.0 U	14.0	1.0 U
	10/10/2017	2	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	1.4	NS
	10/12/2017	4	1.0 U	NS	1.0 U	NS	1.0 U	NS	1.0 U	NS	1.0 U	NS	12.0	1.0 U
Post-Reset Samples	10/20/2017	2	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	1.0	NS
	10/23/2017	5	1.0 U	NS	1.0 U	NS	1.0 U	NS	1.0 U	NS	1.0 U	NS	**16.0**	1.0 U
	10/24/2017	2	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	2.1	NS
	10/26/2017	4	1.0 U	NS	1.0 U	NS	1.0 U	NS	1.0 U	NS	1.0 U	NS	13.0	1.0 U

a/ NS = not sampled; ug/L = micrograms per liter

U = compound not detected. Results shown in highlight and **bold** exceed the comparison standard.

b/ Resin regeneration reset occurred October 16, 2017 through October 18, 2017

Table A-2

Treatment System Influent Sample Data
Former Kop-Flex Facility Site
Hanover, MD

Analyte Name	Units	Cas#	Groundwater Cleanup Standards (µg/L) (c)	Influent VSP-1 3/13/2017	Influent VSP-1 3/15/2017	Influent VSP-1 3/20/2017	Influent VSP-1 3/23/2017	Influent VSP-1 3/29/2017	Influent VSP-1 4/3/2017	Influent VSP-1 4/12/2017	Influent VSP-1 4/19/2017	Influent VSP-1 5/8/2017	Influent VSP-1 6/21/2017	Influent VSP-1 7/10/2017	Influent VSP-1 8/3/2017	Influent VSP-1 9/11/2017	Influent VSP-1 10/9/2017	Influent VSP-1 11/7/2017	Influent VSP-1 12/11/2017
Volatile Organic Compounds (US EPA Method 8260)																			
1,1,1-Trichloroethane	µg/L	71-55-6	200	55	150	92	81	82	62	55	49	41	39	44	41	35	32	32	26
1,1-Dichloroethane	µg/L	75-34-3	90	**180**	**200**	**110**	**140**	**150**	**140**	**140**	**120**	86	59	57	49	40	44	47	48
1,1-Dichloroethene	µg/L	75-35-4	7	**260**	**360**	**260**	**360**	**360**	**390**	**380**	**410**	**360**	**310**	**250**	**230**	**240**	**200**	**240**	**250**
1,2-Dichloroethane	µg/L	107-06-2	5	2	2	3	3	4	4	4	3	3	2.1	2.1	2	1.7	1.6	1.8	1.8
Chloroethane	µg/L	75-00-3	36	3	3	2	2	2	3	3	3	3	2.7	2.3	1.8	1.7	2.6	2.6	4.2
cis-1,2-Dichloroethene	µg/L	156-59-2	70	2	2	1	2	2	3	3	2	2	1.4	1.3	1.3	1 U	1.2	1.3	1.6
Tetrachloroethene	µg/L	127-18-4	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene	µg/L	79-01-6	5	2	3	2	3	3	3	3	3	3	2.2	2.2	2	1.7	1.6	1.7	1.6
Vinyl Chloride	µg/L	75-01-4	2	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
TOTAL VOCs:			-	538.7	722.6	470.2	591.1	603.6	603.8	586.5	589.6	496.8	416.4	358.9	327.1	320.1	283	326.4	333.2
Volatile Organic Compounds (US EPA Method 8260 - SIM)																			
1,4-Dioxane	µg/L	71-55-6	15	**250**	**440**	**360**	**330**	**340**	**330**	**290**	**270**	**220**	**190**	**170**	**170**	**160**	**160**	**150**	**150**

a/ µg/L = micrograms per liter; EPA = Environmental Protection Agency; SIM = selected ion method; VOCs= volatile organic compounds;
Results shown in highlight and **bold** exceed the comparison standard. All results given in µg/L
b/ Maryland Generic Numeric Cleanup Standards for Groundwater, Type I and II Aquifers, from the State of Maryland Interim Final Guidance (December 2000).
Accessed June 1, 2017: http://msa.maryland.gov/megafile/msa/speccol/sc5300/sc5339/000113/000000/000223/unrestricted/20040349e.pdf
c/ Numeric cleanup standards from Section 6 of WSP's October 2, 2015, Response Action Plan, Revision 2.

Table A-3

Treatment System Effluent Sample Data
Former Kop-Flex Facility Site
Hanover, MD

Analyte Name	Cas#	Effluent VSP-4 03/13/2017 (a)		Effluent VSP-4 03/14/2017		Effluent VSP-4 03/14/2017		Effluent VSP-4 3/20/2017 (a)		Effluent VSP-4 3/23/2017		Effluent VSP-4 4/3/2017 (a)		Effluent VSP-4 4/12/2017		Effluent VSP-4 4/19/2017		Effluent VSP-4 5/8/2017		Effluent VSP-4 6/21/2017 (a)		Effluent VSP-4 7/10/2017 (a)		Effluent VSP-4 8/3/2017 (a)		Effluent VSP-4 9/11/2017 (a)	
Volatile Organic Compounds (US EPA Method 8260)																											
1,1,1-Trichloroethane	71-55-6	NA		1.0	U	1.0	U	5.0	U	1.0	U	5.0	U	1.0	U	1.0	U	1.0	U	5.0	U	5.0	U	5.0	U	5.0	U
1,1-Dichloroethane	75-34-3	NA		1.0	U	1.0	U	5.0	U	1.0	U	5.0	U	1.0	U	1.0	U	1.0	U	5.0	U	5.0	U	5.0	U	5.0	U
1,1-Dichloroethene	75-35-4	NA		1.0	U	1.0	U	5.0	U	1.0	U	5.0	U	1.0	U	1.0	U	1.0	U	5.0	U	5.0	U	5.0	U	5.0	U
1,2-Dichloroethane	107-06-2	NA		1.0	U	1.0	U	5.0	U	1.0	U	5.0	U	1.0	U	1.0	U	1.0	U	5.0	U	5.0	U	5.0	U	5.0	U
Chloroethane	75-00-3	NA		1.0	U	1.0	U	5.0	U	1.0	U	5.0	U	1.0	U	1.0	U	1.0	U	5.0	U	5.0	U	5.0	U	5.0	U
cis-1,2-Dichloroethene	156-59-2	NA		1.0	U	1.0	U	NA		1.0	U	NA		1.0	U	1.0	U	1.0	U	NA		NA		NA		NA	
Tetrachloroethene	127-18-4	NA		1.0	U	1.0	U	5.0	U	1.0	U	5.0	U	1.0	U	1.0	U	1.0	U	5.0	U	5.0	U	5.0	U	5.0	U
Trichloroethene	79-01-6	NA		1.0	U	1.0	U	5.0	U	1.0	U	5.0	U	1.0	U	1.0	U	1.0	U	5.0	U	5.0	U	5.0	U	5.0	U
Vinyl Chloride	75-01-4	NA		1.0	U	1.0	U	5.0	U	1.0	U	5.0	U	1.0	U	1.0	U	1.0	U	5.0	U	5.0	U	5.0	U	5.0	U
	TOTAL VOCs:	NA		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Volatile Organic Compounds (US EPA Method 8260 - SIM)																											
1,4-Dioxane	71-55-6	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2	

a/ VOCs were analyzed by Method 624 to fulfill the NPDES permit requirement.

b/ All results given in micrograms/liter

c/ NA = not available, U = concentrations not detected above the method detection limit, ND = non-detect; EPA = Environmental Protection Agency; SIM = selected ion method; VOCs= volatile organic compounds

Table A-3

Treatment System Effluent Sample Data
Former Kop-Flex Facility Site
Hanover, MD

Analyte Name	Cas#	Effluent VSP-4 10/9/2017 (a)		Effluent VSP-4 10/12/2017		Effluent VSP-4 11/7/2017 (a)		Effluent VSP-4 12/11/2017 (a)	
Volatile Organic Compounds (US EPA Method 8260)									
1,1,1-Trichloroethane	71-55-6	5.0	U	NA		5.0	U	5.0	U
1,1-Dichloroethane	75-34-3	5.0	U	NA		5.0	U	5.0	U
1,1-Dichloroethene	75-35-4	5.0	U	NA		5.0	U	5.0	U
1,2-Dichloroethane	107-06-2	5.0	U	NA		5.0	U	5.0	U
Chloroethane	75-00-3	5.0	U	NA		5.0	U	5.0	U
cis-1,2-Dichloroethene	156-59-2	NA		NA		NA		NA	
Tetrachloroethene	127-18-4	5.0	U	NA		5.0	U	5.0	U
Trichloroethene	79-01-6	5.0	U	NA		5.0	U	5.0	U
Vinyl Chloride	75-01-4	5.0	U	NA		5.0	U	5.0	U
	TOTAL VOCs:	ND		-		ND		ND	
Volatile Organic Compounds (US EPA Method 8260 - SIM)									
1,4-Dioxane	71-55-6	1.0	U	1.0	U	1.0	U	1.0	U

a/ VOCs were analyzed by Method 624 to fulfill the NPDES permit requirement.

b/ All results given in micrograms/liter

c/ NA = not available, U = concentrations not detected above the method detection limit, ND = non-detect; EPA = Environmental Protection Agency; SIM = selected ion method; VOCs= volatile organic compounds

ATTACHMENT 1 – LABORATORY ANALYTICAL REPORTS FOR TREATMENT SYSTEM INFLUENT AND EFFLUENT SAMPLES (OCTOBER 2017 – DECEMBER 2017) AND REGENERATION RESET SAMPLES (OCTOBER 2017)

Analytical Report for

WSP USA - Herndon

Certificate of Analysis No.: 17100904

Project Manager: Eric Johnson

Project Name : Kop-Flex

Project Location: Hanover, MD

Project ID : 31400390-09

October 16, 2017

Phase Separation Science, Inc.

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PHASE SEPARATION SCIENCE, INC.

October 16, 2017

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

Reference: PSS Work Order(s) No: **17100904**
Project Name: Kop-Flex
Project Location: Hanover, MD
Project ID.: 31400390-09

Dear Eric Johnson :

This report includes the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Phase Separation Science (PSS) Work Order(s) numbered **17100904**.

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

PSS reserves the right to return any unused samples, extracts or related solutions. Otherwise, the samples are scheduled for disposal, without any further notice, on November 13, 2017, with the exception of air canisters which are cleaned immediately following analysis. This includes any samples that were received with a request to be held but lacked a specific hold period. It is your responsibility to provide a written request defining a specific disposal date if additional storage is required. Upon receipt , the request will be acknowledged by PSS, thus extending the storage period.

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

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

Sincerely,

Dan Prucnal
Laboratory Manager

Sample Summary

Client Name: WSP USA - Herndon

Project Name: Kop-Flex

Work Order Number(s): 17100904

Project ID: 31400390-09

The following samples were received under chain of custody by Phase Separation Science (PSS) on 10/09/2017 at 10:10 am

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
17100904-001	Effluent VSP-4	WASTE WATER	10/09/17 07:55

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

Notes:

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

Standard Flags/Abbreviations:

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

Certifications:

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

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 17100904

WSP USA - Herndon, Herndon, VA

October 16, 2017

Project Name: Kop-Flex
Project Location: Hanover, MD
Project ID: 31400390-09

Sample ID: Effluent VSP-4 **Date/Time Sampled: 10/09/2017 07:55** **PSS Sample ID: 17100904-001**
Matrix: WASTE WATER **Date/Time Received: 10/09/2017 10:10**

Dissolved Metals — Analytical Method: EPA 200.8 — Preparation Method: 200.8

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Copper	**3.2**	ug/L	1.0		1	10/12/17	10/13/17 00:09	1064
Lead	ND	ug/L	1.0		1	10/12/17	10/13/17 00:09	1064
Nickel	**10.3**	ug/L	1.00		1	10/12/17	10/13/17 00:09	1064
Zinc	ND	ug/L	20		1	10/12/17	10/13/17 00:09	1064

Total Metals + Hardness — Analytical Method: EPA 200.8 — Preparation Method: 200.8

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Copper	**4.6**	ug/L	1.0		1	10/11/17	10/11/17 16:00	1064
Lead	ND	ug/L	1.0		1	10/11/17	10/11/17 16:00	1064
Nickel	**10.6**	ug/L	1.00		1	10/11/17	10/11/17 16:00	1064
Zinc	**24.6**	ug/L	20.0		1	10/11/17	10/11/17 16:00	1064
Hardness (Ca & Mg)	**15**	mg/L	0.66		1	10/11/17	10/11/17 16:00	1064

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 17100904

WSP USA - Herndon, Herndon, VA

October 16, 2017

Project Name: Kop-Flex
Project Location: Hanover, MD
Project ID: 31400390-09

Sample ID: Effluent VSP-4 **Date/Time Sampled: 10/09/2017 07:55** **PSS Sample ID: 17100904-001**
Matrix: WASTE WATER **Date/Time Received: 10/09/2017 10:10**

Volatile Organics Compounds (TVO) Analytical Method: EPA 624 Preparation Method: 624
pH=2

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Dichlorodifluoromethane	ND	ug/L	5.0		1	10/09/17	10/09/17 14:53	1011
Chloromethane	ND	ug/L	5.0		1	10/09/17	10/09/17 14:53	1011
Vinyl Chloride	ND	ug/L	5.0		1	10/09/17	10/09/17 14:53	1011
Bromomethane	ND	ug/L	5.0		1	10/09/17	10/09/17 14:53	1011
Chloroethane	ND	ug/L	5.0		1	10/09/17	10/09/17 14:53	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	10/09/17	10/09/17 14:53	1011
1,1-Dichloroethene	ND	ug/L	5.0		1	10/09/17	10/09/17 14:53	1011
Methylene Chloride	ND	ug/L	5.0		1	10/09/17	10/09/17 14:53	1011
trans-1,2-dichloroethene	ND	ug/L	5.0		1	10/09/17	10/09/17 14:53	1011
1,1-Dichloroethane	ND	ug/L	5.0		1	10/09/17	10/09/17 14:53	1011
Chloroform	ND	ug/L	5.0		1	10/09/17	10/09/17 14:53	1011
1,1,1-Trichloroethane	ND	ug/L	5.0		1	10/09/17	10/09/17 14:53	1011
Carbon Tetrachloride	ND	ug/L	5.0		1	10/09/17	10/09/17 14:53	1011
Benzene	ND	ug/L	5.0		1	10/09/17	10/09/17 14:53	1011
1,2-Dichloroethane	ND	ug/L	5.0		1	10/09/17	10/09/17 14:53	1011
Trichloroethene	ND	ug/L	5.0		1	10/09/17	10/09/17 14:53	1011
1,2-Dichloropropane	ND	ug/L	5.0		1	10/09/17	10/09/17 14:53	1011
Bromodichloromethane	ND	ug/L	5.0		1	10/09/17	10/09/17 14:53	1011
2-Chloroethyl Vinyl Ether	ND	ug/L	5.0		1	10/09/17	10/09/17 14:53	1011
cis-1,3-Dichloropropene	ND	ug/L	5.0		1	10/09/17	10/09/17 14:53	1011
Toluene	ND	ug/L	5.0		1	10/09/17	10/09/17 14:53	1011
trans-1,3-dichloropropene	ND	ug/L	5.0		1	10/09/17	10/09/17 14:53	1011
1,1,2-Trichloroethane	ND	ug/L	5.0		1	10/09/17	10/09/17 14:53	1011
Tetrachloroethylene	ND	ug/L	5.0		1	10/09/17	10/09/17 14:53	1011
Dibromochloromethane	ND	ug/L	5.0		1	10/09/17	10/09/17 14:53	1011
Chlorobenzene	ND	ug/L	5.0		1	10/09/17	10/09/17 14:53	1011
Ethylbenzene	ND	ug/L	5.0		1	10/09/17	10/09/17 14:53	1011
Bromoform	ND	ug/L	5.0		1	10/09/17	10/09/17 14:53	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0		1	10/09/17	10/09/17 14:53	1011
1,3-Dichlorobenzene	ND	ug/L	5.0		1	10/09/17	10/09/17 14:53	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 17100904

WSP USA - Herndon, Herndon, VA

October 16, 2017

Project Name: Kop-Flex
Project Location: Hanover, MD
Project ID: 31400390-09

Sample ID: Effluent VSP-4 **Date/Time Sampled: 10/09/2017 07:55** **PSS Sample ID: 17100904-001**
Matrix: WASTE WATER **Date/Time Received: 10/09/2017 10:10**

Volatile Organics Compounds (TVO) Analytical Method: EPA 624 Preparation Method: 624
pH=2

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
1,4-Dichlorobenzene	ND	ug/L	5.0		1	10/09/17	10/09/17 14:53	1011
1,2-Dichlorobenzene	ND	ug/L	5.0		1	10/09/17	10/09/17 14:53	1011

Total Suspended Solids Analytical Method: SM 2540D -2011

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Suspended Solids	ND	mg/L	1.0		1	10/09/17	10/09/17 12:15	1061

Biochemical Oxygen Demand Analytical Method: SM 5210B -2011

	Result	Units	RL	Flag	Prepared	Analyzed	Analyst
Biochemical Oxygen Demand, 5 day	ND	mg/L	5.0		10/10/17	10/10/17 15:50	4005

Case Narrative Summary

Client Name: WSP USA - Herndon

Project Name: Kop-Flex

Work Order Number(s): 17100904
Project ID: 31400390-09

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

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

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

Sample Receipt:

Acrolein and acrylonitrile not required for EPA 624 samples.
Vials for 624 were not received with the trip blank logged in on this work order. Refer to work order 17100906 for 624 trip blank data.
Sample aliquots for dissolved metals were not field filtered and were received unpreserved.

17100904: Analyses associated with analyst code 4005 were performed by Enviro-Chem Laboratories, Inc.

Analytical:

Volatile Organics Compounds (TVO)

Batch: 146846
Laboratory control sample and/or laboratory control sample duplicate (LCS/LCSD) exceedances identified; see LCS summary form.

NELAP accreditation was held for all analyses performed unless noted below. See www.phaseonline.com for complete PSS scope of accreditation.

SM 5210B -2011

Analytical Data Package Information Summary

Work Order(s): 17100904
Report Prepared For: WSP USA - Herndon, Herndon, VA
Project Name: Kop-Flex
Project Manager: Eric Johnson

Method	Client Sample Id	Analysis Type	Lab Sample Id	Analyst	Mtx	Prep Batch	Analytical Batch	Sampled	Prepared	Analyzed
EPA 200.8	Effluent VSP-4	Initial	17100904-001	1064	W	68187	146952	10/09/2017	10/11/2017 11:06	10/11/2017 16:00
	68187-1-BKS	BKS	68187-1-BKS	1064	W	68187	146952	--------	10/11/2017 11:06	10/11/2017 15:55
	68187-1-BLK	BLK	68187-1-BLK	1064	W	68187	146952	--------	10/11/2017 11:06	10/11/2017 15:51
	Effluent VSP-4 S	MS	17100904-001 S	1064	W	68187	146952	10/09/2017	10/11/2017 11:06	10/11/2017 16:04
	Effluent VSP-4 SD	MSD	17100904-001 SD	1064	W	68187	146952	10/09/2017	10/11/2017 11:06	10/11/2017 16:09
	02 Lagoon S	MS	17101011-001 S	1064	W	68187	146985	10/09/2017	10/11/2017 11:06	10/12/2017 22:43
EPA 200.8	Effluent VSP-4	Initial	17100904-001	1064	W	68208	146999	10/09/2017	10/12/2017 15:38	10/13/2017 00:09
	68208-1-BKS	BKS	68208-1-BKS	1064	W	68208	146999	--------	10/12/2017 15:38	10/13/2017 01:09
	68208-1-BLK	BLK	68208-1-BLK	1064	W	68208	146999	--------	10/12/2017 15:38	10/13/2017 01:04
	Effluent VSP-4 S	MS	17100904-001 S	1064	W	68208	146999	10/09/2017	10/12/2017 15:38	10/13/2017 00:14
	Effluent VSP-4 SD	MSD	17100904-001 SD	1064	W	68208	146999	10/09/2017	10/12/2017 15:38	10/13/2017 00:18
EPA 624	Effluent VSP-4	Initial	17100904-001	1011	W	68160	146846	10/09/2017	10/09/2017 09:58	10/09/2017 14:53
	68160-1-BKS	BKS	68160-1-BKS	1011	W	68160	146846	--------	10/09/2017 09:58	10/09/2017 13:33
	68160-1-BLK	BLK	68160-1-BLK	1011	W	68160	146846	--------	10/09/2017 09:58	10/09/2017 14:13
	Effluent VSP-4 S	MS	17100904-001 S	1011	W	68160	146846	10/09/2017	10/09/2017 09:58	10/09/2017 15:40
	Effluent VSP-4 SD	MSD	17100904-001 SD	1011	W	68160	146846	10/09/2017	10/09/2017 09:58	10/09/2017 16:20
SM 2540D -2011	Effluent VSP-4	Initial	17100904-001	1061	W	146842	146842	10/09/2017	10/09/2017 12:15	10/09/2017 12:15
	146842-1-BLK	BLK	146842-1-BLK	1061	W	146842	146842	--------	10/09/2017 12:15	10/09/2017 12:15
	Cintas Laurel IWMP - 2 Sample #1 - Q4 D	MD	17100604-002 D	1061	W	146842	146842	10/05/2017	10/09/2017 12:15	10/09/2017 12:15
SM 5210B -2011	Effluent VSP-4	Initial	17100904-001	4005	W	147041	147041	10/09/2017	10/10/2017 15:50	10/10/2017 15:50

PHASE SEPARATION SCIENCE, INC.

QC Summary 17100904

WSP USA - Herndon
Kop-Flex

Analytical Method: EPA 624 Prep Method: E624PREP
Seq Number: 146846 Matrix: Waste Water Date Prep: 10/09/2017
PSS Sample ID: 17100904-001

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
Dibromofluoromethane	108		87-114	%	10/09/17 14:53
4-Bromofluorobenzene	136	*	90-114	%	10/09/17 14:53
Toluene-D8	95		93-108	%	10/09/17 14:53

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

PHASE SEPARATION SCIENCE, INC.

QC Summary 17100904

WSP USA - Herndon
Kop-Flex

Analytical Method: SM 2540D -2011
Seq Number: 146842 Matrix: Water
MB Sample Id: 146842-1-BLK

Parameter	MB Result	LOD	RL	Units	Analysis Date	Flag
Suspended Solids	ND	0.5000	1.000	mg/L	10/09/17 12:15	

Analytical Method: EPA 200.8 Prep Method: E200.8_PREP
Seq Number: 146952 Matrix: Water Date Prep: 10/11/17
MB Sample Id: 68187-1-BLK LCS Sample Id: 68187-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Copper	<1.000	40.00	39.63	99	85-115	ug/L	10/11/17 15:55	
Lead	<1.000	40.00	38.38	96	85-115	ug/L	10/11/17 15:55	
Nickel	<1.000	40.00	40.05	100	85-115	ug/L	10/11/17 15:55	
Zinc	<20.00	200	202.3	101	85-115	ug/L	10/11/17 15:55	

Analytical Method: EPA 200.8 Prep Method: E200.8_PREP
Seq Number: 146999 Matrix: Water Date Prep: 10/12/17
MB Sample Id: 68208-1-BLK LCS Sample Id: 68208-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Copper	<1.000	40.00	37.36	93	85-115	ug/L	10/13/17 01:09	
Lead	<1.000	40.00	38.29	96	85-115	ug/L	10/13/17 01:09	
Nickel	<1.000	40.00	37.54	94	85-115	ug/L	10/13/17 01:09	
Zinc	<20.00	200	185.7	93	85-115	ug/L	10/13/17 01:09	

Analytical Method: EPA 200.8 Prep Method: E200.8_PREP
Seq Number: 146952 Matrix: Waste Water Date Prep: 10/11/17
Parent Sample Id: 17100904-001 MS Sample Id: 17100904-001 S MSD Sample Id: 17100904-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Copper	4.576	40.00	43.75	98	43.59	98	70-130	0	25	ug/L	10/11/17 16:04	
Lead	<1.000	40.00	37.52	94	37.47	94	70-130	0	25	ug/L	10/11/17 16:04	
Nickel	10.56	40.00	49.82	98	49.61	98	70-130	0	25	ug/L	10/11/17 16:04	
Zinc	24.61	200	224.2	100	222.3	99	70-130	1	25	ug/L	10/11/17 16:04	

PHASE SEPARATION SCIENCE, INC.

QC Summary 17100904

WSP USA - Herndon
Kop-Flex

Analytical Method: EPA 200.8 Prep Method: E200.8_PREP
Seq Number: 146999 Matrix: Waste Water Date Prep: 10/12/17
Parent Sample Id: 17100904-001 MS Sample Id: 17100904-001 S MSD Sample Id: 17100904-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Copper	3.190	40.00	43.02	100	41.42	96	70-130	4	25	ug/L	10/13/17 00:14	
Lead	<1.000	40.00	39.17	98	38.80	97	70-130	1	25	ug/L	10/13/17 00:14	
Nickel	10.33	40.00	49.50	98	47.58	93	70-130	4	25	ug/L	10/13/17 00:14	
Zinc	<20.00	200	214.5	107	204.7	102	70-130	5	25	ug/L	10/13/17 00:14	

Analytical Method: EPA 624 Prep Method: E624PREP
Seq Number: 146846 Matrix: Water Date Prep: 10/09/17
MB Sample Id: 68160-1-BLK LCS Sample Id: 68160-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Dichlorodifluoromethane	<5.000	60.00	71.63	119	51-139	ug/L	10/09/17 13:33	
Chloromethane	<5.000	60.00	64.56	108	56-144	ug/L	10/09/17 13:33	
Vinyl Chloride	<5.000	60.00	70.88	118	46-157	ug/L	10/09/17 13:33	
Bromomethane	<5.000	60.00	58.82	98	63-134	ug/L	10/09/17 13:33	
Chloroethane	<5.000	60.00	59.83	100	56-143	ug/L	10/09/17 13:33	
Trichlorofluoromethane	<5.000	60.00	68.61	114	56-138	ug/L	10/09/17 13:33	
1,1-Dichloroethene	<5.000	60.00	62.75	105	63-134	ug/L	10/09/17 13:33	
Methylene Chloride	<5.000	60.00	60.47	101	65-126	ug/L	10/09/17 13:33	
trans-1,2-dichloroethene	<5.000	60.00	64.93	108	67-129	ug/L	10/09/17 13:33	
1,1-Dichloroethane	<5.000	60.00	64.59	108	66-131	ug/L	10/09/17 13:33	
Chloroform	<5.000	60.00	63.82	106	69-130	ug/L	10/09/17 13:33	
1,1,1-Trichloroethane	<5.000	60.00	65.98	110	66-129	ug/L	10/09/17 13:33	
Carbon Tetrachloride	<5.000	60.00	67.57	113	70-133	ug/L	10/09/17 13:33	
Benzene	<5.000	60.00	66.10	110	69-127	ug/L	10/09/17 13:33	
1,2-Dichloroethane	<5.000	60.00	58.04	97	62-133	ug/L	10/09/17 13:33	
Trichloroethene	<5.000	60.00	67.84	113	71-127	ug/L	10/09/17 13:33	
1,2-Dichloropropane	<5.000	60.00	65.61	109	67-133	ug/L	10/09/17 13:33	
Bromodichloromethane	<5.000	60.00	64.74	108	63-132	ug/L	10/09/17 13:33	
2-Chloroethyl Vinyl Ether	<5.000	60.00	60.66	101	21-140	ug/L	10/09/17 13:33	
cis-1,3-Dichloropropene	<5.000	60.00	64.00	107	65-128	ug/L	10/09/17 13:33	
Toluene	<5.000	60.00	69.57	116	67-130	ug/L	10/09/17 13:33	
trans-1,3-dichloropropene	<5.000	60.00	62.39	104	63-127	ug/L	10/09/17 13:33	
1,1,2-Trichloroethane	<5.000	60.00	65.14	109	62-136	ug/L	10/09/17 13:33	
Tetrachloroethylene	<5.000	60.00	70.68	118	64-135	ug/L	10/09/17 13:33	
Dibromochloromethane	<5.000	60.00	64.90	108	65-126	ug/L	10/09/17 13:33	
Chlorobenzene	<5.000	60.00	72.39	121	70-127	ug/L	10/09/17 13:33	
Ethylbenzene	<5.000	60.00	76.19	127	71-131	ug/L	10/09/17 13:33	
Bromoform	<5.000	60.00	64.27	107	58-128	ug/L	10/09/17 13:33	
1,1,2,2-Tetrachloroethane	<5.000	60.00	64.14	107	63-134	ug/L	10/09/17 13:33	
1,3-Dichlorobenzene	<5.000	60.00	77.59	129	67-128	ug/L	10/09/17 13:33	H
1,4-Dichlorobenzene	<5.000	60.00	76.77	128	67-127	ug/L	10/09/17 13:33	H
1,2-Dichlorobenzene	<5.000	60.00	75.52	126	67-126	ug/L	10/09/17 13:33	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	Limits	Units	Analysis Date
Dibromofluoromethane	111		108		87-114	%	10/09/17 13:33
4-Bromofluorobenzene	135	*	90		90-114	%	10/09/17 13:33
Toluene-D8	90	*	97		93-108	%	10/09/17 13:33

PHASE SEPARATION SCIENCE, INC.

QC Summary 17100904

WSP USA - Herndon
Kop-Flex

Analytical Method: EPA 624 Prep Method: E624PREP

Seq Number: 146846 Matrix: Waste Water Date Prep: 10/09/17

Parent Sample Id: 17100904-001 MS Sample Id: 17100904-001 S MSD Sample Id: 17100904-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Dichlorodifluoromethane	<5.000	60.00	64.20	107	74.13	124	38-157	14	25	ug/L	10/09/17 15:40	
Chloromethane	<5.000	60.00	53.97	90	67.65	113	43-155	22	25	ug/L	10/09/17 15:40	
Vinyl Chloride	<5.000	60.00	58.08	97	72.36	121	48-154	22	25	ug/L	10/09/17 15:40	
Bromomethane	<5.000	60.00	51.09	85	60.27	100	52-143	16	25	ug/L	10/09/17 15:40	
Chloroethane	<5.000	60.00	51.52	86	62.42	104	47-150	19	25	ug/L	10/09/17 15:40	
Trichlorofluoromethane	<5.000	60.00	61.54	103	72.47	121	59-142	16	25	ug/L	10/09/17 15:40	
1,1-Dichloroethene	<5.000	60.00	54.19	90	64.58	108	55-138	17	25	ug/L	10/09/17 15:40	
Methylene Chloride	<5.000	60.00	55.84	93	65.15	109	60-133	15	25	ug/L	10/09/17 15:40	
trans-1,2-dichloroethene	<5.000	60.00	55.17	92	66.44	111	62-133	19	25	ug/L	10/09/17 15:40	
1,1-Dichloroethane	<5.000	60.00	55.10	92	65.06	108	62-134	17	25	ug/L	10/09/17 15:40	
Chloroform	<5.000	60.00	52.25	87	60.98	102	53-142	15	25	ug/L	10/09/17 15:40	
1,1,1-Trichloroethane	<5.000	60.00	55.84	93	67.89	113	63-135	19	25	ug/L	10/09/17 15:40	
Carbon Tetrachloride	<5.000	60.00	57.78	96	68.21	114	62-134	17	25	ug/L	10/09/17 15:40	
Benzene	<5.000	60.00	55.25	92	66.07	110	56-138	18	25	ug/L	10/09/17 15:40	
1,2-Dichloroethane	<5.000	60.00	48.47	81	56.67	94	61-132	16	25	ug/L	10/09/17 15:40	
Trichloroethene	<5.000	60.00	56.73	95	65.93	110	57-142	15	25	ug/L	10/09/17 15:40	
1,2-Dichloropropane	<5.000	60.00	53.97	90	63.61	106	56-141	16	25	ug/L	10/09/17 15:40	
Bromodichloromethane	<5.000	60.00	51.96	87	60.95	102	52-141	16	25	ug/L	10/09/17 15:40	
2-Chloroethyl Vinyl Ether	<5.000	60.00	<5.000	0	<5.000	0	21-140	NC	25	ug/L	10/09/17 15:40	X
cis-1,3-Dichloropropene	<5.000	60.00	49.92	83	60.51	101	29-156	19	25	ug/L	10/09/17 15:40	
Toluene	<5.000	60.00	55.85	93	67.35	112	55-141	19	25	ug/L	10/09/17 15:40	
trans-1,3-dichloropropene	<5.000	60.00	48.37	81	58.61	98	27-156	19	25	ug/L	10/09/17 15:40	
1,1,2-Trichloroethane	<5.000	60.00	53.41	89	60.35	101	50-151	12	25	ug/L	10/09/17 15:40	
Tetrachloroethylene	<5.000	60.00	59.18	99	68.92	115	43-148	15	25	ug/L	10/09/17 15:40	
Dibromochloromethane	<5.000	60.00	47.36	79	57.14	95	45-146	19	25	ug/L	10/09/17 15:40	
Chlorobenzene	<5.000	60.00	52.88	88	64.10	107	57-140	19	25	ug/L	10/09/17 15:40	
Ethylbenzene	<5.000	60.00	57.48	96	68.82	115	58-146	18	25	ug/L	10/09/17 15:40	
Bromoform	<5.000	60.00	49.07	82	57.09	95	42-145	15	25	ug/L	10/09/17 15:40	
1,1,2,2-Tetrachloroethane	<5.000	60.00	50.67	84	54.65	91	48-156	8	25	ug/L	10/09/17 15:40	
1,3-Dichlorobenzene	<5.000	60.00	54.69	91	63.57	106	54-141	15	25	ug/L	10/09/17 15:40	
1,4-Dichlorobenzene	<5.000	60.00	53.72	90	63.23	105	54-140	16	25	ug/L	10/09/17 15:40	
1,2-Dichlorobenzene	<5.000	60.00	53.32	89	61.83	103	53-141	15	25	ug/L	10/09/17 15:40	

Surrogate	MS Result	MS Flag	MSD Result	MSD Flag	Limits	Units	Analysis Date
Dibromofluoromethane	105		104		87-114	%	10/09/17 15:40
4-Bromofluorobenzene	92		88	*	90-114	%	10/09/17 15:40
Toluene-D8	103		101		93-108	%	10/09/17 15:40

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

SAMPLE CHAIN OF CUSTODY/AGREEMENT FORM

PHASE SEPARATION SCIENCE, INC.

(#) NPDES Monthly

www.phaseonline.com
email: info@phaseonline.com

1 *CLIENT: WSP *OFFICE LOC. Herndon VA

*PROJECT MGR: Eric Johnson *PHONE NO.: (703) 705-6500

EMAIL: eric.johnson@wsp.com FAX NO.: ( )

*PROJECT NAME: Kopflex PROJECT NO.: 31400390-09

SITE LOCATION: Hanover, MD P.O. NO.:

SAMPLER(S): Maria Kaplan DW CERT NO.:

PSS Work Order #: 17100904 PAGE 1 OF 1

Matrix Codes: SW=Surface Wtr DW=Drinking Wtr GW=Ground Wtr WW=Waste Wtr O=Oil S=Soil L=Liquid SOL=Solid A=Air WI=Wipe

2 **3**

LAB NO.	*SAMPLE IDENTIFICATION	*DATE (SAMPLED)	*TIME (SAMPLED)	MATRIX (See Codes)	No. CONTAINERS	SAMPLE TYPE C = COMP G = GRAB	BOD 5	TSS	Tot. dissolved metals (Zn, Cu, Pb, Ni)	Tot. metals (Zn, Cu, Pb, Ni)	Hardness (Ca, Mg)	VOCs (624)	REMARKS
Preservatives Used							/	/	/	HNO3	HNO3	HCl	
1	Effluent VSP-4	10/9/17	0755	WW	1	G	X						
1	Effluent VSP-4	10/9/17	0755	WW	1	G		X					
1	Effluent VSP-4	10/9/17	0755	WW	1	G			X				Lab filter!
1	Effluent VSP-4	10/9/17	0755	WW	1	G				X	X		
1	Effluent VSP-4	10/9/17	0755	WW	3	G						X	

5

Relinquished By:	Date	Time	Received By:
(1) [illegible signature]	10/9/17	1010	[illegible signature]
(2)			
(3)			
(4)			

4 *Requested TAT (One TAT per COC): [X] 5-Day [ ] 3-Day [ ] 2-Day [ ] Next Day [ ] Emergency [ ] Other

# of Coolers: 2 (temp blank 12°C)

Custody Seal: Cooler - Intact

Ice Present: PRES Temp: 9-13°C All

Shipping Carrier: Client

Data Deliverables Required: COA [ ] QC SUMM [ ] CLP LIKE [ ] OTHER ____

Special Instructions:

DW COMPLIANCE? YES [ ]

EDD FORMAT TYPE ____

STATE RESULTS REPORTED TO: MD [ ] DE [ ] PA [ ] VA [ ] WV [ ] OTHER ____

6630 Baltimore National Pike • Route 40 West • Baltimore, Maryland 21228 • (410) 747-8770 • (800) 932-9047 • Fax (410) 788-8723

The client (Client Name), by signing, or having client's agent sign, this "Sample Chain of Custody/Agreement Form", agrees to pay for the above requested services per the latest version of the Service Brochure or PSS-provided quotation including any and all attorney's or other reasonable fees if collection becomes necessary. * = REQUIRED

Phase Separation Science, Inc

Sample Receipt Checklist

Work Order #	17100904	**Received By**	Thomas Wingate
Client Name	WSP USA - Herndon	**Date Received**	10/09/2017 10:10:00 AM
Project Name	Kop-Flex	**Delivered By**	Client
Project Number	31400390-09	**Tracking No**	Not Applicable
Disposal Date	11/13/2017	**Logged In By**	Thomas Wingate

Shipping Container(s)

No. of Coolers 1

		Ice	Present
Custody Seal(s) Intact?	Yes	Temp (deg C)	12
Seal(s) Signed / Dated?	Yes	Temp Blank Present	No
		Ice	Present
Custody Seal(s) Intact?	Yes	Temp (deg C)	12
Seal(s) Signed / Dated?	Yes	Temp Blank Present	Yes

Documentation

COC agrees with sample labels?	Yes	Sampler Name	Maria Kaplan
Chain of Custody	Yes	MD DW Cert. No.	N/A

Sample Container

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

Total No. of Samples Received 2 Total No. of Containers Received 9

Preservation

Total Metals	(pH<2)	Yes
Dissolved Metals, filtered within 15 minutes of collection	(pH<2)	No
Orthophosphorus, filtered within 15 minutes of collection		N/A
Cyanides	(pH>12)	N/A
Sulfide	(pH>9)	N/A
TOC, DOC (field filtered), COD, Phenols	(pH<2)	N/A
TOX, TKN, NH3, Total Phos	(pH<2)	N/A
VOC, BTEX (VOA Vials Rcvd Preserved)	(pH<2)	Yes
Do VOA vials have zero headspace?		Yes
624 VOC (Rcvd at least one unpreserved VOA vial)		No
524 VOC (Rcvd with trip blanks)	(pH<2)	N/A

Phase Separation Science, Inc

Sample Receipt Checklist

Work Order #	17100904	**Received By**	Thomas Wingate
Client Name	WSP USA - Herndon	**Date Received**	10/09/2017 10:10:00 AM
Project Name	Kop-Flex	**Delivered By**	Client
Project Number	31400390-09	**Tracking No**	Not Applicable
Disposal Date	11/13/2017	**Logged In By**	Thomas Wingate

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

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

Acrolein and acrylonitrile not required for EPA 624 samples.
Vials for 624 were not received with the trip blank logged in on this work order. Refer to work order 17100906 for 624 trip blank data.
Sample aliquots for dissolved metals were not field filtered and were received unpreserved.

Samples Inspected/Checklist Completed By: Thomas Wingate — Date: 10/09/2017

PM Review and Approval: Lynn Jackson — Date: 10/09/2017

Analytical Report for

WSP USA - Herndon

Certificate of Analysis No.: 17100905

Project Manager: Eric Johnson

Project Name : Kop-Flex

Project Location: Hanover, MD

Project ID : 31400390-09

October 18, 2017

Phase Separation Science, Inc.

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Baltimore, MD 21228
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PHASE SEPARATION SCIENCE, INC.

October 18, 2017

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

Reference: PSS Work Order(s) No: **17100905**
Project Name: Kop-Flex
Project Location: Hanover, MD
Project ID.: 31400390-09

Dear Eric Johnson :

This report includes the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Phase Separation Science (PSS) Work Order(s) numbered **17100905**.

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

PSS reserves the right to return any unused samples, extracts or related solutions. Otherwise, the samples are scheduled for disposal, without any further notice, on November 13, 2017, with the exception of air canisters which are cleaned immediately following analysis. This includes any samples that were received with a request to be held but lacked a specific hold period. It is your responsibility to provide a written request defining a specific disposal date if additional storage is required. Upon receipt , the request will be acknowledged by PSS, thus extending the storage period.

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

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

Sincerely,

Dan Prucnal

Dan Prucnal
Laboratory Manager

Sample Summary

Client Name: WSP USA - Herndon

Project Name: Kop-Flex

Work Order Number(s): 17100905

Project ID: 31400390-09

The following samples were received under chain of custody by Phase Separation Science (PSS) on 10/09/2017 at 10:10 am

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
17100905-001	Effluent VSP-4	WASTE WATER	10/09/17 07:55

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

Notes:

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

Standard Flags/Abbreviations:

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

Certifications:

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

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 17100905

WSP USA - Herndon, Herndon, VA

October 18, 2017

Project Name: Kop-Flex
Project Location: Hanover, MD
Project ID: 31400390-09

Sample ID: Effluent VSP-4 **Date/Time Sampled: 10/09/2017 07:55** **PSS Sample ID: 17100905-001**
Matrix: WASTE WATER **Date/Time Received: 10/09/2017 10:10**

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

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Nitrite (as N)	ND	mg/L	0.10		1	10/09/17	10/09/17 13:25	1053
Nitrate (as N)	**0.92**	mg/L	0.10		1	10/09/17	10/09/17 13:25	1053

Total Kjeldahl Nitrogen — Analytical Method: EPA 351.2

	Result	Units	RL	Flag	Prepared	Analyzed	Analyst
Nitrogen, Total Kjeldahl	ND	mg/L	0.4		10/18/17	10/18/17 12:10	4005

Nitrogen, Organic — Analytical Method: N_ORG Calc. TKN-NH3

	Result	Units	RL	Flag	Prepared	Analyzed	Analyst
Nitrogen, Organic (as N)	ND	mg/L			10/18/17	10/18/17 12:10	4005

Nitrogen, Ammonia — Analytical Method: SM 4500-NH3-F -2011 — Preparation Method: SM4500-NH3B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Nitrogen, Ammonia (as N)	ND	mg/L	0.20		1	10/12/17	10/12/17 13:07	1053

Case Narrative Summary

Client Name: WSP USA - Herndon

Project Name: Kop-Flex

Work Order Number(s): 17100905
Project ID: 31400390-09

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

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

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

Sample Receipt:

All sample receipt conditions were acceptable.

17100905: Analyses associated with analyst code 4005 were performed by Enviro-Chem Laboratories, Inc.

Analytical:

Inorganic Anions

Batch: 146858

Laboratory control sample and/or laboratory control sample duplicate (LCS/LCSD) exceedances identified; see LCS summary form. Exceedances meet marginal exceedance criteria.

NELAP accreditation was held for all analyses performed unless noted below. See www.phaseonline.com for complete PSS scope of accreditation.

EPA 351.2

Analytical Data Package Information Summary

Work Order(s): 17100905
Report Prepared For: WSP USA - Herndon, Herndon, VA
Project Name: Kop-Flex
Project Manager: Eric Johnson

Method	Client Sample Id	Analysis Type	Lab Sample Id	Analyst	Mtx	Prep Batch	Analytical Batch	Sampled	Prepared	Analyzed
EPA 300.0	Effluent VSP-4	Initial	17100905-001	1053	W	68142	146858	10/09/2017	10/09/2017 12:19	10/09/2017 13:25
	68142-1-BKS	BKS	68142-1-BKS	1053	W	68142	146858	--------	10/09/2017 12:19	10/09/2017 12:18
	68142-1-BLK	BLK	68142-1-BLK	1053	W	68142	146858	--------	10/09/2017 12:19	10/09/2017 11:55
	68142-1-BSD	BSD	68142-1-BSD	1053	W	68142	146858	--------	10/09/2017 12:19	10/09/2017 12:40
	Effluent VSP-4 S	MS	17100905-001 S	1053	W	68142	146858	10/09/2017	10/09/2017 12:19	10/09/2017 13:47
EPA 351.2	Effluent VSP-4	Initial	17100905-001	4005	W	147119	147119	10/09/2017	10/18/2017 12:10	10/18/2017 12:10
N_ORG Calc. TKN-NH3	Effluent VSP-4	Initial	17100905-001	4005	W	147119	147119	10/09/2017	10/18/2017 12:10	10/18/2017 12:10
SM 4500-NH3-F - 2011	Effluent VSP-4	Initial	17100905-001	1053	W	68175	146971	10/09/2017	10/12/2017 09:49	10/12/2017 13:07
	68175-1-BKS	BKS	68175-1-BKS	1053	W	68175	146971	--------	10/12/2017 09:49	10/12/2017 12:58
	68175-1-BLK	BLK	68175-1-BLK	1053	W	68175	146971	--------	10/12/2017 09:49	10/12/2017 12:54
	68175-1-BSD	BSD	68175-1-BSD	1053	W	68175	146971	--------	10/12/2017 09:49	10/12/2017 13:02
	Cox Creek S	MS	17101120-002 S	1053	W	68175	146971	10/11/2017	10/12/2017 09:49	10/12/2017 13:27
	Cox Creek SD	MSD	17101120-002 SD	1053	W	68175	146971	10/11/2017	10/12/2017 09:49	10/12/2017 13:31

PHASE SEPARATION SCIENCE, INC.

QC Summary 17100905

WSP USA - Herndon
Kop-Flex

Analytical Method: SM 4500-NH3-F -2011 Prep Method: SM4500-NH3B
Seq Number: 146971 Matrix: Water Date Prep: 10/12/17
MB Sample Id: 68175-1-BLK LCS Sample Id: 68175-1-BKS LCSD Sample Id: 68175-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Nitrogen, Ammonia (as N)	<0.2000	2.500	2.385	95	2.279	91	85-115	5	20	mg/L	10/12/17 12:58	

Analytical Method: EPA 300.0 Prep Method: E300.0P
Seq Number: 146858 Matrix: Water Date Prep: 10/09/17
MB Sample Id: 68142-1-BLK LCS Sample Id: 68142-1-BKS LCSD Sample Id: 68142-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Nitrite (as N)	<0.1000	5.000	4.774	95	4.741	95	90-110	1	20	mg/L	10/09/17 12:18	
Nitrate (as N)	<0.1000	5.000	4.474	89	4.433	89	90-110	1	20	mg/L	10/09/17 12:18	L

Analytical Method: EPA 300.0 Prep Method: E300.0P
Seq Number: 146858 Matrix: Waste Water Date Prep: 10/09/17
Parent Sample Id: 17100905-001 MS Sample Id: 17100905-001 S

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	Limits	Units	Analysis Date	Flag
Nitrite (as N)	<0.1000	5.000	4.936	99	80-112	mg/L	10/09/17 13:47	
Nitrate (as N)	0.9150	5.000	5.828	98	87-115	mg/L	10/09/17 13:47	

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

SAMPLE CHAIN OF CUSTODY/AGREEMENT FORM

PHASE SEPARATION SCIENCE, INC.

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Quarterly
Nitrogen

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email: info@phaseonline.com

*CLIENT: LZSP	*OFFICE LOC. Herndon VA	PSS Work Order #: 17100905	PAGE 1 OF 1
*PROJECT MGR: Eric Johnson	PHONE NO.: 703-709-6500		
EMAIL: eric.johnson@wsp.com	FAX NO.: ( )		
*PROJECT NAME: Kopfly	PROJECT NO.: 31400390.009		
SITE LOCATION: Hancock MD	P.O. NO.:		
SAMPLER(S): Monica Koplan	DW CERT NO.:		

Matrix Codes: SW=Surface Wtr DW=Drinking Wtr GW=Ground Wtr WW=Waste Wtr O=Oil S=Soil L=Liquid SOL=Solid A=Air WI=Wipe

Preservatives Used: H2SO4 / — / H2SO4

Analysis/Method Required: Nitrogen, Ammonia (SM-4500 NH3-E) / Total Kjeldahl Nitrogen (351.2) / Inorganic Anions (300)

LAB NO.	*SAMPLE IDENTIFICATION	*DATE (SAMPLED)	*TIME (SAMPLED)	MATRIX (See Codes)	No. CONTAINERS	SAMPLE TYPE C = COMP G = GRAB	Nitrogen, Ammonia (SM-4500 NH3-E)	Total Kjeldahl Nitrogen (351.2)	Inorganic Anions (300)										REMARKS
1	Effluent VSP-4	10/9/17	0755	WW	1	G	X												
1	Effluent VSP-4	10/9/17	0755	WW	1	G		X											
1	Effluent VSP-4	10/9/17	0755	WW	1	G			X										

Relinquished By:	Date	Time	Received By:
(1) [signature]	10/9/17	1010	[signature]
(2)			
(3)			
(4)			

*Requested TAT (One TAT per COC): ☒ 5-Day ☐ 3-Day ☐ 2-Day ☐ Next Day ☐ Emergency ☐ Other

Data Deliverables Required: COA ☐ QC SUMM ☐ CLP LIKE ☐ OTHER ______

# of Coolers: 2 (temp blank 12°C)
Custody Seal: Cooler = Intact
Ice Present: PRES Temp: All 9-12°C
Shipping Carrier: Client

Special Instructions:

DW COMPLIANCE? YES ☐ | EDD FORMAT TYPE ______ | STATE RESULTS REPORTED TO: MD ☐ DE ☐ PA ☐ VA ☐ WV ☐ OTHER ______

Version 1.000

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Phase Separation Science, Inc

Sample Receipt Checklist

Work Order #	17100905	**Received By**	Thomas Wingate
Client Name	WSP USA - Herndon	**Date Received**	10/09/2017 10:10:00 AM
Project Name	Kop-Flex	**Delivered By**	Client
Project Number	31400390-09	**Tracking No**	Not Applicable
Disposal Date	11/13/2017	**Logged In By**	Thomas Wingate

Shipping Container(s)

No. of Coolers 1

		Ice	Present
Custody Seal(s) Intact?	Yes	Temp (deg C)	12
Seal(s) Signed / Dated?	Yes	Temp Blank Present	No
		Ice	Present
Custody Seal(s) Intact?	Yes	Temp (deg C)	12
Seal(s) Signed / Dated?	Yes	Temp Blank Present	Yes

Documentation

COC agrees with sample labels?	Yes	Sampler Name	Maria Kaplan
Chain of Custody	Yes	MD DW Cert. No.	N/A

Sample Container

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

Total No. of Samples Received 1

Total No. of Containers Received 3

Preservation

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

Phase Separation Science, Inc

Sample Receipt Checklist

Work Order #	17100905	**Received By**	Thomas Wingate
Client Name	WSP USA - Herndon	**Date Received**	10/09/2017 10:10:00 AM
Project Name	Kop-Flex	**Delivered By**	Client
Project Number	31400390-09	**Tracking No**	Not Applicable
Disposal Date	11/13/2017	**Logged In By**	Thomas Wingate

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

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

Samples Inspected/Checklist Completed By: Thomas Wingate Date: 10/09/2017

Thomas Wingate

PM Review and Approval: Lynn Jackson Date: 10/09/2017

Lynn Jackson

Analytical Report for

WSP USA - Herndon

Certificate of Analysis No.: 17100906

Project Manager: Eric Johnson

Project Name : Kop-Flex

Project Location: Hanover, MD

Project ID : 31400390-09

October 16, 2017

Phase Separation Science, Inc.

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PHASE SEPARATION SCIENCE, INC.

October 16, 2017

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

Reference: PSS Work Order(s) No: **17100906**
Project Name: Kop-Flex
Project Location: Hanover, MD
Project ID.: 31400390-09

Dear Eric Johnson :

This report includes the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Phase Separation Science (PSS) Work Order(s) numbered **17100906**.

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

PSS reserves the right to return any unused samples, extracts or related solutions. Otherwise, the samples are scheduled for disposal, without any further notice, on November 13, 2017, with the exception of air canisters which are cleaned immediately following analysis. This includes any samples that were received with a request to be held but lacked a specific hold period. It is your responsibility to provide a written request defining a specific disposal date if additional storage is required. Upon receipt , the request will be acknowledged by PSS, thus extending the storage period.

