VIA ELECTRONIC MAIL

May 26, 2017

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

Re: Quarterly Progress Report No. 2
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. is submitting this quarterly progress report describing the activities conducted in the first quarter 2017 as part of the corrective measures implementation at the Former Kop-Flex Facility Site (Site) in Hanover, Maryland. The report also describes the activities planned for the second quarter 2017. This progress report is being submitted to the U.S. Environmental Protection Agency in accordance with the requirement specified in Section IV.C.3 of the Administrative Order on Consent, Docket No. RCRA-03-2016-0170 CA for the Site.

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

Sincerely yours,

Robert E. Johnson, PhD.
Senior Technical Manager

REJ:rlo
k:\emerson\kop-flex\reporting\status reports\epa progress reports\cm progress report 2\

Enclosure

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

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

Tel.: +1 703 709-6500
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wsp.com

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 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: Vice-President of Environmental Affairs and Real Estate at Emerson Electric Co., the parent company of EMERSUB 16, LLC

Quarterly Progress Report No. 2

Former Kop-Flex Facility Site
January 2017 through March 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 January 2017 – March 2017 Reporting Period

1.1 General

- Pursuant to Sections VI.B.5b and c of the Administrative Order on Consent (Consent Order), the following information pertaining to the use restrictions to be implemented at the Site were submitted to the U.S. Environmental Protection Agency (EPA), Region III on February 8, 2017.

  - geographic survey coordinates (latitude and longitude) for the Site property boundaries and use restricted areas specified in the Final Decision and Response to Comments document; and
  - Use Restriction Implementation Plan (URIP) for the Site.

  On March 3, 2017, MDE provided comments on the draft Environmental Covenant, which was included in Exhibit E of the URIP, to EMERSUB 16 via electronic mail.

1.2 Hydraulic Containment System Construction

- During the week of January 23, 2017, groundwater samples were collected from the shallow and deep recovery wells to gather data on constituents that could adversely affect the long-term performance of the AMBERSORB® resin used to remove the chlorinated volatile organic compounds (VOCs) and 1,4-dioxane from the extracted groundwater. Given the long (30+ foot) screen intervals for the recovery wells, samples were collected using the low-flow sampling method. The groundwater samples were analyzed for the following parameters:

  - VOCs (U.S. Environmental Protection Agency [EPA] SW-846 Test Method 8260B)
  - Semi-volatile organic compounds (USEPA SW-846 Test Method 8270C)
  - Organochlorine pesticides (USEPA SW-846 Test Method 8081B)
  - Chlorinated herbicides (USEPA SW-846 Test Method 8151A)
  - Gasoline and diesel-range petroleum hydrocarbons (USEPA SW-846 Test Method 8015C)
  - Total organic carbon (Standard Method 5310B)
  - Dissolved organic carbon (Standard Method 5310B)
  - Methyl blue active substances (MBAS) anionic surfactants (Standard Method 5540 C-11)
  - Tannins and lignins.

  The analytical results for these pre-startup groundwater samples are provided in Table 1. Copies of the certified laboratory reports for the samples are included in Enclosure A. In addition to VOCs, gasoline range petroleum hydrocarbons were detected at concentrations greater than or equal to 100 micrograms per liter (µg/l) in the samples from shallow recovery wells RW-1S and RW-2S, and deep well RW-2D.

  Very low concentrations (<0.05 milligrams per liter [mg/l]) of anionic surfactants were detected in two of the shallow wells (RW-2S and RW-3S) and deep well RW-2D. Given these results, additional samples were collected from all

recovery wells in mid-February to confirm the presence of these constituents. These samples were obtained using the dedicated electric submersible pumps placed down each of the recovery wells, and the samples analyzed for MBAS surfactants using Standard Method 5540 C-11. The certified laboratory analytical report for these samples is provided in Enclosure B. As with the other pre-startup samples, anionic surfactants were detected in the samples from both the shallow and deep recovery wells, with measured concentrations ranging from 0.023 mg/l to 0.24 mg/l.
Based on evaluation of site information, it was believed the presence of surfactants in the groundwater reflected a transient condition that would dissipate following initiation of the groundwater extraction from the recovery wells. Since surfactants could be difficult to remove during the resin regeneration process, a granular activated carbon (GAC) vessel was temporarily installed upstream of the resin to remove any anionic surfactants that may be present in the system influent. The temporary GAC vessel was piped into the treatment system early the week of March 6th.

— WSP and its subcontractors completed the construction of the treatment system building, and installation of the water conveyance piping, treatment equipment, and utilities in early March 2017. During the latter stages of the construction activities, WSP and Emerging Contaminant Treatment Technology (ECT2) conducted detailed inspections, testing, and set-up/programming of the various system components. If necessary, repairs or adjustments were performed to ensure the proper functioning of the equipment.

1.3 Hydraulic Containment System Startup

— Start-up of the hydraulic containment system was initiated on March 10, 2017. Initially, selected recovery wells were pumped for short durations to check the operation of the treatment system. Simultaneous groundwater extraction from both the shallow and deep recovery wells commenced on March 20, 2017, with a total flow rate of approximately 75 gallons per minute (GPM). The recovery wells were temporarily shut-down on March 24th to perform the initial regeneration of the AMBERSORB® resin. Full-scale operation of the system resumed on March 29, 2017.

— During the initial weeks of system operation, the following samples were periodically collected for VOC (including 1,4-dioxane) analysis to monitor and evaluate the performance of the treatment system:

  — Combined influent from shallow and deep groundwater recovery wells
  — Effluent from the temporary GAC vessel
  — Effluent from the lead resin vessel
  — System effluent

  Influent and GAC vessel effluent samples were also analyzed for MBAS anionic surfactants. The analytical results for the influent, carbon effluent and resin effluent startup samples are provided in Tables 2 through 4. (Copies of the certified laboratory reports for these samples will be provided in the Corrective Measures Implementation [CMI] Report.) Total concentrations of VOCs and 1,4-dioxane for the system influent ranged from 789 µg/l to 1,163 µg/l, with the majority of the samples being less than 1,000 µg/l. Anionic surfactants were not detected above method reporting limit in any of the influent samples, which suggests the detection of these compounds in the pre-startup groundwater samples may have been associated with soap used for the decontamination of equipment during previous investigation activities. Samples collected from the lead resin vessel had non-detect levels of chlorinated VOCs and 1,4-dioxane, with the exception of the very low 1,4-dioxane concentration (2.1 µg/l) in the sample from March 23rd.