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

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

Sincerely,

Dan Prucnal
Laboratory Manager

Sample Summary

Client Name: WSP USA - Herndon

Project Name: Kop-Flex

Work Order Number(s): 17100906

Project ID: 31400390-09

The following samples were received under chain of custody by Phase Separation Science (PSS) on 10/09/2017 at 10:10 am

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
17100906-001	T1100 Lead EF	WATER	10/09/17 08:00
17100906-002	TB - 100917	WATER	10/09/17 10:10
17100906-003	Effluent VSP-4	WATER	10/09/17 07:55
17100906-004	Influent VSP-1	WATER	10/09/17 08:03

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

Notes:

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

Standard Flags/Abbreviations:

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

Certifications:

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

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 17100906

WSP USA - Herndon, Herndon, VA

October 16, 2017

Project Name: Kop-Flex
Project Location: Hanover, MD
Project ID: 31400390-09

Sample ID: T1100 Lead EF **Date/Time Sampled: 10/09/2017 08:00** **PSS Sample ID: 17100906-001**
Matrix: WATER **Date/Time Received: 10/09/2017 10:10**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	10/10/17	10/10/17 13:38	1011
Benzene	ND	ug/L	1.0		1	10/10/17	10/10/17 13:38	1011
Bromochloromethane	ND	ug/L	1.0		1	10/10/17	10/10/17 13:38	1011
Bromodichloromethane	ND	ug/L	1.0		1	10/10/17	10/10/17 13:38	1011
Bromoform	ND	ug/L	5.0		1	10/10/17	10/10/17 13:38	1011
Bromomethane	ND	ug/L	1.0		1	10/10/17	10/10/17 13:38	1011
2-Butanone (MEK)	ND	ug/L	10		1	10/10/17	10/10/17 13:38	1011
Carbon Disulfide	ND	ug/L	10		1	10/10/17	10/10/17 13:38	1011
Carbon Tetrachloride	ND	ug/L	1.0		1	10/10/17	10/10/17 13:38	1011
Chlorobenzene	ND	ug/L	1.0		1	10/10/17	10/10/17 13:38	1011
Chloroethane	ND	ug/L	1.0		1	10/10/17	10/10/17 13:38	1011
Chloroform	ND	ug/L	1.0		1	10/10/17	10/10/17 13:38	1011
Chloromethane	ND	ug/L	1.0		1	10/10/17	10/10/17 13:38	1011
Cyclohexane	ND	ug/L	10		1	10/10/17	10/10/17 13:38	1011
1,2-Dibromo-3-Chloropropane	ND	ug/L	5.0		1	10/10/17	10/10/17 13:38	1011
Dibromochloromethane	ND	ug/L	1.0		1	10/10/17	10/10/17 13:38	1011
1,2-Dibromoethane (EDB)	ND	ug/L	1.0		1	10/10/17	10/10/17 13:38	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	10/10/17	10/10/17 13:38	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	10/10/17	10/10/17 13:38	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	10/10/17	10/10/17 13:38	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	10/10/17	10/10/17 13:38	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	10/10/17	10/10/17 13:38	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	10/10/17	10/10/17 13:38	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	10/10/17	10/10/17 13:38	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	10/10/17	10/10/17 13:38	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	10/10/17	10/10/17 13:38	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	10/10/17	10/10/17 13:38	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	10/10/17	10/10/17 13:38	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	10/10/17	10/10/17 13:38	1011
Ethylbenzene	ND	ug/L	1.0		1	10/10/17	10/10/17 13:38	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 17100906

WSP USA - Herndon, Herndon, VA

October 16, 2017

Project Name: Kop-Flex
Project Location: Hanover, MD
Project ID: 31400390-09

Sample ID: T1100 Lead EF **Date/Time Sampled: 10/09/2017 08:00** **PSS Sample ID: 17100906-001**
Matrix: WATER **Date/Time Received: 10/09/2017 10:10**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone	ND	ug/L	5.0		1	10/10/17	10/10/17 13:38	1011
Isopropylbenzene	ND	ug/L	1.0		1	10/10/17	10/10/17 13:38	1011
Methyl Acetate	ND	ug/L	10		1	10/10/17	10/10/17 13:38	1011
Methylcyclohexane	ND	ug/L	10		1	10/10/17	10/10/17 13:38	1011
Methylene Chloride	ND	ug/L	1.0		1	10/10/17	10/10/17 13:38	1011
4-Methyl-2-Pentanone	ND	ug/L	5.0		1	10/10/17	10/10/17 13:38	1011
Methyl-t-butyl ether	ND	ug/L	1.0		1	10/10/17	10/10/17 13:38	1011
Naphthalene	ND	ug/L	1.0		1	10/10/17	10/10/17 13:38	1011
Styrene	ND	ug/L	1.0		1	10/10/17	10/10/17 13:38	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	10/10/17	10/10/17 13:38	1011
Tetrachloroethene	ND	ug/L	1.0		1	10/10/17	10/10/17 13:38	1011
Toluene	ND	ug/L	1.0		1	10/10/17	10/10/17 13:38	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	10/10/17	10/10/17 13:38	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	10/10/17	10/10/17 13:38	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	10/10/17	10/10/17 13:38	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	10/10/17	10/10/17 13:38	1011
Trichloroethene	ND	ug/L	1.0		1	10/10/17	10/10/17 13:38	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	10/10/17	10/10/17 13:38	1011
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	ug/L	1.0		1	10/10/17	10/10/17 13:38	1011
Vinyl Chloride	ND	ug/L	1.0		1	10/10/17	10/10/17 13:38	1011
m,p-Xylenes	ND	ug/L	2.0		1	10/10/17	10/10/17 13:38	1011
o-Xylene	ND	ug/L	1.0		1	10/10/17	10/10/17 13:38	1011

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

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
1,4-Dioxane (P-Dioxane)	**14**	ug/L	1.0		1	10/12/17	10/12/17 12:59	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 17100906

WSP USA - Herndon, Herndon, VA

October 16, 2017

Project Name: Kop-Flex
Project Location: Hanover, MD
Project ID: 31400390-09

Sample ID: TB - 100917 **Date/Time Sampled: 10/09/2017 10:10** **PSS Sample ID: 17100906-002**
Matrix: WATER **Date/Time Received: 10/09/2017 10:10**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	10/10/17	10/10/17 19:07	1011
Benzene	ND	ug/L	1.0		1	10/10/17	10/10/17 19:07	1011
Bromochloromethane	ND	ug/L	1.0		1	10/10/17	10/10/17 19:07	1011
Bromodichloromethane	ND	ug/L	1.0		1	10/10/17	10/10/17 19:07	1011
Bromoform	ND	ug/L	5.0		1	10/10/17	10/10/17 19:07	1011
Bromomethane	ND	ug/L	1.0		1	10/10/17	10/10/17 19:07	1011
2-Butanone (MEK)	ND	ug/L	10		1	10/10/17	10/10/17 19:07	1011
Carbon Disulfide	ND	ug/L	10		1	10/10/17	10/10/17 19:07	1011
Carbon Tetrachloride	ND	ug/L	1.0		1	10/10/17	10/10/17 19:07	1011
Chlorobenzene	ND	ug/L	1.0		1	10/10/17	10/10/17 19:07	1011
Chloroethane	ND	ug/L	1.0		1	10/10/17	10/10/17 19:07	1011
Chloroform	ND	ug/L	1.0		1	10/10/17	10/10/17 19:07	1011
Chloromethane	ND	ug/L	1.0		1	10/10/17	10/10/17 19:07	1011
Cyclohexane	ND	ug/L	10		1	10/10/17	10/10/17 19:07	1011
1,2-Dibromo-3-Chloropropane	ND	ug/L	5.0		1	10/10/17	10/10/17 19:07	1011
Dibromochloromethane	ND	ug/L	1.0		1	10/10/17	10/10/17 19:07	1011
1,2-Dibromoethane (EDB)	ND	ug/L	1.0		1	10/10/17	10/10/17 19:07	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	10/10/17	10/10/17 19:07	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	10/10/17	10/10/17 19:07	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	10/10/17	10/10/17 19:07	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	10/10/17	10/10/17 19:07	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	10/10/17	10/10/17 19:07	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	10/10/17	10/10/17 19:07	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	10/10/17	10/10/17 19:07	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	10/10/17	10/10/17 19:07	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	10/10/17	10/10/17 19:07	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	10/10/17	10/10/17 19:07	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	10/10/17	10/10/17 19:07	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	10/10/17	10/10/17 19:07	1011
Ethylbenzene	ND	ug/L	1.0		1	10/10/17	10/10/17 19:07	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 17100906

WSP USA - Herndon, Herndon, VA

October 16, 2017

Project Name: Kop-Flex
Project Location: Hanover, MD
Project ID: 31400390-09

Sample ID: TB - 100917 **Date/Time Sampled: 10/09/2017 10:10** **PSS Sample ID: 17100906-002**
Matrix: WATER **Date/Time Received: 10/09/2017 10:10**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone	ND	ug/L	5.0		1	10/10/17	10/10/17 19:07	1011
Isopropylbenzene	ND	ug/L	1.0		1	10/10/17	10/10/17 19:07	1011
Methyl Acetate	ND	ug/L	10		1	10/10/17	10/10/17 19:07	1011
Methylcyclohexane	ND	ug/L	10		1	10/10/17	10/10/17 19:07	1011
Methylene Chloride	ND	ug/L	1.0		1	10/10/17	10/10/17 19:07	1011
4-Methyl-2-Pentanone	ND	ug/L	5.0		1	10/10/17	10/10/17 19:07	1011
Methyl-t-butyl ether	ND	ug/L	1.0		1	10/10/17	10/10/17 19:07	1011
Naphthalene	ND	ug/L	1.0		1	10/10/17	10/10/17 19:07	1011
Styrene	ND	ug/L	1.0		1	10/10/17	10/10/17 19:07	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	10/10/17	10/10/17 19:07	1011
Tetrachloroethene	ND	ug/L	1.0		1	10/10/17	10/10/17 19:07	1011
Toluene	ND	ug/L	1.0		1	10/10/17	10/10/17 19:07	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	10/10/17	10/10/17 19:07	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	10/10/17	10/10/17 19:07	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	10/10/17	10/10/17 19:07	1011
Trichloroethene	ND	ug/L	1.0		1	10/10/17	10/10/17 19:07	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	10/10/17	10/10/17 19:07	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	10/10/17	10/10/17 19:07	1011
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	ug/L	1.0		1	10/10/17	10/10/17 19:07	1011
Vinyl Chloride	ND	ug/L	1.0		1	10/10/17	10/10/17 19:07	1011
m,p-Xylenes	ND	ug/L	2.0		1	10/10/17	10/10/17 19:07	1011
o-Xylene	ND	ug/L	1.0		1	10/10/17	10/10/17 19:07	1011

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

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
1,4-Dioxane (P-Dioxane)	ND	ug/L	1.0		1	10/12/17	10/12/17 13:22	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 17100906

WSP USA - Herndon, Herndon, VA

October 16, 2017

Project Name: Kop-Flex
Project Location: Hanover, MD
Project ID: 31400390-09

Sample ID: Effluent VSP-4 **Date/Time Sampled: 10/09/2017 07:55** **PSS Sample ID: 17100906-003**
Matrix: WATER **Date/Time Received: 10/09/2017 10:10**

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

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
1,4-Dioxane (P-Dioxane)	ND	ug/L	1.0		1	10/12/17	10/12/17 13:44	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 17100906

WSP USA - Herndon, Herndon, VA

October 16, 2017

Project Name: Kop-Flex
Project Location: Hanover, MD
Project ID: 31400390-09

Sample ID: Influent VSP-1 **Date/Time Sampled: 10/09/2017 08:03** **PSS Sample ID: 17100906-004**
Matrix: WATER **Date/Time Received: 10/09/2017 10:10**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	10/10/17	10/10/17 14:00	1011
Benzene	ND	ug/L	1.0		1	10/10/17	10/10/17 14:00	1011
Bromochloromethane	ND	ug/L	1.0		1	10/10/17	10/10/17 14:00	1011
Bromodichloromethane	ND	ug/L	1.0		1	10/10/17	10/10/17 14:00	1011
Bromoform	ND	ug/L	5.0		1	10/10/17	10/10/17 14:00	1011
Bromomethane	ND	ug/L	1.0		1	10/10/17	10/10/17 14:00	1011
2-Butanone (MEK)	ND	ug/L	10		1	10/10/17	10/10/17 14:00	1011
Carbon Disulfide	ND	ug/L	10		1	10/10/17	10/10/17 14:00	1011
Carbon Tetrachloride	ND	ug/L	1.0		1	10/10/17	10/10/17 14:00	1011
Chlorobenzene	ND	ug/L	1.0		1	10/10/17	10/10/17 14:00	1011
Chloroethane	**2.6**	ug/L	1.0		1	10/10/17	10/10/17 14:00	1011
Chloroform	ND	ug/L	1.0		1	10/10/17	10/10/17 14:00	1011
Chloromethane	ND	ug/L	1.0		1	10/10/17	10/10/17 14:00	1011
Cyclohexane	ND	ug/L	10		1	10/10/17	10/10/17 14:00	1011
1,2-Dibromo-3-Chloropropane	ND	ug/L	5.0		1	10/10/17	10/10/17 14:00	1011
Dibromochloromethane	ND	ug/L	1.0		1	10/10/17	10/10/17 14:00	1011
1,2-Dibromoethane (EDB)	ND	ug/L	1.0		1	10/10/17	10/10/17 14:00	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	10/10/17	10/10/17 14:00	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	10/10/17	10/10/17 14:00	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	10/10/17	10/10/17 14:00	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	10/10/17	10/10/17 14:00	1011
1,1-Dichloroethane	**44**	ug/L	1.0		1	10/10/17	10/10/17 14:00	1011
1,2-Dichloroethane	**1.6**	ug/L	1.0		1	10/10/17	10/10/17 14:00	1011
cis-1,2-Dichloroethene	**1.2**	ug/L	1.0		1	10/10/17	10/10/17 14:00	1011
1,1-Dichloroethene	**200**	ug/L	5.0		5	10/10/17	10/10/17 19:29	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	10/10/17	10/10/17 14:00	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	10/10/17	10/10/17 14:00	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	10/10/17	10/10/17 14:00	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	10/10/17	10/10/17 14:00	1011
Ethylbenzene	ND	ug/L	1.0		1	10/10/17	10/10/17 14:00	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 17100906

WSP USA - Herndon, Herndon, VA

October 16, 2017

Project Name: Kop-Flex
Project Location: Hanover, MD
Project ID: 31400390-09

Sample ID: Influent VSP-1 **Date/Time Sampled: 10/09/2017 08:03** **PSS Sample ID: 17100906-004**
Matrix: WATER **Date/Time Received: 10/09/2017 10:10**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone	ND	ug/L	5.0		1	10/10/17	10/10/17 14:00	1011
Isopropylbenzene	ND	ug/L	1.0		1	10/10/17	10/10/17 14:00	1011
Methyl Acetate	ND	ug/L	10		1	10/10/17	10/10/17 14:00	1011
Methylcyclohexane	ND	ug/L	10		1	10/10/17	10/10/17 14:00	1011
Methylene Chloride	ND	ug/L	1.0		1	10/10/17	10/10/17 14:00	1011
4-Methyl-2-Pentanone	ND	ug/L	5.0		1	10/10/17	10/10/17 14:00	1011
Methyl-t-butyl ether	ND	ug/L	1.0		1	10/10/17	10/10/17 14:00	1011
Naphthalene	ND	ug/L	1.0		1	10/10/17	10/10/17 14:00	1011
Styrene	ND	ug/L	1.0		1	10/10/17	10/10/17 14:00	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	10/10/17	10/10/17 14:00	1011
Tetrachloroethene	ND	ug/L	1.0		1	10/10/17	10/10/17 14:00	1011
Toluene	ND	ug/L	1.0		1	10/10/17	10/10/17 14:00	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	10/10/17	10/10/17 14:00	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	10/10/17	10/10/17 14:00	1011
1,1,1-Trichloroethane	**32**	ug/L	1.0		1	10/10/17	10/10/17 14:00	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	10/10/17	10/10/17 14:00	1011
Trichloroethene	**1.6**	ug/L	1.0		1	10/10/17	10/10/17 14:00	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	10/10/17	10/10/17 14:00	1011
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	ug/L	1.0		1	10/10/17	10/10/17 14:00	1011
Vinyl Chloride	ND	ug/L	1.0		1	10/10/17	10/10/17 14:00	1011
m,p-Xylenes	ND	ug/L	2.0		1	10/10/17	10/10/17 14:00	1011
o-Xylene	ND	ug/L	1.0		1	10/10/17	10/10/17 14:00	1011

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

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
1,4-Dioxane (P-Dioxane)	**160**	ug/L	10		10	10/12/17	10/12/17 15:56	1011

Case Narrative Summary

Client Name: WSP USA - Herndon

Project Name: Kop-Flex

Work Order Number(s): 17100906
Project ID: 31400390-09

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

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

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

Sample Receipt:

All sample receipt conditions were acceptable.

General Comments:
Per client, analyze sample 002 for 1,4 Dioxane.
NELAP accreditation was held for all analyses performed unless noted below. See www.phaseonline.com for complete PSS scope of accreditation.

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

Analytical Data Package Information Summary

Work Order(s): 17100906
Report Prepared For: WSP USA - Herndon, Herndon, VA
Project Name: Kop-Flex
Project Manager: Eric Johnson

Method	Client Sample Id	Analysis Type	Lab Sample Id	Analyst	Mtx	Prep Batch	Analytical Batch	Sampled	Prepared	Analyzed
SW-846 8260 B	T1100 Lead EF	Initial	17100906-001	1011	W	68186	146910	10/09/2017	10/10/2017 10:56	10/10/2017 13:38
	TB - 100917	Initial	17100906-002	1011	W	68186	146910	10/09/2017	10/10/2017 10:56	10/10/2017 19:07
	Influent VSP-1	Initial	17100906-004	1011	W	68186	146910	10/09/2017	10/10/2017 10:56	10/10/2017 14:00
	68186-1-BKS	BKS	68186-1-BKS	1011	W	68186	146910	--------	10/10/2017 10:56	10/10/2017 12:07
	68186-1-BLK	BLK	68186-1-BLK	1011	W	68186	146910	--------	10/10/2017 10:56	10/10/2017 12:50
	T1100 Lead EF S	MS	17100906-001 S	1011	W	68186	146910	10/09/2017	10/10/2017 10:56	10/10/2017 14:22
	T1100 Lead EF SD	MSD	17100906-001 SD	1011	W	68186	146910	10/09/2017	10/10/2017 10:56	10/10/2017 14:43
	Influent VSP-1	Reanalysis	17100906-004	1011	W	68186	146910	10/09/2017	10/10/2017 10:56	10/10/2017 19:29
SW-846 8260 B-Modified	T1100 Lead EF	Initial	17100906-001	1011	W	68223	146983	10/09/2017	10/12/2017 09:19	10/12/2017 12:59
	TB - 100917	Initial	17100906-002	1011	W	68223	146983	10/09/2017	10/12/2017 09:19	10/12/2017 13:22
	Effluent VSP-4	Initial	17100906-003	1011	W	68223	146983	10/09/2017	10/12/2017 09:19	10/12/2017 13:44
	68223-1-BKS	BKS	68223-1-BKS	1011	W	68223	146983	--------	10/12/2017 09:19	10/12/2017 10:29
	68223-1-BLK	BLK	68223-1-BLK	1011	W	68223	146983	--------	10/12/2017 09:19	10/12/2017 11:56
	68223-1-BSD	BSD	68223-1-BSD	1011	W	68223	146983	--------	10/12/2017 09:19	10/12/2017 10:51
	Influent VSP-1	Reanalysis	17100906-004	1011	W	68223	146983	10/09/2017	10/12/2017 09:19	10/12/2017 15:56

PHASE SEPARATION SCIENCE, INC.

QC Summary 17100906

WSP USA - Herndon
Kop-Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 146910 Matrix: Water Date Prep: 10/10/2017
PSS Sample ID: 17100906-001

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	97		86-111	%	10/10/17 13:38
Dibromofluoromethane	101		91-119	%	10/10/17 13:38
Toluene-D8	97		90-117	%	10/10/17 13:38

Analytical Method: SW-846 8260 B-Modified Prep Method: SW5030B
Seq Number: 146983 Matrix: Water Date Prep: 10/12/2017
PSS Sample ID: 17100906-001

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
Toluene-D8	94		80-120	%	10/12/17 12:59

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 146910 Matrix: Water Date Prep: 10/10/2017
PSS Sample ID: 17100906-002

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	98		86-111	%	10/10/17 19:07
Dibromofluoromethane	99		91-119	%	10/10/17 19:07
Toluene-D8	98		90-117	%	10/10/17 19:07

Analytical Method: SW-846 8260 B-Modified Prep Method: SW5030B
Seq Number: 146983 Matrix: Water Date Prep: 10/12/2017
PSS Sample ID: 17100906-002

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
Toluene-D8	96		80-120	%	10/12/17 13:22

Analytical Method: SW-846 8260 B-Modified Prep Method: SW5030B
Seq Number: 146983 Matrix: Water Date Prep: 10/12/2017
PSS Sample ID: 17100906-003

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
Toluene-D8	104		80-120	%	10/12/17 13:44

PHASE SEPARATION SCIENCE, INC.

QC Summary 17100906

WSP USA - Herndon
Kop-Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 146910 Matrix: Water Date Prep: 10/10/2017
PSS Sample ID: 17100906-004

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	95		86-111	%	10/10/17 14:00
Dibromofluoromethane	99		91-119	%	10/10/17 14:00
Toluene-D8	101		90-117	%	10/10/17 14:00

Analytical Method: SW-846 8260 B-Modified Prep Method: SW5030B
Seq Number: 146983 Matrix: Water Date Prep: 10/12/2017
PSS Sample ID: 17100906-004

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
Toluene-D8	104		80-120	%	10/12/17 15:34

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

PHASE SEPARATION SCIENCE, INC.

QC Summary 17100906

WSP USA - Herndon

Kop-Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B

Seq Number: 146910 Matrix: Water Date Prep: 10/10/17

MB Sample Id: 68186-1-BLK LCS Sample Id: 68186-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Acetone	<10.00	50.00	44.49	89	29-149	ug/L	10/10/17 12:07	
Benzene	<1.000	50.00	52.65	105	85-123	ug/L	10/10/17 12:07	
Bromochloromethane	<1.000	50.00	57.22	114	82-136	ug/L	10/10/17 12:07	
Bromodichloromethane	<1.000	50.00	51.96	104	88-133	ug/L	10/10/17 12:07	
Bromoform	<5.000	50.00	53.37	107	80-126	ug/L	10/10/17 12:07	
Bromomethane	<1.000	50.00	51.92	104	64-139	ug/L	10/10/17 12:07	
2-Butanone (MEK)	<10.00	50.00	41.51	83	39-135	ug/L	10/10/17 12:07	
Carbon Disulfide	<10.00	50.00	59.58	119	85-124	ug/L	10/10/17 12:07	
Carbon Tetrachloride	<1.000	50.00	48.92	98	81-138	ug/L	10/10/17 12:07	
Chlorobenzene	<1.000	50.00	54.24	108	85-120	ug/L	10/10/17 12:07	
Chloroethane	<1.000	50.00	55.01	110	75-129	ug/L	10/10/17 12:07	
Chloroform	<1.000	50.00	47.50	95	85-128	ug/L	10/10/17 12:07	
Chloromethane	<1.000	50.00	57.79	116	60-139	ug/L	10/10/17 12:07	
Cyclohexane	<10.00	50.00	54.79	110	55-131	ug/L	10/10/17 12:07	
1,2-Dibromo-3-Chloropropane	<5.000	50.00	49.72	99	69-127	ug/L	10/10/17 12:07	
Dibromochloromethane	<1.000	50.00	54.30	109	82-127	ug/L	10/10/17 12:07	
1,2-Dibromoethane (EDB)	<1.000	50.00	55.84	112	82-121	ug/L	10/10/17 12:07	
1,2-Dichlorobenzene	<1.000	50.00	57.58	115	82-123	ug/L	10/10/17 12:07	
1,3-Dichlorobenzene	<1.000	50.00	57.14	114	81-123	ug/L	10/10/17 12:07	
1,4-Dichlorobenzene	<1.000	50.00	56.62	113	81-121	ug/L	10/10/17 12:07	
Dichlorodifluoromethane	<1.000	50.00	62.13	124	69-147	ug/L	10/10/17 12:07	
1,1-Dichloroethane	<1.000	50.00	59.23	118	83-123	ug/L	10/10/17 12:07	
1,2-Dichloroethane	<1.000	50.00	49.32	99	86-138	ug/L	10/10/17 12:07	
1,1-Dichloroethene	<1.000	50.00	57.53	115	85-127	ug/L	10/10/17 12:07	
cis-1,2-Dichloroethene	<1.000	50.00	53.60	107	87-127	ug/L	10/10/17 12:07	
1,2-Dichloropropane	<1.000	50.00	52.60	105	79-125	ug/L	10/10/17 12:07	
cis-1,3-Dichloropropene	<1.000	50.00	55.68	111	79-131	ug/L	10/10/17 12:07	
trans-1,3-Dichloropropene	<1.000	50.00	55.51	111	82-133	ug/L	10/10/17 12:07	
trans-1,2-Dichloroethene	<1.000	50.00	55.20	110	85-125	ug/L	10/10/17 12:07	
Ethylbenzene	<1.000	50.00	55.89	112	83-123	ug/L	10/10/17 12:07	
2-Hexanone	<5.000	50.00	41.98	84	37-137	ug/L	10/10/17 12:07	
Isopropylbenzene	<1.000	50.00	56.73	113	70-131	ug/L	10/10/17 12:07	
Methyl Acetate	<10.00	50.00	54.72	109	69-127	ug/L	10/10/17 12:07	
Methylcyclohexane	<10.00	50.00	59.22	118	75-129	ug/L	10/10/17 12:07	
Methylene Chloride	<1.000	50.00	56.97	114	86-124	ug/L	10/10/17 12:07	
4-Methyl-2-Pentanone	<5.000	50.00	43.45	87	39-143	ug/L	10/10/17 12:07	
Methyl-t-butyl ether	<1.000	50.00	57.51	115	75-134	ug/L	10/10/17 12:07	
Naphthalene	<1.000	50.00	51.53	103	61-118	ug/L	10/10/17 12:07	
Styrene	<1.000	50.00	60.14	120	80-120	ug/L	10/10/17 12:07	
1,1,2,2-Tetrachloroethane	<1.000	50.00	52.29	105	64-125	ug/L	10/10/17 12:07	
Tetrachloroethene	<1.000	50.00	58.03	116	83-138	ug/L	10/10/17 12:07	
Toluene	<1.000	50.00	54.53	109	88-126	ug/L	10/10/17 12:07	
1,2,3-Trichlorobenzene	<1.000	50.00	55.53	111	75-124	ug/L	10/10/17 12:07	
1,2,4-Trichlorobenzene	<1.000	50.00	55.53	111	77-131	ug/L	10/10/17 12:07	
1,1,1-Trichloroethane	<1.000	50.00	50.97	102	68-146	ug/L	10/10/17 12:07	
1,1,2-Trichloroethane	<1.000	50.00	53.44	107	85-124	ug/L	10/10/17 12:07	
Trichloroethene	<1.000	50.00	54.06	108	87-127	ug/L	10/10/17 12:07	
Trichlorofluoromethane	<5.000	50.00	54.58	109	77-147	ug/L	10/10/17 12:07	
1,1,2-Trichloro-1,2,2-Trifluoroethane	<1.000	50.00	57.29	115	68-135	ug/L	10/10/17 12:07	
Vinyl Chloride	<1.000	50.00	51.56	103	74-138	ug/L	10/10/17 12:07	
m,p-Xylenes	<2.000	100	117	117	84-124	ug/L	10/10/17 12:07	

PHASE SEPARATION SCIENCE, INC.

QC Summary 17100906

WSP USA - Herndon
Kop-Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B

Seq Number: 146910 Matrix: Water Date Prep: 10/10/17

MB Sample Id: 68186-1-BLK LCS Sample Id: 68186-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
o-Xylene	<1.000	50.00	57.91	116	79-126	ug/L	10/10/17 12:07	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	97		96		86-111	%	10/10/17 12:07
Dibromofluoromethane	99		99		91-119	%	10/10/17 12:07
Toluene-D8	99		101		90-117	%	10/10/17 12:07

PHASE SEPARATION SCIENCE, INC.

QC Summary 17100906

WSP USA - Herndon

Kop-Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B

Seq Number: 146910 Matrix: Water Date Prep: 10/10/17

Parent Sample Id: 17100906-001 MS Sample Id: 17100906-001 S MSD Sample Id: 17100906-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Acetone	<10.00	50.00	42.91	86	42.44	85	46-138	1	25	ug/L	10/10/17 14:22	
Benzene	<1.000	50.00	52.26	105	50.70	101	77-126	3	25	ug/L	10/10/17 14:22	
Bromochloromethane	<1.000	50.00	55.80	112	55.06	110	74-133	1	25	ug/L	10/10/17 14:22	
Bromodichloromethane	<1.000	50.00	49.44	99	48.12	96	79-130	3	25	ug/L	10/10/17 14:22	
Bromoform	<5.000	50.00	50.60	101	49.95	100	69-120	1	25	ug/L	10/10/17 14:22	
Bromomethane	<1.000	50.00	49.63	99	49.87	100	64-130	0	25	ug/L	10/10/17 14:22	
2-Butanone (MEK)	<10.00	50.00	45.09	90	41.42	83	34-126	8	25	ug/L	10/10/17 14:22	
Carbon Disulfide	<10.00	50.00	51.13	102	51.06	102	76-126	0	25	ug/L	10/10/17 14:22	
Carbon Tetrachloride	<1.000	50.00	46.57	93	46.68	93	77-137	0	25	ug/L	10/10/17 14:22	
Chlorobenzene	<1.000	50.00	53.20	106	51.69	103	74-120	3	25	ug/L	10/10/17 14:22	
Chloroethane	<1.000	50.00	53.85	108	52.04	104	68-133	3	25	ug/L	10/10/17 14:22	
Chloroform	<1.000	50.00	46.68	93	46.01	92	77-127	1	25	ug/L	10/10/17 14:22	
Chloromethane	<1.000	50.00	59.11	118	59.32	119	50-143	0	25	ug/L	10/10/17 14:22	
Cyclohexane	<10.00	50.00	54.77	110	52.55	105	53-139	4	25	ug/L	10/10/17 14:22	
1,2-Dibromo-3-Chloropropane	<5.000	50.00	47.99	96	48.15	96	56-123	0	25	ug/L	10/10/17 14:22	
Dibromochloromethane	<1.000	50.00	53.46	107	52.09	104	70-125	3	25	ug/L	10/10/17 14:22	
1,2-Dibromoethane (EDB)	<1.000	50.00	53.15	106	51.81	104	69-121	3	25	ug/L	10/10/17 14:22	
1,2-Dichlorobenzene	<1.000	50.00	53.77	108	54.34	109	69-118	1	25	ug/L	10/10/17 14:22	
1,3-Dichlorobenzene	<1.000	50.00	54.14	108	52.73	105	68-119	3	25	ug/L	10/10/17 14:22	
1,4-Dichlorobenzene	<1.000	50.00	51.79	104	51.87	104	67-117	0	25	ug/L	10/10/17 14:22	
Dichlorodifluoromethane	<1.000	50.00	67.74	135	64.62	129	68-139	5	25	ug/L	10/10/17 14:22	
1,1-Dichloroethane	<1.000	50.00	55.77	112	46.40	93	78-126	18	25	ug/L	10/10/17 14:22	
1,2-Dichloroethane	<1.000	50.00	47.63	95	46.16	92	78-134	3	25	ug/L	10/10/17 14:22	
1,1-Dichloroethene	<1.000	50.00	55.01	110	56.60	113	78-125	3	25	ug/L	10/10/17 14:22	
cis-1,2-Dichloroethene	<1.000	50.00	51.58	103	51.51	103	78-128	0	25	ug/L	10/10/17 14:22	
1,2-Dichloropropane	<1.000	50.00	50.43	101	49.29	99	73-126	2	25	ug/L	10/10/17 14:22	
cis-1,3-Dichloropropene	<1.000	50.00	52.77	106	51.03	102	67-126	3	25	ug/L	10/10/17 14:22	
trans-1,3-Dichloropropene	<1.000	50.00	52.24	104	51.40	103	68-129	2	25	ug/L	10/10/17 14:22	
trans-1,2-Dichloroethene	<1.000	50.00	52.72	105	50.47	101	76-128	4	25	ug/L	10/10/17 14:22	
Ethylbenzene	<1.000	50.00	53.85	108	52.15	104	74-123	3	25	ug/L	10/10/17 14:22	
2-Hexanone	<5.000	50.00	41.93	84	42.75	86	38-125	2	25	ug/L	10/10/17 14:22	
Isopropylbenzene	<1.000	50.00	52.89	106	52.68	105	58-129	0	25	ug/L	10/10/17 14:22	
Methyl Acetate	<10.00	50.00	51.99	104	51.10	102	63-115	2	25	ug/L	10/10/17 14:22	
Methylcyclohexane	<10.00	50.00	55.33	111	53.41	107	69-130	4	25	ug/L	10/10/17 14:22	
Methylene Chloride	<1.000	50.00	51.90	104	53.67	107	76-124	3	25	ug/L	10/10/17 14:22	
4-Methyl-2-Pentanone	<5.000	50.00	44.50	89	43.82	88	35-123	2	25	ug/L	10/10/17 14:22	
Methyl-t-butyl ether	<1.000	50.00	50.51	101	45.11	90	64-129	11	25	ug/L	10/10/17 14:22	
Naphthalene	<1.000	50.00	49.23	98	50.25	101	45-109	2	25	ug/L	10/10/17 14:22	
Styrene	<1.000	50.00	56.34	113	55.23	110	61-124	2	25	ug/L	10/10/17 14:22	
1,1,2,2-Tetrachloroethane	<1.000	50.00	50.36	101	49.38	99	47-130	2	25	ug/L	10/10/17 14:22	
Tetrachloroethene	<1.000	50.00	54.46	109	54.37	109	68-139	0	25	ug/L	10/10/17 14:22	
Toluene	<1.000	50.00	52.69	105	51.92	104	79-128	1	25	ug/L	10/10/17 14:22	
1,2,3-Trichlorobenzene	<1.000	50.00	50.74	101	51.62	103	48-122	2	25	ug/L	10/10/17 14:22	
1,2,4-Trichlorobenzene	<1.000	50.00	50.89	102	51.97	104	54-124	2	25	ug/L	10/10/17 14:22	
1,1,1-Trichloroethane	<1.000	50.00	49.68	99	49.05	98	73-140	1	25	ug/L	10/10/17 14:22	
1,1,2-Trichloroethane	<1.000	50.00	50.54	101	50.31	101	78-124	0	25	ug/L	10/10/17 14:22	
Trichloroethene	<1.000	50.00	51.08	102	50.78	102	77-131	1	25	ug/L	10/10/17 14:22	
Trichlorofluoromethane	<5.000	50.00	51.92	104	50.94	102	73-144	2	25	ug/L	10/10/17 14:22	
1,1,2-Trichloro-1,2,2-Trifluoroethane	<1.000	50.00	52.83	106	53.51	107	65-140	1	25	ug/L	10/10/17 14:22	
Vinyl Chloride	<1.000	50.00	51.07	102	50.58	101	60-146	1	25	ug/L	10/10/17 14:22	
m,p-Xylenes	<2.000	100	110.9	111	108.7	109	75-125	2	25	ug/L	10/10/17 14:22	

PHASE SEPARATION SCIENCE, INC.

QC Summary 17100906

WSP USA - Herndon
Kop-Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 146910 Matrix: Water Date Prep: 10/10/17
Parent Sample Id: 17100906-001 MS Sample Id: 17100906-001 S MSD Sample Id: 17100906-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
o-Xylene	<1.000	50.00	55.53	111	53.84	108	69-126	3	25	ug/L	10/10/17 14:22	

Surrogate	MS Result	MS Flag	MSD Result	MSD Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	96		96		86-111	%	10/10/17 14:22
Dibromofluoromethane	100		99		91-119	%	10/10/17 14:22
Toluene-D8	100		100		90-117	%	10/10/17 14:22

Analytical Method: SW-846 8260 B-Modified Prep Method: SW5030B
Seq Number: 146983 Matrix: Water Date Prep: 10/12/17
MB Sample Id: 68223-1-BLK LCS Sample Id: 68223-1-BKS LCSD Sample Id: 68223-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
1,4-Dioxane (P-Dioxane)	<1.000	30.00	26.95	90	30.05	100	50-150	11	20	ug/L	10/12/17 10:29	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	LCSD Result	LCSD Flag	Limits	Units	Analysis Date
Toluene-D8	94		103		105		80-120	%	10/12/17 10:29

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

Internal Sampling

CHAIN-OF-CUSTODY RECORD 10/9/17 17100906 Page 1 of 1

WSP | Parsons Brinckerhoff Office Address: 13530 Dulles Technology Drive St 300 Herndon VA

Project Name: Kopflex

WSP | Parsons Brinckerhoff Contact Name: Eric Johnson

Project Location: Hanover, MD

WSP | Parsons Brinckerhoff Contact E-mail: eric.johnson @wspgroup.com

Project Number & Task: 31400390-09

WSP | Parsons Brinckerhoff Contact Phone: 703-709-6500

Sampler(s) Name(s): Maria Kopka

Sampler(s) Signature(s):

No. 004657 WSP | PARSONS BRINCKERHOFF

Laboratory Name & Location: phase

Laboratory Project Manager: Amber Carter

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

Requested Analyses & Preservatives

Sample Identification	Matrix	Collection Start* Date	Collection Start* Time	Collection Stop* Date	Collection Stop* Time	Number of Containers	1,4 Dioxane (8260SIM)	VOCs (8260)	Sample Comments
T1100 Lead Ef	Aq	10/9/17	0800	—	—	6	X	X	
TB-100917	Aq	—	—	—	—	2		X	
Effluent VSP-4	Aq	10/9/17	0755	—	—	3	X		
Influent VSP-1	Aq	10/9/17	0803	—	—	6	X	X	

# of Coolers: 2

Custody Seal: Cooler-Intact

Ice Present: PRES Temp: 9°-12°C

Shipping Carrier: Client

Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Shipment Method	Tracking Number(s)
	10/9/17	1010					
Relinquished By (Signature)	**Date**	**Time**	**Received By (Signature)**	**Date**	**Time**	**Number of Packages**	**Custody Seal Number(s)**

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

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

Phase Separation Science, Inc

Sample Receipt Checklist

Work Order #	17100906	**Received By**	Thomas Wingate
Client Name	WSP USA - Herndon	**Date Received**	10/09/2017 10:10:00 AM
Project Name	Kop-Flex	**Delivered By**	Client
Project Number	31400390-09	**Tracking No**	Not Applicable
Disposal Date	11/13/2017	**Logged In By**	Thomas Wingate

Shipping Container(s)

No. of Coolers 1

		Ice	Present
Custody Seal(s) Intact?	Yes	Temp (deg C)	12
Seal(s) Signed / Dated?	Yes	Temp Blank Present	No
		Ice	Present
Custody Seal(s) Intact?	Yes	Temp (deg C)	12
Seal(s) Signed / Dated?	Yes	Temp Blank Present	Yes

Documentation

COC agrees with sample labels?	Yes	Sampler Name	Maria Kaplan
Chain of Custody	Yes	MD DW Cert. No.	N/A

Sample Container

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

Total No. of Samples Received 4 Total No. of Containers Received 17

Preservation

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

Phase Separation Science, Inc

Sample Receipt Checklist

Work Order #	17100906	**Received By**	Thomas Wingate
Client Name	WSP USA - Herndon	**Date Received**	10/09/2017 10:10:00 AM
Project Name	Kop-Flex	**Delivered By**	Client
Project Number	31400390-09	**Tracking No**	Not Applicable
Disposal Date	11/13/2017	**Logged In By**	Thomas Wingate

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

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

Samples Inspected/Checklist Completed By: Thomas Wingate Date: 10/09/2017

Thomas Wingate

PM Review and Approval: Lynn Jackson Date: 10/09/2017

Lynn Jackson

Analytical Report for

WSP USA - Herndon

Certificate of Analysis No.: 17110718

Project Manager: Eric Johnson

Project Name : Kop-Flex

Project Location: Hanover, MD

Project ID : 31400390-09

November 14, 2017

Phase Separation Science, Inc.

6630 Baltimore National Pike
Baltimore, MD 21228
Phone: (410) 747-8770
Fax: (410) 788-8723

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BALTIMORE, MD 21228
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FAX 410-788-8723

PHASE SEPARATION SCIENCE, INC.

November 14, 2017

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

Reference: PSS Work Order(s) No: **17110718**
Project Name: Kop-Flex
Project Location: Hanover, MD
Project ID.: 31400390-09

Dear Eric Johnson :

This report includes the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Phase Separation Science (PSS) Work Order(s) numbered **17110718**.

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

PSS reserves the right to return any unused samples, extracts or related solutions. Otherwise, the samples are scheduled for disposal, without any further notice, on December 12, 2017, with the exception of air canisters which are cleaned immediately following analysis. This includes any samples that were received with a request to be held but lacked a specific hold period. It is your responsibility to provide a written request defining a specific disposal date if additional storage is required. Upon receipt , the request will be acknowledged by PSS, thus extending the storage period.

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

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

Sincerely,

Dan Prucnal

Dan Prucnal
Laboratory Manager

Sample Summary

Client Name: WSP USA - Herndon

Project Name: Kop-Flex

Work Order Number(s): 17110718

Project ID: 31400390-09

The following samples were received under chain of custody by Phase Separation Science (PSS) on 11/07/2017 at 12:00 pm

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
17110718-001	Effluent VSP-4	WASTE WATER	11/07/17 09:30
17110718-002	Influent VSP-1	GROUND WATER	11/07/17 09:40
17110718-003	TB-110717	WATER	11/07/17 12:00

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

Notes:

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

Standard Flags/Abbreviations:

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

Certifications:

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

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 17110718

WSP USA - Herndon, Herndon, VA

November 14, 2017

Project Name: Kop-Flex
Project Location: Hanover, MD
Project ID: 31400390-09

Sample ID: Effluent VSP-4 **Date/Time Sampled: 11/07/2017 09:30** **PSS Sample ID: 17110718-001**
Matrix: WASTE WATER **Date/Time Received: 11/07/2017 12:00**

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

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
1,4-Dioxane (P-Dioxane)	ND	ug/L	1.0		1	11/13/17	11/13/17 16:21	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 17110718

WSP USA - Herndon, Herndon, VA

November 14, 2017

Project Name: Kop-Flex
Project Location: Hanover, MD
Project ID: 31400390-09

Sample ID: Influent VSP-1 **Date/Time Sampled: 11/07/2017 09:40** **PSS Sample ID: 17110718-002**
Matrix: GROUND WATER **Date/Time Received: 11/07/2017 12:00**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	11/07/17	11/07/17 16:36	1011
Benzene	ND	ug/L	1.0		1	11/07/17	11/07/17 16:36	1011
Bromochloromethane	ND	ug/L	1.0		1	11/07/17	11/07/17 16:36	1011
Bromodichloromethane	ND	ug/L	1.0		1	11/07/17	11/07/17 16:36	1011
Bromoform	ND	ug/L	5.0		1	11/07/17	11/07/17 16:36	1011
Bromomethane	ND	ug/L	1.0		1	11/07/17	11/07/17 16:36	1011
2-Butanone (MEK)	ND	ug/L	10		1	11/07/17	11/07/17 16:36	1011
Carbon Disulfide	ND	ug/L	10		1	11/07/17	11/07/17 16:36	1011
Carbon Tetrachloride	ND	ug/L	1.0		1	11/07/17	11/07/17 16:36	1011
Chlorobenzene	ND	ug/L	1.0		1	11/07/17	11/07/17 16:36	1011
Chloroethane	**2.6**	ug/L	1.0		1	11/07/17	11/07/17 16:36	1011
Chloroform	ND	ug/L	1.0		1	11/07/17	11/07/17 16:36	1011
Chloromethane	ND	ug/L	1.0		1	11/07/17	11/07/17 16:36	1011
Cyclohexane	ND	ug/L	10		1	11/07/17	11/07/17 16:36	1011
1,2-Dibromo-3-Chloropropane	ND	ug/L	5.0		1	11/07/17	11/07/17 16:36	1011
Dibromochloromethane	ND	ug/L	1.0		1	11/07/17	11/07/17 16:36	1011
1,2-Dibromoethane (EDB)	ND	ug/L	1.0		1	11/07/17	11/07/17 16:36	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	11/07/17	11/07/17 16:36	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	11/07/17	11/07/17 16:36	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	11/07/17	11/07/17 16:36	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	11/07/17	11/07/17 16:36	1011
1,1-Dichloroethane	**47**	ug/L	1.0		1	11/07/17	11/07/17 16:36	1011
1,2-Dichloroethane	**1.8**	ug/L	1.0		1	11/07/17	11/07/17 16:36	1011
1,1-Dichloroethene	**240**	ug/L	10		10	11/07/17	11/07/17 17:00	1011
cis-1,2-Dichloroethene	**1.3**	ug/L	1.0		1	11/07/17	11/07/17 16:36	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	11/07/17	11/07/17 16:36	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	11/07/17	11/07/17 16:36	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	11/07/17	11/07/17 16:36	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	11/07/17	11/07/17 16:36	1011
Ethylbenzene	ND	ug/L	1.0		1	11/07/17	11/07/17 16:36	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 17110718

WSP USA - Herndon, Herndon, VA

November 14, 2017

Project Name: Kop-Flex
Project Location: Hanover, MD
Project ID: 31400390-09

Sample ID: Influent VSP-1 **Date/Time Sampled: 11/07/2017 09:40** **PSS Sample ID: 17110718-002**
Matrix: GROUND WATER **Date/Time Received: 11/07/2017 12:00**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone	ND	ug/L	5.0		1	11/07/17	11/07/17 16:36	1011
Isopropylbenzene	ND	ug/L	1.0		1	11/07/17	11/07/17 16:36	1011
Methyl Acetate	ND	ug/L	10		1	11/07/17	11/07/17 16:36	1011
Methylcyclohexane	ND	ug/L	10		1	11/07/17	11/07/17 16:36	1011
Methylene Chloride	ND	ug/L	1.0		1	11/07/17	11/07/17 16:36	1011
4-Methyl-2-Pentanone	ND	ug/L	5.0		1	11/07/17	11/07/17 16:36	1011
Methyl-t-butyl ether	ND	ug/L	1.0		1	11/07/17	11/07/17 16:36	1011
Naphthalene	ND	ug/L	1.0		1	11/07/17	11/07/17 16:36	1011
Styrene	ND	ug/L	1.0		1	11/07/17	11/07/17 16:36	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	11/07/17	11/07/17 16:36	1011
Tetrachloroethene	ND	ug/L	1.0		1	11/07/17	11/07/17 16:36	1011
Toluene	ND	ug/L	1.0		1	11/07/17	11/07/17 16:36	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	11/07/17	11/07/17 16:36	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	11/07/17	11/07/17 16:36	1011
1,1,1-Trichloroethane	**32**	ug/L	1.0		1	11/07/17	11/07/17 16:36	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	11/07/17	11/07/17 16:36	1011
Trichloroethene	**1.7**	ug/L	1.0		1	11/07/17	11/07/17 16:36	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	11/07/17	11/07/17 16:36	1011
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	ug/L	1.0		1	11/07/17	11/07/17 16:36	1011
Vinyl Chloride	ND	ug/L	1.0		1	11/07/17	11/07/17 16:36	1011
m,p-Xylenes	ND	ug/L	2.0		1	11/07/17	11/07/17 16:36	1011
o-Xylene	ND	ug/L	1.0		1	11/07/17	11/07/17 16:36	1011

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

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
1,4-Dioxane (P-Dioxane)	**150**	ug/L	10		10	11/13/17	11/13/17 16:44	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 17110718

WSP USA - Herndon, Herndon, VA

November 14, 2017

Project Name: Kop-Flex
Project Location: Hanover, MD
Project ID: 31400390-09

Sample ID: TB-110717 **Date/Time Sampled: 11/07/2017 12:00** **PSS Sample ID: 17110718-003**
Matrix: WATER **Date/Time Received: 11/07/2017 12:00**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	11/07/17	11/07/17 16:14	1011
Benzene	ND	ug/L	1.0		1	11/07/17	11/07/17 16:14	1011
Bromochloromethane	ND	ug/L	1.0		1	11/07/17	11/07/17 16:14	1011
Bromodichloromethane	ND	ug/L	1.0		1	11/07/17	11/07/17 16:14	1011
Bromoform	ND	ug/L	5.0		1	11/07/17	11/07/17 16:14	1011
Bromomethane	ND	ug/L	1.0		1	11/07/17	11/07/17 16:14	1011
2-Butanone (MEK)	ND	ug/L	10		1	11/07/17	11/07/17 16:14	1011
Carbon Disulfide	ND	ug/L	10		1	11/07/17	11/07/17 16:14	1011
Carbon Tetrachloride	ND	ug/L	1.0		1	11/07/17	11/07/17 16:14	1011
Chlorobenzene	ND	ug/L	1.0		1	11/07/17	11/07/17 16:14	1011
Chloroethane	ND	ug/L	1.0		1	11/07/17	11/07/17 16:14	1011
Chloroform	ND	ug/L	1.0		1	11/07/17	11/07/17 16:14	1011
Chloromethane	ND	ug/L	1.0		1	11/07/17	11/07/17 16:14	1011
Cyclohexane	ND	ug/L	10		1	11/07/17	11/07/17 16:14	1011
1,2-Dibromo-3-Chloropropane	ND	ug/L	5.0		1	11/07/17	11/07/17 16:14	1011
Dibromochloromethane	ND	ug/L	1.0		1	11/07/17	11/07/17 16:14	1011
1,2-Dibromoethane (EDB)	ND	ug/L	1.0		1	11/07/17	11/07/17 16:14	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	11/07/17	11/07/17 16:14	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	11/07/17	11/07/17 16:14	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	11/07/17	11/07/17 16:14	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	11/07/17	11/07/17 16:14	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	11/07/17	11/07/17 16:14	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	11/07/17	11/07/17 16:14	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	11/07/17	11/07/17 16:14	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	11/07/17	11/07/17 16:14	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	11/07/17	11/07/17 16:14	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	11/07/17	11/07/17 16:14	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	11/07/17	11/07/17 16:14	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	11/07/17	11/07/17 16:14	1011
Ethylbenzene	ND	ug/L	1.0		1	11/07/17	11/07/17 16:14	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 17110718

WSP USA - Herndon, Herndon, VA

November 14, 2017

Project Name: Kop-Flex
Project Location: Hanover, MD
Project ID: 31400390-09

Sample ID: TB-110717 **Date/Time Sampled: 11/07/2017 12:00** **PSS Sample ID: 17110718-003**
Matrix: WATER **Date/Time Received: 11/07/2017 12:00**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone	ND	ug/L	5.0		1	11/07/17	11/07/17 16:14	1011
Isopropylbenzene	ND	ug/L	1.0		1	11/07/17	11/07/17 16:14	1011
Methyl Acetate	ND	ug/L	10		1	11/07/17	11/07/17 16:14	1011
Methylcyclohexane	ND	ug/L	10		1	11/07/17	11/07/17 16:14	1011
Methylene Chloride	ND	ug/L	1.0		1	11/07/17	11/07/17 16:14	1011
4-Methyl-2-Pentanone	ND	ug/L	5.0		1	11/07/17	11/07/17 16:14	1011
Methyl-t-butyl ether	ND	ug/L	1.0		1	11/07/17	11/07/17 16:14	1011
Naphthalene	ND	ug/L	1.0		1	11/07/17	11/07/17 16:14	1011
Styrene	ND	ug/L	1.0		1	11/07/17	11/07/17 16:14	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	11/07/17	11/07/17 16:14	1011
Tetrachloroethene	ND	ug/L	1.0		1	11/07/17	11/07/17 16:14	1011
Toluene	ND	ug/L	1.0		1	11/07/17	11/07/17 16:14	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	11/07/17	11/07/17 16:14	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	11/07/17	11/07/17 16:14	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	11/07/17	11/07/17 16:14	1011
Trichloroethene	ND	ug/L	1.0		1	11/07/17	11/07/17 16:14	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	11/07/17	11/07/17 16:14	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	11/07/17	11/07/17 16:14	1011
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	ug/L	1.0		1	11/07/17	11/07/17 16:14	1011
Vinyl Chloride	ND	ug/L	1.0		1	11/07/17	11/07/17 16:14	1011
m,p-Xylenes	ND	ug/L	2.0		1	11/07/17	11/07/17 16:14	1011
o-Xylene	ND	ug/L	1.0		1	11/07/17	11/07/17 16:14	1011

Case Narrative Summary

Client Name: WSP USA - Herndon

Project Name: Kop-Flex

Work Order Number(s): 17110718

Project ID: 31400390-09

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

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

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

Sample Receipt:

All sample receipt conditions were acceptable.

NELAP accreditation was held for all analyses performed unless noted below. See www.phaseonline.com for complete PSS scope of accreditation.

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

Analytical Data Package Information Summary

Work Order(s): 17110718
Report Prepared For: WSP USA - Herndon, Herndon, VA
Project Name: Kop-Flex
Project Manager: Eric Johnson

Method	Client Sample Id	Analysis Type	Lab Sample Id	Analyst	Mtx	Prep Batch	Analytical Batch	Sampled	Prepared	Analyzed
SW-846 8260 B	Influent VSP-1	Initial	17110718-002	1011	W	68620	147743	11/07/2017	11/07/2017 14:00	11/07/2017 16:36
	TB-110717	Initial	17110718-003	1011	W	68620	147743	11/07/2017	11/07/2017 14:00	11/07/2017 16:14
	68620-1-BKS	BKS	68620-1-BKS	1011	W	68620	147743	--------	11/07/2017 08:07	11/07/2017 09:16
	68620-1-BLK	BLK	68620-1-BLK	1011	W	68620	147743	--------	11/07/2017 08:07	11/07/2017 10:06
	GP-02-GW S	MS	17110319-024 S	1011	W	68620	147743	11/03/2017	11/07/2017 08:07	11/07/2017 13:09
	GP-02-GW SD	MSD	17110319-024 SD	1011	W	68620	147743	11/03/2017	11/07/2017 08:07	11/07/2017 13:41
	Influent VSP-1	Reanalysis	17110718-002	1011	W	68620	147743	11/07/2017	11/07/2017 14:00	11/07/2017 17:00
SW-846 8260 B-Modified	Effluent VSP-4	Initial	17110718-001	1011	W	68737	147963	11/07/2017	11/13/2017 08:50	11/13/2017 16:21
	68737-1-BKS	BKS	68737-1-BKS	1011	W	68737	147963	--------	11/13/2017 08:50	11/13/2017 14:31
	68737-1-BLK	BLK	68737-1-BLK	1011	W	68737	147963	--------	11/13/2017 08:50	11/13/2017 15:58
	68737-1-BSD	BSD	68737-1-BSD	1011	W	68737	147963	--------	11/13/2017 08:50	11/13/2017 14:52
	Influent VSP-1	Reanalysis	17110718-002	1011	W	68737	147963	11/07/2017	11/13/2017 08:50	11/13/2017 16:44

PHASE SEPARATION SCIENCE, INC.

QC Summary 17110718

WSP USA - Herndon
Kop-Flex

Analytical Method: SW-846 8260 B-Modified Prep Method: SW5030B
Seq Number: 147963 Matrix: Waste Water Date Prep: 11/13/2017
PSS Sample ID: 17110718-001

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
Toluene-D8	97		80-120	%	11/13/17 16:21

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 147743 Matrix: Ground Water Date Prep: 11/07/2017
PSS Sample ID: 17110718-002

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	97		86-111	%	11/07/17 16:36
Dibromofluoromethane	99		91-119	%	11/07/17 16:36
Toluene-D8	101		90-117	%	11/07/17 16:36

Analytical Method: SW-846 8260 B-Modified Prep Method: SW5030B
Seq Number: 147963 Matrix: Ground Water Date Prep: 11/13/2017
PSS Sample ID: 17110718-002

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
Toluene-D8	96		80-120	%	11/13/17 17:06

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 147743 Matrix: Water Date Prep: 11/07/2017
PSS Sample ID: 17110718-003

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	97		86-111	%	11/07/17 16:14
Dibromofluoromethane	100		91-119	%	11/07/17 16:14
Toluene-D8	102		90-117	%	11/07/17 16:14

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

PHASE SEPARATION SCIENCE, INC.