— In conjunction with the system start-up, expedited sampling of the treated effluent was performed in accordance with State Discharge Permit Number 15-DP-3442 and National Pollutant Discharge Elimination System (NPDES) Permit MD 0069094 (Permit) issued by MDE.

— As part of the BOD study specified in the NPDES permit, WSP collected baseline hydrologic and water quality data pertaining to biochemical oxygen demand (BOD) conditions in the receiving stream (Stony Run). During the week of March 6, 2017, field measurements of the flow velocity and general water quality parameters – temperature, pH, dissolved oxygen, etc. – were collected at locations upstream, immediately downstream, and further downstream from the discharge out-fall. The flow velocity readings, together with the stream cross-sectional area, were used to calculate the discharge within the channel at the Site. Dissolved oxygen levels in the stream ranged between 10 milligrams per liter (mg/l) and 10.35 mg/l. In addition, surface water samples were collected from each location and analyzed for BOD (5-day) and carbonaceous BOD using Standard Method 5210B. All water samples had BOD and

carbonaceous BOD results below the method reporting limit of 5 mg/l. (A copy of the certified laboratory report for the samples is included in Enclosure C.)

1.4 Groundwater Monitoring

— Before initiating groundwater extraction, a synoptic round of depth to water measurements was obtained on February 1, 2017, from the recovery wells and the onsite monitoring wells, including MW-24D on the adjacent Williams Scotsman property, using an electronic water level indicator. Groundwater elevations were determined from the field measurements and survey information for each well. The elevation data were contoured using geostatistical methods (kriging) to characterize the head variations in both the shallow (unconfined) and deep (confined) portions of the aquifer system.

  Groundwater in the shallow zone flows in a generally west-northwest direction across the majority of the site towards Stony Run (Figures 1 and 2). Evaluation of the potentiometric surface contours for the confined portion of the Lower Patapsco Aquifer indicates generally south-southeast flow paths for groundwater in this deeper zone (Figure 3). Overall, the inferred groundwater flow in both the shallow and deep zones is similar to the flow paths determined from the evaluation of the previous water level data.

— Frequent water level measurements were collected from monitoring wells and recovery wells for a one week period with the initiation of the continuous, full-scale operation of the hydraulic containment system on March 29th. For the majority of the wells, water levels were measured and logged using pressure transducers deployed down the well. Water level data for the other wells were obtained using a water level indicator. Evaluation of the aquifer response to pumping based on these water level measurements will be presented in the next quarterly progress report.

1.5 Installation and Sampling of Williams Scotsman Monitoring Well

— WSP completed the installation of a shallow monitoring well (MW-45) on the Williams Scotsman facility the weekend of March 11-12, 2017 (Figure 4). As shown in Figure 4, the Williams Scotsman facility is located to the east of the Former Kop-Flex Facility and outside the Site boundary. The borehole was completed to a total depth of 60 feet below ground surface (BGS). Based on the lithologic and VOC field screening data, the borehole was sealed from 39 feet to 60 feet BGS, and the well installed with a screened interval extending from 28 feet to 38 feet BGS. The elevation of the screen interval is consistent with that for shallow monitoring wells in the eastern-most portion of the site (e.g., MW-01 and MW-04). The boring log and well construction diagram is included in Enclosure D.

— A groundwater sample was collected from this well on March 24th. The sample contained very low concentrations of 1,1-DCE (1.9 µg/l) and 1,4-Dioxane (2.3 µg/l), which are below the applicable MDE Groundwater Cleanup Standards. A copy of the certified laboratory report is provided in Enclosure E.

2.0 Planned Onsite Activities for Next Reporting Period (April 2017 – June 2017)

— Submit the CMI Report to the USEPA and MDE in accordance with the Consent Order.

— Continue with the operation, maintenance, and monitoring (OM&M) activities for the hydraulic containment systems.

— Initiate the biomonitoring activities for the treated water discharge pursuant to the NPDES Permit issued by MDE.

— Conduct water level and water quality monitoring as described in the Groundwater Monitoring Plan and evaluate the data to assess the aquifer response to remedial pumping and capture of the VOC plumes in the unconfined and confined zones.

— Execute an access agreement for the performance of groundwater profiling and well installation activities at the adjoining Verizon property immediately to the north of the Site.

3.0 Key Personnel/Facility Changes

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

Figures

FORMER KOP-FLEX FACILITY SITE
HANOVER, MARYLAND

PREPARED FOR
EMERSUB 16 LLC
ST. LOUIS, MISSOURI

WATER TABLE CONTOUR MAP
FEBRUARY 1, 2017

FIGURE 1

Drawn By: RAL 2/13/2017
Checked:
Approved:
DWG Name: 314P0390-B07

STONY RUN

POND

WILLIAMS SCOTSMAN, INC.

NORTH WAREHOUSE

SOUTH WAREHOUSE

MW-27D
MW-23D
MW-03 [106.77]
MW-43
MW-39
MW-38R [109.64]
RW-1S
MW-42 [109.64]
RW-2S
MW-18
MW-5R [110.01]
MW-40D
RW-3S
MW-44
MW-41D
MW-21D
RW-1D
RW-2D
MW-01D
MW-01 [113.82]
MW-22D
MW-09 [113.80]
MW-16
MW-16D
MW-04 [113.26]
MW-20
MW-24D

107.5 108 108.5 109 109.5 110 110.5 111 111.5 112 112.5 113

N

LEGEND

- PROPERTY LINE
- STREAM/EDGE OF WATER
- FENCE LINE
- SHALLOW MONITORING WELL
- DEEP MONITORING WELL
- SHALLOW EXTRACTION WELL
- DEEP EXTRACTION WELL
- [113.80] GROUNDWATER SURFACE ELEVATION (FEET MSL)
- 112 GROUNDWATER SURFACE CONTOUR

SCALE, FEET
0 40 80 140 280

THE ORIGINAL VERSION OF THIS DRAWING IS IN COLOR. BLACK & WHITE COPIES MAY NOT ACCURATELY DEPICT CERTAIN INFORMATION.