QC Summary 17110718

WSP USA - Herndon

Kop-Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B

Seq Number: 147743 Matrix: Water Date Prep: 11/07/17

MB Sample Id: 68620-1-BLK LCS Sample Id: 68620-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Acetone	<10.00	50.00	50.12	100	29-149	ug/L	11/07/17 09:16	
Benzene	<1.000	50.00	49.62	99	85-123	ug/L	11/07/17 09:16	
Bromochloromethane	<1.000	50.00	50.82	102	82-136	ug/L	11/07/17 09:16	
Bromodichloromethane	<1.000	50.00	51.13	102	88-133	ug/L	11/07/17 09:16	
Bromoform	<5.000	50.00	49.68	99	80-126	ug/L	11/07/17 09:16	
Bromomethane	<1.000	50.00	51.43	103	64-139	ug/L	11/07/17 09:16	
2-Butanone (MEK)	<10.00	50.00	49.97	100	39-135	ug/L	11/07/17 09:16	
Carbon Disulfide	<10.00	50.00	43.74	87	85-124	ug/L	11/07/17 09:16	
Carbon Tetrachloride	<1.000	50.00	49.14	98	81-138	ug/L	11/07/17 09:16	
Chlorobenzene	<1.000	50.00	50.87	102	85-120	ug/L	11/07/17 09:16	
Chloroethane	<1.000	50.00	47.07	94	75-129	ug/L	11/07/17 09:16	
Chloroform	<1.000	50.00	46.38	93	85-128	ug/L	11/07/17 09:16	
Chloromethane	<1.000	50.00	53.19	106	60-139	ug/L	11/07/17 09:16	
Cyclohexane	<10.00	50.00	50.68	101	55-131	ug/L	11/07/17 09:16	
1,2-Dibromo-3-Chloropropane	<5.000	50.00	51.86	104	69-127	ug/L	11/07/17 09:16	
Dibromochloromethane	<1.000	50.00	52.47	105	82-127	ug/L	11/07/17 09:16	
1,2-Dibromoethane (EDB)	<1.000	50.00	52.38	105	82-121	ug/L	11/07/17 09:16	
1,2-Dichlorobenzene	<1.000	50.00	50.91	102	82-123	ug/L	11/07/17 09:16	
1,3-Dichlorobenzene	<1.000	50.00	50.54	101	81-123	ug/L	11/07/17 09:16	
1,4-Dichlorobenzene	<1.000	50.00	49.37	99	81-121	ug/L	11/07/17 09:16	
Dichlorodifluoromethane	<1.000	50.00	55.73	111	69-147	ug/L	11/07/17 09:16	
1,1-Dichloroethane	<1.000	50.00	47.86	96	83-123	ug/L	11/07/17 09:16	
1,2-Dichloroethane	<1.000	50.00	49.73	99	86-138	ug/L	11/07/17 09:16	
1,1-Dichloroethene	<1.000	50.00	49.39	99	85-127	ug/L	11/07/17 09:16	
cis-1,2-Dichloroethene	<1.000	50.00	48.35	97	87-127	ug/L	11/07/17 09:16	
1,2-Dichloropropane	<1.000	50.00	49.84	100	79-125	ug/L	11/07/17 09:16	
cis-1,3-Dichloropropene	<1.000	50.00	51.64	103	79-131	ug/L	11/07/17 09:16	
trans-1,3-Dichloropropene	<1.000	50.00	52.88	106	82-133	ug/L	11/07/17 09:16	
trans-1,2-Dichloroethene	<1.000	50.00	48.48	97	85-125	ug/L	11/07/17 09:16	
Ethylbenzene	<1.000	50.00	50.08	100	83-123	ug/L	11/07/17 09:16	
2-Hexanone	<5.000	50.00	53.54	107	37-137	ug/L	11/07/17 09:16	
Isopropylbenzene	<1.000	50.00	51.47	103	70-131	ug/L	11/07/17 09:16	
Methyl Acetate	<10.00	50.00	49.63	99	69-127	ug/L	11/07/17 09:16	
Methylcyclohexane	<10.00	50.00	51.10	102	75-129	ug/L	11/07/17 09:16	
Methylene Chloride	<1.000	50.00	46.16	92	86-124	ug/L	11/07/17 09:16	
4-Methyl-2-Pentanone	<5.000	50.00	52.76	106	39-143	ug/L	11/07/17 09:16	
Methyl-t-butyl ether	<1.000	50.00	47.96	96	75-134	ug/L	11/07/17 09:16	
Naphthalene	<1.000	50.00	54.79	110	61-118	ug/L	11/07/17 09:16	
Styrene	<1.000	50.00	53.94	108	80-120	ug/L	11/07/17 09:16	
1,1,2,2-Tetrachloroethane	<1.000	50.00	51.34	103	64-125	ug/L	11/07/17 09:16	
Tetrachloroethene	<1.000	50.00	51.63	103	83-138	ug/L	11/07/17 09:16	
Toluene	<1.000	50.00	49.60	99	88-126	ug/L	11/07/17 09:16	
1,2,3-Trichlorobenzene	<1.000	50.00	52.66	105	75-124	ug/L	11/07/17 09:16	
1,2,4-Trichlorobenzene	<1.000	50.00	51.74	103	77-131	ug/L	11/07/17 09:16	
1,1,1-Trichloroethane	<1.000	50.00	49.34	99	68-146	ug/L	11/07/17 09:16	
1,1,2-Trichloroethane	<1.000	50.00	51.93	104	85-124	ug/L	11/07/17 09:16	
Trichloroethene	<1.000	50.00	48.93	98	87-127	ug/L	11/07/17 09:16	
Trichlorofluoromethane	<5.000	50.00	49.16	98	77-147	ug/L	11/07/17 09:16	
1,1,2-Trichloro-1,2,2-Trifluoroethane	<1.000	50.00	51.00	102	68-135	ug/L	11/07/17 09:16	
Vinyl Chloride	<1.000	50.00	54.08	108	74-138	ug/L	11/07/17 09:16	
m,p-Xylenes	<2.000	100	102.5	103	84-124	ug/L	11/07/17 09:16	

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QC Summary 17110718

WSP USA - Herndon
Kop-Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 147743 Matrix: Water Date Prep: 11/07/17
MB Sample Id: 68620-1-BLK LCS Sample Id: 68620-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
o-Xylene	<1.000	50.00	52.79	106	79-126	ug/L	11/07/17 09:16	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	97		98		86-111	%	11/07/17 09:16
Dibromofluoromethane	102		98		91-119	%	11/07/17 09:16
Toluene-D8	97		99		90-117	%	11/07/17 09:16

Analytical Method: SW-846 8260 B-Modified Prep Method: SW5030B
Seq Number: 147963 Matrix: Water Date Prep: 11/13/17
MB Sample Id: 68737-1-BLK LCS Sample Id: 68737-1-BKS LCSD Sample Id: 68737-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
1,4-Dioxane (P-Dioxane)	<1.000	30.00	30.14	100	30.78	103	50-150	2	20	ug/L	11/13/17 14:31	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	LCSD Result	LCSD Flag	Limits	Units	Analysis Date
Toluene-D8	96		100		100		80-120	%	11/13/17 14:31

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

SAMPLE CHAIN OF CUSTODY/AGREEMENT FORM

Internal sampling

PHASE SEPARATION SCIENCE, INC.

www.phaseonline.com
email: info@phaseonline.com

1 *CLIENT: WSP *OFFICE LOC. Herndon VA
*PROJECT MGR: Eric Johnson *PHONE NO.: 703 709-6500
EMAIL: eric.johnson@wsp.com FAX NO.: ( )
*PROJECT NAME: Capflex PROJECT NO.: 31400390-09
SITE LOCATION: Hanover MD P.O. NO.:
SAMPLER(S): Maria Kaplan DW CERT NO.:

PSS Work Order #: 1711 0718 PAGE 1 OF 1

Matrix Codes: SW=Surface Wtr DW=Drinking Wtr GW=Ground Wtr WW=Waste Wtr O=Oil S=Soil L=Liquid SOL=Solid A=Air WI=Wipe

2

LAB NO.	*SAMPLE IDENTIFICATION	*DATE (SAMPLED)	*TIME (SAMPLED)	MATRIX (See Codes)	No. CONTAINERS	SAMPLE TYPE C = COMP G = GRAB	Preservatives Used	Analysis/ Method Required 3 * 1,4 Dioxane (8270 SIM)	VOCs (8260)	REMARKS
	Effluent USP-4	11/7/17	0930	WW	3	G		X		
	Influent USP-1	11/7/17	0940	GW	6	G		X	X	
	TB-110717	—	—	—	2	—			X	

5

Relinquished By: (1)	Date	Time	Received By:
	11/7/17	1200	
Relinquished By: (2)	Date	Time	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date	Time	Received By:

4

*Requested TAT (One TAT per COC)
☒ 5-Day ☐ 3-Day ☐ 2-Day
☐ Next Day ☐ Emergency ☐ Other

Data Deliverables Required:
COA ☐ QC SUMM ☐ CLP LIKE ☐ OTHER ____

# of Coolers: 1
Custody Seal: Cooler-Intact
Ice Present: PRES Temp: 3-6°
Shipping Carrier: Client

Special Instructions:

DW COMPLIANCE? YES ☐
EDD FORMAT TYPE: ____
STATE RESULTS REPORTED TO: MD ☐ DE ☐ PA ☐ VA ☐ WV ☐ OTHER ____

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Phase Separation Science, Inc

Sample Receipt Checklist

Work Order #	17110718	**Received By**	Thomas Wingate
Client Name	WSP USA - Herndon	**Date Received**	11/07/2017 12:00:00 PM
Project Name	Kop-Flex	**Delivered By**	Client
Project Number	31400390-09	**Tracking No**	Not Applicable
Disposal Date	12/12/2017	**Logged In By**	Thomas Wingate

Shipping Container(s)

No. of Coolers 1

		Ice	Present
Custody Seal(s) Intact?	Yes	Temp (deg C)	6
Seal(s) Signed / Dated?	Yes	Temp Blank Present	No

Documentation

		Sampler Name	Maria Kaplan
COC agrees with sample labels?	Yes	MD DW Cert. No.	N/A
Chain of Custody	Yes		

Sample Container

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

Total No. of Samples Received 3 Total No. of Containers Received 11

Preservation

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

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

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

Samples Inspected/Checklist Completed By: Thomas Wingate Date: 11/07/2017

Thomas Wingate

PM Review and Approval: Amber Confer Date: 11/07/2017

Amber Confer

Analytical Report for

WSP USA - Herndon

Certificate of Analysis No.: 17110719

Project Manager: Eric Johnson

Project Name : Kop-Flex

Project Location: Hanover, MD

Project ID : 31400390-09

November 14, 2017

Phase Separation Science, Inc.

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PHASE SEPARATION SCIENCE, INC.

November 14, 2017

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

Reference: PSS Work Order(s) No: **17110719**
Project Name: Kop-Flex
Project Location: Hanover, MD
Project ID.: 31400390-09

Dear Eric Johnson :

This report includes the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Phase Separation Science (PSS) Work Order(s) numbered **17110719**.

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

PSS reserves the right to return any unused samples, extracts or related solutions. Otherwise, the samples are scheduled for disposal, without any further notice, on December 12, 2017, with the exception of air canisters which are cleaned immediately following analysis. This includes any samples that were received with a request to be held but lacked a specific hold period. It is your responsibility to provide a written request defining a specific disposal date if additional storage is required. Upon receipt , the request will be acknowledged by PSS, thus extending the storage period.

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

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

Sincerely,

Dan Prucnal

Dan Prucnal
Laboratory Manager

Sample Summary

Client Name: WSP USA - Herndon

Project Name: Kop-Flex

Work Order Number(s): 17110719

Project ID: 31400390-09

The following samples were received under chain of custody by Phase Separation Science (PSS) on 11/07/2017 at 12:00 pm

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
17110719-001	Effluent VSP-4	WASTE WATER	11/07/17 09:30

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

Notes:

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

Standard Flags/Abbreviations:

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

Certifications:

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

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 17110719

WSP USA - Herndon, Herndon, VA

November 14, 2017

Project Name: Kop-Flex
Project Location: Hanover, MD
Project ID: 31400390-09

Sample ID: Effluent VSP-4 **Date/Time Sampled: 11/07/2017 09:30** **PSS Sample ID: 17110719-001**
Matrix: WASTE WATER **Date/Time Received: 11/07/2017 12:00**

Dissolved Metals — Analytical Method: EPA 200.8 — Preparation Method: 200.8

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Copper	ND	ug/L	1.0		1	11/08/17	11/08/17 22:08	1064
Lead	ND	ug/L	1.0		1	11/08/17	11/08/17 22:08	1064
Nickel	**10.6**	ug/L	1.00		1	11/08/17	11/08/17 22:08	1064
Zinc	ND	ug/L	20		1	11/08/17	11/08/17 22:08	1064

Total Metals + Hardness — Analytical Method: EPA 200.8 — Preparation Method: 200.8

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Copper	ND	ug/L	1.0		1	11/08/17	11/08/17 20:21	1051
Lead	ND	ug/L	1.0		1	11/08/17	11/08/17 20:21	1051
Nickel	**10.8**	ug/L	1.00		1	11/08/17	11/08/17 20:21	1051
Zinc	**21.2**	ug/L	20.0		1	11/08/17	11/08/17 20:21	1051
Hardness (Ca & Mg)	**16**	mg/L	0.66		1	11/08/17	11/08/17 20:21	1051

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 17110719

WSP USA - Herndon, Herndon, VA

November 14, 2017

Project Name: Kop-Flex
Project Location: Hanover, MD
Project ID: 31400390-09

Sample ID: Effluent VSP-4 **Date/Time Sampled: 11/07/2017 09:30** **PSS Sample ID: 17110719-001**
Matrix: WASTE WATER **Date/Time Received: 11/07/2017 12:00**

Volatile Organics Compounds (TVO) Analytical Method: EPA 624 Preparation Method: 624
pH=2

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Dichlorodifluoromethane	ND	ug/L	5.0		1	11/09/17	11/09/17 15:30	1011
Chloromethane	ND	ug/L	5.0		1	11/09/17	11/09/17 15:30	1011
Vinyl Chloride	ND	ug/L	5.0		1	11/09/17	11/09/17 15:30	1011
Bromomethane	ND	ug/L	5.0		1	11/09/17	11/09/17 15:30	1011
Chloroethane	ND	ug/L	5.0		1	11/09/17	11/09/17 15:30	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	11/09/17	11/09/17 15:30	1011
1,1-Dichloroethene	ND	ug/L	5.0		1	11/09/17	11/09/17 15:30	1011
Methylene Chloride	ND	ug/L	5.0		1	11/09/17	11/09/17 15:30	1011
trans-1,2-dichloroethene	ND	ug/L	5.0		1	11/09/17	11/09/17 15:30	1011
1,1-Dichloroethane	ND	ug/L	5.0		1	11/09/17	11/09/17 15:30	1011
Chloroform	ND	ug/L	5.0		1	11/09/17	11/09/17 15:30	1011
1,1,1-Trichloroethane	ND	ug/L	5.0		1	11/09/17	11/09/17 15:30	1011
Carbon Tetrachloride	ND	ug/L	5.0		1	11/09/17	11/09/17 15:30	1011
Benzene	ND	ug/L	5.0		1	11/09/17	11/09/17 15:30	1011
1,2-Dichloroethane	ND	ug/L	5.0		1	11/09/17	11/09/17 15:30	1011
Trichloroethene	ND	ug/L	5.0		1	11/09/17	11/09/17 15:30	1011
1,2-Dichloropropane	ND	ug/L	5.0		1	11/09/17	11/09/17 15:30	1011
Bromodichloromethane	ND	ug/L	5.0		1	11/09/17	11/09/17 15:30	1011
2-Chloroethyl Vinyl Ether	ND	ug/L	5.0		1	11/09/17	11/09/17 15:30	1011
cis-1,3-Dichloropropene	ND	ug/L	5.0		1	11/09/17	11/09/17 15:30	1011
Toluene	ND	ug/L	5.0		1	11/09/17	11/09/17 15:30	1011
trans-1,3-dichloropropene	ND	ug/L	5.0		1	11/09/17	11/09/17 15:30	1011
1,1,2-Trichloroethane	ND	ug/L	5.0		1	11/09/17	11/09/17 15:30	1011
Tetrachloroethylene	ND	ug/L	5.0		1	11/09/17	11/09/17 15:30	1011
Dibromochloromethane	ND	ug/L	5.0		1	11/09/17	11/09/17 15:30	1011
Chlorobenzene	ND	ug/L	5.0		1	11/09/17	11/09/17 15:30	1011
Ethylbenzene	ND	ug/L	5.0		1	11/09/17	11/09/17 15:30	1011
Bromoform	ND	ug/L	5.0		1	11/09/17	11/09/17 15:30	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0		1	11/09/17	11/09/17 15:30	1011
1,3-Dichlorobenzene	ND	ug/L	5.0		1	11/09/17	11/09/17 15:30	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 17110719

WSP USA - Herndon, Herndon, VA

November 14, 2017

Project Name: Kop-Flex
Project Location: Hanover, MD
Project ID: 31400390-09

Sample ID: Effluent VSP-4 **Date/Time Sampled: 11/07/2017 09:30** **PSS Sample ID: 17110719-001**
Matrix: WASTE WATER **Date/Time Received: 11/07/2017 12:00**

Volatile Organics Compounds (TVO) Analytical Method: EPA 624 Preparation Method: 624
pH=2

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
1,4-Dichlorobenzene	ND	ug/L	5.0		1	11/09/17	11/09/17 15:30	1011
1,2-Dichlorobenzene	ND	ug/L	5.0		1	11/09/17	11/09/17 15:30	1011

Total Suspended Solids Analytical Method: SM 2540D -2011

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Suspended Solids	ND	mg/L	1.0		1	11/08/17	11/08/17 16:20	1061

Biochemical Oxygen Demand Analytical Method: SM 5210B -2011

	Result	Units	RL	Flag	Prepared	Analyzed	Analyst
Biochemical Oxygen Demand, 5 day	ND	mg/L	5.0		11/08/17	11/08/17 16:30	4005

Case Narrative Summary

Client Name: WSP USA - Herndon

Project Name: Kop-Flex

Work Order Number(s): 17110719
Project ID: 31400390-09

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

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

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

Sample Receipt:

Sample aliquots for dissolved metals were not field filtered and were received unpreserved.
Sample aliquot for total metals was received unpreserved. Sample was preserved with HNO3 upon receipt.
Acrolein and acrylonitrile not required for EPA 624 samples.

17110719: Analyses associated with analyst code 4005 were performed by Enviro-Chem Laboratories, Inc.

NELAP accreditation was held for all analyses performed unless noted below. See www.phaseonline.com for complete PSS scope of accreditation.

SM 5210B -2011

Analytical Data Package Information Summary

Work Order(s): 17110719
Report Prepared For: WSP USA - Herndon, Herndon, VA
Project Name: Kop-Flex
Project Manager: Eric Johnson

Method	Client Sample Id	Analysis Type	Lab Sample Id	Analyst	Mtx	Prep Batch	Analytical Batch	Sampled	Prepared	Analyzed
EPA 200.8	68634-1-BKS	BKS	68634-1-BKS	1051	W	68634	147810	--------	11/08/2017 09:51	11/08/2017 14:30
	68634-1-BLK	BLK	68634-1-BLK	1051	W	68634	147810	--------	11/08/2017 09:51	11/08/2017 14:24
	Effluent VSP-4	Initial	17110719-001	1051	W	68634	147838	11/07/2017	11/08/2017 09:51	11/08/2017 20:21
	Mississippi Day 1 S	MS	17110716-001 S	1051	W	68634	147838	11/07/2017	11/08/2017 09:51	11/08/2017 19:45
	GAC S	MS	17110734-002 S	1051	W	68634	147838	11/06/2017	11/08/2017 09:51	11/08/2017 21:52
	Mississippi Day 1 SD	MSD	17110716-001 SD	1051	W	68634	147838	11/07/2017	11/08/2017 09:51	11/08/2017 19:50
EPA 200.8	Effluent VSP-4	Initial	17110719-001	1064	W	68647	147848	11/07/2017	11/08/2017 15:43	11/08/2017 22:08
	68647-1-BKS	BKS	68647-1-BKS	1064	W	68647	147848	--------	11/08/2017 15:43	11/08/2017 21:40
	68647-1-BLK	BLK	68647-1-BLK	1064	W	68647	147848	--------	11/08/2017 15:43	11/08/2017 21:35
	L_Dewater_Disch_110617 S	MS	17110615-001 S	1064	W	68647	147848	11/06/2017	11/08/2017 15:43	11/08/2017 21:49
	L_Dewater_Disch_110617 SD	MSD	17110615-001 SD	1064	W	68647	147848	11/06/2017	11/08/2017 15:43	11/08/2017 21:54
EPA 624	Effluent VSP-4	Initial	17110719-001	1011	W	68686	147866	11/07/2017	11/09/2017 08:06	11/09/2017 15:30
	68686-1-BKS	BKS	68686-1-BKS	1011	W	68686	147866	--------	11/09/2017 08:06	11/09/2017 10:50
	68686-1-BLK	BLK	68686-1-BLK	1011	W	68686	147866	--------	11/09/2017 08:06	11/09/2017 11:31
	GTA-DISCH-10 S	MS	17110723-001 S	1011	W	68686	147866	11/07/2017	11/09/2017 08:06	11/09/2017 12:50
	GTA-DISCH-10 SD	MSD	17110723-001 SD	1011	W	68686	147866	11/07/2017	11/09/2017 08:06	11/09/2017 13:30
SM 2540D -2011	Effluent VSP-4	Initial	17110719-001	1061	W	147814	147814	11/07/2017	11/08/2017 16:20	11/08/2017 16:20
	147814-1-BLK	BLK	147814-1-BLK	1061	W	147814	147814	--------	11/08/2017 16:20	11/08/2017 16:20
	Millville 001 D	MD	17110814-001 D	1061	W	147814	147814	11/08/2017	11/08/2017 16:20	11/08/2017 16:20
SM 5210B -2011	Effluent VSP-4	Initial	17110719-001	4005	W	147970	147970	11/07/2017	11/08/2017 16:30	11/08/2017 16:30

PHASE SEPARATION SCIENCE, INC.

QC Summary 17110719

WSP USA - Herndon
Kop-Flex

Analytical Method: EPA 624 Prep Method: E624PREP
Seq Number: 147866 Matrix: Waste Water Date Prep: 11/09/2017
PSS Sample ID: 17110719-001

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
Dibromofluoromethane	104		87-114	%	11/09/17 15:30
4-Bromofluorobenzene	136	*	90-114	%	11/09/17 15:30
Toluene-D8	96		93-108	%	11/09/17 15:30

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

PHASE SEPARATION SCIENCE, INC.

QC Summary 17110719

WSP USA - Herndon
Kop-Flex

Analytical Method: SM 2540D -2011
Seq Number: 147814 Matrix: Water
MB Sample Id: 147814-1-BLK

Parameter	MB Result	LOD	RL	Units	Analysis Date	Flag
Suspended Solids	ND	0.5000	1.000	mg/L	11/08/17 16:20	

Analytical Method: EPA 200.8 Prep Method: E200.8_PREP
Seq Number: 147810 Matrix: Water Date Prep: 11/08/17
MB Sample Id: 68634-1-BLK LCS Sample Id: 68634-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Calcium	<100	400	374.1	94	85-115	ug/L	11/08/17 14:30	
Copper	<1.000	40.00	37.24	93	85-115	ug/L	11/08/17 14:30	
Lead	<1.000	40.00	38.48	96	85-115	ug/L	11/08/17 14:30	
Magnesium	<100	400	378.1	95	85-115	ug/L	11/08/17 14:30	
Nickel	<1.000	40.00	38.66	97	85-115	ug/L	11/08/17 14:30	
Zinc	<20.00	200	189.7	95	85-115	ug/L	11/08/17 14:30	

Analytical Method: EPA 200.8 Prep Method: E200.8_PREP
Seq Number: 147848 Matrix: Water Date Prep: 11/08/17
MB Sample Id: 68647-1-BLK LCS Sample Id: 68647-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Copper	<1.000	40.00	36.72	92	85-115	ug/L	11/08/17 21:40	
Lead	<1.000	40.00	37.24	93	85-115	ug/L	11/08/17 21:40	
Nickel	<1.000	40.00	37.91	95	85-115	ug/L	11/08/17 21:40	
Zinc	<20.00	200	187.6	94	85-115	ug/L	11/08/17 21:40	

PHASE SEPARATION SCIENCE, INC.

QC Summary 17110719

WSP USA - Herndon
Kop-Flex

Analytical Method: EPA 624 Prep Method: E624PREP

Seq Number: 147866 Matrix: Water Date Prep: 11/09/17

MB Sample Id: 68686-1-BLK LCS Sample Id: 68686-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Dichlorodifluoromethane	<5.000	60.00	67.92	113	51-139	ug/L	11/09/17 10:50	
Chloromethane	<5.000	60.00	66.40	111	56-144	ug/L	11/09/17 10:50	
Vinyl Chloride	<5.000	60.00	62.35	104	46-157	ug/L	11/09/17 10:50	
Bromomethane	<5.000	60.00	57.56	96	63-134	ug/L	11/09/17 10:50	
Chloroethane	<5.000	60.00	58.11	97	56-143	ug/L	11/09/17 10:50	
Trichlorofluoromethane	<5.000	60.00	59.42	99	56-138	ug/L	11/09/17 10:50	
1,1-Dichloroethene	<5.000	60.00	56.35	94	63-134	ug/L	11/09/17 10:50	
Methylene Chloride	<5.000	60.00	59.78	100	65-126	ug/L	11/09/17 10:50	
trans-1,2-dichloroethene	<5.000	60.00	57.69	96	67-129	ug/L	11/09/17 10:50	
1,1-Dichloroethane	<5.000	60.00	58.34	97	66-131	ug/L	11/09/17 10:50	
Chloroform	<5.000	60.00	57.20	95	69-130	ug/L	11/09/17 10:50	
1,1,1-Trichloroethane	<5.000	60.00	54.93	92	66-129	ug/L	11/09/17 10:50	
Carbon Tetrachloride	<5.000	60.00	56.63	94	70-133	ug/L	11/09/17 10:50	
Benzene	<5.000	60.00	58.05	97	69-127	ug/L	11/09/17 10:50	
1,2-Dichloroethane	<5.000	60.00	59.61	99	62-133	ug/L	11/09/17 10:50	
Trichloroethene	<5.000	60.00	57.49	96	71-127	ug/L	11/09/17 10:50	
1,2-Dichloropropane	<5.000	60.00	59.59	99	67-133	ug/L	11/09/17 10:50	
Bromodichloromethane	<5.000	60.00	58.06	97	63-132	ug/L	11/09/17 10:50	
2-Chloroethyl Vinyl Ether	<5.000	60.00	33.97	57	21-140	ug/L	11/09/17 10:50	
cis-1,3-Dichloropropene	<5.000	60.00	53.90	90	65-128	ug/L	11/09/17 10:50	
Toluene	<5.000	60.00	57.50	96	67-130	ug/L	11/09/17 10:50	
trans-1,3-dichloropropene	<5.000	60.00	53.46	89	63-127	ug/L	11/09/17 10:50	
1,1,2-Trichloroethane	<5.000	60.00	60.16	100	62-136	ug/L	11/09/17 10:50	
Tetrachloroethylene	<5.000	60.00	56.97	95	64-135	ug/L	11/09/17 10:50	
Dibromochloromethane	<5.000	60.00	56.42	94	65-126	ug/L	11/09/17 10:50	
Chlorobenzene	<5.000	60.00	55.37	92	70-127	ug/L	11/09/17 10:50	
Ethylbenzene	<5.000	60.00	54.94	92	71-131	ug/L	11/09/17 10:50	
Bromoform	<5.000	60.00	57.79	96	58-128	ug/L	11/09/17 10:50	
1,1,2,2-Tetrachloroethane	<5.000	60.00	61.76	103	63-134	ug/L	11/09/17 10:50	
1,3-Dichlorobenzene	<5.000	60.00	56.24	94	67-128	ug/L	11/09/17 10:50	
1,4-Dichlorobenzene	<5.000	60.00	56.33	94	67-127	ug/L	11/09/17 10:50	
1,2-Dichlorobenzene	<5.000	60.00	57.87	96	67-126	ug/L	11/09/17 10:50	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	Limits	Units	Analysis Date
Dibromofluoromethane	103		101		87-114	%	11/09/17 10:50
4-Bromofluorobenzene	122	*	102		90-114	%	11/09/17 10:50
Toluene-D8	97		103		93-108	%	11/09/17 10:50

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

SAMPLE CHAIN OF CUSTODY/AGREEMENT FORM

ANALYTICAL CHEMISTRY • ENVIRONMENTAL SCIENCE

PHASE SEPARATION SCIENCE, INC. NPDES Monthly

www.phaseonline.com
email: info@phaseonline.com

① *CLIENT: WSP	*OFFICE LOC. Herndon VA	PSS Work Order #: 17110719	PAGE 1 OF 1
*PROJECT MGR: Eric Johnson	*PHONE NO.: (703) 709-6500		
EMAIL: eric.johnson@wsp.com	FAX NO.: ( )		
*PROJECT NAME: Kop-Flex	PROJECT NO.: 31400390-09		
SITE LOCATION: Hanover MD	P.O. NO.:		
SAMPLER(S): Maria Kopko	DW CERT NO.:		

Matrix Codes:
SW=Surface Wtr DW=Drinking Wtr GW=Ground Wtr WW=Waste Wtr O=Oil S=Soil L=Liquid SOL=Solid A=Air WI=Wipe

② LAB NO.	*SAMPLE IDENTIFICATION	*DATE (SAMPLED)	*TIME (SAMPLED)	MATRIX (See Codes)	No. CONTAINERS	SAMPLE TYPE C = COMP G = GRAB	VOCs (624)	BOD5	TSS	Tot metals (Zn, Cu, Ni, Pb)	Dis metals (Zn, Cu, Ni, Pb)	Hardness (CaCO3)						REMARKS
Preservatives Used							HCl	/	/	HNO3	/	HNO3						
1	Effluent VSP-4	11/7/17	0930	WW	3	G	X											
2	Effluent VSP-4	11/7/17	0930	WW	1	G		X										
3	Effluent VSP-4	11/7/17	0930	WW	1	G			X									
4	Effluent VSP-4	11/7/17	0930	WW	1	G				X		X						Lab to filter + preserve HNO3
5	Effluent VSP-4	11/7/17	0930	WW	1	G					X							

11/7/17

⑤ Relinquished By:	Date	Time	Received By:
(1) [signature]	11/7/17	1200	[signature]
(2)			
(3)			
(4)			

④ *Requested TAT (One TAT per COC): ☒ 5-Day ☐ 3-Day ☐ 2-Day ☐ Next Day ☐ Emergency ☐ Other

Data Deliverables Required: COA ☐ QC SUMM ☐ CLP LIKE ☐ OTHER ____

Special Instructions:

DW COMPLIANCE? YES ☐

EDD FORMAT TYPE ____

STATE RESULTS REPORTED TO: MD ☐ DE ☐ PA ☐ VA ☐ WV ☐ OTHER ____

# of Coolers: 1
Custody Seal: Cooler-Intact
Ice Present: PRES Temp: 5-6°C
Shipping Carrier: Client

6630 Baltimore National Pike • Route 40 West • Baltimore, Maryland 21228 • (410) 747-8770 • (800) 932-9047 • Fax (410) 788-8723

Phase Separation Science, Inc

Sample Receipt Checklist

Work Order #	17110719	**Received By**	Thomas Wingate
Client Name	WSP USA - Herndon	**Date Received**	11/07/2017 12:00:00 PM
Project Name	Kop-Flex	**Delivered By**	Client
Project Number	31400390-09	**Tracking No**	Not Applicable
Disposal Date	12/12/2017	**Logged In By**	Thomas Wingate

Shipping Container(s)

No. of Coolers 1

		Ice	Present
Custody Seal(s) Intact?	Yes	Temp (deg C)	6
Seal(s) Signed / Dated?	Yes	Temp Blank Present	No

Documentation

		Sampler Name	Maria Kaplan
COC agrees with sample labels?	Yes	MD DW Cert. No.	N/A
Chain of Custody	Yes		

Sample Container

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

Total No. of Samples Received 1 Total No. of Containers Received 7

Preservation

Total Metals	(pH<2)	No
Dissolved Metals, filtered within 15 minutes of collection	(pH<2)	No
Orthophosphorus, filtered within 15 minutes of collection		N/A
Cyanides	(pH>12)	N/A
Sulfide	(pH>9)	N/A
TOC, DOC (field filtered), COD, Phenols	(pH<2)	N/A
TOX, TKN, NH3, Total Phos	(pH<2)	N/A
VOC, BTEX (VOA Vials Rcvd Preserved)	(pH<2)	Yes
Do VOA vials have zero headspace?		Yes
624 VOC (Rcvd at least one unpreserved VOA vial)		No
524 VOC (Rcvd with trip blanks)	(pH<2)	N/A

Phase Separation Science, Inc

Sample Receipt Checklist

Work Order #	17110719	**Received By**	Thomas Wingate
Client Name	WSP USA - Herndon	**Date Received**	11/07/2017 12:00:00 PM
Project Name	Kop-Flex	**Delivered By**	Client
Project Number	31400390-09	**Tracking No**	Not Applicable
Disposal Date	12/12/2017	**Logged In By**	Thomas Wingate

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

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

Sample aliquots for dissolved metals were not field filtered and were received unpreserved.
Sample aliquot for total metals was received unpreserved. Sample was preserved with HNO3 upon receipt.
Acrolein and acrylonitrile not required for EPA 624 samples.

Samples Inspected/Checklist Completed By: Thomas Wingate Date: 11/07/2017

PM Review and Approval: Amber Confer Date: 11/07/2017

Analytical Report for

WSP USA - Herndon

Certificate of Analysis No.: 17121107

Project Manager: Eric Johnson

Project Name : Kop-Flex

Project Location: Hanover, MD

December 20, 2017

Phase Separation Science, Inc.

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PHASE SEPARATION SCIENCE, INC.

December 20, 2017

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

Reference: PSS Work Order(s) No: **17121107**
Project Name: Kop-Flex
Project Location: Hanover, MD

Dear Eric Johnson :

This report includes the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Phase Separation Science (PSS) Work Order(s) numbered **17121107**.

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

PSS reserves the right to return any unused samples, extracts or related solutions. Otherwise, the samples are scheduled for disposal, without any further notice, on January 15, 2018, with the exception of air canisters which are cleaned immediately following analysis. This includes any samples that were received with a request to be held but lacked a specific hold period. It is your responsibility to provide a written request defining a specific disposal date if additional storage is required. Upon receipt , the request will be acknowledged by PSS, thus extending the storage period.

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

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

Sincerely,

Dan Prucnal
Laboratory Manager

Sample Summary
Client Name: WSP USA - Herndon
Project Name: Kop-Flex

Work Order Number(s): 17121107

The following samples were received under chain of custody by Phase Separation Science (PSS) on 12/11/2017 at 11:30 am

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
17121107-001	Effluent VSP-4	WASTE WATER	12/11/17 08:15

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

Notes:

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

Standard Flags/Abbreviations:

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

Certifications:

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

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 17121107

WSP USA - Herndon, Herndon, VA

December 20, 2017

Project Name: Kop-Flex

Project Location: Hanover, MD

Sample ID: Effluent VSP-4 **Date/Time Sampled: 12/11/2017 08:15** **PSS Sample ID: 17121107-001**

Matrix: WASTE WATER **Date/Time Received: 12/11/2017 11:30**

Dissolved Metals — Analytical Method: EPA 200.8 — Preparation Method: 200.8

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Copper	**2.8**	ug/L	1.0		1	12/13/17	12/13/17 23:55	1064
Lead	ND	ug/L	1.0		1	12/13/17	12/13/17 23:55	1064
Nickel	**10.1**	ug/L	1.00		1	12/13/17	12/13/17 23:55	1064
Zinc	ND	ug/L	20		1	12/13/17	12/13/17 23:55	1064

Total Metals + Hardness — Analytical Method: EPA 200.8 — Preparation Method: 200.8

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Copper	**4.0**	ug/L	1.0		1	12/11/17	12/11/17 21:28	1064
Lead	ND	ug/L	1.0		1	12/11/17	12/11/17 21:28	1064
Nickel	**10.7**	ug/L	1.00		1	12/11/17	12/11/17 21:28	1064
Zinc	**20.6**	ug/L	20.0		1	12/11/17	12/11/17 21:28	1064
Hardness (Ca & Mg)	**16**	mg/L	0.66		1	12/11/17	12/11/17 21:28	1064

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 17121107

WSP USA - Herndon, Herndon, VA

December 20, 2017

Project Name: Kop-Flex

Project Location: Hanover, MD

Sample ID: Effluent VSP-4 **Date/Time Sampled: 12/11/2017 08:15** **PSS Sample ID: 17121107-001**

Matrix: WASTE WATER **Date/Time Received: 12/11/2017 11:30**

Volatile Organics Compounds (TVO) Analytical Method: EPA 624 Preparation Method: 624

pH=2

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Dichlorodifluoromethane	ND	ug/L	5.0		1	12/14/17	12/14/17 12:23	1011
Chloromethane	ND	ug/L	5.0		1	12/14/17	12/14/17 12:23	1011
Vinyl Chloride	ND	ug/L	5.0		1	12/14/17	12/14/17 12:23	1011
Bromomethane	ND	ug/L	5.0		1	12/14/17	12/14/17 12:23	1011
Chloroethane	ND	ug/L	5.0		1	12/14/17	12/14/17 12:23	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	12/14/17	12/14/17 12:23	1011
1,1-Dichloroethene	ND	ug/L	5.0		1	12/14/17	12/14/17 12:23	1011
Methylene Chloride	ND	ug/L	5.0		1	12/14/17	12/14/17 12:23	1011
trans-1,2-dichloroethene	ND	ug/L	5.0		1	12/14/17	12/14/17 12:23	1011
1,1-Dichloroethane	ND	ug/L	5.0		1	12/14/17	12/14/17 12:23	1011
Chloroform	ND	ug/L	5.0		1	12/14/17	12/14/17 12:23	1011
1,1,1-Trichloroethane	ND	ug/L	5.0		1	12/14/17	12/14/17 12:23	1011
Carbon Tetrachloride	ND	ug/L	5.0		1	12/14/17	12/14/17 12:23	1011
Benzene	ND	ug/L	5.0		1	12/14/17	12/14/17 12:23	1011
1,2-Dichloroethane	ND	ug/L	5.0		1	12/14/17	12/14/17 12:23	1011
Trichloroethene	ND	ug/L	5.0		1	12/14/17	12/14/17 12:23	1011
1,2-Dichloropropane	ND	ug/L	5.0		1	12/14/17	12/14/17 12:23	1011
Bromodichloromethane	ND	ug/L	5.0		1	12/14/17	12/14/17 12:23	1011
2-Chloroethyl Vinyl Ether	ND	ug/L	5.0		1	12/14/17	12/14/17 12:23	1011
cis-1,3-Dichloropropene	ND	ug/L	5.0		1	12/14/17	12/14/17 12:23	1011
Toluene	ND	ug/L	5.0		1	12/14/17	12/14/17 12:23	1011
trans-1,3-dichloropropene	ND	ug/L	5.0		1	12/14/17	12/14/17 12:23	1011
1,1,2-Trichloroethane	ND	ug/L	5.0		1	12/14/17	12/14/17 12:23	1011
Tetrachloroethylene	ND	ug/L	5.0		1	12/14/17	12/14/17 12:23	1011
Dibromochloromethane	ND	ug/L	5.0		1	12/14/17	12/14/17 12:23	1011
Chlorobenzene	ND	ug/L	5.0		1	12/14/17	12/14/17 12:23	1011
Ethylbenzene	ND	ug/L	5.0		1	12/14/17	12/14/17 12:23	1011
Bromoform	ND	ug/L	5.0		1	12/14/17	12/14/17 12:23	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0		1	12/14/17	12/14/17 12:23	1011
1,3-Dichlorobenzene	ND	ug/L	5.0		1	12/14/17	12/14/17 12:23	1011

OFFICES:
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BALTIMORE, MD 21228
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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 17121107

WSP USA - Herndon, Herndon, VA

December 20, 2017

Project Name: Kop-Flex

Project Location: Hanover, MD

Sample ID: Effluent VSP-4 **Date/Time Sampled: 12/11/2017 08:15** **PSS Sample ID: 17121107-001**

Matrix: WASTE WATER **Date/Time Received: 12/11/2017 11:30**

Volatile Organics Compounds (TVO) Analytical Method: EPA 624 Preparation Method: 624

pH=2

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
1,4-Dichlorobenzene	ND	ug/L	5.0		1	12/14/17	12/14/17 12:23	1011
1,2-Dichlorobenzene	ND	ug/L	5.0		1	12/14/17	12/14/17 12:23	1011

Total Suspended Solids Analytical Method: SM 2540D -2011

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Suspended Solids	ND	mg/L	2.0		1	12/13/17	12/13/17 10:12	1064

Biochemical Oxygen Demand Analytical Method: SM 5210B -2011

	Result	Units	RL	Flag	Prepared	Analyzed	Analyst
Biochemical Oxygen Demand, 5 day	ND	mg/L	5.0		12/11/17	12/11/17 16:40	4005

Case Narrative Summary

Client Name: WSP USA - Herndon

Project Name: Kop-Flex

Work Order Number(s): 17121107

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

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

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

Sample Receipt:

Acrolein and acrylonitrile not required for EPA 624 samples.
Sample aliquots for dissolved metals were not field filtered and were received unpreserved.

17121107: Analyses associated with analyst code 4005 were performed by Enviro-Chem Laboratories, Inc.

NELAP accreditation was held for all analyses performed unless noted below. See www.phaseonline.com for complete PSS scope of accreditation.

SM 5210B -2011

Analytical Data Package Information Summary

Work Order(s): **17121107**
Report Prepared For: WSP USA - Herndon, Herndon, VA
Project Name: Kop-Flex
Project Manager: Eric Johnson

Method	Client Sample Id	Analysis Type	Lab Sample Id	Analyst	Mtx	Prep Batch	Analytical Batch	Sampled	Prepared	Analyzed
EPA 200.8	Effluent VSP-4	Initial	17121107-001	1064	W	69106	148755	12/11/2017	12/11/2017 13:22	12/11/2017 21:28
	69106-1-BKS	BKS	69106-1-BKS	1064	W	69106	148755	--------	12/11/2017 13:22	12/11/2017 21:24
	69106-1-BLK	BLK	69106-1-BLK	1064	W	69106	148755	--------	12/11/2017 13:22	12/11/2017 21:01
	Effluent VSP-4 S	MS	17121107-001 S	1064	W	69106	148755	12/11/2017	12/11/2017 13:22	12/11/2017 21:32
	Effluent VSP-4 SD	MSD	17121107-001 SD	1064	W	69106	148755	12/11/2017	12/11/2017 13:22	12/11/2017 21:36
EPA 200.8	Effluent VSP-4	Initial	17121107-001	1064	W	69154	148855	12/11/2017	12/13/2017 17:09	12/13/2017 23:55
	69154-1-BKS	BKS	69154-1-BKS	1064	W	69154	148855	--------	12/13/2017 17:09	12/13/2017 23:51
	69154-1-BLK	BLK	69154-1-BLK	1064	W	69154	148855	--------	12/13/2017 17:09	12/13/2017 23:47
	Effluent VSP-4 S	MS	17121107-001 S	1064	W	69154	148855	12/11/2017	12/13/2017 17:09	12/13/2017 23:59
	Effluent VSP-4 SD	MSD	17121107-001 SD	1064	W	69154	148855	12/11/2017	12/13/2017 17:09	12/14/2017 00:03
EPA 624	Effluent VSP-4	Initial	17121107-001	1011	W	69201	148933	12/11/2017	12/14/2017 08:23	12/14/2017 12:23
	69201-1-BKS	BKS	69201-1-BKS	1011	W	69201	148933	--------	12/14/2017 08:23	12/14/2017 10:15
	69201-1-BLK	BLK	69201-1-BLK	1011	W	69201	148933	--------	12/14/2017 08:23	12/14/2017 10:54
	L-Dewater-Disch-121217 S	MS	17121216-001 S	1011	W	69201	148933	12/12/2017	12/14/2017 08:23	12/14/2017 16:25
	L-Dewater-Disch-121217 SD	MSD	17121216-001 SD	1011	W	69201	148933	12/12/2017	12/14/2017 08:23	12/14/2017 17:06
SM 2540D -2011	Effluent VSP-4	Initial	17121107-001	1064	W	148801	148801	12/11/2017	12/13/2017 10:12	12/13/2017 10:12
	148801-1-BLK	BLK	148801-1-BLK	1064	W	148801	148801	--------	12/13/2017 10:12	12/13/2017 10:12
	Effluent VSP-4 D	MD	17121107-001 D	1064	W	148801	148801	12/11/2017	12/13/2017 10:12	12/13/2017 10:12
SM 5210B -2011	Effluent VSP-4	Initial	17121107-001	4005	W	149071	149071	12/11/2017	12/11/2017 16:40	12/11/2017 16:40

PHASE SEPARATION SCIENCE, INC.

QC Summary 17121107

WSP USA - Herndon
Kop-Flex

Analytical Method: EPA 624 Prep Method: E624PREP
Seq Number: 148933 Matrix: Waste Water Date Prep: 12/14/2017
PSS Sample ID: 17121107-001

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
Dibromofluoromethane	105		87-114	%	12/14/17 12:23
4-Bromofluorobenzene	125	*	90-114	%	12/14/17 12:23
Toluene-D8	96		93-108	%	12/14/17 12:23

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

PHASE SEPARATION SCIENCE, INC.

QC Summary 17121107

WSP USA - Herndon
Kop-Flex

Analytical Method: SM 2540D -2011
Seq Number: 148801 Matrix: Water
MB Sample Id: 148801-1-BLK

Parameter	MB Result	LOD	RL	Units	Analysis Date	Flag
Suspended Solids	ND	0.5000	1.000	mg/L	12/13/17 10:12	

Analytical Method: SM 2540D -2011
Seq Number: 148801 Matrix: Waste Water
Parent Sample Id: 17121107-001 MD Sample Id: 17121107-001 D

Parameter	Parent Result	MD Result	%RPD	RPD Limit	Units	Analysis Date	Flag
Suspended Solids	<2.000	<2.000	0	10	mg/L	12/13/17 10:12	U

Analytical Method: EPA 200.8 Prep Method: E200.8_PREP
Seq Number: 148755 Matrix: Water Date Prep: 12/11/17
MB Sample Id: 69106-1-BLK LCS Sample Id: 69106-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Calcium	<100	400	413.1	103	85-115	ug/L	12/11/17 21:24	
Copper	<1.000	40.00	41.08	103	85-115	ug/L	12/11/17 21:24	
Lead	<1.000	40.00	39.27	98	85-115	ug/L	12/11/17 21:24	
Magnesium	<100	400	409.9	102	85-115	ug/L	12/11/17 21:24	
Nickel	<1.000	40.00	40.12	100	85-115	ug/L	12/11/17 21:24	
Zinc	<20.00	200	197.3	99	85-115	ug/L	12/11/17 21:24	

Analytical Method: EPA 200.8 Prep Method: E200.8_PREP
Seq Number: 148855 Matrix: Water Date Prep: 12/13/17
MB Sample Id: 69154-1-BLK LCS Sample Id: 69154-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Copper	<1.000	40.00	36.43	91	85-115	ug/L	12/13/17 23:51	
Lead	<1.000	40.00	37.28	93	85-115	ug/L	12/13/17 23:51	
Nickel	<1.000	40.00	36.64	92	85-115	ug/L	12/13/17 23:51	
Zinc	<20.00	200	182.7	91	85-115	ug/L	12/13/17 23:51	

PHASE SEPARATION SCIENCE, INC.

QC Summary 17121107

WSP USA - Herndon
Kop-Flex

Analytical Method: EPA 200.8 Prep Method: E200.8_PREP
Seq Number: 148755 Matrix: Waste Water Date Prep: 12/11/17
Parent Sample Id: 17121107-001 MS Sample Id: 17121107-001 S MSD Sample Id: 17121107-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Calcium	3906	400	4276	93	4421	129	70-130	3	25	ug/L	12/11/17 21:32	
Copper	4.019	40.00	45.19	103	44.20	100	70-130	2	25	ug/L	12/11/17 21:32	
Lead	<1.000	40.00	41.06	103	38.85	97	70-130	6	25	ug/L	12/11/17 21:32	
Magnesium	1580	400	1974	99	2053	118	70-130	4	25	ug/L	12/11/17 21:32	
Nickel	10.71	40.00	50.32	99	49.85	98	70-130	1	25	ug/L	12/11/17 21:32	
Zinc	20.58	200	215	97	213.5	96	70-130	1	25	ug/L	12/11/17 21:32	

Analytical Method: EPA 200.8 Prep Method: E200.8_PREP
Seq Number: 148855 Matrix: Waste Water Date Prep: 12/13/17
Parent Sample Id: 17121107-001 MS Sample Id: 17121107-001 S MSD Sample Id: 17121107-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Copper	2.773	40.00	39.88	93	39.92	93	70-130	0	25	ug/L	12/13/17 23:59	
Lead	<1.000	40.00	37.65	94	38.50	96	70-130	2	25	ug/L	12/13/17 23:59	
Nickel	10.14	40.00	46.70	91	46.81	92	70-130	0	25	ug/L	12/13/17 23:59	
Zinc	<20.00	200	204.7	102	206.5	103	70-130	1	25	ug/L	12/13/17 23:59	

PHASE SEPARATION SCIENCE, INC.

QC Summary 17121107

WSP USA - Herndon
Kop-Flex

Analytical Method: EPA 624 Prep Method: E624PREP

Seq Number: 148933 Matrix: Water Date Prep: 12/14/17

MB Sample Id: 69201-1-BLK LCS Sample Id: 69201-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Dichlorodifluoromethane	<5.000	60.00	75.55	126	51-139	ug/L	12/14/17 10:15	
Chloromethane	<5.000	60.00	58.44	97	56-144	ug/L	12/14/17 10:15	
Vinyl Chloride	<5.000	60.00	56.29	94	46-157	ug/L	12/14/17 10:15	
Bromomethane	<5.000	60.00	53.51	89	63-134	ug/L	12/14/17 10:15	
Chloroethane	<5.000	60.00	50.22	84	56-143	ug/L	12/14/17 10:15	
Trichlorofluoromethane	<5.000	60.00	63.03	105	56-138	ug/L	12/14/17 10:15	
1,1-Dichloroethene	<5.000	60.00	53.00	88	63-134	ug/L	12/14/17 10:15	
Methylene Chloride	<5.000	60.00	54.04	90	65-126	ug/L	12/14/17 10:15	
trans-1,2-dichloroethene	<5.000	60.00	56.39	94	67-129	ug/L	12/14/17 10:15	
1,1-Dichloroethane	<5.000	60.00	54.44	91	66-131	ug/L	12/14/17 10:15	
Chloroform	<5.000	60.00	53.30	89	69-130	ug/L	12/14/17 10:15	
1,1,1-Trichloroethane	<5.000	60.00	57.17	95	66-129	ug/L	12/14/17 10:15	
Carbon Tetrachloride	<5.000	60.00	56.13	94	70-133	ug/L	12/14/17 10:15	
Benzene	<5.000	60.00	51.84	86	69-127	ug/L	12/14/17 10:15	
1,2-Dichloroethane	<5.000	60.00	55.47	92	62-133	ug/L	12/14/17 10:15	
Trichloroethene	<5.000	60.00	55.69	93	71-127	ug/L	12/14/17 10:15	
1,2-Dichloropropane	<5.000	60.00	52.66	88	67-133	ug/L	12/14/17 10:15	
Bromodichloromethane	<5.000	60.00	54.39	91	63-132	ug/L	12/14/17 10:15	
2-Chloroethyl Vinyl Ether	<5.000	60.00	40.81	68	21-140	ug/L	12/14/17 10:15	
cis-1,3-Dichloropropene	<5.000	60.00	51.23	85	65-128	ug/L	12/14/17 10:15	
Toluene	<5.000	60.00	52.71	88	67-130	ug/L	12/14/17 10:15	
trans-1,3-dichloropropene	<5.000	60.00	50.18	84	63-127	ug/L	12/14/17 10:15	
1,1,2-Trichloroethane	<5.000	60.00	51.28	85	62-136	ug/L	12/14/17 10:15	
Tetrachloroethylene	<5.000	60.00	57.26	95	64-135	ug/L	12/14/17 10:15	
Dibromochloromethane	<5.000	60.00	50.84	85	65-126	ug/L	12/14/17 10:15	
Chlorobenzene	<5.000	60.00	50.12	84	70-127	ug/L	12/14/17 10:15	
Ethylbenzene	<5.000	60.00	51.69	86	71-131	ug/L	12/14/17 10:15	
Bromoform	<5.000	60.00	49.28	82	58-128	ug/L	12/14/17 10:15	
1,1,2,2-Tetrachloroethane	<5.000	60.00	49.61	83	63-134	ug/L	12/14/17 10:15	
1,3-Dichlorobenzene	<5.000	60.00	50.46	84	67-128	ug/L	12/14/17 10:15	
1,4-Dichlorobenzene	<5.000	60.00	49.76	83	67-127	ug/L	12/14/17 10:15	
1,2-Dichlorobenzene	<5.000	60.00	51.33	86	67-126	ug/L	12/14/17 10:15	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	Limits	Units	Analysis Date
Dibromofluoromethane	102		102		87-114	%	12/14/17 10:15
4-Bromofluorobenzene	129	*	97		90-114	%	12/14/17 10:15
Toluene-D8	97		100		93-108	%	12/14/17 10:15

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

SAMPLE CHAIN OF CUSTODY/AGREEMENT FORM

PHASE SEPARATION SCIENCE, INC.
www.phaseonline.com
email: info@phaseonline.com

(2) NPDES monthly (2)

(1) *CLIENT: WSP *OFFICE LOC. Herndon VA

*PROJECT MGR: Eric Johnson *PHONE NO.: (703) 709 6500

EMAIL: eric.johnson@wsp.com FAX NO.: ( )

*PROJECT NAME: Kopflers PROJECT NO.:

SITE LOCATION: Hanover MD P.O. NO.:

SAMPLER(S): Maria Kaylor DW CERT NO.:

PSS Work Order #: 1712107 PAGE 1 OF 1

Matrix Codes: SW=Surface Wtr DW=Drinking Wtr GW=Ground Wtr WW=Waste Wtr O=Oil S=Soil L=Liquid SOL=Solid A=Air WI=Wipe

(2) LAB NO.	*SAMPLE IDENTIFICATION	*DATE (SAMPLED)	*TIME (SAMPLED)	MATRIX (See Codes)	No. CONTAINERS	SAMPLE TYPE (C = COMP, G = GRAB)	Preservatives Used	Analysis/Method Required (3) * VOCs (624)	BOD	TSS	Dissolved metals (Pb, Zn, Cu, Ni)	Total metals (Pb, Zn, Cu, Ni)	Hardness	REMARKS
1	Effluent USP-4	12/11/17	0815	WW	3	G	HCl	X						
1	Effluent USP-4	12/11/17	0815	WW	1	G			X	X (MD)				
1	Effluent USP-4	12/11/17	0815	WW	1	G				X				
1	Effluent USP-4	12/11/17	0815	WW	1	G					X			Lab to filter
1	Effluent USP-4	12/11/17	0815	WW	1	G						X	X	

(5)

Relinquished By: (1)	Date	Time	Received By:
	12/11/17	1130	
Relinquished By: (2)	Date	Time	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date	Time	Received By:

(4)

*Requested TAT (One TAT per COC)
☒ 5-Day ☐ 3-Day ☐ 2-Day
☐ Next Day ☐ Emergency ☐ Other

Data Deliverables Required:
COA ☐ QC SUMM ☐ CLP LIKE ☐ OTHER ____

# of Coolers: 1 Temp Blk 9°C

Custody Seal: Coolers-Intact

Ice Present: PRES Temp 8°-10°C

Shipping Carrier: Client

Special Instructions:

DW COMPLIANCE? YES ☐

EDD FORMAT TYPE ____

STATE RESULTS REPORTED TO:
MD ☐ DE ☐ PA ☐ VA ☐ WV ☐ OTHER ____

6630 Baltimore National Pike • Route 40 West • Baltimore, Maryland 21228 • (410) 747-8770 • (800) 932-9047 • Fax (410) 788-8723

Phase Separation Science, Inc

Sample Receipt Checklist

Work Order #	17121107	**Received By**	Thomas Wingate
Client Name	WSP USA - Herndon	**Date Received**	12/11/2017 11:30:00 AM
Project Name	Kop-Flex	**Delivered By**	Client
Disposal Date	01/15/2018	**Tracking No**	Not Applicable
		Logged In By	Thomas Wingate

Shipping Container(s)

No. of Coolers 1

		Ice	Present
Custody Seal(s) Intact?	Yes	Temp (deg C)	10
Seal(s) Signed / Dated?	Yes	Temp Blank Present	Yes

Documentation

		Sampler Name	Maria Kaplan
COC agrees with sample labels?	Yes	MD DW Cert. No.	N/A
Chain of Custody	Yes		

Sample Container

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

Total No. of Samples Received 1 Total No. of Containers Received 7

Preservation

Total Metals	(pH<2)	Yes
Dissolved Metals, filtered within 15 minutes of collection	(pH<2)	No
Orthophosphorus, filtered within 15 minutes of collection		N/A
Cyanides	(pH>12)	N/A
Sulfide	(pH>9)	N/A
TOC, DOC (field filtered), COD, Phenols	(pH<2)	N/A
TOX, TKN, NH3, Total Phos	(pH<2)	N/A
VOC, BTEX (VOA Vials Rcvd Preserved)	(pH<2)	Yes
Do VOA vials have zero headspace?		Yes
624 VOC (Rcvd at least one unpreserved VOA vial)		No
524 VOC (Rcvd with trip blanks)	(pH<2)	N/A

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

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

Acrolein and acrylonitrile not required for EPA 624 samples.
Sample aliquots for dissolved metals were not field filtered and were received unpreserved.

Samples Inspected/Checklist Completed By: Thomas Wingate Date: 12/11/2017

Thomas Wingate

PM Review and Approval: Amber Confer Date: 12/11/2017

Amber Confer

Analytical Report for

WSP USA - Herndon

Certificate of Analysis No.: 17121108

Project Manager: Eric Johnson

Project Name : Kop-Flex

Project Location: Hanover, MD

Project ID : 31400390/09

December 18, 2017

Phase Separation Science, Inc.

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PHASE SEPARATION SCIENCE, INC.

December 18, 2017

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

Reference: PSS Work Order(s) No: **17121108**
Project Name: Kop-Flex
Project Location: Hanover, MD
Project ID.: 31400390/09

Dear Eric Johnson :

This report includes the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Phase Separation Science (PSS) Work Order(s) numbered **17121108**.

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

PSS reserves the right to return any unused samples, extracts or related solutions. Otherwise, the samples are scheduled for disposal, without any further notice, on January 15, 2018, with the exception of air canisters which are cleaned immediately following analysis. This includes any samples that were received with a request to be held but lacked a specific hold period. It is your responsibility to provide a written request defining a specific disposal date if additional storage is required. Upon receipt , the request will be acknowledged by PSS, thus extending the storage period.

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

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

Sincerely,

Dan Prucnal
Laboratory Manager

Sample Summary

Client Name: WSP USA - Herndon

Project Name: Kop-Flex

Work Order Number(s): 17121108

Project ID: 31400390/09

The following samples were received under chain of custody by Phase Separation Science (PSS) on 12/11/2017 at 11:30 am

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
17121108-001	Effluent VSP-4	WATER	12/11/17 08:15
17121108-002	Influent VSP-1	WATER	12/11/17 08:25
17121108-003	TB-121117	WATER	12/11/17 11:30

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

Notes:

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

Standard Flags/Abbreviations:

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

Certifications:

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

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 17121108

WSP USA - Herndon, Herndon, VA

December 18, 2017

Project Name: Kop-Flex
Project Location: Hanover, MD
Project ID: 31400390/09

Sample ID: Effluent VSP-4 **Date/Time Sampled: 12/11/2017 08:15** **PSS Sample ID: 17121108-001**
Matrix: WATER **Date/Time Received: 12/11/2017 11:30**

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

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
1,4-Dioxane (P-Dioxane)	ND	ug/L	1.0		1	12/15/17	12/15/17 17:52	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 17121108

WSP USA - Herndon, Herndon, VA

December 18, 2017

Project Name: Kop-Flex
Project Location: Hanover, MD
Project ID: 31400390/09

Sample ID: Influent VSP-1 **Date/Time Sampled: 12/11/2017 08:25** **PSS Sample ID: 17121108-002**
Matrix: WATER **Date/Time Received: 12/11/2017 11:30**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	12/12/17	12/12/17 16:35	1011
Benzene	ND	ug/L	1.0		1	12/12/17	12/12/17 16:35	1011
Bromochloromethane	ND	ug/L	1.0		1	12/12/17	12/12/17 16:35	1011
Bromodichloromethane	ND	ug/L	1.0		1	12/12/17	12/12/17 16:35	1011
Bromoform	ND	ug/L	5.0		1	12/12/17	12/12/17 16:35	1011
Bromomethane	ND	ug/L	1.0		1	12/12/17	12/12/17 16:35	1011
2-Butanone (MEK)	ND	ug/L	10		1	12/12/17	12/12/17 16:35	1011
Carbon Disulfide	ND	ug/L	10		1	12/12/17	12/12/17 16:35	1011
Carbon tetrachloride	ND	ug/L	1.0		1	12/12/17	12/12/17 16:35	1011
Chlorobenzene	ND	ug/L	1.0		1	12/12/17	12/12/17 16:35	1011
Chloroethane	**4.2**	ug/L	1.0		1	12/12/17	12/12/17 16:35	1011
Chloroform	ND	ug/L	1.0		1	12/12/17	12/12/17 16:35	1011
Chloromethane	ND	ug/L	1.0		1	12/12/17	12/12/17 16:35	1011
Cyclohexane	ND	ug/L	10		1	12/12/17	12/12/17 16:35	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	12/12/17	12/12/17 16:35	1011
Dibromochloromethane	ND	ug/L	1.0		1	12/12/17	12/12/17 16:35	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	12/12/17	12/12/17 16:35	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	12/12/17	12/12/17 16:35	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	12/12/17	12/12/17 16:35	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	12/12/17	12/12/17 16:35	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	12/12/17	12/12/17 16:35	1011
1,1-Dichloroethane	**48**	ug/L	1.0		1	12/12/17	12/12/17 16:35	1011
1,2-Dichloroethane	**1.8**	ug/L	1.0		1	12/12/17	12/12/17 16:35	1011
1,1-Dichloroethene	**250**	ug/L	10		10	12/12/17	12/12/17 16:58	1011
cis-1,2-Dichloroethene	**1.6**	ug/L	1.0		1	12/12/17	12/12/17 16:35	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	12/12/17	12/12/17 16:35	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	12/12/17	12/12/17 16:35	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	12/12/17	12/12/17 16:35	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	12/12/17	12/12/17 16:35	1011
Ethylbenzene	ND	ug/L	1.0		1	12/12/17	12/12/17 16:35	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 17121108

WSP USA - Herndon, Herndon, VA

December 18, 2017

Project Name: Kop-Flex
Project Location: Hanover, MD
Project ID: 31400390/09

Sample ID: Influent VSP-1 **Date/Time Sampled: 12/11/2017 08:25** **PSS Sample ID: 17121108-002**
Matrix: WATER **Date/Time Received: 12/11/2017 11:30**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	12/12/17	12/12/17 16:35	1011
Isopropylbenzene	ND	ug/L	1.0		1	12/12/17	12/12/17 16:35	1011
Methyl Acetate	ND	ug/L	10		1	12/12/17	12/12/17 16:35	1011
Methylcyclohexane	ND	ug/L	10		1	12/12/17	12/12/17 16:35	1011
Methylene chloride	ND	ug/L	1.0		1	12/12/17	12/12/17 16:35	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	12/12/17	12/12/17 16:35	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	12/12/17	12/12/17 16:35	1011
Naphthalene	ND	ug/L	1.0		1	12/12/17	12/12/17 16:35	1011
Styrene	ND	ug/L	1.0		1	12/12/17	12/12/17 16:35	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	12/12/17	12/12/17 16:35	1011
Tetrachloroethene	ND	ug/L	1.0		1	12/12/17	12/12/17 16:35	1011
Toluene	ND	ug/L	1.0		1	12/12/17	12/12/17 16:35	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	12/12/17	12/12/17 16:35	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	12/12/17	12/12/17 16:35	1011
1,1,1-Trichloroethane	**26**	ug/L	1.0		1	12/12/17	12/12/17 16:35	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	12/12/17	12/12/17 16:35	1011
Trichloroethene	**1.6**	ug/L	1.0		1	12/12/17	12/12/17 16:35	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	12/12/17	12/12/17 16:35	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	12/12/17	12/12/17 16:35	1011
Vinyl chloride	ND	ug/L	1.0		1	12/12/17	12/12/17 16:35	1011
m&p-Xylene	ND	ug/L	2.0		1	12/12/17	12/12/17 16:35	1011
o-Xylene	ND	ug/L	1.0		1	12/12/17	12/12/17 16:35	1011

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

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
1,4-Dioxane (P-Dioxane)	**150**	ug/L	10		10	12/15/17	12/15/17 18:13	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 17121108

WSP USA - Herndon, Herndon, VA

December 18, 2017

Project Name: Kop-Flex
Project Location: Hanover, MD
Project ID: 31400390/09

Sample ID: TB-121117 **Date/Time Sampled: 12/11/2017 11:30** **PSS Sample ID: 17121108-003**
Matrix: WATER **Date/Time Received: 12/11/2017 11:30**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	12/12/17	12/12/17 16:10	1011
Benzene	ND	ug/L	1.0		1	12/12/17	12/12/17 16:10	1011
Bromochloromethane	ND	ug/L	1.0		1	12/12/17	12/12/17 16:10	1011
Bromodichloromethane	ND	ug/L	1.0		1	12/12/17	12/12/17 16:10	1011
Bromoform	ND	ug/L	5.0		1	12/12/17	12/12/17 16:10	1011
Bromomethane	ND	ug/L	1.0		1	12/12/17	12/12/17 16:10	1011
2-Butanone (MEK)	ND	ug/L	10		1	12/12/17	12/12/17 16:10	1011
Carbon Disulfide	ND	ug/L	10		1	12/12/17	12/12/17 16:10	1011
Carbon tetrachloride	ND	ug/L	1.0		1	12/12/17	12/12/17 16:10	1011
Chlorobenzene	ND	ug/L	1.0		1	12/12/17	12/12/17 16:10	1011
Chloroethane	ND	ug/L	1.0		1	12/12/17	12/12/17 16:10	1011
Chloroform	ND	ug/L	1.0		1	12/12/17	12/12/17 16:10	1011
Chloromethane	ND	ug/L	1.0		1	12/12/17	12/12/17 16:10	1011
Cyclohexane	ND	ug/L	10		1	12/12/17	12/12/17 16:10	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	12/12/17	12/12/17 16:10	1011
Dibromochloromethane	ND	ug/L	1.0		1	12/12/17	12/12/17 16:10	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	12/12/17	12/12/17 16:10	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	12/12/17	12/12/17 16:10	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	12/12/17	12/12/17 16:10	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	12/12/17	12/12/17 16:10	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	12/12/17	12/12/17 16:10	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	12/12/17	12/12/17 16:10	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	12/12/17	12/12/17 16:10	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	12/12/17	12/12/17 16:10	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	12/12/17	12/12/17 16:10	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	12/12/17	12/12/17 16:10	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	12/12/17	12/12/17 16:10	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	12/12/17	12/12/17 16:10	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	12/12/17	12/12/17 16:10	1011
Ethylbenzene	ND	ug/L	1.0		1	12/12/17	12/12/17 16:10	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 17121108

WSP USA - Herndon, Herndon, VA

December 18, 2017

Project Name: Kop-Flex
Project Location: Hanover, MD
Project ID: 31400390/09

Sample ID: TB-121117 **Date/Time Sampled: 12/11/2017 11:30** **PSS Sample ID: 17121108-003**
Matrix: WATER **Date/Time Received: 12/11/2017 11:30**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	12/12/17	12/12/17 16:10	1011
Isopropylbenzene	ND	ug/L	1.0		1	12/12/17	12/12/17 16:10	1011
Methyl Acetate	ND	ug/L	10		1	12/12/17	12/12/17 16:10	1011
Methylcyclohexane	ND	ug/L	10		1	12/12/17	12/12/17 16:10	1011
Methylene chloride	ND	ug/L	1.0		1	12/12/17	12/12/17 16:10	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	12/12/17	12/12/17 16:10	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	12/12/17	12/12/17 16:10	1011
Naphthalene	ND	ug/L	1.0		1	12/12/17	12/12/17 16:10	1011
Styrene	ND	ug/L	1.0		1	12/12/17	12/12/17 16:10	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	12/12/17	12/12/17 16:10	1011
Tetrachloroethene	ND	ug/L	1.0		1	12/12/17	12/12/17 16:10	1011
Toluene	ND	ug/L	1.0		1	12/12/17	12/12/17 16:10	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	12/12/17	12/12/17 16:10	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	12/12/17	12/12/17 16:10	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	12/12/17	12/12/17 16:10	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	12/12/17	12/12/17 16:10	1011
Trichloroethene	ND	ug/L	1.0		1	12/12/17	12/12/17 16:10	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	12/12/17	12/12/17 16:10	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	12/12/17	12/12/17 16:10	1011
Vinyl chloride	ND	ug/L	1.0		1	12/12/17	12/12/17 16:10	1011
m&p-Xylene	ND	ug/L	2.0		1	12/12/17	12/12/17 16:10	1011
o-Xylene	ND	ug/L	1.0		1	12/12/17	12/12/17 16:10	1011

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

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
1,4-Dioxane (P-Dioxane)	ND	ug/L	1.0		1	12/15/17	12/15/17 17:30	1011

Case Narrative Summary

Client Name: WSP USA - Herndon

Project Name: Kop-Flex

Work Order Number(s): 17121108

Project ID: 31400390/09

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

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

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

Sample Receipt:

All sample receipt conditions were acceptable.

NELAP accreditation was held for all analyses performed unless noted below. See www.phaseonline.com for complete PSS scope of accreditation.

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

Analytical Data Package Information Summary

Work Order(s): 17121108
Report Prepared For: WSP USA - Herndon, Herndon, VA
Project Name: Kop-Flex
Project Manager: Eric Johnson

Method	Client Sample Id	Analysis Type	Lab Sample Id	Analyst	Mtx	Prep Batch	Analytical Batch	Sampled	Prepared	Analyzed
SW-846 8260 B	Influent VSP-1	Initial	17121108-002	1011	W	69131	148788	12/11/2017	12/12/2017 09:14	12/12/2017 16:35
	TB-121117	Initial	17121108-003	1011	W	69131	148788	12/11/2017	12/12/2017 09:14	12/12/2017 16:10
	69131-1-BKS	BKS	69131-1-BKS	1011	W	69131	148788	--------	12/12/2017 09:14	12/12/2017 10:25
	69131-1-BLK	BLK	69131-1-BLK	1011	W	69131	148788	--------	12/12/2017 09:14	12/12/2017 11:18
	Corrado Godwin Discharge 12/7 S	MS	17120803-001 S	1011	W	69131	148788	12/07/2017	12/12/2017 09:14	12/12/2017 14:59
	Corrado Godwin Discharge 12/7 SD	MSD	17120803-001 SD	1011	W	69131	148788	12/07/2017	12/12/2017 09:14	12/12/2017 15:21
	Influent VSP-1	Reanalysis	17121108-002	1011	W	69131	148788	12/11/2017	12/12/2017 09:14	12/12/2017 16:58
SW-846 8260 B-Modified	Effluent VSP-4	Initial	17121108-001	1011	W	69208	148940	12/11/2017	12/15/2017 14:26	12/15/2017 17:52
	TB-121117	Initial	17121108-003	1011	W	69208	148940	12/11/2017	12/15/2017 14:26	12/15/2017 17:30
	69208-1-BKS	BKS	69208-1-BKS	1011	W	69208	148940	--------	12/15/2017 14:26	12/15/2017 15:40
	69208-1-BLK	BLK	69208-1-BLK	1011	W	69208	148940	--------	12/15/2017 14:26	12/15/2017 17:08
	69208-1-BSD	BSD	69208-1-BSD	1011	W	69208	148940	--------	12/15/2017 14:26	12/15/2017 16:02
	Influent VSP-1	Reanalysis	17121108-002	1011	W	69208	148940	12/11/2017	12/15/2017 14:26	12/15/2017 18:13

PHASE SEPARATION SCIENCE, INC.

QC Summary 17121108

WSP USA - Herndon
Kop-Flex

Analytical Method: SW-846 8260 B-Modified Prep Method: SW5030B
Seq Number: 148940 Matrix: Water Date Prep: 12/15/2017
PSS Sample ID: 17121108-001

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
Toluene-D8	94		80-120	%	12/15/17 17:52

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 148788 Matrix: Water Date Prep: 12/12/2017
PSS Sample ID: 17121108-002

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	96		86-111	%	12/12/17 16:35
Dibromofluoromethane	101		91-119	%	12/12/17 16:35
Toluene-D8	104		90-117	%	12/12/17 16:35

Analytical Method: SW-846 8260 B-Modified Prep Method: SW5030B
Seq Number: 148940 Matrix: Water Date Prep: 12/15/2017
PSS Sample ID: 17121108-002

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
Toluene-D8	93		80-120	%	12/15/17 18:34

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 148788 Matrix: Water Date Prep: 12/12/2017
PSS Sample ID: 17121108-003

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	95		86-111	%	12/12/17 16:10
Dibromofluoromethane	100		91-119	%	12/12/17 16:10
Toluene-D8	99		90-117	%	12/12/17 16:10

Analytical Method: SW-846 8260 B-Modified Prep Method: SW5030B
Seq Number: 148940 Matrix: Water Date Prep: 12/15/2017
PSS Sample ID: 17121108-003

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
Toluene-D8	95		80-120	%	12/15/17 17:30

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

PHASE SEPARATION SCIENCE, INC.

QC Summary 17121108

WSP USA - Herndon
Kop-Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B

Seq Number: 148788 Matrix: Water Date Prep: 12/12/17

MB Sample Id: 69131-1-BLK LCS Sample Id: 69131-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Acetone	<10.00	50.00	42.47	85	29-149	ug/L	12/12/17 10:25	
Benzene	<1.000	50.00	50.53	101	85-123	ug/L	12/12/17 10:25	
Bromochloromethane	<1.000	50.00	55.72	111	82-136	ug/L	12/12/17 10:25	
Bromodichloromethane	<1.000	50.00	53.78	108	88-133	ug/L	12/12/17 10:25	
Bromoform	<5.000	50.00	49.75	100	80-126	ug/L	12/12/17 10:25	
Bromomethane	<1.000	50.00	54.80	110	64-139	ug/L	12/12/17 10:25	
2-Butanone (MEK)	<10.00	50.00	47.83	96	39-135	ug/L	12/12/17 10:25	
Carbon Disulfide	<10.00	50.00	49.64	99	85-124	ug/L	12/12/17 10:25	
Carbon tetrachloride	<1.000	50.00	49.28	99	81-138	ug/L	12/12/17 10:25	
Chlorobenzene	<1.000	50.00	52.55	105	85-120	ug/L	12/12/17 10:25	
Chloroethane	<1.000	50.00	51.52	103	75-129	ug/L	12/12/17 10:25	
Chloroform	<1.000	50.00	50.29	101	85-128	ug/L	12/12/17 10:25	
Chloromethane	<1.000	50.00	57.45	115	60-139	ug/L	12/12/17 10:25	
Cyclohexane	<10.00	50.00	51.77	104	55-131	ug/L	12/12/17 10:25	
1,2-Dibromo-3-chloropropane	<5.000	50.00	50.96	102	69-127	ug/L	12/12/17 10:25	
Dibromochloromethane	<1.000	50.00	53.25	107	82-127	ug/L	12/12/17 10:25	
1,2-Dibromoethane	<1.000	50.00	56.16	112	82-121	ug/L	12/12/17 10:25	
1,2-Dichlorobenzene	<1.000	50.00	52.13	104	82-123	ug/L	12/12/17 10:25	
1,3-Dichlorobenzene	<1.000	50.00	51.92	104	81-123	ug/L	12/12/17 10:25	
1,4-Dichlorobenzene	<1.000	50.00	50.57	101	81-121	ug/L	12/12/17 10:25	
Dichlorodifluoromethane	<1.000	50.00	62.86	126	69-147	ug/L	12/12/17 10:25	
1,1-Dichloroethane	<1.000	50.00	53.42	107	83-123	ug/L	12/12/17 10:25	
1,2-Dichloroethane	<1.000	50.00	49.84	100	86-138	ug/L	12/12/17 10:25	
1,1-Dichloroethene	<1.000	50.00	55.15	110	85-127	ug/L	12/12/17 10:25	
cis-1,2-Dichloroethene	<1.000	50.00	55.81	112	87-127	ug/L	12/12/17 10:25	
1,2-Dichloropropane	<1.000	50.00	51.90	104	79-125	ug/L	12/12/17 10:25	
cis-1,3-Dichloropropene	<1.000	50.00	53.01	106	79-131	ug/L	12/12/17 10:25	
trans-1,3-Dichloropropene	<1.000	50.00	54.69	109	82-133	ug/L	12/12/17 10:25	
trans-1,2-Dichloroethene	<1.000	50.00	54.96	110	85-125	ug/L	12/12/17 10:25	
Ethylbenzene	<1.000	50.00	53.34	107	83-123	ug/L	12/12/17 10:25	
2-Hexanone (MBK)	<5.000	50.00	45.41	91	37-137	ug/L	12/12/17 10:25	
Isopropylbenzene	<1.000	50.00	54.08	108	70-131	ug/L	12/12/17 10:25	
Methyl Acetate	<10.00	50.00	53.64	107	69-127	ug/L	12/12/17 10:25	
Methylcyclohexane	<10.00	50.00	53.74	107	75-129	ug/L	12/12/17 10:25	
Methylene chloride	<1.000	50.00	49.26	99	86-124	ug/L	12/12/17 10:25	
4-Methyl-2-Pentanone (MIBK)	<5.000	50.00	46.17	92	39-143	ug/L	12/12/17 10:25	
Methyl-t-Butyl Ether	<1.000	50.00	51.55	103	75-134	ug/L	12/12/17 10:25	
Naphthalene	<1.000	50.00	56.75	114	61-118	ug/L	12/12/17 10:25	
Styrene	<1.000	50.00	58.53	117	80-120	ug/L	12/12/17 10:25	
1,1,2,2-Tetrachloroethane	<1.000	50.00	49.11	98	64-125	ug/L	12/12/17 10:25	
Tetrachloroethene	<1.000	50.00	57.23	114	83-138	ug/L	12/12/17 10:25	
Toluene	<1.000	50.00	50.83	102	88-126	ug/L	12/12/17 10:25	
1,2,3-Trichlorobenzene	<1.000	50.00	57.65	115	75-124	ug/L	12/12/17 10:25	
1,2,4-Trichlorobenzene	<1.000	50.00	55.86	112	77-131	ug/L	12/12/17 10:25	
1,1,1-Trichloroethane	<1.000	50.00	51.44	103	68-146	ug/L	12/12/17 10:25	
1,1,2-Trichloroethane	<1.000	50.00	52.46	105	85-124	ug/L	12/12/17 10:25	
Trichloroethene	<1.000	50.00	52.42	105	87-127	ug/L	12/12/17 10:25	
Trichlorofluoromethane	<5.000	50.00	54.67	109	77-147	ug/L	12/12/17 10:25	
1,1,2-Trichlorotrifluoroethane	<1.000	50.00	57.27	115	68-135	ug/L	12/12/17 10:25	
Vinyl chloride	<1.000	50.00	61.58	123	74-138	ug/L	12/12/17 10:25	
m&p-Xylene	<2.000	100	109	109	84-124	ug/L	12/12/17 10:25	

PHASE SEPARATION SCIENCE, INC.

QC Summary 17121108

WSP USA - Herndon
Kop-Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 148788 Matrix: Water Date Prep: 12/12/17
MB Sample Id: 69131-1-BLK LCS Sample Id: 69131-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
o-Xylene	<1.000	50.00	56.49	113	79-126	ug/L	12/12/17 10:25	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	95		95		86-111	%	12/12/17 10:25
Dibromofluoromethane	94		98		91-119	%	12/12/17 10:25
Toluene-D8	97		95		90-117	%	12/12/17 10:25

Analytical Method: SW-846 8260 B-Modified Prep Method: SW5030B
Seq Number: 148940 Matrix: Water Date Prep: 12/15/17
MB Sample Id: 69208-1-BLK LCS Sample Id: 69208-1-BKS LCSD Sample Id: 69208-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
1,4-Dioxane (P-Dioxane)	<1.000	30.00	28.15	94	29.93	100	50-150	6	20	ug/L	12/15/17 15:40	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	LCSD Result	LCSD Flag	Limits	Units	Analysis Date
Toluene-D8	96		99		93		80-120	%	12/15/17 15:40

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

CHAIN-OF-CUSTODY RECORD 17121108

WSP | Parsons Brinckerhoff Office Address: 13530 Dulles Technology Drive Herndon VA Suite 300

Project Name: Kapflex

WSP | Parsons Brinckerhoff Contact Name: Eric Johnson

Project Location: Hanover MD

WSP | Parsons Brinckerhoff Contact E-mail: eric.y'ohnson@wspgroup.com

Project Number & Task: 31400390/09

WSP | Parsons Brinckerhoff Contact Phone: (703)709-6500

Sampler(s) Name(s): Maria Kaplan

Sampler(s) Signature(s):

No. 004574 WSP | PARSONS BRINCKERHOFF

Laboratory Name & Location: Phase Sep. Science

Laboratory Project Manager: Amber Carter

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	Requested Analyses & Preservatives: VOCs (8260)	1,4 Dioxane (8260 SIM)	Sample Comments
Effluent USP-4	Aq	12/11/17	0815			3		X	
Influent USP-1	Aq	12/11/17	0825			6	X	X	
TB-12/11/17	Aq	—	—			4	X	X	

# of Coolers: 1 Temp Blank 9°C

Custody Seal: Outer + Inner

Ice Present: PRES Temp: 8°-10°C

Shipping Carrier: Client

12/11/17

Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Shipment Method	Tracking Number(s)
	12/11/17	1130					
Relinquished By (Signature)	**Date**	**Time**	**Received By (Signature)**	**Date**	**Time**	**Number of Packages**	**Custody Seal Number(s)**

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

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

Phase Separation Science, Inc

Sample Receipt Checklist

Work Order #	17121108	**Received By**	Thomas Wingate
Client Name	WSP USA - Herndon	**Date Received**	12/11/2017 11:30:00 AM
Project Name	Kop-Flex	**Delivered By**	Client
Project Number	31400390/09	**Tracking No**	Not Applicable
Disposal Date	01/15/2018	**Logged In By**	Thomas Wingate

Shipping Container(s)

No. of Coolers 1

		Ice	Present
Custody Seal(s) Intact?	Yes	Temp (deg C)	10
Seal(s) Signed / Dated?	Yes	Temp Blank Present	Yes

Documentation

		Sampler Name	Maria Kaplan
COC agrees with sample labels?	Yes	MD DW Cert. No.	N/A
Chain of Custody	Yes		

Sample Container

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

Total No. of Samples Received 3 Total No. of Containers Received 13

Preservation

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

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

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

Samples Inspected/Checklist Completed By: Thomas Wingate Date: 12/11/2017

Thomas Wingate

PM Review and Approval: Amber L Confer Date: 12/11/2017

Amber Confer

ENCLOSURE B – CERTIFIED LABORATORY REPORTS FOR NOVEMBER 2017 GROUNDWATER SAMPLES FROM RECOVERY WELLS AND MONITORING WELLS

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

December 05, 2017

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

RE: Project: KOPFLEX- ONSITE
Pace Project No.: 92363686

Dear Eric Johnson:
Enclosed are the analytical results for sample(s) received by the laboratory on November 16, 2017. 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.

Some analyses have been subcontracted outside of the Pace Network. The subcontracted laboratory report has been attached.

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

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

CERTIFICATIONS

Project: KOPFLEX- ONSITE
Pace Project No.: 92363686

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

REPORT OF LABORATORY ANALYSIS

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

SAMPLE SUMMARY

Project: KOPFLEX- ONSITE
Pace Project No.: 92363686

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92363686001	**MW-38R**	Water	11/15/17 09:27	11/16/17 09:40
92363686002	**MW-05R**	Water	11/15/17 09:33	11/16/17 09:40
92363686003	**MW-40D**	Water	11/15/17 09:50	11/16/17 09:40
92363686004	**TB-111517**	Water	11/15/17 00:00	11/16/17 09:40
92363686005	**MW-22D**	Water	11/15/17 10:15	11/16/17 09:40
92363686006	**MW-04**	Water	11/15/17 10:25	11/16/17 09:40
92363686007	**MW-20**	Water	11/15/17 10:30	11/16/17 09:40
92363686008	**MW-09**	Water	11/15/17 10:45	11/16/17 09:40
92363686009	**MW-23D**	Water	11/15/17 10:55	11/16/17 09:40
92363686010	**MW-16D**	Water	11/15/17 11:05	11/16/17 09:40
92363686011	**MW-16**	Water	11/15/17 11:10	11/16/17 09:40
92363686012	**MW-600**	Water	11/15/17 11:30	11/16/17 09:40

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SAMPLE ANALYTE COUNT

Project: KOPFLEX- ONSITE
Pace Project No.: 92363686

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92363686001	**MW-38R**	EPA 8260B Mod.	DLK	3	PASI-C
92363686002	**MW-05R**	EPA 8260B Mod.	DLK	3	PASI-C
92363686003	**MW-40D**	EPA 8260B Mod.	DLK	3	PASI-C
92363686004	**TB-111517**	EPA 8260B Mod.	DLK	3	PASI-C
92363686005	**MW-22D**	EPA 8260B Mod.	DLK	3	PASI-C
92363686006	**MW-04**	EPA 8260B Mod.	DLK	3	PASI-C
92363686007	**MW-20**	EPA 8260B Mod.	DLK	3	PASI-C
92363686008	**MW-09**	EPA 8260B Mod.	DLK	3	PASI-C
92363686009	**MW-23D**	EPA 8260B Mod.	DLK	3	PASI-C
92363686010	**MW-16D**	EPA 8260B Mod.	DLK	3	PASI-C
92363686011	**MW-16**	EPA 8260B Mod.	DLK	3	PASI-C
92363686012	**MW-600**	EPA 8260B Mod.	DLK	3	PASI-C

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ANALYTICAL RESULTS

Project: KOPFLEX- ONSITE
Pace Project No.: 92363686

Sample: MW-38R **Lab ID: 92363686001** Collected: 11/15/17 09:27 Received: 11/16/17 09:40 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	**62.5**	ug/L	2.0	1		11/21/17 20:09	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	97	%	50-150	1		11/21/17 20:09	17060-07-0	
Toluene-d8 (S)	96	%	50-150	1		11/21/17 20:09	2037-26-5	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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(704)875-9092

ANALYTICAL RESULTS

Project: KOPFLEX- ONSITE
Pace Project No.: 92363686

Sample: MW-05R **Lab ID: 92363686002** Collected: 11/15/17 09:33 Received: 11/16/17 09:40 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	**11.1**	ug/L	2.0	1		11/21/17 20:28	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	106	%	50-150	1		11/21/17 20:28	17060-07-0	
Toluene-d8 (S)	102	%	50-150	1		11/21/17 20:28	2037-26-5	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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(704)875-9092

ANALYTICAL RESULTS

Project: KOPFLEX- ONSITE
Pace Project No.: 92363686

Sample: MW-40D **Lab ID: 92363686003** Collected: 11/15/17 09:50 Received: 11/16/17 09:40 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	**5.2**	ug/L	2.0	1		11/21/17 20:47	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	101	%	50-150	1		11/21/17 20:47	17060-07-0	
Toluene-d8 (S)	98	%	50-150	1		11/21/17 20:47	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- ONSITE
Pace Project No.: 92363686

Sample: TB-111517 **Lab ID: 92363686004** Collected: 11/15/17 00:00 Received: 11/16/17 09:40 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	ND	ug/L	2.0	1		11/21/17 19:32	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	108	%	50-150	1		11/21/17 19:32	17060-07-0	
Toluene-d8 (S)	112	%	50-150	1		11/21/17 19:32	2037-26-5	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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(704)875-9092

ANALYTICAL RESULTS

Project: KOPFLEX- ONSITE
Pace Project No.: 92363686

Sample: MW-22D **Lab ID: 92363686005** Collected: 11/15/17 10:15 Received: 11/16/17 09:40 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	**19.6**	ug/L	2.0	1		11/21/17 21:06	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	105	%	50-150	1		11/21/17 21:06	17060-07-0	
Toluene-d8 (S)	101	%	50-150	1		11/21/17 21:06	2037-26-5	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: KOPFLEX- ONSITE
Pace Project No.: 92363686

Sample: MW-04 **Lab ID: 92363686006** Collected: 11/15/17 10:25 Received: 11/16/17 09:40 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	**121**	ug/L	10.0	5		11/21/17 21:25	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	100	%	50-150	5		11/21/17 21:25	17060-07-0	
Toluene-d8 (S)	98	%	50-150	5		11/21/17 21:25	2037-26-5	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: KOPFLEX- ONSITE
Pace Project No.: 92363686

Sample: MW-20 **Lab ID: 92363686007** Collected: 11/15/17 10:30 Received: 11/16/17 09:40 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	**969**	ug/L	20.0	10		11/21/17 21:44	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	103	%	50-150	10		11/21/17 21:44	17060-07-0	
Toluene-d8 (S)	101	%	50-150	10		11/21/17 21:44	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- ONSITE
Pace Project No.: 92363686

Sample: MW-09 **Lab ID: 92363686008** Collected: 11/15/17 10:45 Received: 11/16/17 09:40 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	**32.4**	ug/L	2.0	1		11/21/17 22:02	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	97	%	50-150	1		11/21/17 22:02	17060-07-0	
Toluene-d8 (S)	98	%	50-150	1		11/21/17 22:02	2037-26-5	

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

ANALYTICAL RESULTS

Project: KOPFLEX- ONSITE
Pace Project No.: 92363686

Sample: MW-23D **Lab ID: 92363686009** Collected: 11/15/17 10:55 Received: 11/16/17 09:40 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	**158**	ug/L	5.0	2.5		11/21/17 22:21	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	113	%	50-150	2.5		11/21/17 22:21	17060-07-0	
Toluene-d8 (S)	96	%	50-150	2.5		11/21/17 22:21	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- ONSITE
Pace Project No.: 92363686

Sample: MW-16D **Lab ID: 92363686010** Collected: 11/15/17 11:05 Received: 11/16/17 09:40 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	**192**	ug/L	5.0	2.5		11/21/17 22:40	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	99	%	50-150	2.5		11/21/17 22:40	17060-07-0	
Toluene-d8 (S)	101	%	50-150	2.5		11/21/17 22:40	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- ONSITE
Pace Project No.: 92363686

Sample: MW-16 **Lab ID: 92363686011** Collected: 11/15/17 11:10 Received: 11/16/17 09:40 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	**836**	ug/L	40.0	20		11/21/17 22:59	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	101	%	50-150	20		11/21/17 22:59	17060-07-0	
Toluene-d8 (S)	104	%	50-150	20		11/21/17 22:59	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- ONSITE
Pace Project No.: 92363686

Sample: MW-600 **Lab ID: 92363686012** Collected: 11/15/17 11:30 Received: 11/16/17 09:40 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	**770**	ug/L	20.0	10		11/22/17 22:27	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	92	%	50-150	1		11/21/17 23:18	17060-07-0	
Toluene-d8 (S)	103	%	50-150	1		11/21/17 23:18	2037-26-5	

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

QUALITY CONTROL DATA

Project: KOPFLEX- ONSITE
Pace Project No.: 92363686

QC Batch: 387897 Analysis Method: EPA 8260B Mod.
QC Batch Method: EPA 8260B Mod. Analysis Description: 8260 MSV SIM
Associated Lab Samples: 92363686001, 92363686002, 92363686003, 92363686004, 92363686005, 92363686006, 92363686007, 92363686008, 92363686009, 92363686010, 92363686011, 92363686012

METHOD BLANK: 2152153 Matrix: Water
Associated Lab Samples: 92363686001, 92363686002, 92363686003, 92363686004, 92363686005, 92363686006, 92363686007, 92363686008, 92363686009, 92363686010, 92363686011, 92363686012

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	ND	2.0	11/21/17 19:12	
1,2-Dichloroethane-d4 (S)	%	107	50-150	11/21/17 19:12	
Toluene-d8 (S)	%	95	50-150	11/21/17 19:12	

LABORATORY CONTROL SAMPLE: 2152154

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	20	20.0	100	71-125	
1,2-Dichloroethane-d4 (S)	%			107	50-150	
Toluene-d8 (S)	%			94	50-150	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2152155 2152156

Parameter	Units	92363693004 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	9.7	20	20	32.3	37.7	113	140	50-150	15	30	
1,2-Dichloroethane-d4 (S)	%						97	97	50-150		150	
Toluene-d8 (S)	%						78	75	50-150		150	

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- ONSITE
Pace Project No.: 92363686

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.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

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

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

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

TNI - The NELAC Institute.

LABORATORIES

PASI-C Pace Analytical Services - Charlotte

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: KOPFLEX- ONSITE
Pace Project No.: 92363686

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92363686001	**MW-38R**	EPA 8260B Mod.	387897		
92363686002	**MW-05R**	EPA 8260B Mod.	387897		
92363686003	**MW-40D**	EPA 8260B Mod.	387897		
92363686004	**TB-111517**	EPA 8260B Mod.	387897		
92363686005	**MW-22D**	EPA 8260B Mod.	387897		
92363686006	**MW-04**	EPA 8260B Mod.	387897		
92363686007	**MW-20**	EPA 8260B Mod.	387897		
92363686008	**MW-09**	EPA 8260B Mod.	387897		
92363686009	**MW-23D**	EPA 8260B Mod.	387897		
92363686010	**MW-16D**	EPA 8260B Mod.	387897		
92363686011	**MW-16**	EPA 8260B Mod.	387897		
92363686012	**MW-600**	EPA 8260B Mod.	387897		

Pace Analytical	Document Name: Sample Condition Upon Receipt(SCUR)	Document Revised: August 4, 2017 Page 1 of 2
	Document No.: F-CAR-CS-033-Rev.04	Issuing Authority: Pace Quality Office

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

Sample Condition Upon Receipt

WO# : 92363686

92363686

Client Name: INSP Project

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

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

Date/Initials Person Examining Contents: 11/16/17

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

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

Thermometer: ☑ IR Gun ID: T1X1 ☑ Wet ☐ Blue ☐ None

Correction Factor: Cooler Temp Corrected (°C): 5.0 Type of Ice:

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	

CLIENT NOTIFICATION/RESOLUTION Field Data Required? ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Sample Discrepancy: _____

Lot ID of split containers: _____

Project Manager SCURF Review: _____ **Date:** 11/17

Project Manager SRF Review: _____ **Date:** 11/17

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)

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

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

Project # WO# : 92363686

PM: PTE Due Date: 11/27/17

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)	Cubitainer	VSGU-20 mL Scintillation vials (N/A)	GN
1																6													
2																6													
3																6													
4																4													
5																6													
6																6													
7																6													
8																6													
9																6													
10																6													
11																6													
12															#5	05													

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 #

CHAIN-OF-CUSTODY RECORD

Onsite II

Page 1 of ___

WSP USA Office Address: 13530 Dulles Technology Drive St 300

Project Name: Kapflex-Onsite

WSP USA Contact Name: Eric Johnson

Project Location: Hanover MD

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

Project Number & Task: 31400390

WSP USA Contact Phone: 703-709-6500

Sampler(s) Name(s): Maria Kapka

Sampler(s) Signature(s):

No. 008207

Laboratory Name & Location: Pace

Laboratory Project Manager:

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

9230 3688

Sample Identification	Matrix	Collection Start* Date	Collection Start* Time	Collection Stop* Date	Collection Stop* Time	Number of Containers	Requested Analyses & Preservatives: VOCs (6260)	1,4 Dioxane (8260SIM)	Sample Comments
MW-38R	Aq	11/15/17		0927		6	X	X	001
MW-05R	Aq	11/15/17		0933		6	X	X	002
MW-40D	Aq	11/15/17		0950		6	X	X	003
TB-111517	Aq	—		—		4	X	X	Trip blank 004
MW-22D	Aq	11/15/17		1015		6	X	X	005
MW-04	Aq	11/15/17		1025		6	X	X	006
MW-20	Aq	11/15/17		1030		6	X	X	007
MW-09	Aq	11/15/17		1045		6	X	X	008
MW-23D	Aq	11/15/17		1055		6	X	X	009
MW-16D	Aq	11/15/17		1105		6	X	X	010
MW-16	Aq	11/15/17		1110		6	X	X	011
MW-600	Aq	11/15/17		1130		5	X	X	012

Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Shipment Method	Tracking Number(s)
	11/15/17	1400	Fedex				
Relinquished By (Signature)	**Date**	**Time**	**Received By (Signature)**	**Date**	**Time**	**Number of Packages**	**Custody Seal Number(s)**
					940		

*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)

ANALYTICAL REPORT

November 27, 2017

Pace Analytical - Huntersville, NC

Sample Delivery Group:	L952651
Samples Received:	11/21/2017
Project Number:	92363686
Description:	KOPLEX- ONSITE

Report To: Taylor Ezell
9800 Kincey Avenue, Suite 100
Huntersville, NC 28078

Entire Report Reviewed By:

Nancy McLain
Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.esclabsciences.com

MW-38R L952651-01 GW

Collected by	Collected date/time	Received date/time
	11/15/17 09:27	11/21/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1045507	1	11/22/17 02:55	11/22/17 02:55	ACG

MW-05R L952651-02 GW

Collected by	Collected date/time	Received date/time
	11/15/17 09:33	11/21/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1045507	1	11/22/17 03:15	11/22/17 03:15	ACG

MW-40D L952651-03 GW

Collected by	Collected date/time	Received date/time
	11/15/17 09:50	11/21/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1045507	1	11/22/17 03:36	11/22/17 03:36	ACG

TB-111517 L952651-04 GW

Collected by	Collected date/time	Received date/time
	11/15/17 00:00	11/21/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1045507	1	11/22/17 03:56	11/22/17 03:56	ACG

MW-22D L952651-05 GW

Collected by	Collected date/time	Received date/time
	11/15/17 10:15	11/21/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1045507	1	11/22/17 04:16	11/22/17 04:16	ACG

MW-04 L952651-06 GW

Collected by	Collected date/time	Received date/time
	11/15/17 10:25	11/21/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1045507	1	11/22/17 04:37	11/22/17 04:37	ACG

MW-20 L952651-07 GW

Collected by	Collected date/time	Received date/time
	11/15/17 10:30	11/21/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1045507	1	11/22/17 04:57	11/22/17 04:57	ACG
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1045507	10	11/22/17 14:24	11/22/17 14:24	JHH

MW-09 L952651-08 GW

Collected by	Collected date/time	Received date/time
	11/15/17 10:45	11/21/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1045507	1	11/22/17 05:17	11/22/17 05:17	ACG

MW-23D L952651-09 GW

			Collected by	Collected date/time	Received date/time
				11/15/17 10:55	11/21/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1045507	1	11/22/17 05:37	11/22/17 05:37	ACG

MW-16D L952651-10 GW

			Collected by	Collected date/time	Received date/time
				11/15/17 11:05	11/21/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1045507	1	11/22/17 05:58	11/22/17 05:58	ACG

MW-16 L952651-11 GW

			Collected by	Collected date/time	Received date/time
				11/15/17 11:10	11/21/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1045507	1	11/22/17 06:18	11/22/17 06:18	ACG
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1045507	200	11/22/17 14:44	11/22/17 14:44	JHH

MW-600 L952651-12 GW

			Collected by	Collected date/time	Received date/time
				11/15/17 11:30	11/21/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1045507	1	11/22/17 06:39	11/22/17 06:39	ACG
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1045507	200	11/22/17 15:03	11/22/17 15:03	JHH

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Nancy F. McLain

Nancy McLain
Technical Service Representative

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	U	J4	10.0	50.0	1	11/22/2017 02:55	WG1045507
Benzene	U		0.331	1.00	1	11/22/2017 02:55	WG1045507
Bromobenzene	U		0.352	1.00	1	11/22/2017 02:55	WG1045507
Bromochloromethane	U		0.520	5.00	1	11/22/2017 02:55	WG1045507
Bromodichloromethane	U		0.380	1.00	1	11/22/2017 02:55	WG1045507
Bromoform	U		0.469	1.00	1	11/22/2017 02:55	WG1045507
Bromomethane	U		0.866	5.00	1	11/22/2017 02:55	WG1045507
Carbon tetrachloride	U		0.379	1.00	1	11/22/2017 02:55	WG1045507
Chlorobenzene	U		0.348	1.00	1	11/22/2017 02:55	WG1045507
Chlorodibromomethane	U		0.327	1.00	1	11/22/2017 02:55	WG1045507
Chloroethane	U		0.453	5.00	1	11/22/2017 02:55	WG1045507
Chloroform	U		0.324	5.00	1	11/22/2017 02:55	WG1045507
Chloromethane	U		0.276	2.50	1	11/22/2017 02:55	WG1045507
2-Chlorotoluene	U		0.375	1.00	1	11/22/2017 02:55	WG1045507
4-Chlorotoluene	U		0.351	1.00	1	11/22/2017 02:55	WG1045507
1,2-Dibromo-3-Chloropropane	U		1.33	5.00	1	11/22/2017 02:55	WG1045507
1,2-Dibromoethane	U		0.381	1.00	1	11/22/2017 02:55	WG1045507
Dibromomethane	U		0.346	1.00	1	11/22/2017 02:55	WG1045507
1,2-Dichlorobenzene	U		0.349	1.00	1	11/22/2017 02:55	WG1045507
1,3-Dichlorobenzene	U		0.220	1.00	1	11/22/2017 02:55	WG1045507
1,4-Dichlorobenzene	U		0.274	1.00	1	11/22/2017 02:55	WG1045507
Dichlorodifluoromethane	U		0.551	5.00	1	11/22/2017 02:55	WG1045507
1,1-Dichloroethane	8.33		0.259	1.00	1	11/22/2017 02:55	WG1045507
1,2-Dichloroethane	U		0.361	1.00	1	11/22/2017 02:55	WG1045507
1,1-Dichloroethene	U		0.398	1.00	1	11/22/2017 02:55	WG1045507
cis-1,2-Dichloroethene	U		0.260	1.00	1	11/22/2017 02:55	WG1045507
trans-1,2-Dichloroethene	U		0.396	1.00	1	11/22/2017 02:55	WG1045507
1,2-Dichloropropane	U		0.306	1.00	1	11/22/2017 02:55	WG1045507
1,1-Dichloropropene	U		0.352	1.00	1	11/22/2017 02:55	WG1045507
1,3-Dichloropropane	U		0.366	1.00	1	11/22/2017 02:55	WG1045507
cis-1,3-Dichloropropene	U		0.418	1.00	1	11/22/2017 02:55	WG1045507
trans-1,3-Dichloropropene	U		0.419	1.00	1	11/22/2017 02:55	WG1045507
2,2-Dichloropropane	U		0.321	1.00	1	11/22/2017 02:55	WG1045507
Di-isopropyl ether	U		0.320	1.00	1	11/22/2017 02:55	WG1045507
Ethylbenzene	U		0.384	1.00	1	11/22/2017 02:55	WG1045507
Hexachloro-1,3-butadiene	U		0.256	1.00	1	11/22/2017 02:55	WG1045507
2-Hexanone	U		3.82	10.0	1	11/22/2017 02:55	WG1045507
p-Isopropyltoluene	U		0.350	1.00	1	11/22/2017 02:55	WG1045507
2-Butanone (MEK)	U		3.93	10.0	1	11/22/2017 02:55	WG1045507
Methylene Chloride	8.06		1.00	5.00	1	11/22/2017 02:55	WG1045507
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0	1	11/22/2017 02:55	WG1045507
Methyl tert-butyl ether	0.521	J	0.367	1.00	1	11/22/2017 02:55	WG1045507
Naphthalene	U		1.00	5.00	1	11/22/2017 02:55	WG1045507
Styrene	U		0.307	1.00	1	11/22/2017 02:55	WG1045507
1,1,1,2-Tetrachloroethane	U		0.385	1.00	1	11/22/2017 02:55	WG1045507
1,1,2,2-Tetrachloroethane	U		0.130	1.00	1	11/22/2017 02:55	WG1045507
Tetrachloroethene	U		0.372	1.00	1	11/22/2017 02:55	WG1045507
Toluene	U		0.412	1.00	1	11/22/2017 02:55	WG1045507
1,2,3-Trichlorobenzene	U		0.230	1.00	1	11/22/2017 02:55	WG1045507
1,2,4-Trichlorobenzene	U		0.355	1.00	1	11/22/2017 02:55	WG1045507
1,1,1-Trichloroethane	U		0.319	1.00	1	11/22/2017 02:55	WG1045507
1,1,2-Trichloroethane	U		0.383	1.00	1	11/22/2017 02:55	WG1045507
Trichloroethene	U		0.398	1.00	1	11/22/2017 02:55	WG1045507
Trichlorofluoromethane	U		1.20	5.00	1	11/22/2017 02:55	WG1045507
1,2,3-Trichloropropane	U		0.807	2.50	1	11/22/2017 02:55	WG1045507
Vinyl chloride	U		0.259	1.00	1	11/22/2017 02:55	WG1045507

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Vinyl acetate	U		1.63	10.0	1	11/22/2017 02:55	WG1045507
o-Xylene	U		0.341	1.00	1	11/22/2017 02:55	WG1045507
m&p-Xylene	U		0.719	2.00	1	11/22/2017 02:55	WG1045507
Xylenes, Total	U		1.06	3.00	1	11/22/2017 02:55	WG1045507
(S) Toluene-d8	*105*			*80.0-120*		*11/22/2017 02:55*	WG1045507
(S) Dibromofluoromethane	*94.5*			*76.0-123*		*11/22/2017 02:55*	WG1045507
(S) 4-Bromofluorobenzene	*107*			*80.0-120*		*11/22/2017 02:55*	WG1045507

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	U	J4	10.0	50.0	1	11/22/2017 03:15	WG1045507
Benzene	U		0.331	1.00	1	11/22/2017 03:15	WG1045507
Bromobenzene	U		0.352	1.00	1	11/22/2017 03:15	WG1045507
Bromochloromethane	U		0.520	5.00	1	11/22/2017 03:15	WG1045507
Bromodichloromethane	U		0.380	1.00	1	11/22/2017 03:15	WG1045507
Bromoform	U		0.469	1.00	1	11/22/2017 03:15	WG1045507
Bromomethane	U		0.866	5.00	1	11/22/2017 03:15	WG1045507
Carbon tetrachloride	U		0.379	1.00	1	11/22/2017 03:15	WG1045507
Chlorobenzene	U		0.348	1.00	1	11/22/2017 03:15	WG1045507
Chlorodibromomethane	U		0.327	1.00	1	11/22/2017 03:15	WG1045507
Chloroethane	U		0.453	5.00	1	11/22/2017 03:15	WG1045507
Chloroform	U		0.324	5.00	1	11/22/2017 03:15	WG1045507
Chloromethane	U		0.276	2.50	1	11/22/2017 03:15	WG1045507
2-Chlorotoluene	U		0.375	1.00	1	11/22/2017 03:15	WG1045507
4-Chlorotoluene	U		0.351	1.00	1	11/22/2017 03:15	WG1045507
1,2-Dibromo-3-Chloropropane	U		1.33	5.00	1	11/22/2017 03:15	WG1045507
1,2-Dibromoethane	U		0.381	1.00	1	11/22/2017 03:15	WG1045507
Dibromomethane	U		0.346	1.00	1	11/22/2017 03:15	WG1045507
1,2-Dichlorobenzene	U		0.349	1.00	1	11/22/2017 03:15	WG1045507
1,3-Dichlorobenzene	U		0.220	1.00	1	11/22/2017 03:15	WG1045507
1,4-Dichlorobenzene	U		0.274	1.00	1	11/22/2017 03:15	WG1045507
Dichlorodifluoromethane	U		0.551	5.00	1	11/22/2017 03:15	WG1045507
1,1-Dichloroethane	1.56		0.259	1.00	1	11/22/2017 03:15	WG1045507
1,2-Dichloroethane	U		0.361	1.00	1	11/22/2017 03:15	WG1045507
1,1-Dichloroethene	2.46		0.398	1.00	1	11/22/2017 03:15	WG1045507
cis-1,2-Dichloroethene	U		0.260	1.00	1	11/22/2017 03:15	WG1045507
trans-1,2-Dichloroethene	U		0.396	1.00	1	11/22/2017 03:15	WG1045507
1,2-Dichloropropane	U		0.306	1.00	1	11/22/2017 03:15	WG1045507
1,1-Dichloropropene	U		0.352	1.00	1	11/22/2017 03:15	WG1045507
1,3-Dichloropropane	U		0.366	1.00	1	11/22/2017 03:15	WG1045507
cis-1,3-Dichloropropene	U		0.418	1.00	1	11/22/2017 03:15	WG1045507
trans-1,3-Dichloropropene	U		0.419	1.00	1	11/22/2017 03:15	WG1045507
2,2-Dichloropropane	U		0.321	1.00	1	11/22/2017 03:15	WG1045507
Di-isopropyl ether	U		0.320	1.00	1	11/22/2017 03:15	WG1045507
Ethylbenzene	U		0.384	1.00	1	11/22/2017 03:15	WG1045507
Hexachloro-1,3-butadiene	U		0.256	1.00	1	11/22/2017 03:15	WG1045507
2-Hexanone	U		3.82	10.0	1	11/22/2017 03:15	WG1045507
p-Isopropyltoluene	U		0.350	1.00	1	11/22/2017 03:15	WG1045507
2-Butanone (MEK)	U		3.93	10.0	1	11/22/2017 03:15	WG1045507
Methylene Chloride	10.2		1.00	5.00	1	11/22/2017 03:15	WG1045507
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0	1	11/22/2017 03:15	WG1045507
Methyl tert-butyl ether	0.612	J	0.367	1.00	1	11/22/2017 03:15	WG1045507
Naphthalene	U		1.00	5.00	1	11/22/2017 03:15	WG1045507
Styrene	U		0.307	1.00	1	11/22/2017 03:15	WG1045507
1,1,1,2-Tetrachloroethane	U		0.385	1.00	1	11/22/2017 03:15	WG1045507
1,1,2,2-Tetrachloroethane	U		0.130	1.00	1	11/22/2017 03:15	WG1045507
Tetrachloroethene	U		0.372	1.00	1	11/22/2017 03:15	WG1045507
Toluene	U		0.412	1.00	1	11/22/2017 03:15	WG1045507
1,2,3-Trichlorobenzene	U		0.230	1.00	1	11/22/2017 03:15	WG1045507
1,2,4-Trichlorobenzene	U		0.355	1.00	1	11/22/2017 03:15	WG1045507
1,1,1-Trichloroethane	1.73		0.319	1.00	1	11/22/2017 03:15	WG1045507
1,1,2-Trichloroethane	U		0.383	1.00	1	11/22/2017 03:15	WG1045507
Trichloroethene	U		0.398	1.00	1	11/22/2017 03:15	WG1045507
Trichlorofluoromethane	U		1.20	5.00	1	11/22/2017 03:15	WG1045507
1,2,3-Trichloropropane	U		0.807	2.50	1	11/22/2017 03:15	WG1045507
Vinyl chloride	U		0.259	1.00	1	11/22/2017 03:15	WG1045507

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Vinyl acetate	U		1.63	10.0	1	11/22/2017 03:15	WG1045507
o-Xylene	U		0.341	1.00	1	11/22/2017 03:15	WG1045507
m&p-Xylene	U		0.719	2.00	1	11/22/2017 03:15	WG1045507
Xylenes, Total	U		1.06	3.00	1	11/22/2017 03:15	WG1045507
(S) Toluene-d8	*105*			*80.0-120*		*11/22/2017 03:15*	WG1045507
(S) Dibromofluoromethane	*93.6*			*76.0-123*		*11/22/2017 03:15*	WG1045507
(S) 4-Bromofluorobenzene	*107*			*80.0-120*		*11/22/2017 03:15*	WG1045507

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	U	J4	10.0	50.0	1	11/22/2017 03:36	WG1045507
Benzene	U		0.331	1.00	1	11/22/2017 03:36	WG1045507
Bromobenzene	U		0.352	1.00	1	11/22/2017 03:36	WG1045507
Bromochloromethane	U		0.520	5.00	1	11/22/2017 03:36	WG1045507
Bromodichloromethane	U		0.380	1.00	1	11/22/2017 03:36	WG1045507
Bromoform	U		0.469	1.00	1	11/22/2017 03:36	WG1045507
Bromomethane	U		0.866	5.00	1	11/22/2017 03:36	WG1045507
Carbon tetrachloride	U		0.379	1.00	1	11/22/2017 03:36	WG1045507
Chlorobenzene	U		0.348	1.00	1	11/22/2017 03:36	WG1045507
Chlorodibromomethane	U		0.327	1.00	1	11/22/2017 03:36	WG1045507
Chloroethane	U		0.453	5.00	1	11/22/2017 03:36	WG1045507
Chloroform	U		0.324	5.00	1	11/22/2017 03:36	WG1045507
Chloromethane	U		0.276	2.50	1	11/22/2017 03:36	WG1045507
2-Chlorotoluene	U		0.375	1.00	1	11/22/2017 03:36	WG1045507
4-Chlorotoluene	U		0.351	1.00	1	11/22/2017 03:36	WG1045507
1,2-Dibromo-3-Chloropropane	U		1.33	5.00	1	11/22/2017 03:36	WG1045507
1,2-Dibromoethane	U		0.381	1.00	1	11/22/2017 03:36	WG1045507
Dibromomethane	U		0.346	1.00	1	11/22/2017 03:36	WG1045507
1,2-Dichlorobenzene	U		0.349	1.00	1	11/22/2017 03:36	WG1045507
1,3-Dichlorobenzene	U		0.220	1.00	1	11/22/2017 03:36	WG1045507
1,4-Dichlorobenzene	U		0.274	1.00	1	11/22/2017 03:36	WG1045507
Dichlorodifluoromethane	U		0.551	5.00	1	11/22/2017 03:36	WG1045507
1,1-Dichloroethane	0.934	J	0.259	1.00	1	11/22/2017 03:36	WG1045507
1,2-Dichloroethane	U		0.361	1.00	1	11/22/2017 03:36	WG1045507
1,1-Dichloroethene	5.24		0.398	1.00	1	11/22/2017 03:36	WG1045507
cis-1,2-Dichloroethene	U		0.260	1.00	1	11/22/2017 03:36	WG1045507
trans-1,2-Dichloroethene	U		0.396	1.00	1	11/22/2017 03:36	WG1045507
1,2-Dichloropropane	U		0.306	1.00	1	11/22/2017 03:36	WG1045507
1,1-Dichloropropene	U		0.352	1.00	1	11/22/2017 03:36	WG1045507
1,3-Dichloropropane	U		0.366	1.00	1	11/22/2017 03:36	WG1045507
cis-1,3-Dichloropropene	U		0.418	1.00	1	11/22/2017 03:36	WG1045507
trans-1,3-Dichloropropene	U		0.419	1.00	1	11/22/2017 03:36	WG1045507
2,2-Dichloropropane	U		0.321	1.00	1	11/22/2017 03:36	WG1045507
Di-isopropyl ether	U		0.320	1.00	1	11/22/2017 03:36	WG1045507
Ethylbenzene	U		0.384	1.00	1	11/22/2017 03:36	WG1045507
Hexachloro-1,3-butadiene	U		0.256	1.00	1	11/22/2017 03:36	WG1045507
2-Hexanone	U		3.82	10.0	1	11/22/2017 03:36	WG1045507
p-Isopropyltoluene	U		0.350	1.00	1	11/22/2017 03:36	WG1045507
2-Butanone (MEK)	U		3.93	10.0	1	11/22/2017 03:36	WG1045507
Methylene Chloride	9.70		1.00	5.00	1	11/22/2017 03:36	WG1045507
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0	1	11/22/2017 03:36	WG1045507
Methyl tert-butyl ether	0.692	J	0.367	1.00	1	11/22/2017 03:36	WG1045507
Naphthalene	U		1.00	5.00	1	11/22/2017 03:36	WG1045507
Styrene	U		0.307	1.00	1	11/22/2017 03:36	WG1045507
1,1,1,2-Tetrachloroethane	U		0.385	1.00	1	11/22/2017 03:36	WG1045507
1,1,2,2-Tetrachloroethane	U		0.130	1.00	1	11/22/2017 03:36	WG1045507
Tetrachloroethene	U		0.372	1.00	1	11/22/2017 03:36	WG1045507
Toluene	U		0.412	1.00	1	11/22/2017 03:36	WG1045507
1,2,3-Trichlorobenzene	U		0.230	1.00	1	11/22/2017 03:36	WG1045507
1,2,4-Trichlorobenzene	U		0.355	1.00	1	11/22/2017 03:36	WG1045507
1,1,1-Trichloroethane	U		0.319	1.00	1	11/22/2017 03:36	WG1045507
1,1,2-Trichloroethane	U		0.383	1.00	1	11/22/2017 03:36	WG1045507
Trichloroethene	U		0.398	1.00	1	11/22/2017 03:36	WG1045507
Trichlorofluoromethane	U		1.20	5.00	1	11/22/2017 03:36	WG1045507
1,2,3-Trichloropropane	U		0.807	2.50	1	11/22/2017 03:36	WG1045507
Vinyl chloride	U		0.259	1.00	1	11/22/2017 03:36	WG1045507

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Vinyl acetate	U		1.63	10.0	1	11/22/2017 03:36	WG1045507
o-Xylene	U		0.341	1.00	1	11/22/2017 03:36	WG1045507
m&p-Xylene	U		0.719	2.00	1	11/22/2017 03:36	WG1045507
Xylenes, Total	U		1.06	3.00	1	11/22/2017 03:36	WG1045507
(S) Toluene-d8	*105*			*80.0-120*		*11/22/2017 03:36*	WG1045507
(S) Dibromofluoromethane	*92.8*			*76.0-123*		*11/22/2017 03:36*	WG1045507
(S) 4-Bromofluorobenzene	*106*			*80.0-120*		*11/22/2017 03:36*	WG1045507