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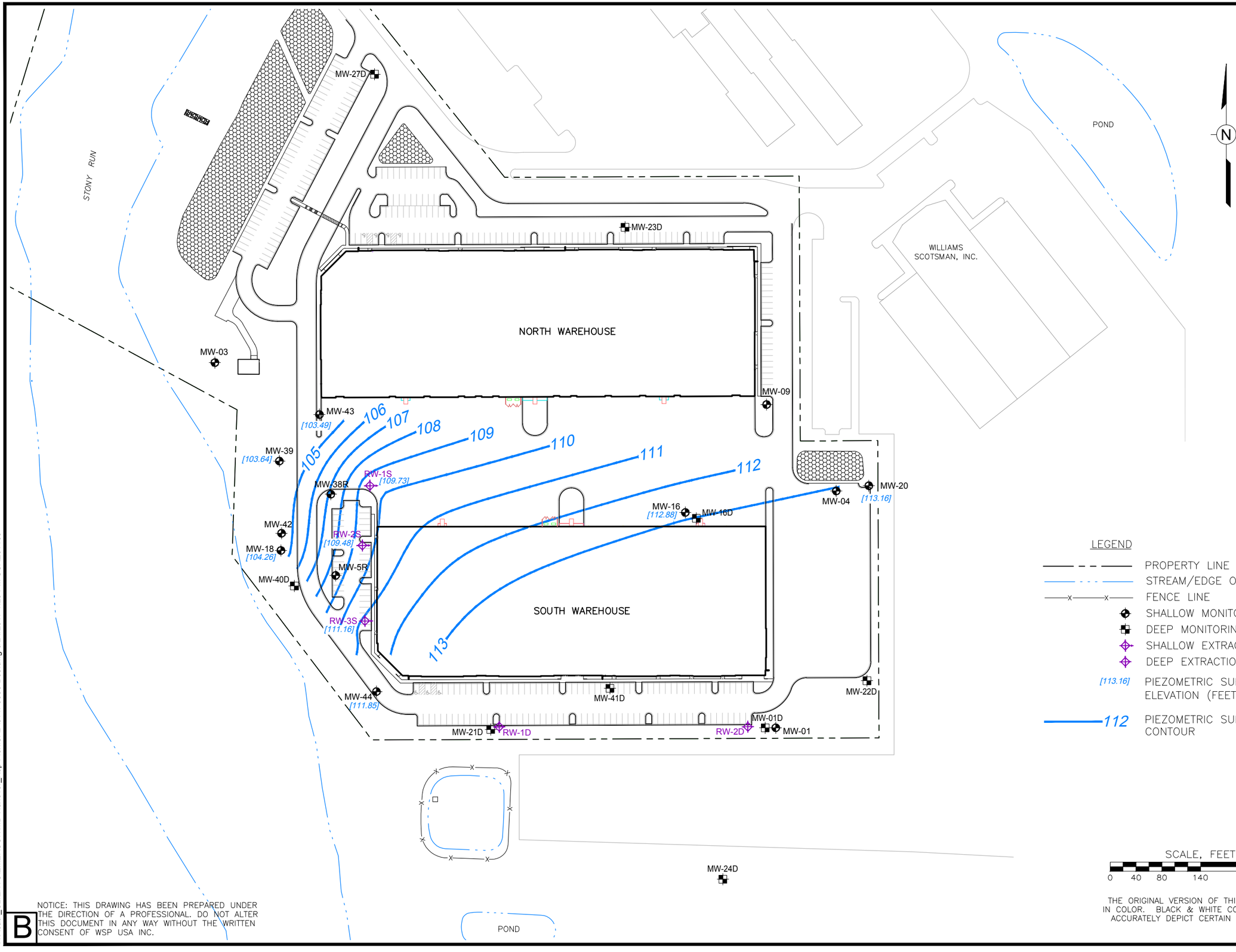

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B

Drawn By: RJL 5/24/2017
Checked:
Approved:
DWG Name: 314P0390-B08

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 FEBRUARY 1, 2017

WSP USA Inc.
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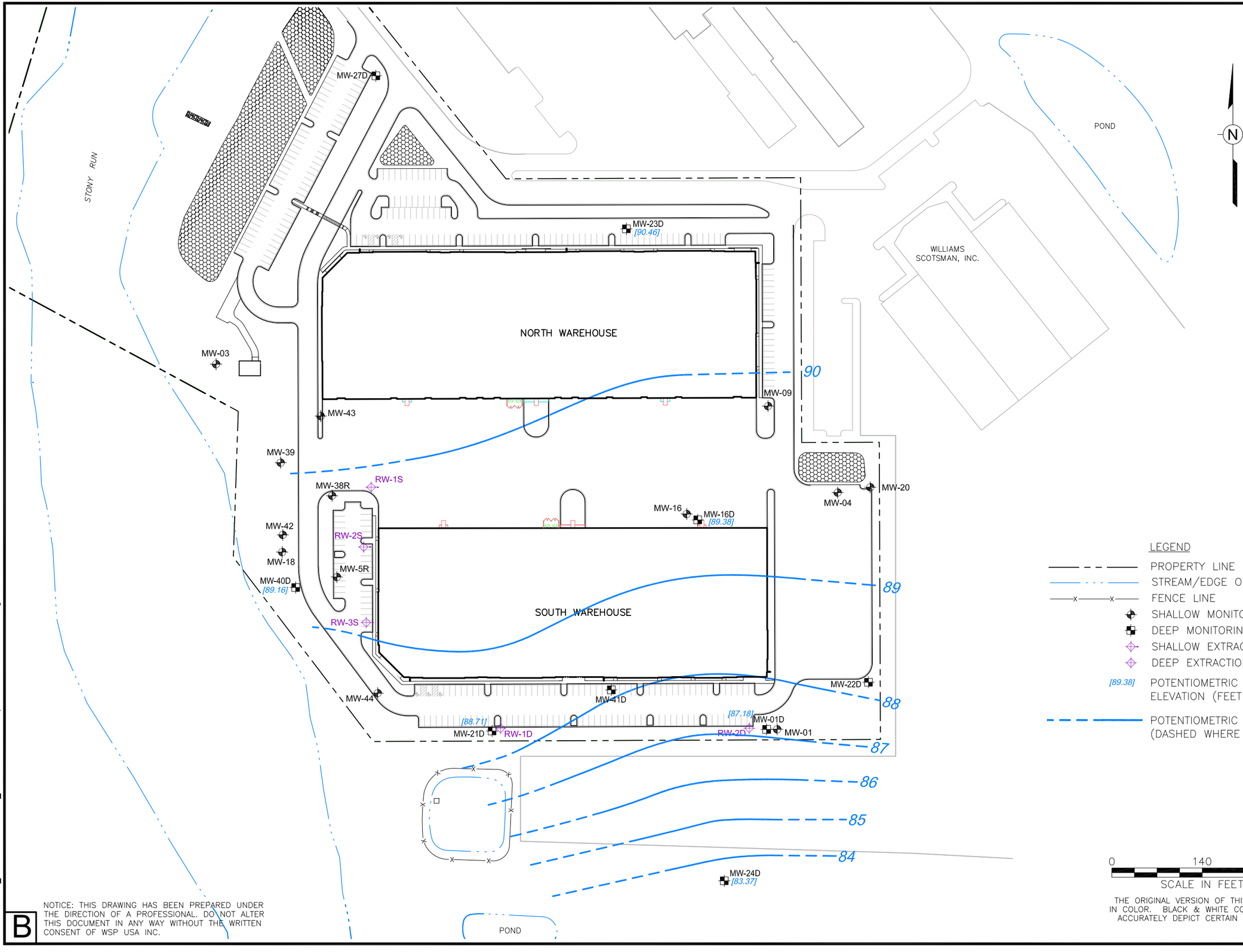
TEL: +1 703.709.6500



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Drawn By: EGC
Checked:
Approved: 5/9/2017
DWG Name: 314V0390-028

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 – FEBRUARY 1, 2017

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SUITE 300
HERNDON, VA 20171
TEL: +1 703.709.6500

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RIPRAP

OUTFALL 001

STONY RUN

VERIZON

POND

WILLIAMS SCOTSMAN

MW-23D

NEW WAREHOUSE BUILDING

MW-03

EQUIPMENT BUILDING

MW-43

MW-09

MW-45

MW-39-50

RW-1S

MW-38R

MW-04

MW-20

MW-16

MW-16D

MW-42

RW-2S

MW-18

MW-05R

MW-40D

NEW WAREHOUSE BUILDING

RW-2S

MW-22D

MW-41D

MW-44

MW-01D

MW-01

MW-21D

RW-1D

RW-2D

MW-24D

POND

LEGEND

- MW-05 WATER TABLE MONITORING WELL
- MW-18 LOWER UNCONFINED AQUIFER MONITORING WELL
- MW-21D CONFINED AQUIFER MONITORING WELL
- RW-2S SHALLOW EXTRACTION WELL
- RW-2D DEEP EXTRACTION WELL
- JUNCTION BOX/VALVE BOX
- WATER DISCHARGE/POWER SUPPLY TRENCH
- TREATED WATER EFFLUENT DISCHARGE
- PROPERTY LINE
- STREAM/EDGE OF WATER
- FENCE LINE

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REVISIONS

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

SEAL

DATE

DRAWN BY ECC

CHECKED KH 4/9/2017

APPROVED

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HYDRAULIC CONTAINMENT SYSTEMS

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

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FIGURE 4

Drawing Number

314V0390-027

Tables

Table 1

January 2017 Recovery Well Sample Results
Former Kop Flex Facility Site
Hanover, Maryland

Parameters	Groundwater Cleanup Criteria (b)	RW-1D 1/25/17	RW-2D 1/23/17	RW-1S 1/25/17	RW-2S 1/25/17	RW-3S 1/25/17
MBAS Surfactants (mg LAS/L)	NE	0.020 U	0.045	0.020 U	0.045	0.023
Dissolved Organic Carbon (mg/L)	NE	0.95	0.84	2.3	2.7	1.3
Total Organic Carbon (mg/L)	NE	0.5 U	0.67	1.9	2.7	0.83
Tannin/Lignin (mg/L)	NE	0.1 U	0.1 U	0.1	0.2	0.1 U
Total Petroleum Hydrocarbons - DRO (mg/L)	-	0.11 U	0.11 U	0.11 U	0.11 U	0.10 U
Total Petroleum Hydrocarbons-GRO (mg/L)	0.047 (c)	0.1 U	**0.1**	**0.71**	**0.97**	0.1 U
VCP Chlorinated Herbicides (µg/L)	-	ND	ND	ND	ND	ND
VCP Organochlorine Pesticides (µg/L)	-	ND	ND	ND	ND	ND
VCP Semivolatile Organic Compounds (µg/L)						
Squalene (TIC)	NE	5.1	5.0 U	5	5.4	5.0 U
VCP Volatile Organic Compounds (µg/L)						
1,1,1-Trichloroethane	200	1 U	31	59	**1,300**	2
1,1-Dichloroethane	90	5	80	**690**	**220**	10
1,1-Dichloroethene	7	**37**	**250**	**1,000**	**1,300**	**10**
1,2-Dichloroethane	5	1 U	5	**6**	5	1 U
Chloroethane	3.6	1 U	1 U	**10**	1 U	1 U
Chloroform (as trihalomethanes)	80	1 U	1 U	1 U	1	1 U
Methylene chloride	5	1 U	1 U	4	**9**	1 U
Toluene	1,000	1 U	1 U	1 U	2	3
Trichloroethene	5	1 U	2	**7**	**13**	1 U
Vinyl chloride	2	1 U	1 U	1	1 U	1 U
cis-1,2-Dichloroethene	70	1 U	1 U	8	2	1 U

a/ ND = No target analytes for this group of compounds were detected above the method detection limits in the sample
NE = Groundwater Quality Criteria not established for parameter
U = compound not detected above the method detection limit.
Bold indicates concentration above Groundwater Quality Criteria
b/ State of Maryland Department of the Environment Cleanup Standards for Soil and Groundwater - June 2008
c/ Criterion based on unrestricted (residential) land use.