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	U	J4	10.0	50.0	1	11/22/2017 03:56	WG1045507
Benzene	U		0.331	1.00	1	11/22/2017 03:56	WG1045507
Bromobenzene	U		0.352	1.00	1	11/22/2017 03:56	WG1045507
Bromochloromethane	U		0.520	5.00	1	11/22/2017 03:56	WG1045507
Bromodichloromethane	U		0.380	1.00	1	11/22/2017 03:56	WG1045507
Bromoform	U		0.469	1.00	1	11/22/2017 03:56	WG1045507
Bromomethane	U		0.866	5.00	1	11/22/2017 03:56	WG1045507
Carbon tetrachloride	U		0.379	1.00	1	11/22/2017 03:56	WG1045507
Chlorobenzene	U		0.348	1.00	1	11/22/2017 03:56	WG1045507
Chlorodibromomethane	U		0.327	1.00	1	11/22/2017 03:56	WG1045507
Chloroethane	U		0.453	5.00	1	11/22/2017 03:56	WG1045507
Chloroform	U		0.324	5.00	1	11/22/2017 03:56	WG1045507
Chloromethane	U		0.276	2.50	1	11/22/2017 03:56	WG1045507
2-Chlorotoluene	U		0.375	1.00	1	11/22/2017 03:56	WG1045507
4-Chlorotoluene	U		0.351	1.00	1	11/22/2017 03:56	WG1045507
1,2-Dibromo-3-Chloropropane	U		1.33	5.00	1	11/22/2017 03:56	WG1045507
1,2-Dibromoethane	U		0.381	1.00	1	11/22/2017 03:56	WG1045507
Dibromomethane	U		0.346	1.00	1	11/22/2017 03:56	WG1045507
1,2-Dichlorobenzene	U		0.349	1.00	1	11/22/2017 03:56	WG1045507
1,3-Dichlorobenzene	U		0.220	1.00	1	11/22/2017 03:56	WG1045507
1,4-Dichlorobenzene	U		0.274	1.00	1	11/22/2017 03:56	WG1045507
Dichlorodifluoromethane	U		0.551	5.00	1	11/22/2017 03:56	WG1045507
1,1-Dichloroethane	U		0.259	1.00	1	11/22/2017 03:56	WG1045507
1,2-Dichloroethane	U		0.361	1.00	1	11/22/2017 03:56	WG1045507
1,1-Dichloroethene	U		0.398	1.00	1	11/22/2017 03:56	WG1045507
cis-1,2-Dichloroethene	U		0.260	1.00	1	11/22/2017 03:56	WG1045507
trans-1,2-Dichloroethene	U		0.396	1.00	1	11/22/2017 03:56	WG1045507
1,2-Dichloropropane	U		0.306	1.00	1	11/22/2017 03:56	WG1045507
1,1-Dichloropropene	U		0.352	1.00	1	11/22/2017 03:56	WG1045507
1,3-Dichloropropane	U		0.366	1.00	1	11/22/2017 03:56	WG1045507
cis-1,3-Dichloropropene	U		0.418	1.00	1	11/22/2017 03:56	WG1045507
trans-1,3-Dichloropropene	U		0.419	1.00	1	11/22/2017 03:56	WG1045507
2,2-Dichloropropane	U		0.321	1.00	1	11/22/2017 03:56	WG1045507
Di-isopropyl ether	U		0.320	1.00	1	11/22/2017 03:56	WG1045507
Ethylbenzene	U		0.384	1.00	1	11/22/2017 03:56	WG1045507
Hexachloro-1,3-butadiene	U		0.256	1.00	1	11/22/2017 03:56	WG1045507
2-Hexanone	U		3.82	10.0	1	11/22/2017 03:56	WG1045507
p-Isopropyltoluene	U		0.350	1.00	1	11/22/2017 03:56	WG1045507
2-Butanone (MEK)	U		3.93	10.0	1	11/22/2017 03:56	WG1045507
Methylene Chloride	2.49	J	1.00	5.00	1	11/22/2017 03:56	WG1045507
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0	1	11/22/2017 03:56	WG1045507
Methyl tert-butyl ether	U		0.367	1.00	1	11/22/2017 03:56	WG1045507
Naphthalene	U		1.00	5.00	1	11/22/2017 03:56	WG1045507
Styrene	U		0.307	1.00	1	11/22/2017 03:56	WG1045507
1,1,1,2-Tetrachloroethane	U		0.385	1.00	1	11/22/2017 03:56	WG1045507
1,1,2,2-Tetrachloroethane	U		0.130	1.00	1	11/22/2017 03:56	WG1045507
Tetrachloroethene	U		0.372	1.00	1	11/22/2017 03:56	WG1045507
Toluene	U		0.412	1.00	1	11/22/2017 03:56	WG1045507
1,2,3-Trichlorobenzene	U		0.230	1.00	1	11/22/2017 03:56	WG1045507
1,2,4-Trichlorobenzene	U		0.355	1.00	1	11/22/2017 03:56	WG1045507
1,1,1-Trichloroethane	U		0.319	1.00	1	11/22/2017 03:56	WG1045507
1,1,2-Trichloroethane	U		0.383	1.00	1	11/22/2017 03:56	WG1045507
Trichloroethene	U		0.398	1.00	1	11/22/2017 03:56	WG1045507
Trichlorofluoromethane	U		1.20	5.00	1	11/22/2017 03:56	WG1045507
1,2,3-Trichloropropane	U		0.807	2.50	1	11/22/2017 03:56	WG1045507
Vinyl chloride	U		0.259	1.00	1	11/22/2017 03:56	WG1045507

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Vinyl acetate	U		1.63	10.0	1	11/22/2017 03:56	WG1045507
o-Xylene	U		0.341	1.00	1	11/22/2017 03:56	WG1045507
m&p-Xylene	U		0.719	2.00	1	11/22/2017 03:56	WG1045507
Xylenes, Total	U		1.06	3.00	1	11/22/2017 03:56	WG1045507
(S) Toluene-d8	*107*			*80.0-120*		*11/22/2017 03:56*	WG1045507
(S) Dibromofluoromethane	*95.2*			*76.0-123*		*11/22/2017 03:56*	WG1045507
(S) 4-Bromofluorobenzene	*106*			*80.0-120*		*11/22/2017 03:56*	WG1045507

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	U	J4	10.0	50.0	1	11/22/2017 04:16	WG1045507
Benzene	U		0.331	1.00	1	11/22/2017 04:16	WG1045507
Bromobenzene	U		0.352	1.00	1	11/22/2017 04:16	WG1045507
Bromochloromethane	U		0.520	5.00	1	11/22/2017 04:16	WG1045507
Bromodichloromethane	U		0.380	1.00	1	11/22/2017 04:16	WG1045507
Bromoform	U		0.469	1.00	1	11/22/2017 04:16	WG1045507
Bromomethane	U		0.866	5.00	1	11/22/2017 04:16	WG1045507
Carbon tetrachloride	U		0.379	1.00	1	11/22/2017 04:16	WG1045507
Chlorobenzene	U		0.348	1.00	1	11/22/2017 04:16	WG1045507
Chlorodibromomethane	U		0.327	1.00	1	11/22/2017 04:16	WG1045507
Chloroethane	U		0.453	5.00	1	11/22/2017 04:16	WG1045507
Chloroform	U		0.324	5.00	1	11/22/2017 04:16	WG1045507
Chloromethane	U		0.276	2.50	1	11/22/2017 04:16	WG1045507
2-Chlorotoluene	U		0.375	1.00	1	11/22/2017 04:16	WG1045507
4-Chlorotoluene	U		0.351	1.00	1	11/22/2017 04:16	WG1045507
1,2-Dibromo-3-Chloropropane	U		1.33	5.00	1	11/22/2017 04:16	WG1045507
1,2-Dibromoethane	U		0.381	1.00	1	11/22/2017 04:16	WG1045507
Dibromomethane	U		0.346	1.00	1	11/22/2017 04:16	WG1045507
1,2-Dichlorobenzene	U		0.349	1.00	1	11/22/2017 04:16	WG1045507
1,3-Dichlorobenzene	U		0.220	1.00	1	11/22/2017 04:16	WG1045507
1,4-Dichlorobenzene	U		0.274	1.00	1	11/22/2017 04:16	WG1045507
Dichlorodifluoromethane	U		0.551	5.00	1	11/22/2017 04:16	WG1045507
1,1-Dichloroethane	1.72		0.259	1.00	1	11/22/2017 04:16	WG1045507
1,2-Dichloroethane	U		0.361	1.00	1	11/22/2017 04:16	WG1045507
1,1-Dichloroethene	24.4		0.398	1.00	1	11/22/2017 04:16	WG1045507
cis-1,2-Dichloroethene	U		0.260	1.00	1	11/22/2017 04:16	WG1045507
trans-1,2-Dichloroethene	U		0.396	1.00	1	11/22/2017 04:16	WG1045507
1,2-Dichloropropane	U		0.306	1.00	1	11/22/2017 04:16	WG1045507
1,1-Dichloropropene	U		0.352	1.00	1	11/22/2017 04:16	WG1045507
1,3-Dichloropropane	U		0.366	1.00	1	11/22/2017 04:16	WG1045507
cis-1,3-Dichloropropene	U		0.418	1.00	1	11/22/2017 04:16	WG1045507
trans-1,3-Dichloropropene	U		0.419	1.00	1	11/22/2017 04:16	WG1045507
2,2-Dichloropropane	U		0.321	1.00	1	11/22/2017 04:16	WG1045507
Di-isopropyl ether	U		0.320	1.00	1	11/22/2017 04:16	WG1045507
Ethylbenzene	U		0.384	1.00	1	11/22/2017 04:16	WG1045507
Hexachloro-1,3-butadiene	U		0.256	1.00	1	11/22/2017 04:16	WG1045507
2-Hexanone	U		3.82	10.0	1	11/22/2017 04:16	WG1045507
p-Isopropyltoluene	U		0.350	1.00	1	11/22/2017 04:16	WG1045507
2-Butanone (MEK)	U		3.93	10.0	1	11/22/2017 04:16	WG1045507
Methylene Chloride	U		1.00	5.00	1	11/22/2017 04:16	WG1045507
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0	1	11/22/2017 04:16	WG1045507
Methyl tert-butyl ether	U		0.367	1.00	1	11/22/2017 04:16	WG1045507
Naphthalene	U		1.00	5.00	1	11/22/2017 04:16	WG1045507
Styrene	U		0.307	1.00	1	11/22/2017 04:16	WG1045507
1,1,1,2-Tetrachloroethane	U		0.385	1.00	1	11/22/2017 04:16	WG1045507
1,1,2,2-Tetrachloroethane	U		0.130	1.00	1	11/22/2017 04:16	WG1045507
Tetrachloroethene	U		0.372	1.00	1	11/22/2017 04:16	WG1045507
Toluene	U		0.412	1.00	1	11/22/2017 04:16	WG1045507
1,2,3-Trichlorobenzene	U		0.230	1.00	1	11/22/2017 04:16	WG1045507
1,2,4-Trichlorobenzene	U		0.355	1.00	1	11/22/2017 04:16	WG1045507
1,1,1-Trichloroethane	2.82		0.319	1.00	1	11/22/2017 04:16	WG1045507
1,1,2-Trichloroethane	U		0.383	1.00	1	11/22/2017 04:16	WG1045507
Trichloroethene	U		0.398	1.00	1	11/22/2017 04:16	WG1045507
Trichlorofluoromethane	U		1.20	5.00	1	11/22/2017 04:16	WG1045507
1,2,3-Trichloropropane	U		0.807	2.50	1	11/22/2017 04:16	WG1045507
Vinyl chloride	U		0.259	1.00	1	11/22/2017 04:16	WG1045507

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Vinyl acetate	U		1.63	10.0	1	11/22/2017 04:16	WG1045507
o-Xylene	U		0.341	1.00	1	11/22/2017 04:16	WG1045507
m&p-Xylene	U		0.719	2.00	1	11/22/2017 04:16	WG1045507
Xylenes, Total	U		1.06	3.00	1	11/22/2017 04:16	WG1045507
(S) Toluene-d8	*106*			*80.0-120*		*11/22/2017 04:16*	WG1045507
(S) Dibromofluoromethane	*92.3*			*76.0-123*		*11/22/2017 04:16*	WG1045507
(S) 4-Bromofluorobenzene	*106*			*80.0-120*		*11/22/2017 04:16*	WG1045507

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	U	J4	10.0	50.0	1	11/22/2017 04:37	WG1045507
Benzene	U		0.331	1.00	1	11/22/2017 04:37	WG1045507
Bromobenzene	U		0.352	1.00	1	11/22/2017 04:37	WG1045507
Bromochloromethane	U		0.520	5.00	1	11/22/2017 04:37	WG1045507
Bromodichloromethane	U		0.380	1.00	1	11/22/2017 04:37	WG1045507
Bromoform	U		0.469	1.00	1	11/22/2017 04:37	WG1045507
Bromomethane	U		0.866	5.00	1	11/22/2017 04:37	WG1045507
Carbon tetrachloride	U		0.379	1.00	1	11/22/2017 04:37	WG1045507
Chlorobenzene	U		0.348	1.00	1	11/22/2017 04:37	WG1045507
Chlorodibromomethane	U		0.327	1.00	1	11/22/2017 04:37	WG1045507
Chloroethane	U		0.453	5.00	1	11/22/2017 04:37	WG1045507
Chloroform	0.516	J	0.324	5.00	1	11/22/2017 04:37	WG1045507
Chloromethane	U		0.276	2.50	1	11/22/2017 04:37	WG1045507
2-Chlorotoluene	U		0.375	1.00	1	11/22/2017 04:37	WG1045507
4-Chlorotoluene	U		0.351	1.00	1	11/22/2017 04:37	WG1045507
1,2-Dibromo-3-Chloropropane	U		1.33	5.00	1	11/22/2017 04:37	WG1045507
1,2-Dibromoethane	U		0.381	1.00	1	11/22/2017 04:37	WG1045507
Dibromomethane	U		0.346	1.00	1	11/22/2017 04:37	WG1045507
1,2-Dichlorobenzene	U		0.349	1.00	1	11/22/2017 04:37	WG1045507
1,3-Dichlorobenzene	U		0.220	1.00	1	11/22/2017 04:37	WG1045507
1,4-Dichlorobenzene	U		0.274	1.00	1	11/22/2017 04:37	WG1045507
Dichlorodifluoromethane	U		0.551	5.00	1	11/22/2017 04:37	WG1045507
1,1-Dichloroethane	29.2		0.259	1.00	1	11/22/2017 04:37	WG1045507
1,2-Dichloroethane	0.997	J	0.361	1.00	1	11/22/2017 04:37	WG1045507
1,1-Dichloroethene	151		0.398	1.00	1	11/22/2017 04:37	WG1045507
cis-1,2-Dichloroethene	U		0.260	1.00	1	11/22/2017 04:37	WG1045507
trans-1,2-Dichloroethene	U		0.396	1.00	1	11/22/2017 04:37	WG1045507
1,2-Dichloropropane	U		0.306	1.00	1	11/22/2017 04:37	WG1045507
1,1-Dichloropropene	U		0.352	1.00	1	11/22/2017 04:37	WG1045507
1,3-Dichloropropane	U		0.366	1.00	1	11/22/2017 04:37	WG1045507
cis-1,3-Dichloropropene	U		0.418	1.00	1	11/22/2017 04:37	WG1045507
trans-1,3-Dichloropropene	U		0.419	1.00	1	11/22/2017 04:37	WG1045507
2,2-Dichloropropane	U		0.321	1.00	1	11/22/2017 04:37	WG1045507
Di-isopropyl ether	U		0.320	1.00	1	11/22/2017 04:37	WG1045507
Ethylbenzene	U		0.384	1.00	1	11/22/2017 04:37	WG1045507
Hexachloro-1,3-butadiene	U		0.256	1.00	1	11/22/2017 04:37	WG1045507
2-Hexanone	U		3.82	10.0	1	11/22/2017 04:37	WG1045507
p-Isopropyltoluene	U		0.350	1.00	1	11/22/2017 04:37	WG1045507
2-Butanone (MEK)	U		3.93	10.0	1	11/22/2017 04:37	WG1045507
Methylene Chloride	10.5		1.00	5.00	1	11/22/2017 04:37	WG1045507
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0	1	11/22/2017 04:37	WG1045507
Methyl tert-butyl ether	0.618	J	0.367	1.00	1	11/22/2017 04:37	WG1045507
Naphthalene	U		1.00	5.00	1	11/22/2017 04:37	WG1045507
Styrene	U		0.307	1.00	1	11/22/2017 04:37	WG1045507
1,1,1,2-Tetrachloroethane	U		0.385	1.00	1	11/22/2017 04:37	WG1045507
1,1,2,2-Tetrachloroethane	U		0.130	1.00	1	11/22/2017 04:37	WG1045507
Tetrachloroethene	0.687	J	0.372	1.00	1	11/22/2017 04:37	WG1045507
Toluene	U		0.412	1.00	1	11/22/2017 04:37	WG1045507
1,2,3-Trichlorobenzene	U		0.230	1.00	1	11/22/2017 04:37	WG1045507
1,2,4-Trichlorobenzene	U		0.355	1.00	1	11/22/2017 04:37	WG1045507
1,1,1-Trichloroethane	4.31		0.319	1.00	1	11/22/2017 04:37	WG1045507
1,1,2-Trichloroethane	U		0.383	1.00	1	11/22/2017 04:37	WG1045507
Trichloroethene	1.43		0.398	1.00	1	11/22/2017 04:37	WG1045507
Trichlorofluoromethane	U		1.20	5.00	1	11/22/2017 04:37	WG1045507
1,2,3-Trichloropropane	U		0.807	2.50	1	11/22/2017 04:37	WG1045507
Vinyl chloride	U		0.259	1.00	1	11/22/2017 04:37	WG1045507

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Vinyl acetate	U		1.63	10.0	1	11/22/2017 04:37	WG1045507
o-Xylene	U		0.341	1.00	1	11/22/2017 04:37	WG1045507
m&p-Xylene	U		0.719	2.00	1	11/22/2017 04:37	WG1045507
Xylenes, Total	U		1.06	3.00	1	11/22/2017 04:37	WG1045507
(S) Toluene-d8	*107*			*80.0-120*		*11/22/2017 04:37*	WG1045507
(S) Dibromofluoromethane	*92.1*			*76.0-123*		*11/22/2017 04:37*	WG1045507
(S) 4-Bromofluorobenzene	*107*			*80.0-120*		*11/22/2017 04:37*	WG1045507

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	U	J4	10.0	50.0	1	11/22/2017 04:57	WG1045507
Benzene	U		0.331	1.00	1	11/22/2017 04:57	WG1045507
Bromobenzene	U		0.352	1.00	1	11/22/2017 04:57	WG1045507
Bromochloromethane	U		0.520	5.00	1	11/22/2017 04:57	WG1045507
Bromodichloromethane	U		0.380	1.00	1	11/22/2017 04:57	WG1045507
Bromoform	U		0.469	1.00	1	11/22/2017 04:57	WG1045507
Bromomethane	U		0.866	5.00	1	11/22/2017 04:57	WG1045507
Carbon tetrachloride	U		0.379	1.00	1	11/22/2017 04:57	WG1045507
Chlorobenzene	U		0.348	1.00	1	11/22/2017 04:57	WG1045507
Chlorodibromomethane	U		0.327	1.00	1	11/22/2017 04:57	WG1045507
Chloroethane	U		0.453	5.00	1	11/22/2017 04:57	WG1045507
Chloroform	U		0.324	5.00	1	11/22/2017 04:57	WG1045507
Chloromethane	U		0.276	2.50	1	11/22/2017 04:57	WG1045507
2-Chlorotoluene	U		0.375	1.00	1	11/22/2017 04:57	WG1045507
4-Chlorotoluene	U		0.351	1.00	1	11/22/2017 04:57	WG1045507
1,2-Dibromo-3-Chloropropane	U		1.33	5.00	1	11/22/2017 04:57	WG1045507
1,2-Dibromoethane	U		0.381	1.00	1	11/22/2017 04:57	WG1045507
Dibromomethane	U		0.346	1.00	1	11/22/2017 04:57	WG1045507
1,2-Dichlorobenzene	U		0.349	1.00	1	11/22/2017 04:57	WG1045507
1,3-Dichlorobenzene	U		0.220	1.00	1	11/22/2017 04:57	WG1045507
1,4-Dichlorobenzene	U		0.274	1.00	1	11/22/2017 04:57	WG1045507
Dichlorodifluoromethane	U		0.551	5.00	1	11/22/2017 04:57	WG1045507
1,1-Dichloroethane	136		0.259	1.00	1	11/22/2017 04:57	WG1045507
1,2-Dichloroethane	5.69		0.361	1.00	1	11/22/2017 04:57	WG1045507
1,1-Dichloroethene	223		3.98	10.0	10	11/22/2017 14:24	WG1045507
cis-1,2-Dichloroethene	1.37		0.260	1.00	1	11/22/2017 04:57	WG1045507
trans-1,2-Dichloroethene	U		0.396	1.00	1	11/22/2017 04:57	WG1045507
1,2-Dichloropropane	U		0.306	1.00	1	11/22/2017 04:57	WG1045507
1,1-Dichloropropene	U		0.352	1.00	1	11/22/2017 04:57	WG1045507
1,3-Dichloropropane	U		0.366	1.00	1	11/22/2017 04:57	WG1045507
cis-1,3-Dichloropropene	U		0.418	1.00	1	11/22/2017 04:57	WG1045507
trans-1,3-Dichloropropene	U		0.419	1.00	1	11/22/2017 04:57	WG1045507
2,2-Dichloropropane	U		0.321	1.00	1	11/22/2017 04:57	WG1045507
Di-isopropyl ether	U		0.320	1.00	1	11/22/2017 04:57	WG1045507
Ethylbenzene	U		0.384	1.00	1	11/22/2017 04:57	WG1045507
Hexachloro-1,3-butadiene	U		0.256	1.00	1	11/22/2017 04:57	WG1045507
2-Hexanone	U		3.82	10.0	1	11/22/2017 04:57	WG1045507
p-Isopropyltoluene	U		0.350	1.00	1	11/22/2017 04:57	WG1045507
2-Butanone (MEK)	U		3.93	10.0	1	11/22/2017 04:57	WG1045507
Methylene Chloride	U		1.00	5.00	1	11/22/2017 04:57	WG1045507
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0	1	11/22/2017 04:57	WG1045507
Methyl tert-butyl ether	U		0.367	1.00	1	11/22/2017 04:57	WG1045507
Naphthalene	U		1.00	5.00	1	11/22/2017 04:57	WG1045507
Styrene	U		0.307	1.00	1	11/22/2017 04:57	WG1045507
1,1,1,2-Tetrachloroethane	U		0.385	1.00	1	11/22/2017 04:57	WG1045507
1,1,2,2-Tetrachloroethane	U		0.130	1.00	1	11/22/2017 04:57	WG1045507
Tetrachloroethene	U		0.372	1.00	1	11/22/2017 04:57	WG1045507
Toluene	U		0.412	1.00	1	11/22/2017 04:57	WG1045507
1,2,3-Trichlorobenzene	U		0.230	1.00	1	11/22/2017 04:57	WG1045507
1,2,4-Trichlorobenzene	U		0.355	1.00	1	11/22/2017 04:57	WG1045507
1,1,1-Trichloroethane	U		0.319	1.00	1	11/22/2017 04:57	WG1045507
1,1,2-Trichloroethane	1.85		0.383	1.00	1	11/22/2017 04:57	WG1045507
Trichloroethene	1.05		0.398	1.00	1	11/22/2017 04:57	WG1045507
Trichlorofluoromethane	U		1.20	5.00	1	11/22/2017 04:57	WG1045507
1,2,3-Trichloropropane	U		0.807	2.50	1	11/22/2017 04:57	WG1045507
Vinyl chloride	U		0.259	1.00	1	11/22/2017 04:57	WG1045507

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Vinyl acetate	U		1.63	10.0	1	11/22/2017 04:57	WG1045507
o-Xylene	U		0.341	1.00	1	11/22/2017 04:57	WG1045507
m&p-Xylene	U		0.719	2.00	1	11/22/2017 04:57	WG1045507
Xylenes, Total	U		1.06	3.00	1	11/22/2017 04:57	WG1045507
(S) Toluene-d8	*106*			*80.0-120*		*11/22/2017 04:57*	WG1045507
(S) Toluene-d8	*103*			*80.0-120*		*11/22/2017 14:24*	WG1045507
(S) Dibromofluoromethane	*97.0*			*76.0-123*		*11/22/2017 14:24*	WG1045507
(S) Dibromofluoromethane	*93.9*			*76.0-123*		*11/22/2017 04:57*	WG1045507
(S) 4-Bromofluorobenzene	*101*			*80.0-120*		*11/22/2017 14:24*	WG1045507
(S) 4-Bromofluorobenzene	*104*			*80.0-120*		*11/22/2017 04:57*	WG1045507

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	U	J4	10.0	50.0	1	11/22/2017 05:17	WG1045507
Benzene	U		0.331	1.00	1	11/22/2017 05:17	WG1045507
Bromobenzene	U		0.352	1.00	1	11/22/2017 05:17	WG1045507
Bromochloromethane	U		0.520	5.00	1	11/22/2017 05:17	WG1045507
Bromodichloromethane	U		0.380	1.00	1	11/22/2017 05:17	WG1045507
Bromoform	U		0.469	1.00	1	11/22/2017 05:17	WG1045507
Bromomethane	U		0.866	5.00	1	11/22/2017 05:17	WG1045507
Carbon tetrachloride	U		0.379	1.00	1	11/22/2017 05:17	WG1045507
Chlorobenzene	U		0.348	1.00	1	11/22/2017 05:17	WG1045507
Chlorodibromomethane	U		0.327	1.00	1	11/22/2017 05:17	WG1045507
Chloroethane	U		0.453	5.00	1	11/22/2017 05:17	WG1045507
Chloroform	U		0.324	5.00	1	11/22/2017 05:17	WG1045507
Chloromethane	U		0.276	2.50	1	11/22/2017 05:17	WG1045507
2-Chlorotoluene	U		0.375	1.00	1	11/22/2017 05:17	WG1045507
4-Chlorotoluene	U		0.351	1.00	1	11/22/2017 05:17	WG1045507
1,2-Dibromo-3-Chloropropane	U		1.33	5.00	1	11/22/2017 05:17	WG1045507
1,2-Dibromoethane	U		0.381	1.00	1	11/22/2017 05:17	WG1045507
Dibromomethane	U		0.346	1.00	1	11/22/2017 05:17	WG1045507
1,2-Dichlorobenzene	U		0.349	1.00	1	11/22/2017 05:17	WG1045507
1,3-Dichlorobenzene	U		0.220	1.00	1	11/22/2017 05:17	WG1045507
1,4-Dichlorobenzene	U		0.274	1.00	1	11/22/2017 05:17	WG1045507
Dichlorodifluoromethane	U		0.551	5.00	1	11/22/2017 05:17	WG1045507
1,1-Dichloroethane	3.06		0.259	1.00	1	11/22/2017 05:17	WG1045507
1,2-Dichloroethane	0.366	J	0.361	1.00	1	11/22/2017 05:17	WG1045507
1,1-Dichloroethene	60.2		0.398	1.00	1	11/22/2017 05:17	WG1045507
cis-1,2-Dichloroethene	U		0.260	1.00	1	11/22/2017 05:17	WG1045507
trans-1,2-Dichloroethene	U		0.396	1.00	1	11/22/2017 05:17	WG1045507
1,2-Dichloropropane	U		0.306	1.00	1	11/22/2017 05:17	WG1045507
1,1-Dichloropropene	U		0.352	1.00	1	11/22/2017 05:17	WG1045507
1,3-Dichloropropane	U		0.366	1.00	1	11/22/2017 05:17	WG1045507
cis-1,3-Dichloropropene	U		0.418	1.00	1	11/22/2017 05:17	WG1045507
trans-1,3-Dichloropropene	U		0.419	1.00	1	11/22/2017 05:17	WG1045507
2,2-Dichloropropane	U		0.321	1.00	1	11/22/2017 05:17	WG1045507
Di-isopropyl ether	U		0.320	1.00	1	11/22/2017 05:17	WG1045507
Ethylbenzene	U		0.384	1.00	1	11/22/2017 05:17	WG1045507
Hexachloro-1,3-butadiene	U		0.256	1.00	1	11/22/2017 05:17	WG1045507
2-Hexanone	U		3.82	10.0	1	11/22/2017 05:17	WG1045507
p-Isopropyltoluene	U		0.350	1.00	1	11/22/2017 05:17	WG1045507
2-Butanone (MEK)	U		3.93	10.0	1	11/22/2017 05:17	WG1045507
Methylene Chloride	U		1.00	5.00	1	11/22/2017 05:17	WG1045507
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0	1	11/22/2017 05:17	WG1045507
Methyl tert-butyl ether	U		0.367	1.00	1	11/22/2017 05:17	WG1045507
Naphthalene	U		1.00	5.00	1	11/22/2017 05:17	WG1045507
Styrene	U		0.307	1.00	1	11/22/2017 05:17	WG1045507
1,1,1,2-Tetrachloroethane	U		0.385	1.00	1	11/22/2017 05:17	WG1045507
1,1,2,2-Tetrachloroethane	U		0.130	1.00	1	11/22/2017 05:17	WG1045507
Tetrachloroethene	U		0.372	1.00	1	11/22/2017 05:17	WG1045507
Toluene	U		0.412	1.00	1	11/22/2017 05:17	WG1045507
1,2,3-Trichlorobenzene	U		0.230	1.00	1	11/22/2017 05:17	WG1045507
1,2,4-Trichlorobenzene	U		0.355	1.00	1	11/22/2017 05:17	WG1045507
1,1,1-Trichloroethane	0.744	J	0.319	1.00	1	11/22/2017 05:17	WG1045507
1,1,2-Trichloroethane	U		0.383	1.00	1	11/22/2017 05:17	WG1045507
Trichloroethene	U		0.398	1.00	1	11/22/2017 05:17	WG1045507
Trichlorofluoromethane	U		1.20	5.00	1	11/22/2017 05:17	WG1045507
1,2,3-Trichloropropane	U		0.807	2.50	1	11/22/2017 05:17	WG1045507
Vinyl chloride	U		0.259	1.00	1	11/22/2017 05:17	WG1045507

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Vinyl acetate	U		1.63	10.0	1	11/22/2017 05:17	WG1045507
o-Xylene	U		0.341	1.00	1	11/22/2017 05:17	WG1045507
m&p-Xylene	U		0.719	2.00	1	11/22/2017 05:17	WG1045507
Xylenes, Total	U		1.06	3.00	1	11/22/2017 05:17	WG1045507
(S) Toluene-d8	*106*			*80.0-120*		*11/22/2017 05:17*	WG1045507
(S) Dibromofluoromethane	*94.6*			*76.0-123*		*11/22/2017 05:17*	WG1045507
(S) 4-Bromofluorobenzene	*106*			*80.0-120*		*11/22/2017 05:17*	WG1045507

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	U	J4	10.0	50.0	1	11/22/2017 05:37	WG1045507
Benzene	U		0.331	1.00	1	11/22/2017 05:37	WG1045507
Bromobenzene	U		0.352	1.00	1	11/22/2017 05:37	WG1045507
Bromochloromethane	U		0.520	5.00	1	11/22/2017 05:37	WG1045507
Bromodichloromethane	U		0.380	1.00	1	11/22/2017 05:37	WG1045507
Bromoform	U		0.469	1.00	1	11/22/2017 05:37	WG1045507
Bromomethane	U		0.866	5.00	1	11/22/2017 05:37	WG1045507
Carbon tetrachloride	U		0.379	1.00	1	11/22/2017 05:37	WG1045507
Chlorobenzene	U		0.348	1.00	1	11/22/2017 05:37	WG1045507
Chlorodibromomethane	U		0.327	1.00	1	11/22/2017 05:37	WG1045507
Chloroethane	U		0.453	5.00	1	11/22/2017 05:37	WG1045507
Chloroform	0.354	J	0.324	5.00	1	11/22/2017 05:37	WG1045507
Chloromethane	U		0.276	2.50	1	11/22/2017 05:37	WG1045507
2-Chlorotoluene	U		0.375	1.00	1	11/22/2017 05:37	WG1045507
4-Chlorotoluene	U		0.351	1.00	1	11/22/2017 05:37	WG1045507
1,2-Dibromo-3-Chloropropane	U		1.33	5.00	1	11/22/2017 05:37	WG1045507
1,2-Dibromoethane	U		0.381	1.00	1	11/22/2017 05:37	WG1045507
Dibromomethane	U		0.346	1.00	1	11/22/2017 05:37	WG1045507
1,2-Dichlorobenzene	U		0.349	1.00	1	11/22/2017 05:37	WG1045507
1,3-Dichlorobenzene	U		0.220	1.00	1	11/22/2017 05:37	WG1045507
1,4-Dichlorobenzene	U		0.274	1.00	1	11/22/2017 05:37	WG1045507
Dichlorodifluoromethane	U		0.551	5.00	1	11/22/2017 05:37	WG1045507
1,1-Dichloroethane	31.1		0.259	1.00	1	11/22/2017 05:37	WG1045507
1,2-Dichloroethane	1.86		0.361	1.00	1	11/22/2017 05:37	WG1045507
1,1-Dichloroethene	179		0.398	1.00	1	11/22/2017 05:37	WG1045507
cis-1,2-Dichloroethene	0.307	J	0.260	1.00	1	11/22/2017 05:37	WG1045507
trans-1,2-Dichloroethene	U		0.396	1.00	1	11/22/2017 05:37	WG1045507
1,2-Dichloropropane	U		0.306	1.00	1	11/22/2017 05:37	WG1045507
1,1-Dichloropropene	U		0.352	1.00	1	11/22/2017 05:37	WG1045507
1,3-Dichloropropane	U		0.366	1.00	1	11/22/2017 05:37	WG1045507
cis-1,3-Dichloropropene	U		0.418	1.00	1	11/22/2017 05:37	WG1045507
trans-1,3-Dichloropropene	U		0.419	1.00	1	11/22/2017 05:37	WG1045507
2,2-Dichloropropane	U		0.321	1.00	1	11/22/2017 05:37	WG1045507
Di-isopropyl ether	U		0.320	1.00	1	11/22/2017 05:37	WG1045507
Ethylbenzene	U		0.384	1.00	1	11/22/2017 05:37	WG1045507
Hexachloro-1,3-butadiene	U		0.256	1.00	1	11/22/2017 05:37	WG1045507
2-Hexanone	U		3.82	10.0	1	11/22/2017 05:37	WG1045507
p-Isopropyltoluene	U		0.350	1.00	1	11/22/2017 05:37	WG1045507
2-Butanone (MEK)	U		3.93	10.0	1	11/22/2017 05:37	WG1045507
Methylene Chloride	U		1.00	5.00	1	11/22/2017 05:37	WG1045507
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0	1	11/22/2017 05:37	WG1045507
Methyl tert-butyl ether	U		0.367	1.00	1	11/22/2017 05:37	WG1045507
Naphthalene	U		1.00	5.00	1	11/22/2017 05:37	WG1045507
Styrene	U		0.307	1.00	1	11/22/2017 05:37	WG1045507
1,1,1,2-Tetrachloroethane	U		0.385	1.00	1	11/22/2017 05:37	WG1045507
1,1,2,2-Tetrachloroethane	U		0.130	1.00	1	11/22/2017 05:37	WG1045507
Tetrachloroethene	0.417	J	0.372	1.00	1	11/22/2017 05:37	WG1045507
Toluene	U		0.412	1.00	1	11/22/2017 05:37	WG1045507
1,2,3-Trichlorobenzene	U		0.230	1.00	1	11/22/2017 05:37	WG1045507
1,2,4-Trichlorobenzene	U		0.355	1.00	1	11/22/2017 05:37	WG1045507
1,1,1-Trichloroethane	19.3		0.319	1.00	1	11/22/2017 05:37	WG1045507
1,1,2-Trichloroethane	0.444	J	0.383	1.00	1	11/22/2017 05:37	WG1045507
Trichloroethene	0.946	J	0.398	1.00	1	11/22/2017 05:37	WG1045507
Trichlorofluoromethane	U		1.20	5.00	1	11/22/2017 05:37	WG1045507
1,2,3-Trichloropropane	U		0.807	2.50	1	11/22/2017 05:37	WG1045507
Vinyl chloride	U		0.259	1.00	1	11/22/2017 05:37	WG1045507

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Vinyl acetate	U		1.63	10.0	1	11/22/2017 05:37	WG1045507
o-Xylene	U		0.341	1.00	1	11/22/2017 05:37	WG1045507
m&p-Xylene	U		0.719	2.00	1	11/22/2017 05:37	WG1045507
Xylenes, Total	U		1.06	3.00	1	11/22/2017 05:37	WG1045507
(S) Toluene-d8	*104*			*80.0-120*		*11/22/2017 05:37*	WG1045507
(S) Dibromofluoromethane	*93.7*			*76.0-123*		*11/22/2017 05:37*	WG1045507
(S) 4-Bromofluorobenzene	*107*			*80.0-120*		*11/22/2017 05:37*	WG1045507

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	U	J4	10.0	50.0	1	11/22/2017 05:58	WG1045507
Benzene	U		0.331	1.00	1	11/22/2017 05:58	WG1045507
Bromobenzene	U		0.352	1.00	1	11/22/2017 05:58	WG1045507
Bromochloromethane	U		0.520	5.00	1	11/22/2017 05:58	WG1045507
Bromodichloromethane	U		0.380	1.00	1	11/22/2017 05:58	WG1045507
Bromoform	U		0.469	1.00	1	11/22/2017 05:58	WG1045507
Bromomethane	U		0.866	5.00	1	11/22/2017 05:58	WG1045507
Carbon tetrachloride	U		0.379	1.00	1	11/22/2017 05:58	WG1045507
Chlorobenzene	U		0.348	1.00	1	11/22/2017 05:58	WG1045507
Chlorodibromomethane	U		0.327	1.00	1	11/22/2017 05:58	WG1045507
Chloroethane	U		0.453	5.00	1	11/22/2017 05:58	WG1045507
Chloroform	0.373	J	0.324	5.00	1	11/22/2017 05:58	WG1045507
Chloromethane	U		0.276	2.50	1	11/22/2017 05:58	WG1045507
2-Chlorotoluene	U		0.375	1.00	1	11/22/2017 05:58	WG1045507
4-Chlorotoluene	U		0.351	1.00	1	11/22/2017 05:58	WG1045507
1,2-Dibromo-3-Chloropropane	U		1.33	5.00	1	11/22/2017 05:58	WG1045507
1,2-Dibromoethane	U		0.381	1.00	1	11/22/2017 05:58	WG1045507
Dibromomethane	U		0.346	1.00	1	11/22/2017 05:58	WG1045507
1,2-Dichlorobenzene	U		0.349	1.00	1	11/22/2017 05:58	WG1045507
1,3-Dichlorobenzene	U		0.220	1.00	1	11/22/2017 05:58	WG1045507
1,4-Dichlorobenzene	U		0.274	1.00	1	11/22/2017 05:58	WG1045507
Dichlorodifluoromethane	U		0.551	5.00	1	11/22/2017 05:58	WG1045507
1,1-Dichloroethane	29.7		0.259	1.00	1	11/22/2017 05:58	WG1045507
1,2-Dichloroethane	1.90		0.361	1.00	1	11/22/2017 05:58	WG1045507
1,1-Dichloroethene	179		0.398	1.00	1	11/22/2017 05:58	WG1045507
cis-1,2-Dichloroethene	0.282	J	0.260	1.00	1	11/22/2017 05:58	WG1045507
trans-1,2-Dichloroethene	U		0.396	1.00	1	11/22/2017 05:58	WG1045507
1,2-Dichloropropane	U		0.306	1.00	1	11/22/2017 05:58	WG1045507
1,1-Dichloropropene	U		0.352	1.00	1	11/22/2017 05:58	WG1045507
1,3-Dichloropropane	U		0.366	1.00	1	11/22/2017 05:58	WG1045507
cis-1,3-Dichloropropene	U		0.418	1.00	1	11/22/2017 05:58	WG1045507
trans-1,3-Dichloropropene	U		0.419	1.00	1	11/22/2017 05:58	WG1045507
2,2-Dichloropropane	U		0.321	1.00	1	11/22/2017 05:58	WG1045507
Di-isopropyl ether	U		0.320	1.00	1	11/22/2017 05:58	WG1045507
Ethylbenzene	U		0.384	1.00	1	11/22/2017 05:58	WG1045507
Hexachloro-1,3-butadiene	U		0.256	1.00	1	11/22/2017 05:58	WG1045507
2-Hexanone	U		3.82	10.0	1	11/22/2017 05:58	WG1045507
p-Isopropyltoluene	U		0.350	1.00	1	11/22/2017 05:58	WG1045507
2-Butanone (MEK)	U		3.93	10.0	1	11/22/2017 05:58	WG1045507
Methylene Chloride	10.0		1.00	5.00	1	11/22/2017 05:58	WG1045507
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0	1	11/22/2017 05:58	WG1045507
Methyl tert-butyl ether	0.889	J	0.367	1.00	1	11/22/2017 05:58	WG1045507
Naphthalene	U		1.00	5.00	1	11/22/2017 05:58	WG1045507
Styrene	U		0.307	1.00	1	11/22/2017 05:58	WG1045507
1,1,1,2-Tetrachloroethane	U		0.385	1.00	1	11/22/2017 05:58	WG1045507
1,1,2,2-Tetrachloroethane	U		0.130	1.00	1	11/22/2017 05:58	WG1045507
Tetrachloroethene	U		0.372	1.00	1	11/22/2017 05:58	WG1045507
Toluene	U		0.412	1.00	1	11/22/2017 05:58	WG1045507
1,2,3-Trichlorobenzene	U		0.230	1.00	1	11/22/2017 05:58	WG1045507
1,2,4-Trichlorobenzene	U		0.355	1.00	1	11/22/2017 05:58	WG1045507
1,1,1-Trichloroethane	15.1		0.319	1.00	1	11/22/2017 05:58	WG1045507
1,1,2-Trichloroethane	0.488	J	0.383	1.00	1	11/22/2017 05:58	WG1045507
Trichloroethene	0.856	J	0.398	1.00	1	11/22/2017 05:58	WG1045507
Trichlorofluoromethane	U		1.20	5.00	1	11/22/2017 05:58	WG1045507
1,2,3-Trichloropropane	U		0.807	2.50	1	11/22/2017 05:58	WG1045507
Vinyl chloride	U		0.259	1.00	1	11/22/2017 05:58	WG1045507

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Vinyl acetate	U		1.63	10.0	1	11/22/2017 05:58	WG1045507
o-Xylene	U		0.341	1.00	1	11/22/2017 05:58	WG1045507
m&p-Xylene	U		0.719	2.00	1	11/22/2017 05:58	WG1045507
Xylenes, Total	U		1.06	3.00	1	11/22/2017 05:58	WG1045507
(S) Toluene-d8	*105*			*80.0-120*		*11/22/2017 05:58*	WG1045507
(S) Dibromofluoromethane	*92.9*			*76.0-123*		*11/22/2017 05:58*	WG1045507
(S) 4-Bromofluorobenzene	*106*			*80.0-120*		*11/22/2017 05:58*	WG1045507

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Acetone	69.9	J4	10.0	50.0	1	11/22/2017 06:18	WG1045507
Benzene	U		0.331	1.00	1	11/22/2017 06:18	WG1045507
Bromobenzene	U		0.352	1.00	1	11/22/2017 06:18	WG1045507
Bromochloromethane	U		0.520	5.00	1	11/22/2017 06:18	WG1045507
Bromodichloromethane	U		0.380	1.00	1	11/22/2017 06:18	WG1045507
Bromoform	U		0.469	1.00	1	11/22/2017 06:18	WG1045507
Bromomethane	U		0.866	5.00	1	11/22/2017 06:18	WG1045507
Carbon tetrachloride	U		0.379	1.00	1	11/22/2017 06:18	WG1045507
Chlorobenzene	U		0.348	1.00	1	11/22/2017 06:18	WG1045507
Chlorodibromomethane	U		0.327	1.00	1	11/22/2017 06:18	WG1045507
Chloroethane	732	J	90.6	1000	200	11/22/2017 14:44	WG1045507
Chloroform	U		0.324	5.00	1	11/22/2017 06:18	WG1045507
Chloromethane	U		0.276	2.50	1	11/22/2017 06:18	WG1045507
2-Chlorotoluene	U		0.375	1.00	1	11/22/2017 06:18	WG1045507
4-Chlorotoluene	U		0.351	1.00	1	11/22/2017 06:18	WG1045507
1,2-Dibromo-3-Chloropropane	U		1.33	5.00	1	11/22/2017 06:18	WG1045507
1,2-Dibromoethane	U		0.381	1.00	1	11/22/2017 06:18	WG1045507
Dibromomethane	U		0.346	1.00	1	11/22/2017 06:18	WG1045507
1,2-Dichlorobenzene	U		0.349	1.00	1	11/22/2017 06:18	WG1045507
1,3-Dichlorobenzene	U		0.220	1.00	1	11/22/2017 06:18	WG1045507
1,4-Dichlorobenzene	U		0.274	1.00	1	11/22/2017 06:18	WG1045507
Dichlorodifluoromethane	U		0.551	5.00	1	11/22/2017 06:18	WG1045507
1,1-Dichloroethane	7110		51.8	200	200	11/22/2017 14:44	WG1045507
1,2-Dichloroethane	21.8		0.361	1.00	1	11/22/2017 06:18	WG1045507
1,1-Dichloroethene	7740		79.6	200	200	11/22/2017 14:44	WG1045507
cis-1,2-Dichloroethene	45.9		0.260	1.00	1	11/22/2017 06:18	WG1045507
trans-1,2-Dichloroethene	0.445	J	0.396	1.00	1	11/22/2017 06:18	WG1045507
1,2-Dichloropropane	U		0.306	1.00	1	11/22/2017 06:18	WG1045507
1,1-Dichloropropene	U		0.352	1.00	1	11/22/2017 06:18	WG1045507
1,3-Dichloropropane	U		0.366	1.00	1	11/22/2017 06:18	WG1045507
cis-1,3-Dichloropropene	U		0.418	1.00	1	11/22/2017 06:18	WG1045507
trans-1,3-Dichloropropene	U		0.419	1.00	1	11/22/2017 06:18	WG1045507
2,2-Dichloropropane	U		0.321	1.00	1	11/22/2017 06:18	WG1045507
Di-isopropyl ether	U		0.320	1.00	1	11/22/2017 06:18	WG1045507
Ethylbenzene	3.07		0.384	1.00	1	11/22/2017 06:18	WG1045507
Hexachloro-1,3-butadiene	U		0.256	1.00	1	11/22/2017 06:18	WG1045507
2-Hexanone	U		3.82	10.0	1	11/22/2017 06:18	WG1045507
p-Isopropyltoluene	U		0.350	1.00	1	11/22/2017 06:18	WG1045507
2-Butanone (MEK)	101		3.93	10.0	1	11/22/2017 06:18	WG1045507
Methylene Chloride	10.6		1.00	5.00	1	11/22/2017 06:18	WG1045507
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0	1	11/22/2017 06:18	WG1045507
Methyl tert-butyl ether	U		0.367	1.00	1	11/22/2017 06:18	WG1045507
Naphthalene	1.47	J	1.00	5.00	1	11/22/2017 06:18	WG1045507
Styrene	U		0.307	1.00	1	11/22/2017 06:18	WG1045507
1,1,1,2-Tetrachloroethane	U		0.385	1.00	1	11/22/2017 06:18	WG1045507
1,1,2,2-Tetrachloroethane	U		0.130	1.00	1	11/22/2017 06:18	WG1045507
Tetrachloroethene	18.4		0.372	1.00	1	11/22/2017 06:18	WG1045507
Toluene	2.19		0.412	1.00	1	11/22/2017 06:18	WG1045507
1,2,3-Trichlorobenzene	U		0.230	1.00	1	11/22/2017 06:18	WG1045507
1,2,4-Trichlorobenzene	U		0.355	1.00	1	11/22/2017 06:18	WG1045507
1,1,1-Trichloroethane	5590		63.8	200	200	11/22/2017 14:44	WG1045507
1,1,2-Trichloroethane	U		0.383	1.00	1	11/22/2017 06:18	WG1045507
Trichloroethene	68.9		0.398	1.00	1	11/22/2017 06:18	WG1045507
Trichlorofluoromethane	U		1.20	5.00	1	11/22/2017 06:18	WG1045507
1,2,3-Trichloropropane	U		0.807	2.50	1	11/22/2017 06:18	WG1045507
Vinyl chloride	18.9		0.259	1.00	1	11/22/2017 06:18	WG1045507

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Vinyl acetate	U		1.63	10.0	1	11/22/2017 06:18	WG1045507
o-Xylene	4.88		0.341	1.00	1	11/22/2017 06:18	WG1045507
m&p-Xylene	8.55		0.719	2.00	1	11/22/2017 06:18	WG1045507
Xylenes, Total	13.4		1.06	3.00	1	11/22/2017 06:18	WG1045507
(S) Toluene-d8	*103*			*80.0-120*		*11/22/2017 06:18*	WG1045507
(S) Toluene-d8	*103*			*80.0-120*		*11/22/2017 14:44*	WG1045507
(S) Dibromofluoromethane	*105*			*76.0-123*		*11/22/2017 06:18*	WG1045507
(S) Dibromofluoromethane	*94.6*			*76.0-123*		*11/22/2017 14:44*	WG1045507
(S) 4-Bromofluorobenzene	*105*			*80.0-120*		*11/22/2017 14:44*	WG1045507
(S) 4-Bromofluorobenzene	*104*			*80.0-120*		*11/22/2017 06:18*	WG1045507

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Acetone	70.9	J4	10.0	50.0	1	11/22/2017 06:39	WG1045507
Benzene	U		0.331	1.00	1	11/22/2017 06:39	WG1045507
Bromobenzene	U		0.352	1.00	1	11/22/2017 06:39	WG1045507
Bromochloromethane	U		0.520	5.00	1	11/22/2017 06:39	WG1045507
Bromodichloromethane	U		0.380	1.00	1	11/22/2017 06:39	WG1045507
Bromoform	U		0.469	1.00	1	11/22/2017 06:39	WG1045507
Bromomethane	U		0.866	5.00	1	11/22/2017 06:39	WG1045507
Carbon tetrachloride	U		0.379	1.00	1	11/22/2017 06:39	WG1045507
Chlorobenzene	U		0.348	1.00	1	11/22/2017 06:39	WG1045507
Chlorodibromomethane	U		0.327	1.00	1	11/22/2017 06:39	WG1045507
Chloroethane	708	J	90.6	1000	200	11/22/2017 15:03	WG1045507
Chloroform	U		0.324	5.00	1	11/22/2017 06:39	WG1045507
Chloromethane	U		0.276	2.50	1	11/22/2017 06:39	WG1045507
2-Chlorotoluene	U		0.375	1.00	1	11/22/2017 06:39	WG1045507
4-Chlorotoluene	U		0.351	1.00	1	11/22/2017 06:39	WG1045507
1,2-Dibromo-3-Chloropropane	U		1.33	5.00	1	11/22/2017 06:39	WG1045507
1,2-Dibromoethane	U		0.381	1.00	1	11/22/2017 06:39	WG1045507
Dibromomethane	U		0.346	1.00	1	11/22/2017 06:39	WG1045507
1,2-Dichlorobenzene	U		0.349	1.00	1	11/22/2017 06:39	WG1045507
1,3-Dichlorobenzene	U		0.220	1.00	1	11/22/2017 06:39	WG1045507
1,4-Dichlorobenzene	U		0.274	1.00	1	11/22/2017 06:39	WG1045507
Dichlorodifluoromethane	U		0.551	5.00	1	11/22/2017 06:39	WG1045507
1,1-Dichloroethane	6850		51.8	200	200	11/22/2017 15:03	WG1045507
1,2-Dichloroethane	21.3		0.361	1.00	1	11/22/2017 06:39	WG1045507
1,1-Dichloroethene	7080		79.6	200	200	11/22/2017 15:03	WG1045507
cis-1,2-Dichloroethene	46.2		0.260	1.00	1	11/22/2017 06:39	WG1045507
trans-1,2-Dichloroethene	0.506	J	0.396	1.00	1	11/22/2017 06:39	WG1045507
1,2-Dichloropropane	U		0.306	1.00	1	11/22/2017 06:39	WG1045507
1,1-Dichloropropene	U		0.352	1.00	1	11/22/2017 06:39	WG1045507
1,3-Dichloropropane	U		0.366	1.00	1	11/22/2017 06:39	WG1045507
cis-1,3-Dichloropropene	U		0.418	1.00	1	11/22/2017 06:39	WG1045507
trans-1,3-Dichloropropene	U		0.419	1.00	1	11/22/2017 06:39	WG1045507
2,2-Dichloropropane	U		0.321	1.00	1	11/22/2017 06:39	WG1045507
Di-isopropyl ether	U		0.320	1.00	1	11/22/2017 06:39	WG1045507
Ethylbenzene	3.17		0.384	1.00	1	11/22/2017 06:39	WG1045507
Hexachloro-1,3-butadiene	U		0.256	1.00	1	11/22/2017 06:39	WG1045507
2-Hexanone	U		3.82	10.0	1	11/22/2017 06:39	WG1045507
p-Isopropyltoluene	U		0.350	1.00	1	11/22/2017 06:39	WG1045507
2-Butanone (MEK)	102		3.93	10.0	1	11/22/2017 06:39	WG1045507
Methylene Chloride	10.7		1.00	5.00	1	11/22/2017 06:39	WG1045507
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0	1	11/22/2017 06:39	WG1045507
Methyl tert-butyl ether	U		0.367	1.00	1	11/22/2017 06:39	WG1045507
Naphthalene	1.55	J	1.00	5.00	1	11/22/2017 06:39	WG1045507
Styrene	U		0.307	1.00	1	11/22/2017 06:39	WG1045507
1,1,1,2-Tetrachloroethane	U		0.385	1.00	1	11/22/2017 06:39	WG1045507
1,1,2,2-Tetrachloroethane	U		0.130	1.00	1	11/22/2017 06:39	WG1045507
Tetrachloroethene	18.5		0.372	1.00	1	11/22/2017 06:39	WG1045507
Toluene	2.26		0.412	1.00	1	11/22/2017 06:39	WG1045507
1,2,3-Trichlorobenzene	U		0.230	1.00	1	11/22/2017 06:39	WG1045507
1,2,4-Trichlorobenzene	U		0.355	1.00	1	11/22/2017 06:39	WG1045507
1,1,1-Trichloroethane	5230		63.8	200	200	11/22/2017 15:03	WG1045507
1,1,2-Trichloroethane	U		0.383	1.00	1	11/22/2017 06:39	WG1045507
Trichloroethene	69.0		0.398	1.00	1	11/22/2017 06:39	WG1045507
Trichlorofluoromethane	U		1.20	5.00	1	11/22/2017 06:39	WG1045507
1,2,3-Trichloropropane	U		0.807	2.50	1	11/22/2017 06:39	WG1045507
Vinyl chloride	17.8		0.259	1.00	1	11/22/2017 06:39	WG1045507

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Vinyl acetate	U		1.63	10.0	1	11/22/2017 06:39	WG1045507
o-Xylene	4.72		0.341	1.00	1	11/22/2017 06:39	WG1045507
m&p-Xylene	8.51		0.719	2.00	1	11/22/2017 06:39	WG1045507
Xylenes, Total	13.2		1.06	3.00	1	11/22/2017 06:39	WG1045507
(S) Toluene-d8	*104*			*80.0-120*		*11/22/2017 06:39*	WG1045507
(S) Toluene-d8	*105*			*80.0-120*		*11/22/2017 15:03*	WG1045507
(S) Dibromofluoromethane	*105*			*76.0-123*		*11/22/2017 06:39*	WG1045507
(S) Dibromofluoromethane	*96.6*			*76.0-123*		*11/22/2017 15:03*	WG1045507
(S) 4-Bromofluorobenzene	*106*			*80.0-120*		*11/22/2017 06:39*	WG1045507
(S) 4-Bromofluorobenzene	*101*			*80.0-120*		*11/22/2017 15:03*	WG1045507

Method Blank (MB)

(MB) R3267646-3 11/22/17 01:13

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Acetone	U		10.0	50.0
Benzene	U		0.331	1.00
Bromobenzene	U		0.352	1.00
Bromodichloromethane	U		0.380	1.00
Bromochloromethane	U		0.520	5.00
Bromoform	U		0.469	1.00
Bromomethane	U		0.866	5.00
Carbon tetrachloride	U		0.379	1.00
Chlorobenzene	U		0.348	1.00
Chlorodibromomethane	U		0.327	1.00
Chloroethane	U		0.453	5.00
Chloroform	U		0.324	5.00
Chloromethane	U		0.276	2.50
2-Chlorotoluene	U		0.375	1.00
4-Chlorotoluene	U		0.351	1.00
1,2-Dibromo-3-Chloropropane	U		1.33	5.00
1,2-Dibromoethane	U		0.381	1.00
Dibromomethane	U		0.346	1.00
1,2-Dichlorobenzene	U		0.349	1.00
1,3-Dichlorobenzene	U		0.220	1.00
1,4-Dichlorobenzene	U		0.274	1.00
Dichlorodifluoromethane	U		0.551	5.00
1,1-Dichloroethane	U		0.259	1.00
1,2-Dichloroethane	U		0.361	1.00
1,1-Dichloroethene	U		0.398	1.00
cis-1,2-Dichloroethene	U		0.260	1.00
trans-1,2-Dichloroethene	U		0.396	1.00
1,2-Dichloropropane	U		0.306	1.00
1,1-Dichloropropene	U		0.352	1.00
1,3-Dichloropropane	U		0.366	1.00
cis-1,3-Dichloropropene	U		0.418	1.00
trans-1,3-Dichloropropene	U		0.419	1.00
2,2-Dichloropropane	U		0.321	1.00
Di-isopropyl ether	U		0.320	1.00
Ethylbenzene	U		0.384	1.00
Hexachloro-1,3-butadiene	0.519	J	0.256	1.00
2-Hexanone	U		3.82	10.0
p-Isopropyltoluene	U		0.350	1.00
2-Butanone (MEK)	U		3.93	10.0
Methylene Chloride	U		1.00	5.00