Table 2

March 2017 Initial System Influent Sample Results
Former Kop Flex Facility Site
Hanover, Maryland

Parameters	Groundwater Cleanup Criteria (µg/L) (b)	Influent VSP-1 3/13/17	3/15/17	3/20/17	3/23/17	3/29/17
Surfactants, MBAS (µg/L)						
Surfactants, MBAS	NE	ND	ND	ND	ND	NA
TCL Volatile Organic Compounds (µg/L)						
1,1,1-Trichloroethane	200	55	150	92	81	82
1,1-Dichloroethane	90	**180**	**200**	**110**	**140**	**150**
1,1-Dichloroethene	7	**260**	**360**	**260**	**360**	**360**
1,2-Dichloroethane	5	1.6	2.0	2.5	3.1	3.5
2-Butanone (MEK)	700	25	ND	ND	ND	ND
Acetone	550	10	ND	ND	ND	ND
Chloroethane	3.6	3.0	3.4	2.3	2.4	2.3
Methylene chloride	5	ND	1.5	ND	ND	1.1
Trichloroethene	5	1.9	3.4	2.2	3	2.8
cis-1,2-Dichloroethene	70	2.2	2.3	1.2	1.8	1.9
Total TCL Volatile Organic Compounds (µg/L)		538.7	722.6	467.9	588.7	603.6
1,4-Dioxane (µg/L)	6.7	**250**	**440**	**360**	**330**	**340**

a/ ND = compound(s) were not detected above the method detection limits in the sample
NA = Not Analyzed
NE = Groundwater Quality Criteria not established for parameter
Bold indicates concentration above Groundwater Cleanup Criteria
b/ State of Maryland Department of the Environment Cleanup Standards for Soil and Groundwater - June 2008
MDE Risk Based Action Level for 1,4-Dioxane

Table 3

March 2017 Carbon Effluent Sample Results
Former Kop Flex Facility Site
Hanover, Maryland

Parameters	Carbon Effluent 3/13/17	3/15/17	3/20/17	3/23/17
Surfactants, MBAS (µg/L)				
Surfactants, MBAS	ND	ND	ND	ND
TCLVolatile Organic Compounds (µg/L)				
Acetone	ND	16	ND	ND
1,4-Dioxane (µg/L)	ND	ND	150	410

a/ ND = compound(s) were not detected above the method detection limits in the sample

Table 4

March 2017 Resin Effluent Sample Results
Former Kop Flex Facility Site
Hanover, Maryland

	Lead Ambersorb					
Parameters	3/13/17	3/14/17	3/15/17	3/20/17	3/23/17	3/29/17
Total Volatile Organic Compounds (µg/L)	ND	ND	ND	ND	ND	ND
1,4-Dioxane (µg/L)	ND	ND	ND	ND	2.1	ND

a/ ND = compound(s) were not detected above the method detection limits in the sample

Enclosure A – Certified Laboratory Reports for Pre-startup Groundwater Samples from Recovery Wells (January 2017)

Water Systems Engineering, Inc.

Date: February 3, 2017

Lab Report No. 20772

Eric Johnson
WSP
1350 Dulles Technology Drive, Suite 300
Herndon, VA 20171

Project Description: RW-1D, RW-1S, RW-2S, RW-3S
Special Analysis; samples received 1/25/2017

Testing Procedures:

All laboratory testing procedures are performed according to the guidelines set forth in *Standard Methods for the Examination of Water and Wastewater* as established by the American Public Health Association (APHA), American Water Works Association (AWWA), and Water Environment Federation (WEF). Corrosion analyses are performed in accordance with the guidelines as set forth by the National Association of Corrosion Engineers (NACE). In general, these methods are approved by both the Environmental Protection Agency (EPA) and AWWA for the reporting of water and/or wastewater data.

Sample collection and shipment is the responsibility of the customer, performed according to protocol and procedures defined by the laboratory in advance of the sampling event with regards to the specific project and nature of the problem.

Disclaimer:

The data and interpretations presented are based on an evaluation of the samples and submitted data. Conclusions reached in this report are based upon the data available at the time of submittal and the accuracy of the report depends upon the validity of information submitted. Any recommendations presented are based on laboratory and field evaluations of similar fouling occurrences within potable water systems. Further investigative efforts, such as efficiency testing, site inspection, video survey, or other evaluation methods may offer additional insight into the system's condition and the degree of fouling present.

Client: WSP
Date: February 3, 2017
Lab Report No. 20770

Re: RW-1D, RW-15, RW-25, RW-35
Special Analysis; samples received 1/25/2017

ND - Not Detected NA - Not Applicable	**RW-1D** mg/l	**RW-1S** mg/l	**RW-2S** mg/l	**RW-3S** mg/l	**Detection Limits**
Tannin/Lignin	ND	0.1	0.2	ND	0.1 mg/l

Note:

Tannin and Lignin are organic compounds similar to humic substances. Tannin is a complex organic compound found naturally in soil and in certain tree barks. Lignin is a compound common in woody plants and trees. Humic substances, tannin, and lignin are most common in surface water and shallow groundwater hydraulically connected to surface waters or wetlands. These organic substances may occasionally be found in well water, particularly if aquifer receives rapid recharge from the shallow subsurface or if the well is not properly constructed.

There are currently no primary or secondary water quality standards for the presence of tannin or lignin in produced water. When present in elevated concentrations, tannin and lignin can impart a yellow or light brown color, butter taste, and “earthy” odor in water.

Although there are currently no treatments certified specifically for the reduction of humic substances, tannin, or lignin, effective treatment methods for reducing the levels in drinking water include activated carbon, anion exchange, and chlorination/filtration.

Should you have any questions or require additional information, please contact our office.

Michael Schnieders, PG, PH-GW
Hydrogeologist

Water Systems Engineering, Inc.

Date: January 25, 2017

Lab Report No. 20770

Eric Johnson
WSP
1350 Dulles Technology Drive, Suite 300
Herndon, VA 20171

Project Description: RW-2D Pre-start-up sample
Special Analysis; sample received 1/24/2017

Testing Procedures:

All laboratory testing procedures are performed according to the guidelines set forth in *Standard Methods for the Examination of Water and Wastewater* as established by the American Public Health Association (APHA), American Water Works Association (AWWA), and Water Environment Federation (WEF). Corrosion analyses are performed in accordance with the guidelines as set forth by the National Association of Corrosion Engineers (NACE). In general, these methods are approved by both the Environmental Protection Agency (EPA) and AWWA for the reporting of water and/or wastewater data.

Sample collection and shipment is the responsibility of the customer, performed according to protocol and procedures defined by the laboratory in advance of the sampling event with regards to the specific project and nature of the problem.

Disclaimer:

The data and interpretations presented are based on an evaluation of the samples and submitted data. Conclusions reached in this report are based upon the data available at the time of submittal and the accuracy of the report depends upon the validity of information submitted. Any recommendations presented are based on laboratory and field evaluations of similar fouling occurrences within potable water systems. Further investigative efforts, such as efficiency testing, site inspection, video survey, or other evaluation methods may offer additional insight into the system's condition and the degree of fouling present.

Client: WSP
Date: January 25, 2017
Lab Report No. 20770

Re: RW-2D Pre-start-up sample
Special Analysis; sample received 1/24/2017

ND - Not Detected NA - Not Applicable	**Startup** mg/l	**Detection Limits**
Tannin/Lignin	ND	0.1 mg/l

Note:

Tannin and Lignin are organic compounds similar to humic substances. Tannin is a complex organic compound found naturally in soil and in certain tree barks. Lignin is a compound common in woody plants and trees. Humic substances, tannin, and lignin are most common in surface water and shallow groundwater hydraulically connected to surface waters or wetlands. These organic substances may occasionally be found in well water, particularly if aquifer receives rapid recharge from the shallow subsurface or if the well is not properly constructed.

There are currently no primary or secondary water quality standards for the presence of tannin or lignin in produced water. When present in elevated concentrations, tannin and lignin can impart a yellow or light brown color, butter taste, and “earthy” odor in water.

Although there are currently no treatments certified specifically for the reduction of humic substances, tannin, or lignin, effective treatment methods for reducing the levels in drinking water include activated carbon, anion exchange, and chlorination/filtration.

Should you have any questions or require additional information, please contact our office.

Michael Schnieders, PG, PH-GW
Hydrogeologist

Analytical Report for

WSP Environment & Energy - Herndon

Certificate of Analysis No.: 17012320

Project Manager: Eric Johnson
Project Name : Former KopFlex Facility Site
Project Location: Hanover, MD
Project ID : 31400390 - 5

January 30, 2017

Phase Separation Science, Inc.
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PHASE SEPARATION SCIENCE, INC.

January 30, 2017

Eric Johnson
WSP Environment & Energy - Herndon
13530 Dulles Technology Dr, Suite 300
Herndon, VA 20171

Reference: PSS Work Order(s) No: **17012320**
Project Name: Former KopFlex Facility Site
Project Location: Hanover, MD
Project ID.: 31400390 - 5

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 **17012320**.

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 February 27, 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 Environment & Energy - Herndon

Project Name: Former KopFlex Facility Site

Work Order Number(s): 17012320

Project ID: 31400390 - 5

The following samples were received under chain of custody by Phase Separation Science (PSS) on 01/23/2017 at 04:30 pm

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
17012320-001	EB - 01232017	WATER	01/23/17 10:00
17012320-002	RW-2D	WATER	01/23/17 12:25
17012320-003	Trip Blank	WATER	01/23/17 16:30

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: 17012320

WSP Environment & Energy - Herndon, Herndon, VA

January 30, 2017

Project Name: Former KopFlex Facility Site
Project Location: Hanover, MD
Project ID: 31400390 - 5

Sample ID: EB - 01232017 **Date/Time Sampled: 01/23/2017 10:00** **PSS Sample ID: 17012320-001**
Matrix: WATER **Date/Time Received: 01/23/2017 16:30**

Total Organic Carbon — Analytical Method: SM20 5310B

	Result	Units	RL	Flag	Prepared	Analyzed	Analyst
Total Organic Carbon	ND	mg/L	0.50		01/25/17	01/25/17 11:01	4001

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW-846 8015 C — Preparation Method: 3510C

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
TPH-DRO (Diesel Range Organics)	ND	mg/L	0.11		1	01/24/17	01/26/17 21:14	1045

Total Petroleum Hydrocarbons-GRO — Analytical Method: SW-846 8015C — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
TPH-GRO (Gasoline Range Organics)	ND	ug/L	100		1	01/24/17	01/24/17 11:41	1035

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CERTIFICATE OF ANALYSIS

No: 17012320

WSP Environment & Energy - Herndon, Herndon, VA

January 30, 2017

Project Name: Former KopFlex Facility Site
Project Location: Hanover, MD
Project ID: 31400390 - 5

Sample ID: EB - 01232017 **Date/Time Sampled: 01/23/2017 10:00** **PSS Sample ID: 17012320-001**
Matrix: WATER **Date/Time Received: 01/23/2017 16:30**

VCP Organochlorine Pesticides — Analytical Method: SW-846 8081 B — Preparation Method: 3510C

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
alpha-BHC	ND	ug/L	0.040		1	01/24/17	01/24/17 15:45	1029
gamma-BHC (Lindane)	ND	ug/L	0.040		1	01/24/17	01/24/17 15:45	1029
beta-BHC	ND	ug/L	0.040		1	01/24/17	01/24/17 15:45	1029
delta-BHC	ND	ug/L	0.040		1	01/24/17	01/24/17 15:45	1029
Heptachlor	ND	ug/L	0.040		1	01/24/17	01/24/17 15:45	1029
Aldrin	ND	ug/L	0.040		1	01/24/17	01/24/17 15:45	1029
Heptachlor epoxide	ND	ug/L	0.040		1	01/24/17	01/24/17 15:45	1029
gamma-Chlordane	ND	ug/L	0.040		1	01/24/17	01/24/17 15:45	1029
alpha-Chlordane	ND	ug/L	0.040		1	01/24/17	01/24/17 15:45	1029
4,4-DDE	ND	ug/L	0.040		1	01/24/17	01/24/17 15:45	1029
Endosulfan I	ND	ug/L	0.040		1	01/24/17	01/24/17 15:45	1029
Dieldrin	ND	ug/L	0.040		1	01/24/17	01/24/17 15:45	1029
Endrin	ND	ug/L	0.040		1	01/24/17	01/24/17 15:45	1029
4,4-DDD	ND	ug/L	0.040		1	01/24/17	01/24/17 15:45	1029
Endosulfan II	ND	ug/L	0.040		1	01/24/17	01/24/17 15:45	1029
4,4-DDT	ND	ug/L	0.040		1	01/24/17	01/24/17 15:45	1029
Endrin aldehyde	ND	ug/L	0.040		1	01/24/17	01/24/17 15:45	1029
Methoxychlor	ND	ug/L	0.040		1	01/24/17	01/24/17 15:45	1029
Endosulfan sulfate	ND	ug/L	0.040		1	01/24/17	01/24/17 15:45	1029
Endrin ketone	ND	ug/L	0.040		1	01/24/17	01/24/17 15:45	1029
Toxaphene	ND	ug/L	1.0		1	01/24/17	01/24/17 15:45	1029