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Method Blank (MB)

(MB) R3267646-3 11/22/17 01:13

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0
Methyl tert-butyl ether	U		0.367	1.00
Naphthalene	U		1.00	5.00
1,1,2,2-Tetrachloroethane	U		0.130	1.00
Tetrachloroethene	U		0.372	1.00
Styrene	U		0.307	1.00
1,1,1,2-Tetrachloroethane	U		0.385	1.00
Toluene	U		0.412	1.00
1,1,1-Trichloroethane	U		0.319	1.00
1,1,2-Trichloroethane	U		0.383	1.00
1,2,3-Trichlorobenzene	0.267	J	0.230	1.00
Trichloroethene	U		0.398	1.00
1,2,4-Trichlorobenzene	U		0.355	1.00
Trichlorofluoromethane	U		1.20	5.00
1,2,3-Trichloropropane	U		0.807	2.50
Vinyl chloride	U		0.259	1.00
Vinyl acetate	U		1.63	10.0
Xylenes, Total	U		1.06	3.00
o-Xylene	U		0.341	1.00
m&p-Xylenes	U		0.719	2.00
(S) Toluene-d8	*106*			*80.0-120*
(S) Dibromofluoromethane	*94.8*			*76.0-123*
(S) 4-Bromofluorobenzene	*109*			*80.0-120*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3267646-1 11/22/17 00:12 • (LCSD) R3267646-2 11/22/17 00:33

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Acetone	125	190	219	152	175	10.0-160		J4	14.5	23
Benzene	25.0	24.6	24.6	98.3	98.4	69.0-123			0.147	20
Bromobenzene	25.0	25.4	25.6	101	102	79.0-120			0.994	20
Bromodichloromethane	25.0	27.2	26.6	109	106	76.0-120			2.15	20
Bromochloromethane	25.0	26.1	25.2	104	101	76.0-122			3.61	20
Bromoform	25.0	25.5	26.1	102	105	67.0-132			2.55	20
Bromomethane	25.0	15.2	16.2	60.7	64.7	18.0-160			6.33	20
Carbon tetrachloride	25.0	27.2	26.1	109	104	63.0-122			4.36	20
Chlorobenzene	25.0	25.2	24.5	101	97.9	79.0-121			2.86	20
Chlorodibromomethane	25.0	25.7	24.7	103	98.6	75.0-125			4.32	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3267646-1 11/22/17 00:12 • (LCSD) R3267646-2 11/22/17 00:33

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Chloroethane	25.0	21.7	22.1	86.9	88.2	47.0-152			1.48	20
Chloroform	25.0	25.5	25.0	102	99.9	72.0-121			1.95	20
Chloromethane	25.0	22.7	22.0	91.0	87.9	48.0-139			3.47	20
2-Chlorotoluene	25.0	25.8	25.4	103	102	74.0-122			1.25	20
4-Chlorotoluene	25.0	25.7	26.2	103	105	79.0-120			2.05	20
1,2-Dibromo-3-Chloropropane	25.0	23.0	25.8	92.0	103	64.0-127			11.3	20
1,2-Dibromoethane	25.0	24.8	24.6	99.0	98.3	77.0-123			0.699	20
1,2-Dichlorobenzene	25.0	24.6	24.3	98.6	97.1	80.0-120			1.54	20
Dibromomethane	25.0	25.1	25.2	100	101	78.0-120			0.482	20
1,3-Dichlorobenzene	25.0	24.8	24.5	99.4	98.1	72.0-123			1.33	20
1,4-Dichlorobenzene	25.0	23.6	23.5	94.4	93.9	77.0-120			0.493	20
Dichlorodifluoromethane	25.0	32.1	31.9	128	128	49.0-155			0.450	20
1,1-Dichloroethane	25.0	25.4	25.0	102	100	70.0-126			1.57	20
1,2-Dichloroethane	25.0	24.6	24.1	98.4	96.5	67.0-126			1.91	20
1,1-Dichloroethene	25.0	26.5	26.1	106	104	64.0-129			1.50	20
cis-1,2-Dichloroethene	25.0	24.1	22.8	96.3	91.2	73.0-120			5.48	20
trans-1,2-Dichloroethene	25.0	25.8	24.8	103	99.1	71.0-121			4.09	20
1,2-Dichloropropane	25.0	26.6	26.1	107	104	75.0-125			2.05	20
1,1-Dichloropropene	25.0	27.1	26.6	108	106	71.0-129			1.95	20
1,3-Dichloropropane	25.0	25.3	24.6	101	98.6	80.0-121			2.56	20
cis-1,3-Dichloropropene	25.0	26.8	25.4	107	102	79.0-123			5.20	20
trans-1,3-Dichloropropene	25.0	25.8	25.1	103	100	74.0-127			2.86	20
2,2-Dichloropropane	25.0	25.7	25.4	103	102	60.0-125			0.994	20
Di-isopropyl ether	25.0	26.0	25.6	104	102	59.0-133			1.58	20
Ethylbenzene	25.0	25.3	24.3	101	97.3	77.0-120			4.09	20
Hexachloro-1,3-butadiene	25.0	24.3	25.2	97.3	101	64.0-131			3.41	20
2-Hexanone	125	140	146	112	117	58.0-147			3.92	20
p-Isopropyltoluene	25.0	26.3	26.1	105	104	74.0-126			0.716	20
2-Butanone (MEK)	125	153	171	123	137	37.0-158			11.1	20
Methylene Chloride	25.0	24.1	23.4	96.4	93.6	66.0-121			2.92	20
4-Methyl-2-pentanone (MIBK)	125	123	130	98.5	104	59.0-143			5.76	20
Methyl tert-butyl ether	25.0	25.1	24.5	100	98.2	64.0-123			2.14	20
Naphthalene	25.0	23.1	25.5	92.3	102	62.0-128			10.0	20
Styrene	25.0	26.1	26.0	104	104	78.0-124			0.400	20
1,1,1,2-Tetrachloroethane	25.0	26.7	25.4	107	102	75.0-122			4.88	20
1,1,2,2-Tetrachloroethane	25.0	25.0	25.7	99.9	103	71.0-122			2.86	20
Tetrachloroethene	25.0	26.0	24.5	104	98.1	70.0-127			6.01	20
Toluene	25.0	26.1	24.8	105	99.4	77.0-120			5.06	20
1,2,3-Trichlorobenzene	25.0	22.5	24.3	89.9	97.2	61.0-133			7.73	20
1,1,1-Trichloroethane	25.0	26.9	26.5	107	106	68.0-122			1.56	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3267646-1 11/22/17 00:12 • (LCSD) R3267646-2 11/22/17 00:33

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
1,2,4-Trichlorobenzene	25.0	23.4	24.2	93.5	96.9	69.0-129			3.59	20
1,1,2-Trichloroethane	25.0	25.2	23.7	101	94.9	78.0-120			5.88	20
Trichloroethene	25.0	25.5	24.9	102	99.5	78.0-120			2.35	20
Trichlorofluoromethane	25.0	25.5	24.0	102	95.9	56.0-137			5.96	20
1,2,3-Trichloropropane	25.0	23.9	25.7	95.4	103	72.0-124			7.31	20
Vinyl acetate	125	89.4	90.3	71.5	72.3	46.0-160			1.05	20
Vinyl chloride	25.0	26.2	25.4	105	101	64.0-133			3.05	20
Xylenes, Total	75.0	77.8	74.3	104	99.1	77.0-120			4.60	20
o-Xylene	25.0	26.1	25.0	104	100	78.0-120			4.13	20
m&p-Xylenes	50.0	51.7	49.3	103	98.5	77.0-120			4.74	20
(S) Toluene-d8				*103*	*102*	*80.0-120*				
(S) Dibromofluoromethane				*96.5*	*95.6*	*76.0-123*				
(S) 4-Bromofluorobenzene				*106*	*106*	*80.0-120*				

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDL	Method Detection Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
J4	The associated batch QC was outside the established quality control range for accuracy.

ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our "one location" design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be **YOUR LAB OF CHOICE.**
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey–NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Conneticut	PH-0197	North Carolina [1]	DW21704
Florida	E87487	North Carolina [2]	41
Georgia	NELAP	North Dakota	R-140
Georgia [1]	923	Ohio–VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky [1]	90010	South Dakota	n/a
Kentucky [2]	16	Tennessee [1 4]	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

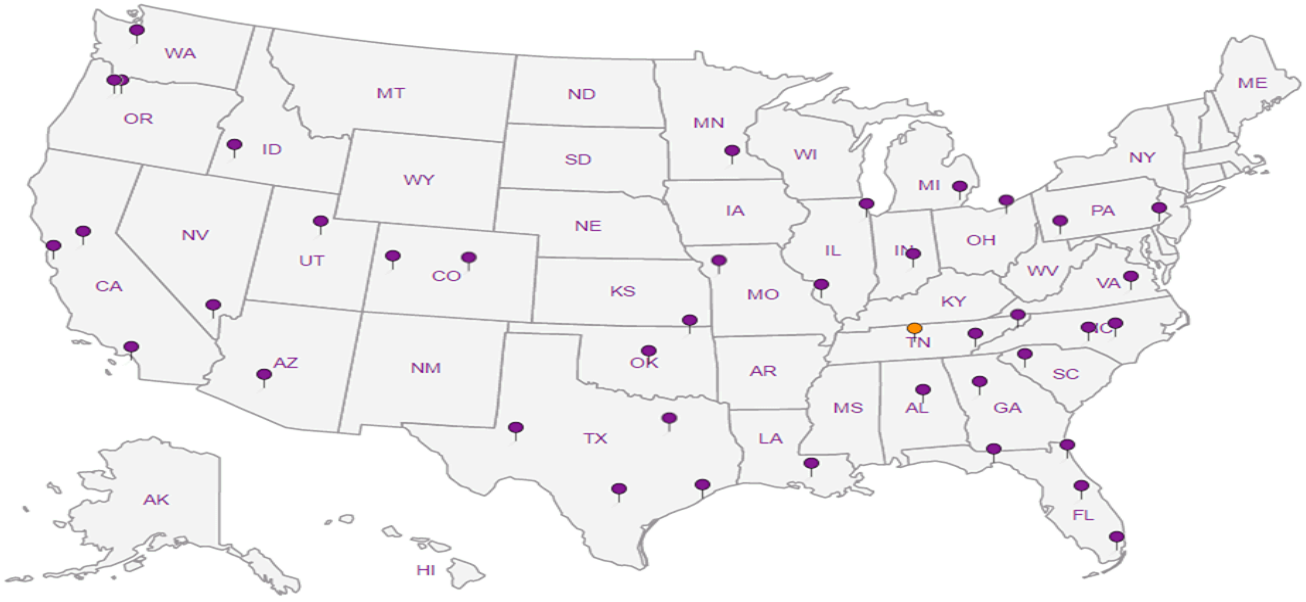
Third Party & Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	S-67674
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [n/a] Accreditation not applicable

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. **ESC Lab Sciences performs all testing at our central laboratory.**



Chain of Custody

C147

Pace Analytical® www.pacelabs.com

L952651

Workorder: 92363686 Workorder Name: KOPFLEX- ONSITE

Results Requested By: 11/27/2017

Report / Invoice To	Subcontract To
Taylor Ezell Pace Analytical Charlotte 9800 Kincey Ave. Suite 100 Huntersville, NC 28078 Phone (704)875-9092 Email: taylor.ezell@pacelabs.com	ESC -TN P.O. PTE 112017A

State of Sample Origin: MD

Requested Analysis: 8260 *

Item	Sample ID	Collect Date/Time	Lab ID	Matrix	Preserved Containers: HCL	8260	LAB USE ONLY
1	MW-38R	11/15/2017 09:27	92363686001	Water	5	X	-01
2	MW-05R	11/15/2017 09:33	92363686002	Water	5	X	-02
3	MW-40D	11/15/2017 09:50	92363686003	Water	5	X	-03
4	TB-111517	11/15/2017 00:00	92363686004	Water	3	X	-04
5	MW-22D	11/15/2017 10:15	92363686005	Water	5	X	-05
6	MW-04	11/15/2017 10:25	92363686006	Water	5	X	-06
7	MW-20	11/15/2017 10:30	92363686007	Water	5	X	-07
8	MW-09	11/15/2017 10:45	92363686008	Water	5	X	-08
9	MW-23D	11/15/2017 10:55	92363686009	Water	5	X	-09
10	MW-16D	11/15/2017 11:05	92363686010	Water	5	X	-10
11	MW-16	11/15/2017 11:10	92363686011	Water	5	X	-11
12	MW-600	11/15/2017 11:30	92363686012	Water	4	X	-12
13							
14							
15							
16							

Tracking #: 7458 9834 4871

2.5

Kelly [signature] 841
11/21/17 0845

Monday, November 20, 2017 10:53:22 AM

FMT-ALL-C-002rev.00 24March2009

Transfers	Released By	Date/Time	Received By	Date/Time	Comments
1	[illegible]	11/20/17 18:[illegible]	[illegible]	11/21/17 0845	* SEE ATTACHED LIST + LIMITS
2					
3					

Cooler Temperature on Receipt ____ °C	Custody Seal Y or N	Received on Ice Y or N	Samples Intact Y or N

Tracking #: 7458 9834 4871

L952651

2.5 mm 50

Sample Receipt Form

Pace Analytical Services, LLC
Charlotte

Pace Analytical
www.pacelabs.com

Sample Acknowledgement Recipients:
WSP USA
Eric Johnson
13530 Dulles Technology Drive
Suite 300
Herndon, VA 20171
Email: eric.johnson@wsp.com

Bill to:
WSP USA
Eric Johnson
13530 Dulles Technology Drive
Suite 300
Herndon, VA 20171
Email: eric.johnson@wsp.com

Final Report Recipients:
WSP USA
Eric Johnson (Primary)
13530 Dulles Technology Drive
Suite 300
Herndon, VA 20171
Email: eric.johnson@wsp.com

Line Item Descriptions:
[1] 1,4-Dioxane

Client P O No:
Phone: (704)875-9092
Project Manager: Taylor Ezell
Client Project ID: KOPFLEX- ONSITE

Lab Project No: 92363686
Project Deliverables Type: Standard Report
Project Report Due Date: 11/27/17
Profile: 4362 (Autoreleased)

Automated EDD
EDD #: ERIMS for WSP (57)
Publish or Review?: Publish (P)
Email Client ?: Yes (Y)
Include FR ?: Yes (Y)
Auto Invoice: No, do not auto invoice (N)
Email Invoice?: No, do not auto email (N)
Print Final Invoice?: Yes, print invoice (Y)
Multiple EDD #2: FR Only no EDD (0)
Multiple EDD #3: FR Only no EDD (0)
Multiple EDD #4: FR Only no EDD (0)
Multiple EDD #5: FR Only no EDD (0)

Lab Smp ID: 92363686001 **Client Smp ID: MW-38R** Smp Type: PS Line Item: 1
Collected Date: 11/15/17 09:27
Received Date: 11/16/17 09:40
Proj Smp No: 1 Matrix: Water

PARAMETER	METHOD	EARLIEST HOLD	UNIT PRICE	WR	SPL	%
8260 WLL - 8260 MS Volatiles	EPA 8260	11/29/17 23:59	$65.00			

COMPOUND	PQL	UNITS
Acetone	25	ug/L
Benzene	1	ug/L
Bromobenzene	1	ug/L
Bromochloromethane	1	ug/L
Bromodichloromethane	1	ug/L
Bromoform	1	ug/L
Bromomethane	2	ug/L
2-Butanone (MEK)	5	ug/L
Carbon tetrachloride	1	ug/L
Chlorobenzene	1	ug/L
Chloroethane	1	ug/L
Chloroform	1	ug/L
Chloromethane	1	ug/L
2-Chlorotoluene	1	ug/L
4-Chlorotoluene	1	ug/L
1,2-Dibromo-3-chloropropane	2	ug/L
Dibromochloromethane	1	ug/L
1,2-Dibromoethane (EDB)	1	ug/L

L952651

PARAMETER	METHOD	EARLIEST HOLD	UNIT PRICE	WR	SPL	%

COMPOUND	PQL	UNITS
Dibromomethane	1	ug/L
1,2-Dichlorobenzene	1	ug/L
1,3-Dichlorobenzene	1	ug/L
1,4-Dichlorobenzene	1	ug/L
Dichlorodifluoromethane	1	ug/L
1,1-Dichloroethane	1	ug/L
1,2-Dichloroethane	1	ug/L
1,1-Dichloroethene	1	ug/L
cis-1,2-Dichloroethene	1	ug/L
trans-1,2-Dichloroethene	1	ug/L
1,2-Dichloropropane	1	ug/L
1,3-Dichloropropane	1	ug/L
2,2-Dichloropropane	1	ug/L
1,1-Dichloropropene	1	ug/L
cis-1,3-Dichloropropene	1	ug/L
trans-1,3-Dichloropropene	1	ug/L
Diisopropyl ether	1	ug/L
Ethylbenzene	1	ug/L
Hexachloro-1,3-butadiene	1	ug/L
2-Hexanone	5	ug/L
p-Isopropyltoluene	1	ug/L
Methylene Chloride	2	ug/L
4-Methyl-2-pentanone (MIBK)	5	ug/L
Methyl-tert-butyl ether	1	ug/L
Naphthalene	1	ug/L
Styrene	1	ug/L
1,1,1,2-Tetrachloroethane	1	ug/L
1,1,2,2-Tetrachloroethane	1	ug/L
Tetrachloroethene	1	ug/L
Toluene	1	ug/L
1,2,3-Trichlorobenzene	1	ug/L
1,2,4-Trichlorobenzene	1	ug/L
1,1,1-Trichloroethane	1	ug/L
1,1,2-Trichloroethane	1	ug/L
Trichloroethene	1	ug/L
Trichlorofluoromethane	1	ug/L
1,2,3-Trichloropropane	1	ug/L
Vinyl acetate	2	ug/L
Vinyl chloride	1	ug/L
Xylene (Total)	1	ug/L
m&p-Xylene	2	ug/L
o-Xylene	1	ug/L

8260 WSIM - 8260 MSV	EPA 8260B Mod.	11/29/17 23:59	$125.00

Sub Total - Sample 2147297 $190.00

Lab Smp ID: 92363686002 **Client Smp ID: MW-05R**
Proj Smp No: 2 Matrix: Water Smp Type: PS Line Item: 1
Collected Date: 11/15/17 09:33
Received Date: 11/16/17 09:40

PARAMETER	METHOD	EARLIEST HOLD	UNIT PRICE	WR	SPL	%
8260 WLL - 8260 MS Volatiles	EPA 8260	11/29/17 23:59	$65.00			
Compound Count: 60						
8260 WSIM - 8260 MSV	EPA 8260B Mod.	11/29/17 23:59	$125.00			

L95265

ESC LAB SCIENCES
Cooler Receipt Form

Client: PACE	SDG#	952651
Cooler Received/Opened On: 11/21/17	Temperature:	2.5
Received By: Kelly Mercer		
Signature: Kelly Mercer 841		

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?			
COC Signed / Accurate?			
Bottles arrive intact?			
Correct bottles used?			
Sufficient volume sent?			
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?			

Katie Ingram

From: Nancy McLain
Sent: Tuesday, November 21, 2017 3:18 PM
To: Login; Shipping
Subject: PACE -Huntersville NC samples
Importance: High

PACE (Huntersville, NC) says they sent us too many vials for 8260 analysis. These haven't been logged yet. They need two or three vials for each of these work orders sent back to them. If by chance they're mistaken and didn't send an extra 2-3 to spare and send back please let me know.

92363686
92363691
92363693
92363838

The WO number is on the COC.

Shipping: Pleaes ship back to here:

Pace Analytical Services, Inc.-Carolina Labs
Attn: Taylor Ezell
9800 Kincey Ave
Suite 100
Huntersville, NC 28078

Thanks,
Nancy

L952651

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

November 29, 2017

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

RE: Project: KOPFLEX- ONSITE
Pace Project No.: 92363691

Dear Eric Johnson:
Enclosed are the analytical results for sample(s) received by the laboratory on November 16, 2017. 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.

Some analyses have been subcontracted outside of the Pace Network. The subcontracted laboratory report has been attached.

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

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

CERTIFICATIONS

Project: KOPFLEX- ONSITE
Pace Project No.: 92363691

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

SAMPLE SUMMARY

Project: KOPFLEX- ONSITE
Pace Project No.: 92363691

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92363691001	**RW-2D**	Water	11/14/17 13:42	11/16/17 09:40
92363691002	**MW-200**	Water	11/14/17 13:35	11/16/17 09:40
92363691003	**MW-01D**	Water	11/14/17 14:00	11/16/17 09:40
92363691004	**RW-1D**	Water	11/14/17 14:11	11/16/17 09:40
92363691005	**MW-21D**	Water	11/14/17 14:18	11/16/17 09:40
92363691006	**RW-3S**	Water	11/14/17 14:33	11/16/17 09:40
92363691007	**RW-2S**	Water	11/14/17 14:40	11/16/17 09:40
92363691008	**RW-1S**	Water	11/14/17 14:49	11/16/17 09:40
92363691009	**TB-11417**	Water	11/14/17 00:00	11/16/17 09:40
92363691010	**MW-39**	Water	11/14/17 08:25	11/16/17 09:40
92363691011	**MW-42**	Water	11/14/17 08:33	11/16/17 09:40
92363691012	**MW-18**	Water	11/14/17 09:15	11/16/17 09:40

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

SAMPLE ANALYTE COUNT

Project: KOPFLEX- ONSITE
Pace Project No.: 92363691

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92363691001	**RW-2D**	EPA 8260B Mod.	DLK	3	PASI-C
92363691002	**MW-200**	EPA 8260B Mod.	DLK	3	PASI-C
92363691003	**MW-01D**	EPA 8260B Mod.	DLK	3	PASI-C
92363691004	**RW-1D**	EPA 8260B Mod.	DLK	3	PASI-C
92363691005	**MW-21D**	EPA 8260B Mod.	DLK	3	PASI-C
92363691006	**RW-3S**	EPA 8260B Mod.	DLK	3	PASI-C
92363691007	**RW-2S**	EPA 8260B Mod.	DLK	3	PASI-C
92363691008	**RW-1S**	EPA 8260B Mod.	DLK	3	PASI-C
92363691009	**TB-11417**	EPA 8260B Mod.	DLK	3	PASI-C
92363691010	**MW-39**	EPA 8260B Mod.	DLK	3	PASI-C
92363691011	**MW-42**	EPA 8260B Mod.	DLK	3	PASI-C
92363691012	**MW-18**	EPA 8260B Mod.	DLK	3	PASI-C

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Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: KOPFLEX- ONSITE
Pace Project No.: 92363691

Sample: RW-2D **Lab ID: 92363691001** Collected: 11/14/17 13:42 Received: 11/16/17 09:40 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	**172**	ug/L	5.0	2.5		11/21/17 23:37	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	104	%	50-150	2.5		11/21/17 23:37	17060-07-0	
Toluene-d8 (S)	101	%	50-150	2.5		11/21/17 23:37	2037-26-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: KOPFLEX- ONSITE
Pace Project No.: 92363691

Sample: MW-200 **Lab ID: 92363691002** Collected: 11/14/17 13:35 Received: 11/16/17 09:40 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	**257**	ug/L	40.0	20		11/21/17 23:55	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	112	%	50-150	20		11/21/17 23:55	17060-07-0	
Toluene-d8 (S)	99	%	50-150	20		11/21/17 23:55	2037-26-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: KOPFLEX- ONSITE
Pace Project No.: 92363691

Sample: MW-01D **Lab ID: 92363691003** Collected: 11/14/17 14:00 Received: 11/16/17 09:40 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	**243**	ug/L	10.0	5		11/22/17 00:14	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	110	%	50-150	5		11/22/17 00:14	17060-07-0	
Toluene-d8 (S)	97	%	50-150	5		11/22/17 00:14	2037-26-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: KOPFLEX- ONSITE
Pace Project No.: 92363691

Sample: RW-1D **Lab ID: 92363691004** Collected: 11/14/17 14:11 Received: 11/16/17 09:40 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	**65.5**	ug/L	2.0	1		11/22/17 00:33	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	107	%	50-150	1		11/22/17 00:33	17060-07-0	
Toluene-d8 (S)	93	%	50-150	1		11/22/17 00:33	2037-26-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: KOPFLEX- ONSITE
Pace Project No.: 92363691

Sample: MW-21D **Lab ID: 92363691005** Collected: 11/14/17 14:18 Received: 11/16/17 09:40 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	**18.5**	ug/L	2.0	1		11/22/17 00:52	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	107	%	50-150	1		11/22/17 00:52	17060-07-0	
Toluene-d8 (S)	90	%	50-150	1		11/22/17 00:52	2037-26-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: KOPFLEX- ONSITE
Pace Project No.: 92363691

Sample: RW-3S **Lab ID: 92363691006** Collected: 11/14/17 14:33 Received: 11/16/17 09:40 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	**10.6**	ug/L	2.0	1		11/22/17 01:11	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	102	%	50-150	1		11/22/17 01:11	17060-07-0	
Toluene-d8 (S)	87	%	50-150	1		11/22/17 01:11	2037-26-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: KOPFLEX- ONSITE
Pace Project No.: 92363691

Sample: RW-2S **Lab ID: 92363691007** Collected: 11/14/17 14:40 Received: 11/16/17 09:40 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	**549**	ug/L	40.0	20		11/22/17 01:30	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	102	%	50-150	20		11/22/17 01:30	17060-07-0	
Toluene-d8 (S)	88	%	50-150	20		11/22/17 01:30	2037-26-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: KOPFLEX- ONSITE
Pace Project No.: 92363691

Sample: RW-1S **Lab ID: 92363691008** Collected: 11/14/17 14:49 Received: 11/16/17 09:40 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	**580**	ug/L	50.0	25		11/22/17 02:45	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	94	%	50-150	25		11/22/17 02:45	17060-07-0	
Toluene-d8 (S)	73	%	50-150	25		11/22/17 02:45	2037-26-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: KOPFLEX- ONSITE
Pace Project No.: 92363691

Sample: TB-11417 **Lab ID: 92363691009** Collected: 11/14/17 00:00 Received: 11/16/17 09:40 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	ND	ug/L	2.0	1		11/21/17 19:50	123-91-1	R1
Surrogates								
1,2-Dichloroethane-d4 (S)	99	%	50-150	1		11/21/17 19:50	17060-07-0	
Toluene-d8 (S)	97	%	50-150	1		11/21/17 19:50	2037-26-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: KOPFLEX- ONSITE
Pace Project No.: 92363691

Sample: MW-39 **Lab ID: 92363691010** Collected: 11/14/17 08:25 Received: 11/16/17 09:40 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	**2.2**	ug/L	2.0	1		11/22/17 03:04	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	97	%	50-150	1		11/22/17 03:04	17060-07-0	
Toluene-d8 (S)	71	%	50-150	1		11/22/17 03:04	2037-26-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: KOPFLEX- ONSITE
Pace Project No.: 92363691

Sample: MW-42 **Lab ID: 92363691011** Collected: 11/14/17 08:33 Received: 11/16/17 09:40 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	**19.3**	ug/L	2.0	1		11/22/17 03:23	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	83	%	50-150	1		11/22/17 03:23	17060-07-0	
Toluene-d8 (S)	67	%	50-150	1		11/22/17 03:23	2037-26-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: KOPFLEX- ONSITE
Pace Project No.: 92363691

Sample: MW-18 **Lab ID: 92363691012** Collected: 11/14/17 09:15 Received: 11/16/17 09:40 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	**24.9**	ug/L	2.0	1		11/22/17 03:42	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	81	%	50-150	1		11/22/17 03:42	17060-07-0	
Toluene-d8 (S)	67	%	50-150	1		11/22/17 03:42	2037-26-5	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALITY CONTROL DATA

Project: KOPFLEX- ONSITE
Pace Project No.: 92363691

QC Batch: 387897 Analysis Method: EPA 8260B Mod.
QC Batch Method: EPA 8260B Mod. Analysis Description: 8260 MSV SIM
Associated Lab Samples: 92363691001, 92363691002, 92363691003, 92363691004, 92363691005, 92363691006, 92363691007

METHOD BLANK: 2152153 Matrix: Water
Associated Lab Samples: 92363691001, 92363691002, 92363691003, 92363691004, 92363691005, 92363691006, 92363691007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	ND	2.0	11/21/17 19:12	
1,2-Dichloroethane-d4 (S)	%	107	50-150	11/21/17 19:12	
Toluene-d8 (S)	%	95	50-150	11/21/17 19:12	

LABORATORY CONTROL SAMPLE: 2152154

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	20	20.0	100	71-125	
1,2-Dichloroethane-d4 (S)	%			107	50-150	
Toluene-d8 (S)	%			94	50-150	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2152155 2152156

Parameter	Units	92363693004 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	9.7	20	20	32.3	37.7	113	140	50-150	15	30	
1,2-Dichloroethane-d4 (S)	%						97	97	50-150		150	
Toluene-d8 (S)	%						78	75	50-150		150	

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

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QUALITY CONTROL DATA

Project: KOPFLEX- ONSITE
Pace Project No.: 92363691

QC Batch: 387898 Analysis Method: EPA 8260B Mod.
QC Batch Method: EPA 8260B Mod. Analysis Description: 8260 MSV SIM
Associated Lab Samples: 92363691008, 92363691009, 92363691010, 92363691011, 92363691012

METHOD BLANK: 2152169 Matrix: Water
Associated Lab Samples: 92363691008, 92363691009, 92363691010, 92363691011, 92363691012

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	ND	2.0	11/21/17 18:54	
1,2-Dichloroethane-d4 (S)	%	102	50-150	11/21/17 18:54	
Toluene-d8 (S)	%	101	50-150	11/21/17 18:54	

LABORATORY CONTROL SAMPLE: 2152170

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	20	20.7	104	71-125	
1,2-Dichloroethane-d4 (S)	%			105	50-150	
Toluene-d8 (S)	%			98	50-150	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2153698 2153699

Parameter	Units	92363691009 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,4-Dioxane (p-Dioxane)	ug/L	ND	20	20	25.3	16.3	126	82	50-150	43	30	R1
1,2-Dichloroethane-d4 (S)	%						100	98	50-150		150	
Toluene-d8 (S)	%						104	97	50-150		150	

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

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QUALIFIERS

Project: KOPFLEX- ONSITE
Pace Project No.: 92363691

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.

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

R1	RPD value was outside control limits.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: KOPFLEX- ONSITE
Pace Project No.: 92363691

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92363691001	**RW-2D**	EPA 8260B Mod.	387897		
92363691002	**MW-200**	EPA 8260B Mod.	387897		
92363691003	**MW-01D**	EPA 8260B Mod.	387897		
92363691004	**RW-1D**	EPA 8260B Mod.	387897		
92363691005	**MW-21D**	EPA 8260B Mod.	387897		
92363691006	**RW-3S**	EPA 8260B Mod.	387897		
92363691007	**RW-2S**	EPA 8260B Mod.	387897		
92363691008	**RW-1S**	EPA 8260B Mod.	387898		
92363691009	**TB-11417**	EPA 8260B Mod.	387898		
92363691010	**MW-39**	EPA 8260B Mod.	387898		
92363691011	**MW-42**	EPA 8260B Mod.	387898		
92363691012	**MW-18**	EPA 8260B Mod.	387898		

Pace Analytical	Document Name: Sample Condition Upon Receipt(SCUR)	Document Revised: August 4, 2017 Page 1 of 2
	Document No.: F-CAR-CS-033-Rev.04	Issuing Authority: Pace Quality Office

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

Sample Condition Upon Receipt **Client Name:** WSP **Project #:**

WO# : 92363691

92363691

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

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

Date/Initials Person Examining Contents: 11/16/17

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

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

Thermometer: ☑ IR Gun ID: T1101

Type of Ice: ☑ Wet ☐ Blue ☐ None

Correction Factor: **Cooler Temp Corrected (°C):** 5.2

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? -Includes Date/Time/ID/Analysis Matrix: WT	☑ Yes	☐ No	☐ N/A	9.
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	

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Sample Discrepancy: _____

Lot ID of split containers: _____

Project Manager SCURF Review: TR **Date:** 11/17

Project Manager SRF Review: TR **Date:** 11/17

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)

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

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

Project

WO# : 92363691

PM: PTE Due Date: 11/27/17

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)	Cubitainer	VSGU-20 mL Scintillation vials (N/A)	GN
1																6													
2																6													
3																6													
4																6													
5																6													
6																6													
7																6													
8																6													
9																4													
10																6													
11																6													
12																6													

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 #

CHAIN-OF-CUSTODY RECORD

Onsite I

Page 1 of 1

Page 23 of 69

WSP USA Office Address	13530 Dulles Technology Drive St 300
Project Name	Kapflex-onsite
WSP USA Contact Name	Eric Johnson
Project Location	~~3M~~ Hanover MD
WSP USA Contact E-mail	eric.johnson@wsp.com
Project Number & Task	31400390
WSP USA Contact Phone	(703) 709-6500
Sampler(s) Name(s)	Mara Kaplan
Sampler(s) Signature(s)	

No. 008206

Laboratory Name & Location: Pace

Laboratory Project Manager:

Requested Turn-Around-Time: [X] Standard [ ] 24 HR [ ] 48 HR [ ] 72 HR [ ] ___ HR 92360349

Sample Identification	Matrix	~~Collection Start*~~ Date	~~Time~~	~~Collection Stop*~~ Date	Time	Number of Containers	VOCs (8260)	1,4 Dioxane (8260SIM)	Sample Comments
RW-2D	Aq	11/14/17		1342		6	X	X	001
MW-20D	Aq	11/14/17		1335		6	X	X	002
MW-01D	Aq	11/14/17		1400		6	X	X	003
RW-1D	Aq	11/14/17		1411		6	X	X	004
MW-21D	Aq	11/14/17		1418		6	X	X	005
RW-35	Aq	11/14/17		1433		6	X	X	006
RW-25	Aq	11/14/17		1440		6	X	X	007
RW-1S	Aq	11/14/17		1449		6	X	X	008
TB-111417	Aq	—		—		4	X	X	Trip blank 009
~~MW-43~~	~~Aq~~	~~11/15/17~~		~~0812~~		~~6~~	~~X~~	~~X~~	~~MS/MSD~~
MW-39	Aq	11/15/17		0825		6	X	X	010
MW-42	Aq	11/15/17		0833		6	X	X	011
MW-18	Aq	11/15/17		0915		6	X	X	012

Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Shipment Method	Tracking Number(s)
	11/15/17	1400	FedEx				
Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Number of Packages	Custody Seal Number(s)
				11/16/17	940		

*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)

Pace Analytical	Document Name: Sample Condition Upon Receipt(SCUR)	Document Revised: August 4, 2017 Page 1 of 2
	Document No.: F-CAR-CS-033-Rev.04	Issuing Authority: Pace Quality Office

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

WO# : 92363691

92363691

Sample Condition Upon Receipt

Client Name: WSP **Project #**

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

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

Date/Initials Person Examining Contents: DW 11/16/17

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

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

Thermometer: ☑ IR Gun ID: T101 **Type of Ice:** ☑ Wet ☐ Blue ☐ None

Correction Factor: **Cooler Temp Corrected (°C):** 5.2

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	

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Sample Discrepancy: _____

Lot ID of split containers: _____

Project Manager SCURF Review: TC **Date:** 11/17

Project Manager SRF Review: [illegible] **Date:** 11/17

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)

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

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

Project **WO# : 92363691**

PM: PTE Due Date: 11/27/17

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)	Cubitainer	VSGU-20 mL Scintillation vials (N/A)	GN
1																6													
2																6													
3																6													
4																6													
5																6													
6																6													
7																6													
8																6													
9																4													
10																6													
11																6													
12																6													

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 #

Onsite I

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

WSP USA Office Address	13530 Dulles Technology Drive St 300
Project Name	Kapflex-onsite
WSP USA Contact Name	Eric Johnson
Project Location	~~3rd~~ Hanover MD
WSP USA Contact E-mail	eric.johnson@wsp.com
Project Number & Task	31400390
WSP USA Contact Phone	(703) 709-6500
Sampler(s) Name(s)	Mara Kaplan
Sampler(s) Signature(s)	

No. 008206

WSP

Laboratory Name & Location: Pace

Laboratory Project Manager:

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

923603691

Sample Identification	Matrix	~~Collection Start*~~ Date	~~Time~~	~~Collection Stop*~~ Date	Time	Number of Containers	Requested Analyses & Preservatives: VOCs (8260)	1,4 Dioxane (8260SIM)	Sample Comments
RW-2D	Ag	11/14/17		1342		6	X	X	001
MW-20D	Ag	11/14/17		1335		6	X	X	002
MW-01D	Ag	11/14/17		1400		6	X	X	003
RW-1D	Ag	11/14/17		1411		6	X	X	004
MW-21D	Ag	11/14/17		1418		6	X	X	005
RW-35	Ag	11/14/17		1433		6	X	X	006
RW-25	Ag	11/14/17		1440		6	X	X	007
RW-1S	Ag	11/14/17		1449		6	X	X	008
TB-111417	Ag	—		—		4	X	X	Trip blank 009
~~MW-43~~	~~Ag~~	~~11/15/17~~		~~0812~~		~~6~~	~~X~~	~~X~~	~~010~~
MW-39	Ag	11/15/17		0825		6	X	X	010
MW-42	Ag	11/15/17		0833		6	X	X	011
MW-18	Ag	11/15/17		0915		6	X	X	012

Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Shipment Method	Tracking Number(s)
	11/15/17	1400	FedEx				
Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Number of Packages	Custody Seal Number(s)
				11/16/17	940		

*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)

Pace Analytical - Huntersville, NC

Sample Delivery Group:	L952664
Samples Received:	11/21/2017
Project Number:	92363691
Description:	KOPLEX-ONSITE

Report To: Taylor Ezell
9800 Kincey Avenue, Suite 100
Huntersville, NC 28078

Entire Report Reviewed By:

Nancy McLain
Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

RW-2D L952664-01 GW

Collected by	Collected date/time	Received date/time
	11/14/17 13:42	11/21/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1045961	1	11/28/17 14:15	11/28/17 14:15	BMB
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1045961	10	11/28/17 17:49	11/28/17 17:49	BMB

MW-200 L952664-02 GW

Collected by	Collected date/time	Received date/time
	11/14/17 13:35	11/21/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1045961	1	11/28/17 14:34	11/28/17 14:34	BMB
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1045961	10	11/28/17 18:08	11/28/17 18:08	BMB

MW-01D L952664-03 GW

Collected by	Collected date/time	Received date/time
	11/14/17 14:00	11/21/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1045961	1	11/28/17 14:53	11/28/17 14:53	BMB
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1045961	10	11/28/17 18:28	11/28/17 18:28	BMB

RW-1D L952664-04 GW

Collected by	Collected date/time	Received date/time
	11/14/17 14:11	11/21/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1045961	1	11/28/17 15:13	11/28/17 15:13	BMB

MW-21D L952664-05 GW

Collected by	Collected date/time	Received date/time
	11/14/17 14:18	11/21/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1045961	1	11/28/17 15:32	11/28/17 15:32	BMB
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1045961	1	11/28/17 18:48	11/28/17 18:48	BMB

RW-3S L952664-06 GW

Collected by	Collected date/time	Received date/time
	11/14/17 14:33	11/21/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1045961	1	11/28/17 15:52	11/28/17 15:52	BMB
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1045961	1	11/28/17 19:07	11/28/17 19:07	BMB

RW-2S L952664-07 GW

Collected by	Collected date/time	Received date/time
	11/14/17 14:40	11/21/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1045961	1	11/28/17 16:11	11/28/17 16:11	BMB
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1045961	10	11/28/17 19:27	11/28/17 19:27	BMB

RW-1S L952664-08 GW

Collected by	Collected date/time	Received date/time
	11/14/17 14:49	11/21/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1045961	1	11/28/17 16:31	11/28/17 16:31	BMB
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1045961	10	11/28/17 19:46	11/28/17 19:46	BMB

TB-11417 L952664-09 GW

Collected by	Collected date/time	Received date/time
	11/14/17 00:00	11/21/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1045961	1	11/28/17 13:36	11/28/17 13:36	BMB

MW-39 L952664-10 GW

Collected by	Collected date/time	Received date/time
	11/14/17 08:25	11/21/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1045961	1	11/28/17 16:50	11/28/17 16:50	BMB
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1045961	1	11/28/17 20:06	11/28/17 20:06	BMB

MW-42 L952664-11 GW

Collected by	Collected date/time	Received date/time
	11/14/17 08:33	11/21/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1045961	1	11/28/17 17:10	11/28/17 17:10	BMB

MW-18 L952664-12 GW

Collected by	Collected date/time	Received date/time
	11/14/17 09:15	11/21/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1045961	1	11/28/17 17:29	11/28/17 17:29	BMB

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Nancy McLain
Technical Service Representative

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	U		10.0	50.0	1	11/28/2017 14:15	WG1045961
Benzene	U		0.331	1.00	1	11/28/2017 14:15	WG1045961
Bromobenzene	U		0.352	1.00	1	11/28/2017 14:15	WG1045961
Bromochloromethane	U		0.520	5.00	1	11/28/2017 14:15	WG1045961
Bromodichloromethane	U		0.380	1.00	1	11/28/2017 14:15	WG1045961
Bromoform	U		0.469	1.00	1	11/28/2017 14:15	WG1045961
Bromomethane	U	J3	0.866	5.00	1	11/28/2017 14:15	WG1045961
Carbon tetrachloride	U		0.379	1.00	1	11/28/2017 14:15	WG1045961
Chlorobenzene	U		0.348	1.00	1	11/28/2017 14:15	WG1045961
Chlorodibromomethane	U		0.327	1.00	1	11/28/2017 14:15	WG1045961
Chloroethane	1.18	J	0.453	5.00	1	11/28/2017 14:15	WG1045961
Chloroform	0.326	J	0.324	5.00	1	11/28/2017 14:15	WG1045961
Chloromethane	U		0.276	2.50	1	11/28/2017 14:15	WG1045961
2-Chlorotoluene	U		0.375	1.00	1	11/28/2017 14:15	WG1045961
4-Chlorotoluene	U		0.351	1.00	1	11/28/2017 14:15	WG1045961
1,2-Dibromo-3-Chloropropane	U		1.33	5.00	1	11/28/2017 14:15	WG1045961
1,2-Dibromoethane	U		0.381	1.00	1	11/28/2017 14:15	WG1045961
Dibromomethane	U		0.346	1.00	1	11/28/2017 14:15	WG1045961
1,2-Dichlorobenzene	U		0.349	1.00	1	11/28/2017 14:15	WG1045961
1,3-Dichlorobenzene	U		0.220	1.00	1	11/28/2017 14:15	WG1045961
1,4-Dichlorobenzene	U		0.274	1.00	1	11/28/2017 14:15	WG1045961
Dichlorodifluoromethane	U		0.551	5.00	1	11/28/2017 14:15	WG1045961
1,1-Dichloroethane	44.0		0.259	1.00	1	11/28/2017 14:15	WG1045961
1,2-Dichloroethane	2.50		0.361	1.00	1	11/28/2017 14:15	WG1045961
1,1-Dichloroethene	295		3.98	10.0	10	11/28/2017 17:49	WG1045961
cis-1,2-Dichloroethene	1.26		0.260	1.00	1	11/28/2017 14:15	WG1045961
trans-1,2-Dichloroethene	U		0.396	1.00	1	11/28/2017 14:15	WG1045961
1,2-Dichloropropane	U		0.306	1.00	1	11/28/2017 14:15	WG1045961
1,1-Dichloropropene	U		0.352	1.00	1	11/28/2017 14:15	WG1045961
1,3-Dichloropropane	U		0.366	1.00	1	11/28/2017 14:15	WG1045961
cis-1,3-Dichloropropene	U		0.418	1.00	1	11/28/2017 14:15	WG1045961
trans-1,3-Dichloropropene	U		0.419	1.00	1	11/28/2017 14:15	WG1045961
2,2-Dichloropropane	U		0.321	1.00	1	11/28/2017 14:15	WG1045961
Di-isopropyl ether	U		0.320	1.00	1	11/28/2017 14:15	WG1045961
Ethylbenzene	U		0.384	1.00	1	11/28/2017 14:15	WG1045961
Hexachloro-1,3-butadiene	U		0.256	1.00	1	11/28/2017 14:15	WG1045961
2-Hexanone	U		3.82	10.0	1	11/28/2017 14:15	WG1045961
p-Isopropyltoluene	U		0.350	1.00	1	11/28/2017 14:15	WG1045961
2-Butanone (MEK)	U		3.93	10.0	1	11/28/2017 14:15	WG1045961
Methylene Chloride	U		1.00	5.00	1	11/28/2017 14:15	WG1045961
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0	1	11/28/2017 14:15	WG1045961
Methyl tert-butyl ether	U		0.367	1.00	1	11/28/2017 14:15	WG1045961
Naphthalene	U		1.00	5.00	1	11/28/2017 14:15	WG1045961
Styrene	U		0.307	1.00	1	11/28/2017 14:15	WG1045961
1,1,1,2-Tetrachloroethane	U		0.385	1.00	1	11/28/2017 14:15	WG1045961
1,1,2,2-Tetrachloroethane	U		0.130	1.00	1	11/28/2017 14:15	WG1045961
Tetrachloroethene	0.436	J	0.372	1.00	1	11/28/2017 14:15	WG1045961
Toluene	U		0.412	1.00	1	11/28/2017 14:15	WG1045961
1,2,3-Trichlorobenzene	U		0.230	1.00	1	11/28/2017 14:15	WG1045961
1,2,4-Trichlorobenzene	U		0.355	1.00	1	11/28/2017 14:15	WG1045961
1,1,1-Trichloroethane	12.6		0.319	1.00	1	11/28/2017 14:15	WG1045961
1,1,2-Trichloroethane	0.417	J	0.383	1.00	1	11/28/2017 14:15	WG1045961
Trichloroethene	1.62		0.398	1.00	1	11/28/2017 14:15	WG1045961
Trichlorofluoromethane	U		1.20	5.00	1	11/28/2017 14:15	WG1045961
1,2,3-Trichloropropane	U		0.807	2.50	1	11/28/2017 14:15	WG1045961
Vinyl chloride	U		0.259	1.00	1	11/28/2017 14:15	WG1045961

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Vinyl acetate	U		1.63	10.0	1	11/28/2017 14:15	WG1045961
o-Xylene	U		0.341	1.00	1	11/28/2017 14:15	WG1045961
m&p-Xylene	U		0.719	2.00	1	11/28/2017 14:15	WG1045961
Xylenes, Total	U		1.06	3.00	1	11/28/2017 14:15	WG1045961
(S) Toluene-d8	*98.9*			*80.0-120*		*11/28/2017 17:49*	WG1045961
(S) Toluene-d8	*97.3*			*80.0-120*		*11/28/2017 14:15*	WG1045961
(S) Dibromofluoromethane	*105*			*76.0-123*		*11/28/2017 14:15*	WG1045961
(S) Dibromofluoromethane	*101*			*76.0-123*		*11/28/2017 17:49*	WG1045961
(S) 4-Bromofluorobenzene	*97.0*			*80.0-120*		*11/28/2017 14:15*	WG1045961
(S) 4-Bromofluorobenzene	*97.0*			*80.0-120*		*11/28/2017 17:49*	WG1045961

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	U		10.0	50.0	1	11/28/2017 14:34	WG1045961
Benzene	U		0.331	1.00	1	11/28/2017 14:34	WG1045961
Bromobenzene	U		0.352	1.00	1	11/28/2017 14:34	WG1045961
Bromochloromethane	U		0.520	5.00	1	11/28/2017 14:34	WG1045961
Bromodichloromethane	U		0.380	1.00	1	11/28/2017 14:34	WG1045961
Bromoform	U		0.469	1.00	1	11/28/2017 14:34	WG1045961
Bromomethane	U	J3	0.866	5.00	1	11/28/2017 14:34	WG1045961
Carbon tetrachloride	U		0.379	1.00	1	11/28/2017 14:34	WG1045961
Chlorobenzene	U		0.348	1.00	1	11/28/2017 14:34	WG1045961
Chlorodibromomethane	U		0.327	1.00	1	11/28/2017 14:34	WG1045961
Chloroethane	1.11	J	0.453	5.00	1	11/28/2017 14:34	WG1045961
Chloroform	U		0.324	5.00	1	11/28/2017 14:34	WG1045961
Chloromethane	U		0.276	2.50	1	11/28/2017 14:34	WG1045961
2-Chlorotoluene	U		0.375	1.00	1	11/28/2017 14:34	WG1045961
4-Chlorotoluene	U		0.351	1.00	1	11/28/2017 14:34	WG1045961
1,2-Dibromo-3-Chloropropane	U		1.33	5.00	1	11/28/2017 14:34	WG1045961
1,2-Dibromoethane	U		0.381	1.00	1	11/28/2017 14:34	WG1045961
Dibromomethane	U		0.346	1.00	1	11/28/2017 14:34	WG1045961
1,2-Dichlorobenzene	U		0.349	1.00	1	11/28/2017 14:34	WG1045961
1,3-Dichlorobenzene	U		0.220	1.00	1	11/28/2017 14:34	WG1045961
1,4-Dichlorobenzene	U		0.274	1.00	1	11/28/2017 14:34	WG1045961
Dichlorodifluoromethane	U		0.551	5.00	1	11/28/2017 14:34	WG1045961
1,1-Dichloroethane	45.9		0.259	1.00	1	11/28/2017 14:34	WG1045961
1,2-Dichloroethane	2.60		0.361	1.00	1	11/28/2017 14:34	WG1045961
1,1-Dichloroethene	255		3.98	10.0	10	11/28/2017 18:08	WG1045961
cis-1,2-Dichloroethene	1.48		0.260	1.00	1	11/28/2017 14:34	WG1045961
trans-1,2-Dichloroethene	U		0.396	1.00	1	11/28/2017 14:34	WG1045961
1,2-Dichloropropane	U		0.306	1.00	1	11/28/2017 14:34	WG1045961
1,1-Dichloropropene	U		0.352	1.00	1	11/28/2017 14:34	WG1045961
1,3-Dichloropropane	U		0.366	1.00	1	11/28/2017 14:34	WG1045961
cis-1,3-Dichloropropene	U		0.418	1.00	1	11/28/2017 14:34	WG1045961
trans-1,3-Dichloropropene	U		0.419	1.00	1	11/28/2017 14:34	WG1045961
2,2-Dichloropropane	U		0.321	1.00	1	11/28/2017 14:34	WG1045961
Di-isopropyl ether	U		0.320	1.00	1	11/28/2017 14:34	WG1045961
Ethylbenzene	U		0.384	1.00	1	11/28/2017 14:34	WG1045961
Hexachloro-1,3-butadiene	U		0.256	1.00	1	11/28/2017 14:34	WG1045961
2-Hexanone	U		3.82	10.0	1	11/28/2017 14:34	WG1045961
p-Isopropyltoluene	U		0.350	1.00	1	11/28/2017 14:34	WG1045961
2-Butanone (MEK)	U		3.93	10.0	1	11/28/2017 14:34	WG1045961
Methylene Chloride	U		1.00	5.00	1	11/28/2017 14:34	WG1045961
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0	1	11/28/2017 14:34	WG1045961
Methyl tert-butyl ether	0.393	J	0.367	1.00	1	11/28/2017 14:34	WG1045961
Naphthalene	U		1.00	5.00	1	11/28/2017 14:34	WG1045961
Styrene	U		0.307	1.00	1	11/28/2017 14:34	WG1045961
1,1,1,2-Tetrachloroethane	U		0.385	1.00	1	11/28/2017 14:34	WG1045961
1,1,2,2-Tetrachloroethane	U		0.130	1.00	1	11/28/2017 14:34	WG1045961
Tetrachloroethene	0.417	J	0.372	1.00	1	11/28/2017 14:34	WG1045961
Toluene	U		0.412	1.00	1	11/28/2017 14:34	WG1045961
1,2,3-Trichlorobenzene	U		0.230	1.00	1	11/28/2017 14:34	WG1045961
1,2,4-Trichlorobenzene	U		0.355	1.00	1	11/28/2017 14:34	WG1045961
1,1,1-Trichloroethane	13.4		0.319	1.00	1	11/28/2017 14:34	WG1045961
1,1,2-Trichloroethane	0.397	J	0.383	1.00	1	11/28/2017 14:34	WG1045961
Trichloroethene	1.68		0.398	1.00	1	11/28/2017 14:34	WG1045961
Trichlorofluoromethane	U		1.20	5.00	1	11/28/2017 14:34	WG1045961
1,2,3-Trichloropropane	U		0.807	2.50	1	11/28/2017 14:34	WG1045961
Vinyl chloride	U		0.259	1.00	1	11/28/2017 14:34	WG1045961

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Vinyl acetate	U		1.63	10.0	1	11/28/2017 14:34	WG1045961
o-Xylene	U		0.341	1.00	1	11/28/2017 14:34	WG1045961
m&p-Xylene	U		0.719	2.00	1	11/28/2017 14:34	WG1045961
Xylenes, Total	U		1.06	3.00	1	11/28/2017 14:34	WG1045961
(S) Toluene-d8	*96.1*			*80.0-120*		*11/28/2017 14:34*	WG1045961
(S) Toluene-d8	*98.6*			*80.0-120*		*11/28/2017 18:08*	WG1045961
(S) Dibromofluoromethane	*103*			*76.0-123*		*11/28/2017 14:34*	WG1045961
(S) Dibromofluoromethane	*100*			*76.0-123*		*11/28/2017 18:08*	WG1045961
(S) 4-Bromofluorobenzene	*98.6*			*80.0-120*		*11/28/2017 14:34*	WG1045961
(S) 4-Bromofluorobenzene	*102*			*80.0-120*		*11/28/2017 18:08*	WG1045961