VCP Chlorinated Herbicides — Analytical Method: SW-846 8151 A — Preparation Method: 8151A

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Dalapon	ND	ug/L	4.6		10	01/26/17	01/27/17 11:24	1029
2,4-D	ND	ug/L	1.9		10	01/26/17	01/27/17 11:24	1029
2,4,5-TP (Silvex)	ND	ug/L	0.19		10	01/26/17	01/27/17 11:24	1029
Dinoseb	ND	ug/L	0.95		10	01/26/17	01/27/17 11:24	1029

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 17012320

WSP Environment & Energy - Herndon, Herndon, VA

January 30, 2017

Project Name: Former KopFlex Facility Site
Project Location: Hanover, MD
Project ID: 31400390 - 5

Sample ID: EB - 01232017 **Date/Time Sampled: 01/23/2017 10:00** **PSS Sample ID: 17012320-001**
Matrix: WATER **Date/Time Received: 01/23/2017 16:30**

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

Library search was performed and TICs (if any) are listed below, values of TICs are estimated

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	01/26/17	01/26/17 13:38	1011
Benzene	ND	ug/L	1.0		1	01/26/17	01/26/17 13:38	1011
Bromodichloromethane	ND	ug/L	1.0		1	01/26/17	01/26/17 13:38	1011
Bromoform	ND	ug/L	5.0		1	01/26/17	01/26/17 13:38	1011
Bromomethane	ND	ug/L	1.0		1	01/26/17	01/26/17 13:38	1011
2-Butanone (MEK)	ND	ug/L	10		1	01/26/17	01/26/17 13:38	1011
n-Butylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 13:38	1011
Carbon Disulfide	ND	ug/L	10		1	01/26/17	01/26/17 13:38	1011
Carbon tetrachloride	ND	ug/L	1.0		1	01/26/17	01/26/17 13:38	1011
Chlorobenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 13:38	1011
Chloroethane	ND	ug/L	1.0		1	01/26/17	01/26/17 13:38	1011
Chloroform	ND	ug/L	1.0		1	01/26/17	01/26/17 13:38	1011
Chloromethane	ND	ug/L	1.0		1	01/26/17	01/26/17 13:38	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	10		1	01/26/17	01/26/17 13:38	1011
Dibromochloromethane	ND	ug/L	1.0		1	01/26/17	01/26/17 13:38	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	01/26/17	01/26/17 13:38	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	01/26/17	01/26/17 13:38	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	01/26/17	01/26/17 13:38	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	01/26/17	01/26/17 13:38	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	01/26/17	01/26/17 13:38	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	01/26/17	01/26/17 13:38	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	01/26/17	01/26/17 13:38	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	01/26/17	01/26/17 13:38	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	01/26/17	01/26/17 13:38	1011
Ethylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 13:38	1011
Isopropylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 13:38	1011
Methylene chloride	ND	ug/L	1.0		1	01/26/17	01/26/17 13:38	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	01/26/17	01/26/17 13:38	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	01/26/17	01/26/17 13:38	1011
n-Propylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 13:38	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 17012320

WSP Environment & Energy - Herndon, Herndon, VA

January 30, 2017

Project Name: Former KopFlex Facility Site
Project Location: Hanover, MD
Project ID: 31400390 - 5

Sample ID: EB - 01232017 **Date/Time Sampled: 01/23/2017 10:00** **PSS Sample ID: 17012320-001**
Matrix: WATER **Date/Time Received: 01/23/2017 16:30**

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

Library search was performed and TICs (if any) are listed below, values of TICs are estimated

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Styrene	ND	ug/L	1.0		1	01/26/17	01/26/17 13:38	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	01/26/17	01/26/17 13:38	1011
Tetrachloroethene	ND	ug/L	1.0		1	01/26/17	01/26/17 13:38	1011
Toluene	ND	ug/L	1.0		1	01/26/17	01/26/17 13:38	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	01/26/17	01/26/17 13:38	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	01/26/17	01/26/17 13:38	1011
Trichloroethene	ND	ug/L	1.0		1	01/26/17	01/26/17 13:38	1011
1,2,4-Trimethylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 13:38	1011
1,3,5-Trimethylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 13:38	1011
Vinyl chloride	ND	ug/L	1.0		1	01/26/17	01/26/17 13:38	1011
m&p-Xylene	ND	ug/L	2.0		1	01/26/17	01/26/17 13:38	1011
o-Xylene	ND	ug/L	1.0		1	01/26/17	01/26/17 13:38	1011

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January 30, 2017

Project Name: Former KopFlex Facility Site
Project Location: Hanover, MD
Project ID: 31400390 - 5

Sample ID: EB - 01232017 **Date/Time Sampled: 01/23/2017 10:00** **PSS Sample ID: 17012320-001**
Matrix: WATER **Date/Time Received: 01/23/2017 16:30**

VCP Semivolatile Organic Compounds Analytical Method: SW-846 8270 C Preparation Method: 3510C

Library search was performed and TICs (if any) are listed below, values of TICs are estimated