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	U		10.0	50.0	1	11/28/2017 14:53	WG1045961
Benzene	U		0.331	1.00	1	11/28/2017 14:53	WG1045961
Bromobenzene	U		0.352	1.00	1	11/28/2017 14:53	WG1045961
Bromochloromethane	U		0.520	5.00	1	11/28/2017 14:53	WG1045961
Bromodichloromethane	U		0.380	1.00	1	11/28/2017 14:53	WG1045961
Bromoform	U		0.469	1.00	1	11/28/2017 14:53	WG1045961
Bromomethane	U	J3	0.866	5.00	1	11/28/2017 14:53	WG1045961
Carbon tetrachloride	U		0.379	1.00	1	11/28/2017 14:53	WG1045961
Chlorobenzene	U		0.348	1.00	1	11/28/2017 14:53	WG1045961
Chlorodibromomethane	U		0.327	1.00	1	11/28/2017 14:53	WG1045961
Chloroethane	U		0.453	5.00	1	11/28/2017 14:53	WG1045961
Chloroform	0.517	J	0.324	5.00	1	11/28/2017 14:53	WG1045961
Chloromethane	U		0.276	2.50	1	11/28/2017 14:53	WG1045961
2-Chlorotoluene	U		0.375	1.00	1	11/28/2017 14:53	WG1045961
4-Chlorotoluene	U		0.351	1.00	1	11/28/2017 14:53	WG1045961
1,2-Dibromo-3-Chloropropane	U		1.33	5.00	1	11/28/2017 14:53	WG1045961
1,2-Dibromoethane	U		0.381	1.00	1	11/28/2017 14:53	WG1045961
Dibromomethane	U		0.346	1.00	1	11/28/2017 14:53	WG1045961
1,2-Dichlorobenzene	U		0.349	1.00	1	11/28/2017 14:53	WG1045961
1,3-Dichlorobenzene	U		0.220	1.00	1	11/28/2017 14:53	WG1045961
1,4-Dichlorobenzene	U		0.274	1.00	1	11/28/2017 14:53	WG1045961
Dichlorodifluoromethane	U		0.551	5.00	1	11/28/2017 14:53	WG1045961
1,1-Dichloroethane	80.4		0.259	1.00	1	11/28/2017 14:53	WG1045961
1,2-Dichloroethane	3.78		0.361	1.00	1	11/28/2017 14:53	WG1045961
1,1-Dichloroethene	277		3.98	10.0	10	11/28/2017 18:28	WG1045961
cis-1,2-Dichloroethene	0.573	J	0.260	1.00	1	11/28/2017 14:53	WG1045961
trans-1,2-Dichloroethene	U		0.396	1.00	1	11/28/2017 14:53	WG1045961
1,2-Dichloropropane	U		0.306	1.00	1	11/28/2017 14:53	WG1045961
1,1-Dichloropropene	U		0.352	1.00	1	11/28/2017 14:53	WG1045961
1,3-Dichloropropane	U		0.366	1.00	1	11/28/2017 14:53	WG1045961
cis-1,3-Dichloropropene	U		0.418	1.00	1	11/28/2017 14:53	WG1045961
trans-1,3-Dichloropropene	U		0.419	1.00	1	11/28/2017 14:53	WG1045961
2,2-Dichloropropane	U		0.321	1.00	1	11/28/2017 14:53	WG1045961
Di-isopropyl ether	U		0.320	1.00	1	11/28/2017 14:53	WG1045961
Ethylbenzene	U		0.384	1.00	1	11/28/2017 14:53	WG1045961
Hexachloro-1,3-butadiene	U		0.256	1.00	1	11/28/2017 14:53	WG1045961
2-Hexanone	U		3.82	10.0	1	11/28/2017 14:53	WG1045961
p-Isopropyltoluene	U		0.350	1.00	1	11/28/2017 14:53	WG1045961
2-Butanone (MEK)	U		3.93	10.0	1	11/28/2017 14:53	WG1045961
Methylene Chloride	U		1.00	5.00	1	11/28/2017 14:53	WG1045961
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0	1	11/28/2017 14:53	WG1045961
Methyl tert-butyl ether	U		0.367	1.00	1	11/28/2017 14:53	WG1045961
Naphthalene	U		1.00	5.00	1	11/28/2017 14:53	WG1045961
Styrene	U		0.307	1.00	1	11/28/2017 14:53	WG1045961
1,1,1,2-Tetrachloroethane	U		0.385	1.00	1	11/28/2017 14:53	WG1045961
1,1,2,2-Tetrachloroethane	U		0.130	1.00	1	11/28/2017 14:53	WG1045961
Tetrachloroethene	0.519	J	0.372	1.00	1	11/28/2017 14:53	WG1045961
Toluene	U		0.412	1.00	1	11/28/2017 14:53	WG1045961
1,2,3-Trichlorobenzene	U		0.230	1.00	1	11/28/2017 14:53	WG1045961
1,2,4-Trichlorobenzene	U		0.355	1.00	1	11/28/2017 14:53	WG1045961
1,1,1-Trichloroethane	29.8		0.319	1.00	1	11/28/2017 14:53	WG1045961
1,1,2-Trichloroethane	0.789	J	0.383	1.00	1	11/28/2017 14:53	WG1045961
Trichloroethene	1.66		0.398	1.00	1	11/28/2017 14:53	WG1045961
Trichlorofluoromethane	U		1.20	5.00	1	11/28/2017 14:53	WG1045961
1,2,3-Trichloropropane	U		0.807	2.50	1	11/28/2017 14:53	WG1045961
Vinyl chloride	U		0.259	1.00	1	11/28/2017 14:53	WG1045961

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Vinyl acetate	U		1.63	10.0	1	11/28/2017 14:53	WG1045961
o-Xylene	U		0.341	1.00	1	11/28/2017 14:53	WG1045961
m&p-Xylene	U		0.719	2.00	1	11/28/2017 14:53	WG1045961
Xylenes, Total	U		1.06	3.00	1	11/28/2017 14:53	WG1045961
(S) Toluene-d8	*95.2*			*80.0-120*		*11/28/2017 18:28*	WG1045961
(S) Toluene-d8	*95.8*			*80.0-120*		*11/28/2017 14:53*	WG1045961
(S) Dibromofluoromethane	*102*			*76.0-123*		*11/28/2017 18:28*	WG1045961
(S) Dibromofluoromethane	*102*			*76.0-123*		*11/28/2017 14:53*	WG1045961
(S) 4-Bromofluorobenzene	*98.7*			*80.0-120*		*11/28/2017 14:53*	WG1045961
(S) 4-Bromofluorobenzene	*99.3*			*80.0-120*		*11/28/2017 18:28*	WG1045961

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	U		10.0	50.0	1	11/28/2017 15:13	WG1045961
Benzene	U		0.331	1.00	1	11/28/2017 15:13	WG1045961
Bromobenzene	U		0.352	1.00	1	11/28/2017 15:13	WG1045961
Bromochloromethane	U		0.520	5.00	1	11/28/2017 15:13	WG1045961
Bromodichloromethane	U		0.380	1.00	1	11/28/2017 15:13	WG1045961
Bromoform	U		0.469	1.00	1	11/28/2017 15:13	WG1045961
Bromomethane	U	J3	0.866	5.00	1	11/28/2017 15:13	WG1045961
Carbon tetrachloride	U		0.379	1.00	1	11/28/2017 15:13	WG1045961
Chlorobenzene	U		0.348	1.00	1	11/28/2017 15:13	WG1045961
Chlorodibromomethane	U		0.327	1.00	1	11/28/2017 15:13	WG1045961
Chloroethane	2.22	J	0.453	5.00	1	11/28/2017 15:13	WG1045961
Chloroform	U		0.324	5.00	1	11/28/2017 15:13	WG1045961
Chloromethane	U		0.276	2.50	1	11/28/2017 15:13	WG1045961
2-Chlorotoluene	U		0.375	1.00	1	11/28/2017 15:13	WG1045961
4-Chlorotoluene	U		0.351	1.00	1	11/28/2017 15:13	WG1045961
1,2-Dibromo-3-Chloropropane	U		1.33	5.00	1	11/28/2017 15:13	WG1045961
1,2-Dibromoethane	U		0.381	1.00	1	11/28/2017 15:13	WG1045961
Dibromomethane	U		0.346	1.00	1	11/28/2017 15:13	WG1045961
1,2-Dichlorobenzene	U		0.349	1.00	1	11/28/2017 15:13	WG1045961
1,3-Dichlorobenzene	U		0.220	1.00	1	11/28/2017 15:13	WG1045961
1,4-Dichlorobenzene	U		0.274	1.00	1	11/28/2017 15:13	WG1045961
Dichlorodifluoromethane	U		0.551	5.00	1	11/28/2017 15:13	WG1045961
1,1-Dichloroethane	30.4		0.259	1.00	1	11/28/2017 15:13	WG1045961
1,2-Dichloroethane	1.19		0.361	1.00	1	11/28/2017 15:13	WG1045961
1,1-Dichloroethene	174		0.398	1.00	1	11/28/2017 15:13	WG1045961
cis-1,2-Dichloroethene	1.15		0.260	1.00	1	11/28/2017 15:13	WG1045961
trans-1,2-Dichloroethene	U		0.396	1.00	1	11/28/2017 15:13	WG1045961
1,2-Dichloropropane	U		0.306	1.00	1	11/28/2017 15:13	WG1045961
1,1-Dichloropropene	U		0.352	1.00	1	11/28/2017 15:13	WG1045961
1,3-Dichloropropane	U		0.366	1.00	1	11/28/2017 15:13	WG1045961
cis-1,3-Dichloropropene	U		0.418	1.00	1	11/28/2017 15:13	WG1045961
trans-1,3-Dichloropropene	U		0.419	1.00	1	11/28/2017 15:13	WG1045961
2,2-Dichloropropane	U		0.321	1.00	1	11/28/2017 15:13	WG1045961
Di-isopropyl ether	U		0.320	1.00	1	11/28/2017 15:13	WG1045961
Ethylbenzene	U		0.384	1.00	1	11/28/2017 15:13	WG1045961
Hexachloro-1,3-butadiene	U		0.256	1.00	1	11/28/2017 15:13	WG1045961
2-Hexanone	U		3.82	10.0	1	11/28/2017 15:13	WG1045961
p-Isopropyltoluene	U		0.350	1.00	1	11/28/2017 15:13	WG1045961
2-Butanone (MEK)	U		3.93	10.0	1	11/28/2017 15:13	WG1045961
Methylene Chloride	1.00	J	1.00	5.00	1	11/28/2017 15:13	WG1045961
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0	1	11/28/2017 15:13	WG1045961
Methyl tert-butyl ether	U		0.367	1.00	1	11/28/2017 15:13	WG1045961
Naphthalene	U		1.00	5.00	1	11/28/2017 15:13	WG1045961
Styrene	U		0.307	1.00	1	11/28/2017 15:13	WG1045961
1,1,1,2-Tetrachloroethane	U		0.385	1.00	1	11/28/2017 15:13	WG1045961
1,1,2,2-Tetrachloroethane	U		0.130	1.00	1	11/28/2017 15:13	WG1045961
Tetrachloroethene	U		0.372	1.00	1	11/28/2017 15:13	WG1045961
Toluene	U		0.412	1.00	1	11/28/2017 15:13	WG1045961
1,2,3-Trichlorobenzene	U		0.230	1.00	1	11/28/2017 15:13	WG1045961
1,2,4-Trichlorobenzene	U		0.355	1.00	1	11/28/2017 15:13	WG1045961
1,1,1-Trichloroethane	3.02		0.319	1.00	1	11/28/2017 15:13	WG1045961
1,1,2-Trichloroethane	U		0.383	1.00	1	11/28/2017 15:13	WG1045961
Trichloroethene	0.881	J	0.398	1.00	1	11/28/2017 15:13	WG1045961
Trichlorofluoromethane	U		1.20	5.00	1	11/28/2017 15:13	WG1045961
1,2,3-Trichloropropane	U		0.807	2.50	1	11/28/2017 15:13	WG1045961
Vinyl chloride	U		0.259	1.00	1	11/28/2017 15:13	WG1045961

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Vinyl acetate	U		1.63	10.0	1	11/28/2017 15:13	WG1045961
o-Xylene	U		0.341	1.00	1	11/28/2017 15:13	WG1045961
m&p-Xylene	U		0.719	2.00	1	11/28/2017 15:13	WG1045961
Xylenes, Total	U		1.06	3.00	1	11/28/2017 15:13	WG1045961
(S) Toluene-d8	*99.3*			*80.0-120*		*11/28/2017 15:13*	WG1045961
(S) Dibromofluoromethane	*103*			*76.0-123*		*11/28/2017 15:13*	WG1045961
(S) 4-Bromofluorobenzene	*98.5*			*80.0-120*		*11/28/2017 15:13*	WG1045961

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	U		10.0	50.0	1	11/28/2017 15:32	WG1045961
Benzene	U		0.331	1.00	1	11/28/2017 15:32	WG1045961
Bromobenzene	U		0.352	1.00	1	11/28/2017 15:32	WG1045961
Bromochloromethane	U		0.520	5.00	1	11/28/2017 15:32	WG1045961
Bromodichloromethane	U		0.380	1.00	1	11/28/2017 15:32	WG1045961
Bromoform	U		0.469	1.00	1	11/28/2017 15:32	WG1045961
Bromomethane	U	J3	0.866	5.00	1	11/28/2017 15:32	WG1045961
Carbon tetrachloride	U		0.379	1.00	1	11/28/2017 15:32	WG1045961
Chlorobenzene	U		0.348	1.00	1	11/28/2017 15:32	WG1045961
Chlorodibromomethane	U		0.327	1.00	1	11/28/2017 15:32	WG1045961
Chloroethane	U		0.453	5.00	1	11/28/2017 15:32	WG1045961
Chloroform	U		0.324	5.00	1	11/28/2017 15:32	WG1045961
Chloromethane	U		0.276	2.50	1	11/28/2017 15:32	WG1045961
2-Chlorotoluene	U		0.375	1.00	1	11/28/2017 15:32	WG1045961
4-Chlorotoluene	U		0.351	1.00	1	11/28/2017 15:32	WG1045961
1,2-Dibromo-3-Chloropropane	U		1.33	5.00	1	11/28/2017 15:32	WG1045961
1,2-Dibromoethane	U		0.381	1.00	1	11/28/2017 15:32	WG1045961
Dibromomethane	U		0.346	1.00	1	11/28/2017 15:32	WG1045961
1,2-Dichlorobenzene	U		0.349	1.00	1	11/28/2017 15:32	WG1045961
1,3-Dichlorobenzene	U		0.220	1.00	1	11/28/2017 15:32	WG1045961
1,4-Dichlorobenzene	U		0.274	1.00	1	11/28/2017 15:32	WG1045961
Dichlorodifluoromethane	U		0.551	5.00	1	11/28/2017 15:32	WG1045961
1,1-Dichloroethane	2.04		0.259	1.00	1	11/28/2017 15:32	WG1045961
1,2-Dichloroethane	U		0.361	1.00	1	11/28/2017 15:32	WG1045961
1,1-Dichloroethene	14.4		0.398	1.00	1	11/28/2017 18:48	WG1045961
cis-1,2-Dichloroethene	U		0.260	1.00	1	11/28/2017 15:32	WG1045961
trans-1,2-Dichloroethene	U		0.396	1.00	1	11/28/2017 15:32	WG1045961
1,2-Dichloropropane	U		0.306	1.00	1	11/28/2017 15:32	WG1045961
1,1-Dichloropropene	U		0.352	1.00	1	11/28/2017 15:32	WG1045961
1,3-Dichloropropane	U		0.366	1.00	1	11/28/2017 15:32	WG1045961
cis-1,3-Dichloropropene	U		0.418	1.00	1	11/28/2017 15:32	WG1045961
trans-1,3-Dichloropropene	U		0.419	1.00	1	11/28/2017 15:32	WG1045961
2,2-Dichloropropane	U		0.321	1.00	1	11/28/2017 15:32	WG1045961
Di-isopropyl ether	U		0.320	1.00	1	11/28/2017 15:32	WG1045961
Ethylbenzene	U		0.384	1.00	1	11/28/2017 15:32	WG1045961
Hexachloro-1,3-butadiene	U		0.256	1.00	1	11/28/2017 15:32	WG1045961
2-Hexanone	U		3.82	10.0	1	11/28/2017 15:32	WG1045961
p-Isopropyltoluene	U		0.350	1.00	1	11/28/2017 15:32	WG1045961
2-Butanone (MEK)	U		3.93	10.0	1	11/28/2017 15:32	WG1045961
Methylene Chloride	U		1.00	5.00	1	11/28/2017 15:32	WG1045961
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0	1	11/28/2017 15:32	WG1045961
Methyl tert-butyl ether	U		0.367	1.00	1	11/28/2017 15:32	WG1045961
Naphthalene	U		1.00	5.00	1	11/28/2017 15:32	WG1045961
Styrene	U		0.307	1.00	1	11/28/2017 15:32	WG1045961
1,1,1,2-Tetrachloroethane	U		0.385	1.00	1	11/28/2017 15:32	WG1045961
1,1,2,2-Tetrachloroethane	U		0.130	1.00	1	11/28/2017 15:32	WG1045961
Tetrachloroethene	U		0.372	1.00	1	11/28/2017 15:32	WG1045961
Toluene	U		0.412	1.00	1	11/28/2017 15:32	WG1045961
1,2,3-Trichlorobenzene	U		0.230	1.00	1	11/28/2017 15:32	WG1045961
1,2,4-Trichlorobenzene	U		0.355	1.00	1	11/28/2017 15:32	WG1045961
1,1,1-Trichloroethane	0.696	J	0.319	1.00	1	11/28/2017 15:32	WG1045961
1,1,2-Trichloroethane	U		0.383	1.00	1	11/28/2017 15:32	WG1045961
Trichloroethene	U		0.398	1.00	1	11/28/2017 15:32	WG1045961
Trichlorofluoromethane	U		1.20	5.00	1	11/28/2017 15:32	WG1045961
1,2,3-Trichloropropane	U		0.807	2.50	1	11/28/2017 15:32	WG1045961
Vinyl chloride	U		0.259	1.00	1	11/28/2017 15:32	WG1045961

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Vinyl acetate	U		1.63	10.0	1	11/28/2017 15:32	WG1045961
o-Xylene	U		0.341	1.00	1	11/28/2017 15:32	WG1045961
m&p-Xylene	U		0.719	2.00	1	11/28/2017 15:32	WG1045961
Xylenes, Total	U		1.06	3.00	1	11/28/2017 15:32	WG1045961
(S) Toluene-d8	*94.6*			*80.0-120*		*11/28/2017 18:48*	WG1045961
(S) Toluene-d8	*97.0*			*80.0-120*		*11/28/2017 15:32*	WG1045961
(S) Dibromofluoromethane	*103*			*76.0-123*		*11/28/2017 18:48*	WG1045961
(S) Dibromofluoromethane	*102*			*76.0-123*		*11/28/2017 15:32*	WG1045961
(S) 4-Bromofluorobenzene	*98.4*			*80.0-120*		*11/28/2017 18:48*	WG1045961
(S) 4-Bromofluorobenzene	*98.3*			*80.0-120*		*11/28/2017 15:32*	WG1045961

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	U		10.0	50.0	1	11/28/2017 15:52	WG1045961
Benzene	U		0.331	1.00	1	11/28/2017 15:52	WG1045961
Bromobenzene	U		0.352	1.00	1	11/28/2017 15:52	WG1045961
Bromochloromethane	U		0.520	5.00	1	11/28/2017 15:52	WG1045961
Bromodichloromethane	U		0.380	1.00	1	11/28/2017 15:52	WG1045961
Bromoform	U		0.469	1.00	1	11/28/2017 15:52	WG1045961
Bromomethane	U	J3	0.866	5.00	1	11/28/2017 15:52	WG1045961
Carbon tetrachloride	U		0.379	1.00	1	11/28/2017 15:52	WG1045961
Chlorobenzene	U		0.348	1.00	1	11/28/2017 15:52	WG1045961
Chlorodibromomethane	U		0.327	1.00	1	11/28/2017 15:52	WG1045961
Chloroethane	U		0.453	5.00	1	11/28/2017 15:52	WG1045961
Chloroform	U		0.324	5.00	1	11/28/2017 15:52	WG1045961
Chloromethane	U		0.276	2.50	1	11/28/2017 15:52	WG1045961
2-Chlorotoluene	U		0.375	1.00	1	11/28/2017 15:52	WG1045961
4-Chlorotoluene	U		0.351	1.00	1	11/28/2017 15:52	WG1045961
1,2-Dibromo-3-Chloropropane	U		1.33	5.00	1	11/28/2017 15:52	WG1045961
1,2-Dibromoethane	U		0.381	1.00	1	11/28/2017 15:52	WG1045961
Dibromomethane	U		0.346	1.00	1	11/28/2017 15:52	WG1045961
1,2-Dichlorobenzene	U		0.349	1.00	1	11/28/2017 15:52	WG1045961
1,3-Dichlorobenzene	U		0.220	1.00	1	11/28/2017 15:52	WG1045961
1,4-Dichlorobenzene	U		0.274	1.00	1	11/28/2017 15:52	WG1045961
Dichlorodifluoromethane	U		0.551	5.00	1	11/28/2017 15:52	WG1045961
1,1-Dichloroethane	1.78		0.259	1.00	1	11/28/2017 15:52	WG1045961
1,2-Dichloroethane	U		0.361	1.00	1	11/28/2017 15:52	WG1045961
1,1-Dichloroethene	1.78		0.398	1.00	1	11/28/2017 19:07	WG1045961
cis-1,2-Dichloroethene	U		0.260	1.00	1	11/28/2017 15:52	WG1045961
trans-1,2-Dichloroethene	U		0.396	1.00	1	11/28/2017 15:52	WG1045961
1,2-Dichloropropane	U		0.306	1.00	1	11/28/2017 15:52	WG1045961
1,1-Dichloropropene	U		0.352	1.00	1	11/28/2017 15:52	WG1045961
1,3-Dichloropropane	U		0.366	1.00	1	11/28/2017 15:52	WG1045961
cis-1,3-Dichloropropene	U		0.418	1.00	1	11/28/2017 15:52	WG1045961
trans-1,3-Dichloropropene	U		0.419	1.00	1	11/28/2017 15:52	WG1045961
2,2-Dichloropropane	U		0.321	1.00	1	11/28/2017 15:52	WG1045961
Di-isopropyl ether	U		0.320	1.00	1	11/28/2017 15:52	WG1045961
Ethylbenzene	U		0.384	1.00	1	11/28/2017 15:52	WG1045961
Hexachloro-1,3-butadiene	U		0.256	1.00	1	11/28/2017 15:52	WG1045961
2-Hexanone	U		3.82	10.0	1	11/28/2017 15:52	WG1045961
p-Isopropyltoluene	U		0.350	1.00	1	11/28/2017 15:52	WG1045961
2-Butanone (MEK)	U		3.93	10.0	1	11/28/2017 15:52	WG1045961
Methylene Chloride	U		1.00	5.00	1	11/28/2017 15:52	WG1045961
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0	1	11/28/2017 15:52	WG1045961
Methyl tert-butyl ether	U		0.367	1.00	1	11/28/2017 15:52	WG1045961
Naphthalene	U		1.00	5.00	1	11/28/2017 15:52	WG1045961
Styrene	U		0.307	1.00	1	11/28/2017 15:52	WG1045961
1,1,1,2-Tetrachloroethane	U		0.385	1.00	1	11/28/2017 15:52	WG1045961
1,1,2,2-Tetrachloroethane	U		0.130	1.00	1	11/28/2017 15:52	WG1045961
Tetrachloroethene	U		0.372	1.00	1	11/28/2017 15:52	WG1045961
Toluene	U		0.412	1.00	1	11/28/2017 15:52	WG1045961
1,2,3-Trichlorobenzene	U		0.230	1.00	1	11/28/2017 15:52	WG1045961
1,2,4-Trichlorobenzene	U		0.355	1.00	1	11/28/2017 15:52	WG1045961
1,1,1-Trichloroethane	7.40		0.319	1.00	1	11/28/2017 15:52	WG1045961
1,1,2-Trichloroethane	U		0.383	1.00	1	11/28/2017 15:52	WG1045961
Trichloroethene	U		0.398	1.00	1	11/28/2017 15:52	WG1045961
Trichlorofluoromethane	U		1.20	5.00	1	11/28/2017 15:52	WG1045961
1,2,3-Trichloropropane	U		0.807	2.50	1	11/28/2017 15:52	WG1045961
Vinyl chloride	U		0.259	1.00	1	11/28/2017 15:52	WG1045961

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Vinyl acetate	U		1.63	10.0	1	11/28/2017 15:52	WG1045961
o-Xylene	U		0.341	1.00	1	11/28/2017 15:52	WG1045961
m&p-Xylene	U		0.719	2.00	1	11/28/2017 15:52	WG1045961
Xylenes, Total	U		1.06	3.00	1	11/28/2017 15:52	WG1045961
(S) Toluene-d8	*97.0*			*80.0-120*		*11/28/2017 15:52*	WG1045961
(S) Toluene-d8	*97.3*			*80.0-120*		*11/28/2017 19:07*	WG1045961
(S) Dibromofluoromethane	*101*			*76.0-123*		*11/28/2017 15:52*	WG1045961
(S) Dibromofluoromethane	*99.5*			*76.0-123*		*11/28/2017 19:07*	WG1045961
(S) 4-Bromofluorobenzene	*97.9*			*80.0-120*		*11/28/2017 19:07*	WG1045961
(S) 4-Bromofluorobenzene	*96.1*			*80.0-120*		*11/28/2017 15:52*	WG1045961

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	U		10.0	50.0	1	11/28/2017 16:11	WG1045961
Benzene	U		0.331	1.00	1	11/28/2017 16:11	WG1045961
Bromobenzene	U		0.352	1.00	1	11/28/2017 16:11	WG1045961
Bromochloromethane	U		0.520	5.00	1	11/28/2017 16:11	WG1045961
Bromodichloromethane	U		0.380	1.00	1	11/28/2017 16:11	WG1045961
Bromoform	U		0.469	1.00	1	11/28/2017 16:11	WG1045961
Bromomethane	U	J3	0.866	5.00	1	11/28/2017 16:11	WG1045961
Carbon tetrachloride	U		0.379	1.00	1	11/28/2017 16:11	WG1045961
Chlorobenzene	U		0.348	1.00	1	11/28/2017 16:11	WG1045961
Chlorodibromomethane	U		0.327	1.00	1	11/28/2017 16:11	WG1045961
Chloroethane	1.35	J	0.453	5.00	1	11/28/2017 16:11	WG1045961
Chloroform	0.374	J	0.324	5.00	1	11/28/2017 16:11	WG1045961
Chloromethane	U		0.276	2.50	1	11/28/2017 16:11	WG1045961
2-Chlorotoluene	U		0.375	1.00	1	11/28/2017 16:11	WG1045961
4-Chlorotoluene	U		0.351	1.00	1	11/28/2017 16:11	WG1045961
1,2-Dibromo-3-Chloropropane	U		1.33	5.00	1	11/28/2017 16:11	WG1045961
1,2-Dibromoethane	U		0.381	1.00	1	11/28/2017 16:11	WG1045961
Dibromomethane	U		0.346	1.00	1	11/28/2017 16:11	WG1045961
1,2-Dichlorobenzene	0.372	J	0.349	1.00	1	11/28/2017 16:11	WG1045961
1,3-Dichlorobenzene	U		0.220	1.00	1	11/28/2017 16:11	WG1045961
1,4-Dichlorobenzene	U		0.274	1.00	1	11/28/2017 16:11	WG1045961
Dichlorodifluoromethane	U		0.551	5.00	1	11/28/2017 16:11	WG1045961
1,1-Dichloroethane	83.5		0.259	1.00	1	11/28/2017 16:11	WG1045961
1,2-Dichloroethane	1.74		0.361	1.00	1	11/28/2017 16:11	WG1045961
1,1-Dichloroethene	401		3.98	10.0	10	11/28/2017 19:27	WG1045961
cis-1,2-Dichloroethene	1.03		0.260	1.00	1	11/28/2017 16:11	WG1045961
trans-1,2-Dichloroethene	U		0.396	1.00	1	11/28/2017 16:11	WG1045961
1,2-Dichloropropane	U		0.306	1.00	1	11/28/2017 16:11	WG1045961
1,1-Dichloropropene	U		0.352	1.00	1	11/28/2017 16:11	WG1045961
1,3-Dichloropropane	U		0.366	1.00	1	11/28/2017 16:11	WG1045961
cis-1,3-Dichloropropene	U		0.418	1.00	1	11/28/2017 16:11	WG1045961
trans-1,3-Dichloropropene	U		0.419	1.00	1	11/28/2017 16:11	WG1045961
2,2-Dichloropropane	U		0.321	1.00	1	11/28/2017 16:11	WG1045961
Di-isopropyl ether	U		0.320	1.00	1	11/28/2017 16:11	WG1045961
Ethylbenzene	U		0.384	1.00	1	11/28/2017 16:11	WG1045961
Hexachloro-1,3-butadiene	U		0.256	1.00	1	11/28/2017 16:11	WG1045961
2-Hexanone	U		3.82	10.0	1	11/28/2017 16:11	WG1045961
p-Isopropyltoluene	U		0.350	1.00	1	11/28/2017 16:11	WG1045961
2-Butanone (MEK)	U		3.93	10.0	1	11/28/2017 16:11	WG1045961
Methylene Chloride	3.82	J	1.00	5.00	1	11/28/2017 16:11	WG1045961
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0	1	11/28/2017 16:11	WG1045961
Methyl tert-butyl ether	U		0.367	1.00	1	11/28/2017 16:11	WG1045961
Naphthalene	U		1.00	5.00	1	11/28/2017 16:11	WG1045961
Styrene	U		0.307	1.00	1	11/28/2017 16:11	WG1045961
1,1,1,2-Tetrachloroethane	U		0.385	1.00	1	11/28/2017 16:11	WG1045961
1,1,2,2-Tetrachloroethane	U		0.130	1.00	1	11/28/2017 16:11	WG1045961
Tetrachloroethene	U		0.372	1.00	1	11/28/2017 16:11	WG1045961
Toluene	1.71		0.412	1.00	1	11/28/2017 16:11	WG1045961
1,2,3-Trichlorobenzene	U		0.230	1.00	1	11/28/2017 16:11	WG1045961
1,2,4-Trichlorobenzene	U		0.355	1.00	1	11/28/2017 16:11	WG1045961
1,1,1-Trichloroethane	458		3.19	10.0	10	11/28/2017 19:27	WG1045961
1,1,2-Trichloroethane	U		0.383	1.00	1	11/28/2017 16:11	WG1045961
Trichloroethene	5.13		0.398	1.00	1	11/28/2017 16:11	WG1045961
Trichlorofluoromethane	U		1.20	5.00	1	11/28/2017 16:11	WG1045961
1,2,3-Trichloropropane	U		0.807	2.50	1	11/28/2017 16:11	WG1045961
Vinyl chloride	U		0.259	1.00	1	11/28/2017 16:11	WG1045961

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Vinyl acetate	U		1.63	10.0	1	11/28/2017 16:11	WG1045961
o-Xylene	U		0.341	1.00	1	11/28/2017 16:11	WG1045961
m&p-Xylene	U		0.719	2.00	1	11/28/2017 16:11	WG1045961
Xylenes, Total	U		1.06	3.00	1	11/28/2017 16:11	WG1045961
(S) Toluene-d8	*97.1*			*80.0-120*		*11/28/2017 16:11*	WG1045961
(S) Toluene-d8	*98.6*			*80.0-120*		*11/28/2017 19:27*	WG1045961
(S) Dibromofluoromethane	*100*			*76.0-123*		*11/28/2017 19:27*	WG1045961
(S) Dibromofluoromethane	*103*			*76.0-123*		*11/28/2017 16:11*	WG1045961
(S) 4-Bromofluorobenzene	*97.4*			*80.0-120*		*11/28/2017 19:27*	WG1045961
(S) 4-Bromofluorobenzene	*96.9*			*80.0-120*		*11/28/2017 16:11*	WG1045961

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	U		10.0	50.0	1	11/28/2017 16:31	WG1045961
Benzene	U		0.331	1.00	1	11/28/2017 16:31	WG1045961
Bromobenzene	U		0.352	1.00	1	11/28/2017 16:31	WG1045961
Bromochloromethane	U		0.520	5.00	1	11/28/2017 16:31	WG1045961
Bromodichloromethane	U		0.380	1.00	1	11/28/2017 16:31	WG1045961
Bromoform	U		0.469	1.00	1	11/28/2017 16:31	WG1045961
Bromomethane	U	J3	0.866	5.00	1	11/28/2017 16:31	WG1045961
Carbon tetrachloride	U		0.379	1.00	1	11/28/2017 16:31	WG1045961
Chlorobenzene	U		0.348	1.00	1	11/28/2017 16:31	WG1045961
Chlorodibromomethane	U		0.327	1.00	1	11/28/2017 16:31	WG1045961
Chloroethane	28.8		0.453	5.00	1	11/28/2017 16:31	WG1045961
Chloroform	U		0.324	5.00	1	11/28/2017 16:31	WG1045961
Chloromethane	U		0.276	2.50	1	11/28/2017 16:31	WG1045961
2-Chlorotoluene	U		0.375	1.00	1	11/28/2017 16:31	WG1045961
4-Chlorotoluene	U		0.351	1.00	1	11/28/2017 16:31	WG1045961
1,2-Dibromo-3-Chloropropane	U		1.33	5.00	1	11/28/2017 16:31	WG1045961
1,2-Dibromoethane	U		0.381	1.00	1	11/28/2017 16:31	WG1045961
Dibromomethane	U		0.346	1.00	1	11/28/2017 16:31	WG1045961
1,2-Dichlorobenzene	U		0.349	1.00	1	11/28/2017 16:31	WG1045961
1,3-Dichlorobenzene	U		0.220	1.00	1	11/28/2017 16:31	WG1045961
1,4-Dichlorobenzene	U		0.274	1.00	1	11/28/2017 16:31	WG1045961
Dichlorodifluoromethane	U		0.551	5.00	1	11/28/2017 16:31	WG1045961
1,1-Dichloroethane	196		0.259	1.00	1	11/28/2017 16:31	WG1045961
1,2-Dichloroethane	2.59		0.361	1.00	1	11/28/2017 16:31	WG1045961
1,1-Dichloroethene	544		3.98	10.0	10	11/28/2017 19:46	WG1045961
cis-1,2-Dichloroethene	2.90		0.260	1.00	1	11/28/2017 16:31	WG1045961
trans-1,2-Dichloroethene	0.427	J	0.396	1.00	1	11/28/2017 16:31	WG1045961
1,2-Dichloropropane	U		0.306	1.00	1	11/28/2017 16:31	WG1045961
1,1-Dichloropropene	U		0.352	1.00	1	11/28/2017 16:31	WG1045961
1,3-Dichloropropane	U		0.366	1.00	1	11/28/2017 16:31	WG1045961
cis-1,3-Dichloropropene	U		0.418	1.00	1	11/28/2017 16:31	WG1045961
trans-1,3-Dichloropropene	U		0.419	1.00	1	11/28/2017 16:31	WG1045961
2,2-Dichloropropane	U		0.321	1.00	1	11/28/2017 16:31	WG1045961
Di-isopropyl ether	U		0.320	1.00	1	11/28/2017 16:31	WG1045961
Ethylbenzene	U		0.384	1.00	1	11/28/2017 16:31	WG1045961
Hexachloro-1,3-butadiene	U		0.256	1.00	1	11/28/2017 16:31	WG1045961
2-Hexanone	U		3.82	10.0	1	11/28/2017 16:31	WG1045961
p-Isopropyltoluene	U		0.350	1.00	1	11/28/2017 16:31	WG1045961
2-Butanone (MEK)	U		3.93	10.0	1	11/28/2017 16:31	WG1045961
Methylene Chloride	U		1.00	5.00	1	11/28/2017 16:31	WG1045961
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0	1	11/28/2017 16:31	WG1045961
Methyl tert-butyl ether	0.470	J	0.367	1.00	1	11/28/2017 16:31	WG1045961
Naphthalene	U		1.00	5.00	1	11/28/2017 16:31	WG1045961
Styrene	U		0.307	1.00	1	11/28/2017 16:31	WG1045961
1,1,1,2-Tetrachloroethane	U		0.385	1.00	1	11/28/2017 16:31	WG1045961
1,1,2,2-Tetrachloroethane	U		0.130	1.00	1	11/28/2017 16:31	WG1045961
Tetrachloroethene	0.445	J	0.372	1.00	1	11/28/2017 16:31	WG1045961
Toluene	U		0.412	1.00	1	11/28/2017 16:31	WG1045961
1,2,3-Trichlorobenzene	U		0.230	1.00	1	11/28/2017 16:31	WG1045961
1,2,4-Trichlorobenzene	U		0.355	1.00	1	11/28/2017 16:31	WG1045961
1,1,1-Trichloroethane	34.6		0.319	1.00	1	11/28/2017 16:31	WG1045961
1,1,2-Trichloroethane	U		0.383	1.00	1	11/28/2017 16:31	WG1045961
Trichloroethene	4.08		0.398	1.00	1	11/28/2017 16:31	WG1045961
Trichlorofluoromethane	U		1.20	5.00	1	11/28/2017 16:31	WG1045961
1,2,3-Trichloropropane	U		0.807	2.50	1	11/28/2017 16:31	WG1045961
Vinyl chloride	0.762	J	0.259	1.00	1	11/28/2017 16:31	WG1045961

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Vinyl acetate	U		1.63	10.0	1	11/28/2017 16:31	WG1045961
o-Xylene	U		0.341	1.00	1	11/28/2017 16:31	WG1045961
m&p-Xylene	U		0.719	2.00	1	11/28/2017 16:31	WG1045961
Xylenes, Total	U		1.06	3.00	1	11/28/2017 16:31	WG1045961
(S) Toluene-d8	*94.7*			*80.0-120*		*11/28/2017 19:46*	WG1045961
(S) Toluene-d8	*95.5*			*80.0-120*		*11/28/2017 16:31*	WG1045961
(S) Dibromofluoromethane	*99.2*			*76.0-123*		*11/28/2017 16:31*	WG1045961
(S) Dibromofluoromethane	*100*			*76.0-123*		*11/28/2017 19:46*	WG1045961
(S) 4-Bromofluorobenzene	*97.5*			*80.0-120*		*11/28/2017 16:31*	WG1045961
(S) 4-Bromofluorobenzene	*96.9*			*80.0-120*		*11/28/2017 19:46*	WG1045961

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	U		10.0	50.0	1	11/28/2017 13:36	WG1045961
Benzene	U		0.331	1.00	1	11/28/2017 13:36	WG1045961
Bromobenzene	U		0.352	1.00	1	11/28/2017 13:36	WG1045961
Bromochloromethane	U		0.520	5.00	1	11/28/2017 13:36	WG1045961
Bromodichloromethane	U		0.380	1.00	1	11/28/2017 13:36	WG1045961
Bromoform	U		0.469	1.00	1	11/28/2017 13:36	WG1045961
Bromomethane	U	J3	0.866	5.00	1	11/28/2017 13:36	WG1045961
Carbon tetrachloride	U		0.379	1.00	1	11/28/2017 13:36	WG1045961
Chlorobenzene	U		0.348	1.00	1	11/28/2017 13:36	WG1045961
Chlorodibromomethane	U		0.327	1.00	1	11/28/2017 13:36	WG1045961
Chloroethane	U		0.453	5.00	1	11/28/2017 13:36	WG1045961
Chloroform	U		0.324	5.00	1	11/28/2017 13:36	WG1045961
Chloromethane	U		0.276	2.50	1	11/28/2017 13:36	WG1045961
2-Chlorotoluene	U		0.375	1.00	1	11/28/2017 13:36	WG1045961
4-Chlorotoluene	U		0.351	1.00	1	11/28/2017 13:36	WG1045961
1,2-Dibromo-3-Chloropropane	U		1.33	5.00	1	11/28/2017 13:36	WG1045961
1,2-Dibromoethane	U		0.381	1.00	1	11/28/2017 13:36	WG1045961
Dibromomethane	U		0.346	1.00	1	11/28/2017 13:36	WG1045961
1,2-Dichlorobenzene	U		0.349	1.00	1	11/28/2017 13:36	WG1045961
1,3-Dichlorobenzene	U		0.220	1.00	1	11/28/2017 13:36	WG1045961
1,4-Dichlorobenzene	U		0.274	1.00	1	11/28/2017 13:36	WG1045961
Dichlorodifluoromethane	U		0.551	5.00	1	11/28/2017 13:36	WG1045961
1,1-Dichloroethane	U		0.259	1.00	1	11/28/2017 13:36	WG1045961
1,2-Dichloroethane	U		0.361	1.00	1	11/28/2017 13:36	WG1045961
1,1-Dichloroethene	U		0.398	1.00	1	11/28/2017 13:36	WG1045961
cis-1,2-Dichloroethene	U		0.260	1.00	1	11/28/2017 13:36	WG1045961
trans-1,2-Dichloroethene	U		0.396	1.00	1	11/28/2017 13:36	WG1045961
1,2-Dichloropropane	U		0.306	1.00	1	11/28/2017 13:36	WG1045961
1,1-Dichloropropene	U		0.352	1.00	1	11/28/2017 13:36	WG1045961
1,3-Dichloropropane	U		0.366	1.00	1	11/28/2017 13:36	WG1045961
cis-1,3-Dichloropropene	U		0.418	1.00	1	11/28/2017 13:36	WG1045961
trans-1,3-Dichloropropene	U		0.419	1.00	1	11/28/2017 13:36	WG1045961
2,2-Dichloropropane	U		0.321	1.00	1	11/28/2017 13:36	WG1045961
Di-isopropyl ether	U		0.320	1.00	1	11/28/2017 13:36	WG1045961
Ethylbenzene	U		0.384	1.00	1	11/28/2017 13:36	WG1045961
Hexachloro-1,3-butadiene	U		0.256	1.00	1	11/28/2017 13:36	WG1045961
2-Hexanone	U		3.82	10.0	1	11/28/2017 13:36	WG1045961
p-Isopropyltoluene	U		0.350	1.00	1	11/28/2017 13:36	WG1045961
2-Butanone (MEK)	U		3.93	10.0	1	11/28/2017 13:36	WG1045961
Methylene Chloride	1.84	J	1.00	5.00	1	11/28/2017 13:36	WG1045961
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0	1	11/28/2017 13:36	WG1045961
Methyl tert-butyl ether	U		0.367	1.00	1	11/28/2017 13:36	WG1045961
Naphthalene	U		1.00	5.00	1	11/28/2017 13:36	WG1045961
Styrene	U		0.307	1.00	1	11/28/2017 13:36	WG1045961
1,1,1,2-Tetrachloroethane	U		0.385	1.00	1	11/28/2017 13:36	WG1045961
1,1,2,2-Tetrachloroethane	U		0.130	1.00	1	11/28/2017 13:36	WG1045961
Tetrachloroethene	U		0.372	1.00	1	11/28/2017 13:36	WG1045961
Toluene	U		0.412	1.00	1	11/28/2017 13:36	WG1045961
1,2,3-Trichlorobenzene	U		0.230	1.00	1	11/28/2017 13:36	WG1045961
1,2,4-Trichlorobenzene	U		0.355	1.00	1	11/28/2017 13:36	WG1045961
1,1,1-Trichloroethane	U		0.319	1.00	1	11/28/2017 13:36	WG1045961
1,1,2-Trichloroethane	U		0.383	1.00	1	11/28/2017 13:36	WG1045961
Trichloroethene	U		0.398	1.00	1	11/28/2017 13:36	WG1045961
Trichlorofluoromethane	U		1.20	5.00	1	11/28/2017 13:36	WG1045961
1,2,3-Trichloropropane	U		0.807	2.50	1	11/28/2017 13:36	WG1045961
Vinyl chloride	U		0.259	1.00	1	11/28/2017 13:36	WG1045961

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Vinyl acetate	U		1.63	10.0	1	11/28/2017 13:36	WG1045961
o-Xylene	U		0.341	1.00	1	11/28/2017 13:36	WG1045961
m&p-Xylene	U		0.719	2.00	1	11/28/2017 13:36	WG1045961
Xylenes, Total	U		1.06	3.00	1	11/28/2017 13:36	WG1045961
(S) Toluene-d8	*97.9*			*80.0-120*		*11/28/2017 13:36*	WG1045961
(S) Dibromofluoromethane	*103*			*76.0-123*		*11/28/2017 13:36*	WG1045961
(S) 4-Bromofluorobenzene	*95.4*			*80.0-120*		*11/28/2017 13:36*	WG1045961

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	U		10.0	50.0	1	11/28/2017 16:50	WG1045961
Benzene	U		0.331	1.00	1	11/28/2017 16:50	WG1045961
Bromobenzene	U		0.352	1.00	1	11/28/2017 16:50	WG1045961
Bromochloromethane	U		0.520	5.00	1	11/28/2017 16:50	WG1045961
Bromodichloromethane	U		0.380	1.00	1	11/28/2017 16:50	WG1045961
Bromoform	U		0.469	1.00	1	11/28/2017 16:50	WG1045961
Bromomethane	U	J3	0.866	5.00	1	11/28/2017 16:50	WG1045961
Carbon tetrachloride	U		0.379	1.00	1	11/28/2017 16:50	WG1045961
Chlorobenzene	U		0.348	1.00	1	11/28/2017 16:50	WG1045961
Chlorodibromomethane	U		0.327	1.00	1	11/28/2017 16:50	WG1045961
Chloroethane	U		0.453	5.00	1	11/28/2017 16:50	WG1045961
Chloroform	U		0.324	5.00	1	11/28/2017 16:50	WG1045961
Chloromethane	U		0.276	2.50	1	11/28/2017 16:50	WG1045961
2-Chlorotoluene	U		0.375	1.00	1	11/28/2017 16:50	WG1045961
4-Chlorotoluene	U		0.351	1.00	1	11/28/2017 16:50	WG1045961
1,2-Dibromo-3-Chloropropane	U		1.33	5.00	1	11/28/2017 16:50	WG1045961
1,2-Dibromoethane	U		0.381	1.00	1	11/28/2017 16:50	WG1045961
Dibromomethane	U		0.346	1.00	1	11/28/2017 16:50	WG1045961
1,2-Dichlorobenzene	U		0.349	1.00	1	11/28/2017 16:50	WG1045961
1,3-Dichlorobenzene	U		0.220	1.00	1	11/28/2017 16:50	WG1045961
1,4-Dichlorobenzene	U		0.274	1.00	1	11/28/2017 16:50	WG1045961
Dichlorodifluoromethane	U		0.551	5.00	1	11/28/2017 16:50	WG1045961
1,1-Dichloroethane	U		0.259	1.00	1	11/28/2017 16:50	WG1045961
1,2-Dichloroethane	U		0.361	1.00	1	11/28/2017 16:50	WG1045961
1,1-Dichloroethene	0.563	J	0.398	1.00	1	11/28/2017 20:06	WG1045961
cis-1,2-Dichloroethene	U		0.260	1.00	1	11/28/2017 16:50	WG1045961
trans-1,2-Dichloroethene	U		0.396	1.00	1	11/28/2017 16:50	WG1045961
1,2-Dichloropropane	U		0.306	1.00	1	11/28/2017 16:50	WG1045961
1,1-Dichloropropene	U		0.352	1.00	1	11/28/2017 16:50	WG1045961
1,3-Dichloropropane	U		0.366	1.00	1	11/28/2017 16:50	WG1045961
cis-1,3-Dichloropropene	U		0.418	1.00	1	11/28/2017 16:50	WG1045961
trans-1,3-Dichloropropene	U		0.419	1.00	1	11/28/2017 16:50	WG1045961
2,2-Dichloropropane	U		0.321	1.00	1	11/28/2017 16:50	WG1045961
Di-isopropyl ether	U		0.320	1.00	1	11/28/2017 16:50	WG1045961
Ethylbenzene	U		0.384	1.00	1	11/28/2017 16:50	WG1045961
Hexachloro-1,3-butadiene	U		0.256	1.00	1	11/28/2017 16:50	WG1045961
2-Hexanone	U		3.82	10.0	1	11/28/2017 16:50	WG1045961
p-Isopropyltoluene	U		0.350	1.00	1	11/28/2017 16:50	WG1045961
2-Butanone (MEK)	U		3.93	10.0	1	11/28/2017 16:50	WG1045961
Methylene Chloride	U		1.00	5.00	1	11/28/2017 16:50	WG1045961
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0	1	11/28/2017 16:50	WG1045961
Methyl tert-butyl ether	0.418	J	0.367	1.00	1	11/28/2017 16:50	WG1045961
Naphthalene	U		1.00	5.00	1	11/28/2017 16:50	WG1045961
Styrene	U		0.307	1.00	1	11/28/2017 16:50	WG1045961
1,1,1,2-Tetrachloroethane	U		0.385	1.00	1	11/28/2017 16:50	WG1045961
1,1,2,2-Tetrachloroethane	U		0.130	1.00	1	11/28/2017 16:50	WG1045961
Tetrachloroethene	U		0.372	1.00	1	11/28/2017 16:50	WG1045961
Toluene	U		0.412	1.00	1	11/28/2017 16:50	WG1045961
1,2,3-Trichlorobenzene	U		0.230	1.00	1	11/28/2017 16:50	WG1045961
1,2,4-Trichlorobenzene	U		0.355	1.00	1	11/28/2017 16:50	WG1045961
1,1,1-Trichloroethane	U		0.319	1.00	1	11/28/2017 16:50	WG1045961
1,1,2-Trichloroethane	U		0.383	1.00	1	11/28/2017 16:50	WG1045961
Trichloroethene	U		0.398	1.00	1	11/28/2017 16:50	WG1045961
Trichlorofluoromethane	U		1.20	5.00	1	11/28/2017 16:50	WG1045961
1,2,3-Trichloropropane	U		0.807	2.50	1	11/28/2017 16:50	WG1045961
Vinyl chloride	U		0.259	1.00	1	11/28/2017 16:50	WG1045961

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Vinyl acetate	U		1.63	10.0	1	11/28/2017 16:50	WG1045961
o-Xylene	U		0.341	1.00	1	11/28/2017 16:50	WG1045961
m&p-Xylene	U		0.719	2.00	1	11/28/2017 16:50	WG1045961
Xylenes, Total	U		1.06	3.00	1	11/28/2017 16:50	WG1045961
(S) Toluene-d8	*98.5*			*80.0-120*		*11/28/2017 20:06*	WG1045961
(S) Toluene-d8	*97.2*			*80.0-120*		*11/28/2017 16:50*	WG1045961
(S) Dibromofluoromethane	*100*			*76.0-123*		*11/28/2017 20:06*	WG1045961
(S) Dibromofluoromethane	*99.3*			*76.0-123*		*11/28/2017 16:50*	WG1045961
(S) 4-Bromofluorobenzene	*98.9*			*80.0-120*		*11/28/2017 20:06*	WG1045961
(S) 4-Bromofluorobenzene	*99.1*			*80.0-120*		*11/28/2017 16:50*	WG1045961

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	U		10.0	50.0	1	11/28/2017 17:10	WG1045961
Benzene	U		0.331	1.00	1	11/28/2017 17:10	WG1045961
Bromobenzene	U		0.352	1.00	1	11/28/2017 17:10	WG1045961
Bromochloromethane	U		0.520	5.00	1	11/28/2017 17:10	WG1045961
Bromodichloromethane	U		0.380	1.00	1	11/28/2017 17:10	WG1045961
Bromoform	U		0.469	1.00	1	11/28/2017 17:10	WG1045961
Bromomethane	U	J3	0.866	5.00	1	11/28/2017 17:10	WG1045961
Carbon tetrachloride	U		0.379	1.00	1	11/28/2017 17:10	WG1045961
Chlorobenzene	U		0.348	1.00	1	11/28/2017 17:10	WG1045961
Chlorodibromomethane	U		0.327	1.00	1	11/28/2017 17:10	WG1045961
Chloroethane	U		0.453	5.00	1	11/28/2017 17:10	WG1045961
Chloroform	U		0.324	5.00	1	11/28/2017 17:10	WG1045961
Chloromethane	U		0.276	2.50	1	11/28/2017 17:10	WG1045961
2-Chlorotoluene	U		0.375	1.00	1	11/28/2017 17:10	WG1045961
4-Chlorotoluene	U		0.351	1.00	1	11/28/2017 17:10	WG1045961
1,2-Dibromo-3-Chloropropane	U		1.33	5.00	1	11/28/2017 17:10	WG1045961
1,2-Dibromoethane	U		0.381	1.00	1	11/28/2017 17:10	WG1045961
Dibromomethane	U		0.346	1.00	1	11/28/2017 17:10	WG1045961
1,2-Dichlorobenzene	U		0.349	1.00	1	11/28/2017 17:10	WG1045961
1,3-Dichlorobenzene	U		0.220	1.00	1	11/28/2017 17:10	WG1045961
1,4-Dichlorobenzene	U		0.274	1.00	1	11/28/2017 17:10	WG1045961
Dichlorodifluoromethane	U		0.551	5.00	1	11/28/2017 17:10	WG1045961
1,1-Dichloroethane	U		0.259	1.00	1	11/28/2017 17:10	WG1045961
1,2-Dichloroethane	U		0.361	1.00	1	11/28/2017 17:10	WG1045961
1,1-Dichloroethene	U		0.398	1.00	1	11/28/2017 17:10	WG1045961
cis-1,2-Dichloroethene	U		0.260	1.00	1	11/28/2017 17:10	WG1045961
trans-1,2-Dichloroethene	U		0.396	1.00	1	11/28/2017 17:10	WG1045961
1,2-Dichloropropane	U		0.306	1.00	1	11/28/2017 17:10	WG1045961
1,1-Dichloropropene	U		0.352	1.00	1	11/28/2017 17:10	WG1045961
1,3-Dichloropropane	U		0.366	1.00	1	11/28/2017 17:10	WG1045961
cis-1,3-Dichloropropene	U		0.418	1.00	1	11/28/2017 17:10	WG1045961
trans-1,3-Dichloropropene	U		0.419	1.00	1	11/28/2017 17:10	WG1045961
2,2-Dichloropropane	U		0.321	1.00	1	11/28/2017 17:10	WG1045961
Di-isopropyl ether	U		0.320	1.00	1	11/28/2017 17:10	WG1045961
Ethylbenzene	U		0.384	1.00	1	11/28/2017 17:10	WG1045961
Hexachloro-1,3-butadiene	U		0.256	1.00	1	11/28/2017 17:10	WG1045961
2-Hexanone	U		3.82	10.0	1	11/28/2017 17:10	WG1045961
p-Isopropyltoluene	U		0.350	1.00	1	11/28/2017 17:10	WG1045961
2-Butanone (MEK)	U		3.93	10.0	1	11/28/2017 17:10	WG1045961
Methylene Chloride	U		1.00	5.00	1	11/28/2017 17:10	WG1045961
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0	1	11/28/2017 17:10	WG1045961
Methyl tert-butyl ether	U		0.367	1.00	1	11/28/2017 17:10	WG1045961
Naphthalene	U		1.00	5.00	1	11/28/2017 17:10	WG1045961
Styrene	U		0.307	1.00	1	11/28/2017 17:10	WG1045961
1,1,1,2-Tetrachloroethane	U		0.385	1.00	1	11/28/2017 17:10	WG1045961
1,1,2,2-Tetrachloroethane	U		0.130	1.00	1	11/28/2017 17:10	WG1045961
Tetrachloroethene	U		0.372	1.00	1	11/28/2017 17:10	WG1045961
Toluene	U		0.412	1.00	1	11/28/2017 17:10	WG1045961
1,2,3-Trichlorobenzene	U		0.230	1.00	1	11/28/2017 17:10	WG1045961
1,2,4-Trichlorobenzene	U		0.355	1.00	1	11/28/2017 17:10	WG1045961
1,1,1-Trichloroethane	U		0.319	1.00	1	11/28/2017 17:10	WG1045961
1,1,2-Trichloroethane	U		0.383	1.00	1	11/28/2017 17:10	WG1045961
Trichloroethene	U		0.398	1.00	1	11/28/2017 17:10	WG1045961
Trichlorofluoromethane	U		1.20	5.00	1	11/28/2017 17:10	WG1045961
1,2,3-Trichloropropane	U		0.807	2.50	1	11/28/2017 17:10	WG1045961
Vinyl chloride	U		0.259	1.00	1	11/28/2017 17:10	WG1045961

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Vinyl acetate	U		1.63	10.0	1	11/28/2017 17:10	WG1045961
o-Xylene	U		0.341	1.00	1	11/28/2017 17:10	WG1045961
m&p-Xylene	U		0.719	2.00	1	11/28/2017 17:10	WG1045961
Xylenes, Total	U		1.06	3.00	1	11/28/2017 17:10	WG1045961
(S) Toluene-d8	*97.2*			*80.0-120*		*11/28/2017 17:10*	WG1045961
(S) Dibromofluoromethane	*101*			*76.0-123*		*11/28/2017 17:10*	WG1045961
(S) 4-Bromofluorobenzene	*99.1*			*80.0-120*		*11/28/2017 17:10*	WG1045961

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	U		10.0	50.0	1	11/28/2017 17:29	WG1045961
Benzene	U		0.331	1.00	1	11/28/2017 17:29	WG1045961
Bromobenzene	U		0.352	1.00	1	11/28/2017 17:29	WG1045961
Bromochloromethane	U		0.520	5.00	1	11/28/2017 17:29	WG1045961
Bromodichloromethane	U		0.380	1.00	1	11/28/2017 17:29	WG1045961
Bromoform	U		0.469	1.00	1	11/28/2017 17:29	WG1045961
Bromomethane	U	J3	0.866	5.00	1	11/28/2017 17:29	WG1045961
Carbon tetrachloride	U		0.379	1.00	1	11/28/2017 17:29	WG1045961
Chlorobenzene	U		0.348	1.00	1	11/28/2017 17:29	WG1045961
Chlorodibromomethane	U		0.327	1.00	1	11/28/2017 17:29	WG1045961
Chloroethane	U		0.453	5.00	1	11/28/2017 17:29	WG1045961
Chloroform	U		0.324	5.00	1	11/28/2017 17:29	WG1045961
Chloromethane	U		0.276	2.50	1	11/28/2017 17:29	WG1045961
2-Chlorotoluene	U		0.375	1.00	1	11/28/2017 17:29	WG1045961
4-Chlorotoluene	U		0.351	1.00	1	11/28/2017 17:29	WG1045961
1,2-Dibromo-3-Chloropropane	U		1.33	5.00	1	11/28/2017 17:29	WG1045961
1,2-Dibromoethane	U		0.381	1.00	1	11/28/2017 17:29	WG1045961
Dibromomethane	U		0.346	1.00	1	11/28/2017 17:29	WG1045961
1,2-Dichlorobenzene	U		0.349	1.00	1	11/28/2017 17:29	WG1045961
1,3-Dichlorobenzene	U		0.220	1.00	1	11/28/2017 17:29	WG1045961
1,4-Dichlorobenzene	U		0.274	1.00	1	11/28/2017 17:29	WG1045961
Dichlorodifluoromethane	U		0.551	5.00	1	11/28/2017 17:29	WG1045961
1,1-Dichloroethane	U		0.259	1.00	1	11/28/2017 17:29	WG1045961
1,2-Dichloroethane	U		0.361	1.00	1	11/28/2017 17:29	WG1045961
1,1-Dichloroethene	U		0.398	1.00	1	11/28/2017 17:29	WG1045961
cis-1,2-Dichloroethene	U		0.260	1.00	1	11/28/2017 17:29	WG1045961
trans-1,2-Dichloroethene	U		0.396	1.00	1	11/28/2017 17:29	WG1045961
1,2-Dichloropropane	U		0.306	1.00	1	11/28/2017 17:29	WG1045961
1,1-Dichloropropene	U		0.352	1.00	1	11/28/2017 17:29	WG1045961
1,3-Dichloropropane	U		0.366	1.00	1	11/28/2017 17:29	WG1045961
cis-1,3-Dichloropropene	U		0.418	1.00	1	11/28/2017 17:29	WG1045961
trans-1,3-Dichloropropene	U		0.419	1.00	1	11/28/2017 17:29	WG1045961
2,2-Dichloropropane	U		0.321	1.00	1	11/28/2017 17:29	WG1045961
Di-isopropyl ether	U		0.320	1.00	1	11/28/2017 17:29	WG1045961
Ethylbenzene	U		0.384	1.00	1	11/28/2017 17:29	WG1045961
Hexachloro-1,3-butadiene	U		0.256	1.00	1	11/28/2017 17:29	WG1045961
2-Hexanone	U		3.82	10.0	1	11/28/2017 17:29	WG1045961
p-Isopropyltoluene	U		0.350	1.00	1	11/28/2017 17:29	WG1045961
2-Butanone (MEK)	U		3.93	10.0	1	11/28/2017 17:29	WG1045961
Methylene Chloride	U		1.00	5.00	1	11/28/2017 17:29	WG1045961
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0	1	11/28/2017 17:29	WG1045961
Methyl tert-butyl ether	0.442	J	0.367	1.00	1	11/28/2017 17:29	WG1045961
Naphthalene	U		1.00	5.00	1	11/28/2017 17:29	WG1045961
Styrene	U		0.307	1.00	1	11/28/2017 17:29	WG1045961
1,1,1,2-Tetrachloroethane	U		0.385	1.00	1	11/28/2017 17:29	WG1045961
1,1,2,2-Tetrachloroethane	U		0.130	1.00	1	11/28/2017 17:29	WG1045961
Tetrachloroethene	U		0.372	1.00	1	11/28/2017 17:29	WG1045961
Toluene	U		0.412	1.00	1	11/28/2017 17:29	WG1045961
1,2,3-Trichlorobenzene	U		0.230	1.00	1	11/28/2017 17:29	WG1045961
1,2,4-Trichlorobenzene	U		0.355	1.00	1	11/28/2017 17:29	WG1045961
1,1,1-Trichloroethane	U		0.319	1.00	1	11/28/2017 17:29	WG1045961
1,1,2-Trichloroethane	U		0.383	1.00	1	11/28/2017 17:29	WG1045961
Trichloroethene	U		0.398	1.00	1	11/28/2017 17:29	WG1045961
Trichlorofluoromethane	U		1.20	5.00	1	11/28/2017 17:29	WG1045961
1,2,3-Trichloropropane	U		0.807	2.50	1	11/28/2017 17:29	WG1045961
Vinyl chloride	U		0.259	1.00	1	11/28/2017 17:29	WG1045961

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Vinyl acetate	U		1.63	10.0	1	11/28/2017 17:29	WG1045961
o-Xylene	U		0.341	1.00	1	11/28/2017 17:29	WG1045961
m&p-Xylene	U		0.719	2.00	1	11/28/2017 17:29	WG1045961
Xylenes, Total	U		1.06	3.00	1	11/28/2017 17:29	WG1045961
(S) Toluene-d8	*98.7*			*80.0-120*		*11/28/2017 17:29*	WG1045961
(S) Dibromofluoromethane	*98.4*			*76.0-123*		*11/28/2017 17:29*	WG1045961
(S) 4-Bromofluorobenzene	*95.8*			*80.0-120*		*11/28/2017 17:29*	WG1045961

Method Blank (MB)

(MB) R3268920-3 11/28/17 12:38

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Acetone	U		10.0	50.0
Benzene	U		0.331	1.00
Bromobenzene	U		0.352	1.00
Bromodichloromethane	U		0.380	1.00
Bromochloromethane	U		0.520	5.00
Bromoform	U		0.469	1.00
Bromomethane	U		0.866	5.00
Carbon tetrachloride	U		0.379	1.00
Chlorobenzene	U		0.348	1.00
Chlorodibromomethane	U		0.327	1.00
Chloroethane	U		0.453	5.00
Chloroform	U		0.324	5.00
Chloromethane	U		0.276	2.50
2-Chlorotoluene	U		0.375	1.00
4-Chlorotoluene	U		0.351	1.00
1,2-Dibromo-3-Chloropropane	U		1.33	5.00
1,2-Dibromoethane	U		0.381	1.00
Dibromomethane	U		0.346	1.00
1,2-Dichlorobenzene	U		0.349	1.00
1,3-Dichlorobenzene	U		0.220	1.00
1,4-Dichlorobenzene	U		0.274	1.00
Dichlorodifluoromethane	U		0.551	5.00
1,1-Dichloroethane	U		0.259	1.00
1,2-Dichloroethane	U		0.361	1.00
1,1-Dichloroethene	U		0.398	1.00
cis-1,2-Dichloroethene	U		0.260	1.00
trans-1,2-Dichloroethene	U		0.396	1.00
1,2-Dichloropropane	U		0.306	1.00
1,1-Dichloropropene	U		0.352	1.00
1,3-Dichloropropane	U		0.366	1.00
cis-1,3-Dichloropropene	U		0.418	1.00
trans-1,3-Dichloropropene	U		0.419	1.00
2,2-Dichloropropane	U		0.321	1.00
Di-isopropyl ether	U		0.320	1.00
Ethylbenzene	U		0.384	1.00
Hexachloro-1,3-butadiene	U		0.256	1.00
2-Hexanone	U		3.82	10.0
p-Isopropyltoluene	U		0.350	1.00
2-Butanone (MEK)	U		3.93	10.0
Methylene Chloride	U		1.00	5.00

Method Blank (MB)

(MB) R3268920-3 11/28/17 12:38

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0
Methyl tert-butyl ether	U		0.367	1.00
Naphthalene	U		1.00	5.00
Styrene	U		0.307	1.00
1,1,1,2-Tetrachloroethane	U		0.385	1.00
1,1,2,2-Tetrachloroethane	U		0.130	1.00
Tetrachloroethene	U		0.372	1.00
Toluene	U		0.412	1.00
1,2,3-Trichlorobenzene	U		0.230	1.00
1,2,4-Trichlorobenzene	U		0.355	1.00
1,1,1-Trichloroethane	U		0.319	1.00
1,1,2-Trichloroethane	U		0.383	1.00
Trichloroethene	U		0.398	1.00
Trichlorofluoromethane	U		1.20	5.00
1,2,3-Trichloropropane	U		0.807	2.50
Vinyl acetate	U		1.63	10.0
Vinyl chloride	U		0.259	1.00
Xylenes, Total	U		1.06	3.00
o-Xylene	U		0.341	1.00
m&p-Xylenes	U		0.719	2.00
(S) Toluene-d8	*98.6*			*80.0-120*
(S) Dibromofluoromethane	*102*			*76.0-123*
(S) 4-Bromofluorobenzene	*98.7*			*80.0-120*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3268920-1 11/28/17 11:40 • (LCSD) R3268920-2 11/28/17 11:59

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Acetone	125	158	146	126	117	10.0-160			7.63	23
Benzene	25.0	24.5	25.3	97.8	101	69.0-123			3.37	20
Bromobenzene	25.0	21.8	22.5	87.2	90.0	79.0-120			3.11	20
Bromodichloromethane	25.0	24.1	24.6	96.4	98.4	76.0-120			2.04	20
Bromochloromethane	25.0	27.4	27.2	110	109	76.0-122			0.690	20
Bromoform	25.0	24.8	25.5	99.2	102	67.0-132			2.74	20
Bromomethane	25.0	14.5	18.7	58.1	74.8	18.0-160		J3	25.1	20
Carbon tetrachloride	25.0	26.7	26.4	107	105	63.0-122			1.36	20
Chlorobenzene	25.0	23.5	23.9	94.0	95.4	79.0-121			1.54	20
Chlorodibromomethane	25.0	25.3	26.4	101	106	75.0-125			4.53	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3268920-1 11/28/17 11:40 • (LCSD) R3268920-2 11/28/17 11:59

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Chloroethane	25.0	28.0	28.5	112	114	47.0-152			1.51	20
Chloroform	25.0	24.1	24.9	96.3	99.7	72.0-121			3.47	20
Chloromethane	25.0	19.5	20.9	77.8	83.6	48.0-139			7.17	20
2-Chlorotoluene	25.0	22.5	23.5	90.0	93.9	74.0-122			4.29	20
4-Chlorotoluene	25.0	22.2	22.8	89.0	91.1	79.0-120			2.33	20
1,2-Dibromo-3-Chloropropane	25.0	23.1	24.5	92.2	97.8	64.0-127			5.88	20
1,2-Dibromoethane	25.0	24.0	24.7	95.9	98.7	77.0-123			2.85	20
Dibromomethane	25.0	25.7	25.6	103	103	78.0-120			0.212	20
1,2-Dichlorobenzene	25.0	23.6	24.1	94.4	96.3	80.0-120			1.97	20
1,3-Dichlorobenzene	25.0	22.4	23.2	89.4	92.8	72.0-123			3.78	20
1,4-Dichlorobenzene	25.0	22.6	23.3	90.2	93.2	77.0-120			3.30	20
Dichlorodifluoromethane	25.0	23.4	23.8	93.5	95.4	49.0-155			2.01	20
1,1-Dichloroethane	25.0	27.2	27.8	109	111	70.0-126			1.98	20
1,2-Dichloroethane	25.0	26.6	27.1	107	108	67.0-126			1.73	20
1,1-Dichloroethene	25.0	27.3	27.7	109	111	64.0-129			1.48	20
cis-1,2-Dichloroethene	25.0	24.5	24.8	97.8	99.1	73.0-120			1.23	20
trans-1,2-Dichloroethene	25.0	23.8	24.8	95.0	99.4	71.0-121			4.49	20
1,2-Dichloropropane	25.0	26.3	26.4	105	106	75.0-125			0.572	20
1,1-Dichloropropene	25.0	24.4	24.9	97.5	99.6	71.0-129			2.12	20
1,3-Dichloropropane	25.0	24.0	24.8	96.2	99.3	80.0-121			3.24	20
cis-1,3-Dichloropropene	25.0	23.4	24.1	93.6	96.2	79.0-123			2.80	20
trans-1,3-Dichloropropene	25.0	24.9	25.2	99.5	101	74.0-127			1.52	20
2,2-Dichloropropane	25.0	23.8	23.7	95.1	94.7	60.0-125			0.422	20
Di-isopropyl ether	25.0	27.2	27.8	109	111	59.0-133			2.10	20
Ethylbenzene	25.0	24.0	25.0	96.2	100	77.0-120			3.93	20
Hexachloro-1,3-butadiene	25.0	24.8	26.2	99.1	105	64.0-131			5.51	20
2-Hexanone	125	151	151	121	121	58.0-147			0.0131	20
p-Isopropyltoluene	25.0	23.2	24.0	92.7	95.8	74.0-126			3.39	20
2-Butanone (MEK)	125	156	155	125	124	37.0-158			0.888	20
Methylene Chloride	25.0	23.8	23.8	95.1	95.1	66.0-121			0.0134	20
4-Methyl-2-pentanone (MIBK)	125	138	142	111	114	59.0-143			2.87	20
Methyl tert-butyl ether	25.0	24.9	25.6	99.7	102	64.0-123			2.71	20
Naphthalene	25.0	23.5	24.7	93.9	98.9	62.0-128			5.13	20
Styrene	25.0	22.9	23.6	91.6	94.4	78.0-124			3.01	20
1,1,1,2-Tetrachloroethane	25.0	24.7	25.6	98.9	102	75.0-122			3.58	20
1,1,2,2-Tetrachloroethane	25.0	24.0	24.4	95.9	97.5	71.0-122			1.65	20
Tetrachloroethene	25.0	24.0	24.5	96.1	98.1	70.0-127			2.08	20
Toluene	25.0	22.4	23.2	89.5	92.9	77.0-120			3.71	20
1,2,3-Trichlorobenzene	25.0	24.3	25.5	97.3	102	61.0-133			4.64	20
1,2,4-Trichlorobenzene	25.0	24.4	26.1	97.7	104	69.0-129			6.48	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3268920-1 11/28/17 11:40 • (LCSD) R3268920-2 11/28/17 11:59

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
1,1,1-Trichloroethane	25.0	24.6	25.6	98.4	102	68.0-122			3.97	20
1,1,2-Trichloroethane	25.0	23.1	24.1	92.3	96.5	78.0-120			4.48	20
Trichloroethene	25.0	24.5	24.9	98.1	99.7	78.0-120			1.57	20
Trichlorofluoromethane	25.0	27.2	28.4	109	114	56.0-137			4.39	20
1,2,3-Trichloropropane	25.0	24.5	24.9	98.0	99.5	72.0-124			1.58	20
Vinyl acetate	125	154	155	123	124	46.0-160			0.795	20
Vinyl chloride	25.0	25.6	26.6	103	106	64.0-133			3.75	20
Xylenes, Total	75.0	71.0	72.5	94.7	96.7	77.0-120			2.09	20
o-Xylene	25.0	23.5	23.7	94.1	95.0	78.0-120			0.881	20
m&p-Xylenes	50.0	47.5	48.8	95.0	97.7	77.0-120			2.77	20
(S) Toluene-d8				*95.7*	*97.2*	*80.0-120*				
(S) Dibromofluoromethane				*102*	*102*	*76.0-123*				
(S) 4-Bromofluorobenzene				*94.5*	*95.7*	*80.0-120*				

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDL	Method Detection Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.

ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our "one location" design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be **YOUR LAB OF CHOICE.**
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey–NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Conneticut	PH-0197	North Carolina [1]	DW21704
Florida	E87487	North Carolina [2]	41
Georgia	NELAP	North Dakota	R-140
Georgia [1]	923	Ohio–VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky [1]	90010	South Dakota	n/a
Kentucky [2]	16	Tennessee [1 4]	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

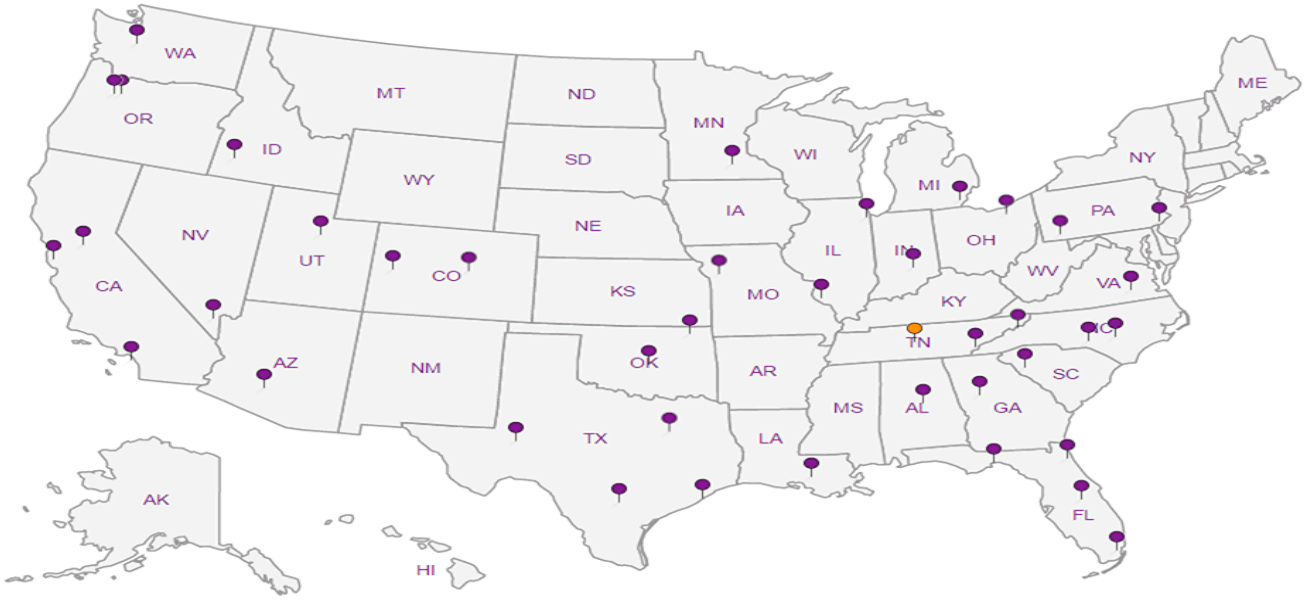
Third Party & Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	S-67674
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [n/a] Accreditation not applicable

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. **ESC Lab Sciences performs all testing at our central laboratory.**



Chain of Custody

L952664

C149

Pace Analytical® www.pacelabs.com

Workorder: 92363691 **Workorder Name:** KOPFLEX- ONSITE **Results Requested By:** 11/27/2017

Report / Invoice To	Subcontract To	Requested Analysis
Taylor Ezell Pace Analytical Charlotte 9800 Kincey Ave. Suite 100 Huntersville, NC 28078 Phone (704)875-9092 Email: taylor.ezell@pacelabs.com State of Sample Origin: MD	ESC - TN P.O. PTE112017 B	8260 *

Item	Sample ID	Collect Date/Time	Lab ID	Matrix	Preserved Containers: HCL						8260											LAB USE ONLY
1	RW-2D	11/14/2017 13:42	92363691001	Water	6						X											-01
2	MW-200	11/14/2017 13:35	92363691002	Water	6						X											-02
3	MW-01D	11/14/2017 14:00	92363691003	Water	6						X											-03
4	RW-1D	11/14/2017 14:11	92363691004	Water	6						X											-04
5	MW-21D	11/14/2017 14:18	92363691005	Water	6						X											-05
6	RW-3S	11/14/2017 14:33	92363691006	Water	6						X											-06
7	RW-2S	11/14/2017 14:40	92363691007	Water	6						X											-07
8	RW-1S	11/14/2017 14:49	92363691008	Water	6						X											-08
9	TB-11417	11/14/2017 00:00	92363691009	Water	6						X											-09
10	MW-39	11/14/2017 08:25	92363691010	Water	6						X											-10
11	MW-42	11/14/2017 08:33	92363691011	Water	6						X											-11
12	MW-18	11/14/2017 09:15	92363691012	Water	6						X											-12
13																						
14																						
15																						
16																						

Kelly Mer 841
11/21/17 0845

2.5 ^ann^ 50

Tracking #: 7458 9834 4882

L9526064

Transfers	Released By	Date/Time	Received By	Date/Time	Comments
1	[illegible]	11/20/17 1800	[illegible]	11/21/17 0845	* SEE ATTACHED LIST + LIMITS
2					
3					

Cooler Temperature on Receipt ____ °C	Custody Seal Y or N	Received on Ice Y or N	Samples Intact Y or N

2.5 mg 80

Sample Receipt Form

Pace Analytical Services, LLC
Charlotte

Pace Analytical®
www.pacelabs.com

Sample Acknowledgement Recipients:
WSP USA
Eric Johnson
13530 Dulles Technology Drive
Suite 300
Herndon, VA 20171
Email: eric.johnson@wsp.com

Bill to:
WSP USA
Eric Johnson
13530 Dulles Technology Drive
Suite 300
Herndon, VA 20171
Email: eric.johnson@wsp.com

Final Report Recipients:
WSP USA
Eric Johnson (Primary)
13530 Dulles Technology Drive
Suite 300
Herndon, VA 20171
Email: eric.johnson@wsp.com

Line Item Descriptions:
[1] 1,4-Dioxane

Client P O No:
Phone: (704)875-9092
Project Manager: Taylor Ezell
Client Project ID: KOPFLEX- ONSITE

Lab Project No: 92363691
Project Deliverables Type: Standard Report
Project Report Due Date: 11/27/17
Profile: 4362 (Autoreleased)

Automated EDD
EDD #: ERIMS for WSP (57)
Publish or Review?: Publish (P)
Email Client ?: Yes (Y)
Include FR ?: Yes (Y)
Auto Invoice: No, do not auto invoice (N)
Email Invoice?: No, do not auto email (N)
Print Final Invoice?: Yes, print invoice (Y)
Multiple EDD #2: FR Only no EDD (0)
Multiple EDD #3: FR Only no EDD (0)
Multiple EDD #4: FR Only no EDD (0)
Multiple EDD #5: FR Only no EDD (0)

Lab Smp ID: 92363691001 **Client Smp ID: RW-2D**
Proj Smp No: 1 Matrix: Water Smp Type: PS Line Item: 1
Collected Date: 11/14/17 13:42
Received Date: 11/16/17 09:40

PARAMETER	METHOD	EARLIEST HOLD	UNIT PRICE	WR	SPL	%
8260 WLL - 8260 MS Volatiles	EPA 8260	11/28/17 23:59	$65.00			

COMPOUND	PQL	UNITS
Acetone	25	ug/L
Benzene	1	ug/L
Bromobenzene	1	ug/L
Bromochloromethane	1	ug/L
Bromodichloromethane	1	ug/L
Bromoform	1	ug/L
Bromomethane	2	ug/L
2-Butanone (MEK)	5	ug/L
Carbon tetrachloride	1	ug/L
Chlorobenzene	1	ug/L
Chloroethane	1	ug/L
Chloroform	1	ug/L
Chloromethane	1	ug/L
2-Chlorotoluene	1	ug/L
4-Chlorotoluene	1	ug/L
1,2-Dibromo-3-chloropropane	2	ug/L
Dibromochloromethane	1	ug/L
1,2-Dibromoethane (EDB)	1	ug/L

L952464

PARAMETER	METHOD	EARLIEST HOLD	UNIT PRICE	WR	SPL	%

COMPOUND	PQL	UNITS
Dibromomethane	1	ug/L
1,2-Dichlorobenzene	1	ug/L
1,3-Dichlorobenzene	1	ug/L
1,4-Dichlorobenzene	1	ug/L
Dichlorodifluoromethane	1	ug/L
1,1-Dichloroethane	1	ug/L
1,2-Dichloroethane	1	ug/L
1,1-Dichloroethene	1	ug/L
cis-1,2-Dichloroethene	1	ug/L
trans-1,2-Dichloroethene	1	ug/L
1,2-Dichloropropane	1	ug/L
1,3-Dichloropropane	1	ug/L
2,2-Dichloropropane	1	ug/L
1,1-Dichloropropene	1	ug/L
cis-1,3-Dichloropropene	1	ug/L
trans-1,3-Dichloropropene	1	ug/L
Diisopropyl ether	1	ug/L
Ethylbenzene	1	ug/L
Hexachloro-1,3-butadiene	1	ug/L
2-Hexanone	5	ug/L
p-Isopropyltoluene	1	ug/L
Methylene Chloride	2	ug/L
4-Methyl-2-pentanone (MIBK)	5	ug/L
Methyl-tert-butyl ether	1	ug/L
Naphthalene	1	ug/L
Styrene	1	ug/L
1,1,1,2-Tetrachloroethane	1	ug/L
1,1,2,2-Tetrachloroethane	1	ug/L
Tetrachloroethene	1	ug/L
Toluene	1	ug/L
1,2,3-Trichlorobenzene	1	ug/L
1,2,4-Trichlorobenzene	1	ug/L
1,1,1-Trichloroethane	1	ug/L
1,1,2-Trichloroethane	1	ug/L
Trichloroethene	1	ug/L
Trichlorofluoromethane	1	ug/L
1,2,3-Trichloropropane	1	ug/L
Vinyl acetate	2	ug/L
Vinyl chloride	1	ug/L
Xylene (Total)	1	ug/L
m&p-Xylene	2	ug/L
o-Xylene	1	ug/L

8260 WSIM - 8260 MSV		EPA 8260B Mod.	11/28/17 23:59	$125.00		

Sub Total - Sample 2147321 $190.00

Lab Smp ID: 92363691002 **Client Smp ID: MW-200**
Proj Smp No: 2 Matrix: Water Smp Type: PS Line Item: 1
Collected Date: 11/14/17 13:35
Received Date: 11/16/17 09:40

PARAMETER	METHOD	EARLIEST HOLD	UNIT PRICE	WR	SPL	%
8260 WLL - 8260 MS Volatiles	EPA 8260	11/28/17 23:59	$65.00			
Compound Count: 60						
8260 WSIM - 8260 MSV	EPA 8260B Mod.	11/28/17 23:59	$125.00			

1952404

ESC LAB SCIENCES
Cooler Receipt Form

Client: PACE	SDG#	952664
Cooler Received/Opened On: 11/21/17	Temperature:	2.5
Received By: Kelly Mercer		
Signature: Kelly Mercer		

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?			
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?		✓	
Preservation Correct / Checked?			

L952064

Katie Ingram

From: Nancy McLain
Sent: Tuesday, November 21, 2017 3:18 PM
To: Login; Shipping
Subject: PACE -Huntersville NC samples
Importance: High

PACE (Huntersville, NC) says they sent us too many vials for 8260 analysis. These haven't been logged yet. They need two or three vials for each of these work orders sent back to them. If by chance they're mistaken and didn't send an extra 2-3 to spare and send back please let me know.

92363686
92363691
92363693
92363838

The WO number is on the COC.

Shipping: Pleaes ship back to here:

Pace Analytical Services, Inc.-Carolina Labs
Attn: Taylor Ezell
9800 Kincey Ave
Suite 100
Huntersville, NC 28078

Thanks,
Nancy

ESC Lab Sciences
Non-Conformance Form

Login #:L952664	Client:PACE	Date:11/21/17	Evaluated by: Myra "Katie" Ingram

Non-Conformance (check applicable items)

	Sample Integrity		Chain of Custody Clarification		
	Parameter(s) past holding time		Login Clarification Needed		**If Broken Container:**
	Improper temperature		Chain of custody is incomplete		Insufficient packing material around container
	Improper container type		Please specify Metals requested.		Insufficient packing material inside cooler
	Improper preservation		Please specify TCLP requested.		Improper handling by carrier (FedEx / UPS / Courier
	Insufficient sample volume.		Received additional samples not listed on coc.		Sample was frozen
	Sample is biphasic.		Sample ids on containers do not match ids on coc		Container lid not intact
	Vials received with headspace.		Trip Blank not received.		**If no Chain of Custody:**
	Broken container		Client did not "X" analysis.		Received by:
	Broken container:		Chain of Custody is missing		Date/Time:
	Sufficient sample remains				Temp./Cont. Rec./pH:
					Carrier:
					Tracking#

Login Comments:

Received one broken vial for ID: MW01D

Client informed by:		Call		Email X		Voice Mail		Date: 11/22/2017	Time: 11:18am
TSR Initials: NM	Client Contact: Taylor Ezell								

Login Instructions:

Client notified.

ESC Lab Sciences
Non-Conformance Form

Login #:L952664	Client:PACE	Date:11/21/17	Evaluated by: Myra "Katie" Ingram

Non-Conformance (check applicable items)

	Sample Integrity		Chain of Custody Clarification		
	Parameter(s) past holding time		Login Clarification Needed		**If Broken Container:**
	Improper temperature		Chain of custody is incomplete		Insufficient packing material around container
	Improper container type		Please specify Metals requested.		Insufficient packing material inside cooler
	Improper preservation		Please specify TCLP requested.		Improper handling by carrier (FedEx / UPS / Courier
	Insufficient sample volume.		Received additional samples not listed on coc.		Sample was frozen
	Sample is biphasic.		Sample ids on containers do not match ids on coc		Container lid not intact
	Vials received with headspace.		Trip Blank not received.		**If no Chain of Custody:**
	Broken container		Client did not "X" analysis.		Received by:
	Broken container:		Chain of Custody is missing		Date/Time:
	Sufficient sample remains				Temp./Cont. Rec./pH:
					Carrier:
					Tracking#

Login Comments:

Received one broken vial for ID: MW01D

Client informed by:		Call		Email X		Voice Mail		Date: 11/22/2017	Time: 11:18am
TSR Initials: NM	Client Contact: Taylor Ezell								

Login Instructions:

Client notified.

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

December 08, 2017

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

RE: Project: KOPFLEX
Pace Project No.: 92365229

Dear Eric Johnson:
Enclosed are the analytical results for sample(s) received by the laboratory on December 01, 2017. 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

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

CERTIFICATIONS

Project: KOPFLEX
Pace Project No.: 92365229

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

SAMPLE SUMMARY

Project: KOPFLEX
Pace Project No.: 92365229

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92365229001	**MW-43**	Water	11/30/17 11:22	12/01/17 10:05
92365229002	**TB-113017**	Water	11/30/17 00:00	12/01/17 10:05

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

SAMPLE ANALYTE COUNT

Project: KOPFLEX
Pace Project No.: 92365229

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92365229001	**MW-43**	EPA 8260	CAH	63	PASI-C
		EPA 8260B Mod.	DLK	3	PASI-C
92365229002	**TB-113017**	EPA 8260	CAH	63	PASI-C
		EPA 8260B Mod.	DLK	3	PASI-C

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

ANALYTICAL RESULTS

Project: KOPFLEX
Pace Project No.: 92365229

Sample: MW-43 **Lab ID: 92365229001** Collected: 11/30/17 11:22 Received: 12/01/17 10:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260							
Acetone	ND	ug/L	25.0	1		12/08/17 00:49	67-64-1	
Benzene	ND	ug/L	1.0	1		12/08/17 00:49	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		12/08/17 00:49	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		12/08/17 00:49	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		12/08/17 00:49	75-27-4	
Bromoform	ND	ug/L	1.0	1		12/08/17 00:49	75-25-2	
Bromomethane	ND	ug/L	2.0	1		12/08/17 00:49	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		12/08/17 00:49	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	1		12/08/17 00:49	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		12/08/17 00:49	108-90-7	
Chloroethane	ND	ug/L	1.0	1		12/08/17 00:49	75-00-3	
Chloroform	ND	ug/L	1.0	1		12/08/17 00:49	67-66-3	
Chloromethane	ND	ug/L	1.0	1		12/08/17 00:49	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		12/08/17 00:49	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		12/08/17 00:49	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.0	1		12/08/17 00:49	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		12/08/17 00:49	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		12/08/17 00:49	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		12/08/17 00:49	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		12/08/17 00:49	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		12/08/17 00:49	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		12/08/17 00:49	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		12/08/17 00:49	75-71-8	
1,1-Dichloroethane	**15.9**	ug/L	1.0	1		12/08/17 00:49	75-34-3	
1,2-Dichloroethane	**1.3**	ug/L	1.0	1		12/08/17 00:49	107-06-2	
1,1-Dichloroethene	**159**	ug/L	1.0	1		12/08/17 00:49	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		12/08/17 00:49	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		12/08/17 00:49	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		12/08/17 00:49	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		12/08/17 00:49	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		12/08/17 00:49	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		12/08/17 00:49	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		12/08/17 00:49	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		12/08/17 00:49	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	1		12/08/17 00:49	108-20-3	
Ethylbenzene	ND	ug/L	1.0	1		12/08/17 00:49	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		12/08/17 00:49	87-68-3	
2-Hexanone	ND	ug/L	5.0	1		12/08/17 00:49	591-78-6	
p-Isopropyltoluene	ND	ug/L	1.0	1		12/08/17 00:49	99-87-6	
Methylene Chloride	ND	ug/L	2.0	1		12/08/17 00:49	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		12/08/17 00:49	108-10-1	
Methyl-tert-butyl ether	**10.9**	ug/L	1.0	1		12/08/17 00:49	1634-04-4	
Naphthalene	ND	ug/L	1.0	1		12/08/17 00:49	91-20-3	
Styrene	ND	ug/L	1.0	1		12/08/17 00:49	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		12/08/17 00:49	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		12/08/17 00:49	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		12/08/17 00:49	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.: 92365229

Sample: MW-43 **Lab ID: 92365229001** Collected: 11/30/17 11:22 Received: 12/01/17 10:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260							
Toluene	ND	ug/L	1.0	1		12/08/17 00:49	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		12/08/17 00:49	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		12/08/17 00:49	120-82-1	
1,1,1-Trichloroethane	**1.2**	ug/L	1.0	1		12/08/17 00:49	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		12/08/17 00:49	79-00-5	
Trichloroethene	ND	ug/L	1.0	1		12/08/17 00:49	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		12/08/17 00:49	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	1		12/08/17 00:49	96-18-4	
Vinyl acetate	ND	ug/L	2.0	1		12/08/17 00:49	108-05-4	
Vinyl chloride	ND	ug/L	1.0	1		12/08/17 00:49	75-01-4	
Xylene (Total)	ND	ug/L	1.0	1		12/08/17 00:49	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	1		12/08/17 00:49	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		12/08/17 00:49	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	97	%	70-130	1		12/08/17 00:49	460-00-4	
1,2-Dichloroethane-d4 (S)	95	%	70-130	1		12/08/17 00:49	17060-07-0	
Toluene-d8 (S)	108	%	70-130	1		12/08/17 00:49	2037-26-5	
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	**165**	ug/L	10.0	5		12/05/17 15:56	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	118	%	50-150	5		12/05/17 15:56	17060-07-0	
Toluene-d8 (S)	109	%	50-150	5		12/05/17 15:56	2037-26-5	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: KOPFLEX
Pace Project No.: 92365229

Sample: TB-113017 **Lab ID: 92365229002** Collected: 11/30/17 00:00 Received: 12/01/17 10:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260							
Acetone	ND	ug/L	25.0	1		12/07/17 23:03	67-64-1	
Benzene	ND	ug/L	1.0	1		12/07/17 23:03	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		12/07/17 23:03	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		12/07/17 23:03	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		12/07/17 23:03	75-27-4	
Bromoform	ND	ug/L	1.0	1		12/07/17 23:03	75-25-2	
Bromomethane	ND	ug/L	2.0	1		12/07/17 23:03	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		12/07/17 23:03	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	1		12/07/17 23:03	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		12/07/17 23:03	108-90-7	
Chloroethane	ND	ug/L	1.0	1		12/07/17 23:03	75-00-3	
Chloroform	ND	ug/L	1.0	1		12/07/17 23:03	67-66-3	
Chloromethane	ND	ug/L	1.0	1		12/07/17 23:03	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		12/07/17 23:03	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		12/07/17 23:03	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.0	1		12/07/17 23:03	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		12/07/17 23:03	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		12/07/17 23:03	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		12/07/17 23:03	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		12/07/17 23:03	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		12/07/17 23:03	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		12/07/17 23:03	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		12/07/17 23:03	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		12/07/17 23:03	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		12/07/17 23:03	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		12/07/17 23:03	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		12/07/17 23:03	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		12/07/17 23:03	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		12/07/17 23:03	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		12/07/17 23:03	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		12/07/17 23:03	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		12/07/17 23:03	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		12/07/17 23:03	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		12/07/17 23:03	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	1		12/07/17 23:03	108-20-3	
Ethylbenzene	ND	ug/L	1.0	1		12/07/17 23:03	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		12/07/17 23:03	87-68-3	
2-Hexanone	ND	ug/L	5.0	1		12/07/17 23:03	591-78-6	
p-Isopropyltoluene	ND	ug/L	1.0	1		12/07/17 23:03	99-87-6	
Methylene Chloride	ND	ug/L	2.0	1		12/07/17 23:03	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		12/07/17 23:03	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		12/07/17 23:03	1634-04-4	
Naphthalene	ND	ug/L	1.0	1		12/07/17 23:03	91-20-3	
Styrene	ND	ug/L	1.0	1		12/07/17 23:03	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		12/07/17 23:03	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		12/07/17 23:03	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		12/07/17 23:03	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.: 92365229

Sample: TB-113017 **Lab ID: 92365229002** Collected: 11/30/17 00:00 Received: 12/01/17 10:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260							
Toluene	ND	ug/L	1.0	1		12/07/17 23:03	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		12/07/17 23:03	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		12/07/17 23:03	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		12/07/17 23:03	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		12/07/17 23:03	79-00-5	
Trichloroethene	ND	ug/L	1.0	1		12/07/17 23:03	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		12/07/17 23:03	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	1		12/07/17 23:03	96-18-4	
Vinyl acetate	ND	ug/L	2.0	1		12/07/17 23:03	108-05-4	
Vinyl chloride	ND	ug/L	1.0	1		12/07/17 23:03	75-01-4	
Xylene (Total)	ND	ug/L	1.0	1		12/07/17 23:03	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	1		12/07/17 23:03	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		12/07/17 23:03	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	96	%	70-130	1		12/07/17 23:03	460-00-4	
1,2-Dichloroethane-d4 (S)	107	%	70-130	1		12/07/17 23:03	17060-07-0	
Toluene-d8 (S)	108	%	70-130	1		12/07/17 23:03	2037-26-5	
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	ND	ug/L	2.0	1		12/05/17 15:37	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	111	%	50-150	1		12/05/17 15:37	17060-07-0	
Toluene-d8 (S)	109	%	50-150	1		12/05/17 15:37	2037-26-5	

REPORT OF LABORATORY ANALYSIS

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

Project: KOPFLEX
Pace Project No.: 92365229

QC Batch: 389874 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV Low Level
Associated Lab Samples: 92365229001, 92365229002

METHOD BLANK: 2162948 Matrix: Water
Associated Lab Samples: 92365229001, 92365229002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	12/07/17 16:35	
1,1,1-Trichloroethane	ug/L	ND	1.0	12/07/17 16:35	
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	12/07/17 16:35	
1,1,2-Trichloroethane	ug/L	ND	1.0	12/07/17 16:35	
1,1-Dichloroethane	ug/L	ND	1.0	12/07/17 16:35	
1,1-Dichloroethene	ug/L	ND	1.0	12/07/17 16:35	
1,1-Dichloropropene	ug/L	ND	1.0	12/07/17 16:35	
1,2,3-Trichlorobenzene	ug/L	ND	1.0	12/07/17 16:35	
1,2,3-Trichloropropane	ug/L	ND	1.0	12/07/17 16:35	
1,2,4-Trichlorobenzene	ug/L	ND	1.0	12/07/17 16:35	
1,2-Dibromo-3-chloropropane	ug/L	ND	2.0	12/07/17 16:35	
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	12/07/17 16:35	
1,2-Dichlorobenzene	ug/L	ND	1.0	12/07/17 16:35	
1,2-Dichloroethane	ug/L	ND	1.0	12/07/17 16:35	
1,2-Dichloropropane	ug/L	ND	1.0	12/07/17 16:35	
1,3-Dichlorobenzene	ug/L	ND	1.0	12/07/17 16:35	
1,3-Dichloropropane	ug/L	ND	1.0	12/07/17 16:35	
1,4-Dichlorobenzene	ug/L	ND	1.0	12/07/17 16:35	
2,2-Dichloropropane	ug/L	ND	1.0	12/07/17 16:35	
2-Butanone (MEK)	ug/L	ND	5.0	12/07/17 16:35	
2-Chlorotoluene	ug/L	ND	1.0	12/07/17 16:35	
2-Hexanone	ug/L	ND	5.0	12/07/17 16:35	
4-Chlorotoluene	ug/L	ND	1.0	12/07/17 16:35	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	5.0	12/07/17 16:35	
Acetone	ug/L	ND	25.0	12/07/17 16:35	
Benzene	ug/L	ND	1.0	12/07/17 16:35	
Bromobenzene	ug/L	ND	1.0	12/07/17 16:35	
Bromochloromethane	ug/L	ND	1.0	12/07/17 16:35	
Bromodichloromethane	ug/L	ND	1.0	12/07/17 16:35	
Bromoform	ug/L	ND	1.0	12/07/17 16:35	
Bromomethane	ug/L	ND	2.0	12/07/17 16:35	
Carbon tetrachloride	ug/L	ND	1.0	12/07/17 16:35	
Chlorobenzene	ug/L	ND	1.0	12/07/17 16:35	
Chloroethane	ug/L	ND	1.0	12/07/17 16:35	
Chloroform	ug/L	ND	1.0	12/07/17 16:35	
Chloromethane	ug/L	ND	1.0	12/07/17 16:35	
cis-1,2-Dichloroethene	ug/L	ND	1.0	12/07/17 16:35	
cis-1,3-Dichloropropene	ug/L	ND	1.0	12/07/17 16:35	
Dibromochloromethane	ug/L	ND	1.0	12/07/17 16:35	
Dibromomethane	ug/L	ND	1.0	12/07/17 16:35	
Dichlorodifluoromethane	ug/L	ND	1.0	12/07/17 16:35	

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
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(704)875-9092

QUALITY CONTROL DATA

Project: KOPFLEX
Pace Project No.: 92365229

METHOD BLANK: 2162948 Matrix: Water
Associated Lab Samples: 92365229001, 92365229002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diisopropyl ether	ug/L	ND	1.0	12/07/17 16:35	
Ethylbenzene	ug/L	ND	1.0	12/07/17 16:35	
Hexachloro-1,3-butadiene	ug/L	ND	1.0	12/07/17 16:35	
m&p-Xylene	ug/L	ND	2.0	12/07/17 16:35	
Methyl-tert-butyl ether	ug/L	ND	1.0	12/07/17 16:35	
Methylene Chloride	ug/L	ND	2.0	12/07/17 16:35	
Naphthalene	ug/L	ND	1.0	12/07/17 16:35	
o-Xylene	ug/L	ND	1.0	12/07/17 16:35	
p-Isopropyltoluene	ug/L	ND	1.0	12/07/17 16:35	
Styrene	ug/L	ND	1.0	12/07/17 16:35	
Tetrachloroethene	ug/L	ND	1.0	12/07/17 16:35	
Toluene	ug/L	ND	1.0	12/07/17 16:35	
trans-1,2-Dichloroethene	ug/L	ND	1.0	12/07/17 16:35	
trans-1,3-Dichloropropene	ug/L	ND	1.0	12/07/17 16:35	
Trichloroethene	ug/L	ND	1.0	12/07/17 16:35	
Trichlorofluoromethane	ug/L	ND	1.0	12/07/17 16:35	
Vinyl acetate	ug/L	ND	2.0	12/07/17 16:35	
Vinyl chloride	ug/L	ND	1.0	12/07/17 16:35	
Xylene (Total)	ug/L	ND	1.0	12/07/17 16:35	
1,2-Dichloroethane-d4 (S)	%	94	70-130	12/07/17 16:35	
4-Bromofluorobenzene (S)	%	109	70-130	12/07/17 16:35	
Toluene-d8 (S)	%	98	70-130	12/07/17 16:35	

LABORATORY CONTROL SAMPLE: 2162949

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	50	47.9	96	70-130	
1,1,1-Trichloroethane	ug/L	50	47.5	95	70-130	
1,1,2,2-Tetrachloroethane	ug/L	50	46.0	92	70-130	
1,1,2-Trichloroethane	ug/L	50	49.0	98	70-130	
1,1-Dichloroethane	ug/L	50	49.3	99	70-130	
1,1-Dichloroethene	ug/L	50	53.6	107	70-132	
1,1-Dichloropropene	ug/L	50	46.7	93	70-130	
1,2,3-Trichlorobenzene	ug/L	50	47.5	95	70-135	
1,2,3-Trichloropropane	ug/L	50	40.8	82	70-130	
1,2,4-Trichlorobenzene	ug/L	50	47.0	94	70-134	
1,2-Dibromo-3-chloropropane	ug/L	50	44.3	89	70-130	
1,2-Dibromoethane (EDB)	ug/L	50	46.2	92	70-130	
1,2-Dichlorobenzene	ug/L	50	48.7	97	70-130	
1,2-Dichloroethane	ug/L	50	43.4	87	70-130	
1,2-Dichloropropane	ug/L	50	43.0	86	70-130	
1,3-Dichlorobenzene	ug/L	50	49.8	100	70-130	
1,3-Dichloropropane	ug/L	50	47.5	95	70-130	
1,4-Dichlorobenzene	ug/L	50	49.0	98	70-130	

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REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: KOPFLEX
Pace Project No.: 92365229

LABORATORY CONTROL SAMPLE: 2162949

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,2-Dichloropropane	ug/L	50	56.2	112	58-145	
2-Butanone (MEK)	ug/L	100	84.2	84	70-145	
2-Chlorotoluene	ug/L	50	43.3	87	70-130	
2-Hexanone	ug/L	100	90.1	90	70-144	
4-Chlorotoluene	ug/L	50	45.4	91	70-130	
4-Methyl-2-pentanone (MIBK)	ug/L	100	103	103	70-140	
Acetone	ug/L	100	89.4	89	50-175	
Benzene	ug/L	50	42.3	85	70-130	
Bromobenzene	ug/L	50	45.2	90	70-130	
Bromochloromethane	ug/L	50	53.0	106	70-130	
Bromodichloromethane	ug/L	50	46.0	92	70-130	
Bromoform	ug/L	50	50.6	101	70-130	
Bromomethane	ug/L	50	45.1	90	54-130	
Carbon tetrachloride	ug/L	50	46.3	93	70-132	
Chlorobenzene	ug/L	50	48.1	96	70-130	
Chloroethane	ug/L	50	56.2	112	64-134	
Chloroform	ug/L	50	50.9	102	70-130	
Chloromethane	ug/L	50	49.8	100	64-130	
cis-1,2-Dichloroethene	ug/L	50	54.7	109	70-131	
cis-1,3-Dichloropropene	ug/L	50	48.2	96	70-130	
Dibromochloromethane	ug/L	50	50.1	100	70-130	
Dibromomethane	ug/L	50	45.4	91	70-131	
Dichlorodifluoromethane	ug/L	50	49.3	99	56-130	
Diisopropyl ether	ug/L	50	53.5	107	70-130	
Ethylbenzene	ug/L	50	48.2	96	70-130	
Hexachloro-1,3-butadiene	ug/L	50	47.5	95	70-130	
m&p-Xylene	ug/L	100	96.5	97	70-130	
Methyl-tert-butyl ether	ug/L	50	48.6	97	70-130	
Methylene Chloride	ug/L	50	51.0	102	63-130	
Naphthalene	ug/L	50	45.7	91	70-138	
o-Xylene	ug/L	50	47.7	95	70-130	
p-Isopropyltoluene	ug/L	50	50.8	102	70-130	
Styrene	ug/L	50	47.2	94	70-130	
Tetrachloroethene	ug/L	50	51.3	103	70-130	
Toluene	ug/L	50	46.3	93	70-130	
trans-1,2-Dichloroethene	ug/L	50	51.3	103	70-130	
trans-1,3-Dichloropropene	ug/L	50	50.9	102	70-132	
Trichloroethene	ug/L	50	44.3	89	70-130	
Trichlorofluoromethane	ug/L	50	50.3	101	62-133	
Vinyl acetate	ug/L	100	100	100	66-157	
Vinyl chloride	ug/L	50	54.9	110	50-150	
Xylene (Total)	ug/L	150	144	96	70-130	
1,2-Dichloroethane-d4 (S)	%			90	70-130	
4-Bromofluorobenzene (S)	%			97	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
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QUALITY CONTROL DATA

Project: KOPFLEX
Pace Project No.: 92365229

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2162954 2162955

Parameter	Units	92365235017 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,1,1,2-Tetrachloroethane	ug/L	ND	20	20	20.7	21.5	104	107	70-130	4	30	
1,1,1-Trichloroethane	ug/L	ND	20	20	19.7	25.3	99	126	70-130	25	30	
1,1,2,2-Tetrachloroethane	ug/L	ND	20	20	19.3	20.3	97	101	70-130	5	30	
1,1,2-Trichloroethane	ug/L	ND	20	20	20.9	23.4	105	117	70-130	11	30	
1,1-Dichloroethane	ug/L	ND	20	20	20.2	20.9	101	105	70-130	4	30	
1,1-Dichloroethene	ug/L	ND	20	20	21.5	21.7	108	109	70-166	1	30	
1,1-Dichloropropene	ug/L	ND	20	20	19.8	24.9	99	124	70-130	23	30	
1,2,3-Trichlorobenzene	ug/L	ND	20	20	23.1	21.2	115	106	70-130	8	30	
1,2,3-Trichloropropane	ug/L	ND	20	20	19.1	20.5	95	103	70-130	7	30	
1,2,4-Trichlorobenzene	ug/L	ND	20	20	24.3	21.5	122	108	70-130	12	30	
1,2-Dibromo-3-chloropropane	ug/L	ND	20	20	23.2	21.3	116	106	70-130	9	30	
1,2-Dibromoethane (EDB)	ug/L	ND	20	20	22.0	20.5	110	103	70-130	7	30	
1,2-Dichlorobenzene	ug/L	ND	20	20	21.8	23.5	109	117	70-130	7	30	
1,2-Dichloroethane	ug/L	ND	20	20	20.2	20.2	101	100	70-130	0	30	
1,2-Dichloropropane	ug/L	ND	20	20	19.8	21.5	99	107	70-130	8	30	
1,3-Dichlorobenzene	ug/L	ND	20	20	21.3	21.6	107	108	70-130	1	30	
1,3-Dichloropropane	ug/L	ND	20	20	21.5	20.9	108	104	70-130	3	30	
1,4-Dichlorobenzene	ug/L	ND	20	20	21.4	21.3	107	106	70-130	0	30	
2,2-Dichloropropane	ug/L	ND	20	20	20.6	21.6	103	108	70-130	4	30	
2-Butanone (MEK)	ug/L	ND	40	40	34.1	47.3	84	117	70-130	33	30	R1
2-Chlorotoluene	ug/L	ND	20	20	21.4	20.6	107	103	70-130	4	30	
2-Hexanone	ug/L	ND	40	40	41.0	41.0	102	103	70-130	0	30	
4-Chlorotoluene	ug/L	ND	20	20	21.5	20.7	108	104	70-130	4	30	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	40	40	39.5	48.1	99	120	70-130	20	30	
Acetone	ug/L	ND	40	40	35.8	43.5	90	109	70-130	19	30	
Benzene	ug/L	ND	20	20	22.5	24.1	112	121	70-148	7	30	
Bromobenzene	ug/L	ND	20	20	21.7	21.2	109	106	70-130	2	30	
Bromochloromethane	ug/L	ND	20	20	20.1	21.3	101	107	70-130	6	30	
Bromodichloromethane	ug/L	ND	20	20	19.2	21.3	96	107	70-130	11	30	
Bromoform	ug/L	ND	20	20	20.6	21.5	103	108	70-130	4	30	
Bromomethane	ug/L	ND	20	20	22.1	21.5	111	108	70-130	3	30	
Carbon tetrachloride	ug/L	ND	20	20	21.1	23.9	106	119	70-130	12	30	
Chlorobenzene	ug/L	ND	20	20	22.1	21.3	110	107	70-146	3	30	
Chloroethane	ug/L	ND	20	20	24.2	24.5	121	122	70-130	1	30	
Chloroform	ug/L	ND	20	20	19.0	20.7	95	104	70-130	9	30	
Chloromethane	ug/L	ND	20	20	18.8	19.2	94	96	70-130	2	30	
cis-1,2-Dichloroethene	ug/L	ND	20	20	20.6	21.5	103	107	70-130	4	30	
cis-1,3-Dichloropropene	ug/L	ND	20	20	20.4	24.2	102	121	70-130	17	30	
Dibromochloromethane	ug/L	ND	20	20	21.1	20.9	105	104	70-130	1	30	
Dibromomethane	ug/L	ND	20	20	20.1	22.4	101	112	70-130	11	30	
Dichlorodifluoromethane	ug/L	ND	20	20	17.0	17.8	85	89	70-130	4	30	
Diisopropyl ether	ug/L	ND	20	20	20.5	20.6	102	103	70-130	0	30	
Ethylbenzene	ug/L	ND	20	20	21.9	21.6	110	108	70-130	1	30	
Hexachloro-1,3-butadiene	ug/L	ND	20	20	24.3	22.1	121	110	70-130	9	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

QUALITY CONTROL DATA

Project: KOPFLEX
Pace Project No.: 92365229

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2162954 2162955

Parameter	Units	92365235017 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	41.8	43.1	105	108	70-130	3	30	
Methyl-tert-butyl ether	ug/L	ND	20	20	19.1	20.2	95	101	70-130	6	30	
Methylene Chloride	ug/L	ND	20	20	17.7	18.9	89	94	70-130	6	30	
Naphthalene	ug/L	ND	20	20	22.6	20.9	113	105	70-130	8	30	
o-Xylene	ug/L	ND	20	20	20.4	21.3	102	106	70-130	4	30	
p-Isopropyltoluene	ug/L	ND	20	20	22.3	22.2	112	111	70-130	1	30	
Styrene	ug/L	ND	20	20	19.9	20.5	100	103	70-130	3	30	
Tetrachloroethene	ug/L	ND	20	20	21.8	23.1	109	116	70-130	6	30	
Toluene	ug/L	ND	20	20	20.6	24.4	103	122	70-155	17	30	
trans-1,2-Dichloroethene	ug/L	ND	20	20	21.2	21.7	106	109	70-130	3	30	
trans-1,3-Dichloropropene	ug/L	ND	20	20	20.3	23.7	102	118	70-130	15	30	
Trichloroethene	ug/L	ND	20	20	21.9	22.0	110	110	69-151	1	30	
Trichlorofluoromethane	ug/L	ND	20	20	21.4	22.0	107	110	70-130	3	30	
Vinyl acetate	ug/L	ND	40	40	38.6	39.5	96	99	70-130	2	30	
Vinyl chloride	ug/L	ND	20	20	22.6	22.9	113	114	70-130	1	30	
1,2-Dichloroethane-d4 (S)	%						97	96	70-130			
4-Bromofluorobenzene (S)	%						94	95	70-130			
Toluene-d8 (S)	%						94	112	70-130			

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.: 92365229

QC Batch: 389430 Analysis Method: EPA 8260B Mod.
QC Batch Method: EPA 8260B Mod. Analysis Description: 8260 MSV SIM
Associated Lab Samples: 92365229001, 92365229002

METHOD BLANK: 2159977 Matrix: Water
Associated Lab Samples: 92365229001, 92365229002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	ND	2.0	12/05/17 13:44	
1,2-Dichloroethane-d4 (S)	%	101	50-150	12/05/17 13:44	
Toluene-d8 (S)	%	103	50-150	12/05/17 13:44	

LABORATORY CONTROL SAMPLE: 2159978

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	20	22.8	114	71-125	
1,2-Dichloroethane-d4 (S)	%			103	50-150	
Toluene-d8 (S)	%			101	50-150	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2159979 2159980

Parameter	Units	92365229001 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	165	100	100	268	267	103	102	50-150	0	30	
1,2-Dichloroethane-d4 (S)	%						110	109	50-150		150	
Toluene-d8 (S)	%						108	109	50-150		150	

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.: 92365229

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.

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

R1	RPD value was outside control limits.

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.: 92365229

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92365229001	**MW-43**	EPA 8260	389874		
92365229002	**TB-113017**	EPA 8260	389874		
92365229001	**MW-43**	EPA 8260B Mod.	389430		
92365229002	**TB-113017**	EPA 8260B Mod.	389430		

Pace Analytical™	Document Name: Sample Condition Upon Receipt(SCUR)	Document Revised: August 4, 2017 Page 1 of 2
	Document No.: F-CAR-CS-033-Rev.04	Issuing Authority: Pace Quality Office

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

Sample Condition Upon Receipt

Client Name: WSP Env.

Project #: WO# : 92365229

92365229

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

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

Date/Initials Person Examining Contents: NC 12-7-17

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

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

Thermometer: ☐ IR Gun ID: 1704

Type of Ice: ☑ Wet ☐ Blue ☐ None

Correction Factor: **Cooler Temp Corrected (°C):** 5.4

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	

CLIENT NOTIFICATION/RESOLUTION

Field Data Required? ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Sample Discrepancy: _____

Lot ID of split containers: _____

Project Manager SCURF Review: JC **Date:** 12/4

Project Manager SRF Review: JC **Date:** 12/4

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)

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

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

Project # WO#: 92365229

PM: PTE Due Date: 12/08/17

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)	VCGH	BP3A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	Cubitainer	VSGU-20 mL Scintillation vials (N/A)	GN
1																6													
2																									1				
3																													
4																													
5																													
6																													
7																													
8																													
9																													
10																													
11																													
12																													

pH Adjustment Log for Preserved Samples

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

CHAIN-OF-CUSTODY RECORD

No. 004575 | WSP | PARSONS BRINCKERHOFF

WSP | Parsons Brinckerhoff Office Address	13530 Dulles Technology Drive Suite 300 Herndon VA 20171
Project Name	Kopflex
WSP | Parsons Brinckerhoff Contact Name	Eric Johnson
Project Location	Hanover MD
WSP | Parsons Brinckerhoff Contact E-mail	eric.johnson@wspgroup.com
Project Number & Task	31400390/06
WSP | Parsons Brinckerhoff Contact Phone	(703) 709-6500
Sampler(s) Name(s)	Maria Kaplan, Shannon Burke
Sampler(s) Signature(s)	
Laboratory Name & Location	Pace, Huntsville
Laboratory Project Manager	Taylor Ezell

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 (8260)	1,4 Dioxane (8260 SIM)	Sample Comments
MW-43	Aq	11/30/17		1122		6			
TB-113017	Aq	—		—		4	X	X	Trip blank

Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Shipment Method	Tracking Number(s)
Maria Kaplan	11/30/17	1330		12-1-17	0905		
Relinquished By (Signature)	**Date**	**Time**	**Received By (Signature)**	**Date**	**Time**	**Number of Packages**	**Custody Seal Number(s)**

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

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