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acenaphthene	ND	ug/L	0.50		1	01/24/17	01/24/17 23:39	1055
Acenaphthylene	ND	ug/L	0.50		1	01/24/17	01/24/17 23:39	1055
Anthracene	ND	ug/L	0.50		1	01/24/17	01/24/17 23:39	1055
Benzo(a)anthracene	ND	ug/L	0.50		1	01/24/17	01/24/17 23:39	1055
Benzo(a)pyrene	ND	ug/L	0.50		1	01/24/17	01/24/17 23:39	1055
Benzo(b)fluoranthene	ND	ug/L	0.50		1	01/24/17	01/24/17 23:39	1055
Benzo(g,h,i)perylene	ND	ug/L	0.50		1	01/24/17	01/24/17 23:39	1055
Benzo(k)fluoranthene	ND	ug/L	0.50		1	01/24/17	01/24/17 23:39	1055
bis(2-chloroethyl) ether	ND	ug/L	5.0		1	01/24/17	01/24/17 23:39	1055
bis(2-chloroisopropyl) ether	ND	ug/L	5.0		1	01/24/17	01/24/17 23:39	1055
bis(2-ethylhexyl) phthalate	ND	ug/L	5.0		1	01/24/17	01/24/17 23:39	1055
Di-n-butyl phthalate	ND	ug/L	5.0		1	01/24/17	01/24/17 23:39	1055
Carbazole	ND	ug/L	5.0		1	01/24/17	01/24/17 23:39	1055
4-Chloroaniline	ND	ug/L	5.0		1	01/24/17	01/24/17 23:39	1055
2-Chloronaphthalene	ND	ug/L	5.0		1	01/24/17	01/24/17 23:39	1055
2-Chlorophenol	ND	ug/L	5.0		1	01/24/17	01/24/17 23:39	1055
Chrysene	ND	ug/L	0.50		1	01/24/17	01/24/17 23:39	1055
Dibenz(a,h)anthracene	ND	ug/L	0.50		1	01/24/17	01/24/17 23:39	1055
Dibenzofuran	ND	ug/L	5.0		1	01/24/17	01/24/17 23:39	1055
1,2'-Dichlorobenzene	ND	ug/L	5.0		1	01/24/17	01/24/17 23:39	1055
1,3'-Dichlorobenzene	ND	ug/L	5.0		1	01/24/17	01/24/17 23:39	1055
1,4-Dichlorobenzene	ND	ug/L	5.0		1	01/24/17	01/24/17 23:39	1055
3,3-Dichlorobenzidine	ND	ug/L	5.0		1	01/24/17	01/24/17 23:39	1055
2,4-Dichlorophenol	ND	ug/L	5.0		1	01/24/17	01/24/17 23:39	1055
Diethyl phthalate	ND	ug/L	5.0		1	01/24/17	01/24/17 23:39	1055
2,4-Dimethylphenol	ND	ug/L	5.0		1	01/24/17	01/24/17 23:39	1055
2,4-Dinitrophenol	ND	ug/L	10		1	01/24/17	01/24/17 23:39	1055
2,4-Dinitrotoluene	ND	ug/L	5.0		1	01/24/17	01/24/17 23:39	1055
2,6-Dinitrotoluene	ND	ug/L	5.0		1	01/24/17	01/24/17 23:39	1055
Fluoranthene	ND	ug/L	0.50		1	01/24/17	01/24/17 23:39	1055

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CERTIFICATE OF ANALYSIS

No: 17012320

WSP Environment & Energy - Herndon, Herndon, VA

January 30, 2017

Project Name: Former KopFlex Facility Site
Project Location: Hanover, MD
Project ID: 31400390 - 5

Sample ID: EB - 01232017 **Date/Time Sampled: 01/23/2017 10:00** **PSS Sample ID: 17012320-001**
Matrix: WATER **Date/Time Received: 01/23/2017 16:30**

VCP Semivolatile Organic Compounds Analytical Method: SW-846 8270 C Preparation Method: 3510C

Library search was performed and TICs (if any) are listed below, values of TICs are estimated

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Fluorene	ND	ug/L	0.50		1	01/24/17	01/24/17 23:39	1055
Hexachlorobenzene	ND	ug/L	5.0		1	01/24/17	01/24/17 23:39	1055
Hexachlorobutadiene	ND	ug/L	5.0		1	01/24/17	01/24/17 23:39	1055
Hexachlorocyclopentadiene	ND	ug/L	5.0		1	01/24/17	01/24/17 23:39	1055
Hexachloroethane	ND	ug/L	5.0		1	01/24/17	01/24/17 23:39	1055
Indeno(1,2,3-c,d)Pyrene	ND	ug/L	0.50		1	01/24/17	01/24/17 23:39	1055
Isophorone	ND	ug/L	5.0		1	01/24/17	01/24/17 23:39	1055
2-Methylnaphthalene	ND	ug/L	0.50		1	01/24/17	01/24/17 23:39	1055
2-Methylphenol	ND	ug/L	5.0		1	01/24/17	01/24/17 23:39	1055
3&4-Methylphenol	ND	ug/L	5.0		1	01/24/17	01/24/17 23:39	1055
Naphthalene	ND	ug/L	0.50		1	01/24/17	01/24/17 23:39	1055
Nitrobenzene	ND	ug/L	5.0		1	01/24/17	01/24/17 23:39	1055
N-Nitrosodi-n-propyl amine	ND	ug/L	5.0		1	01/24/17	01/24/17 23:39	1055
N-Nitrosodiphenylamine	ND	ug/L	5.0		1	01/24/17	01/24/17 23:39	1055
Pentachlorophenol	ND	ug/L	5.0		1	01/24/17	01/24/17 23:39	1055
Phenanthrene	ND	ug/L	0.50		1	01/24/17	01/24/17 23:39	1055
Phenol	ND	ug/L	5.0		1	01/24/17	01/24/17 23:39	1055
Pyrene	ND	ug/L	0.50		1	01/24/17	01/24/17 23:39	1055
1,2,4-Trichlorobenzene	ND	ug/L	5.0		1	01/24/17	01/24/17 23:39	1055
2,4,5-Trichlorophenol	ND	ug/L	5.0		1	01/24/17	01/24/17 23:39	1055
2,4,6-Trichlorophenol	ND	ug/L	5.0		1	01/24/17	01/24/17 23:39	1055
Bis(2-ethylhexyl)adipate	ND	ug/L	5.0		1	01/24/17	01/24/17 23:39	1055

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 17012320

WSP Environment & Energy - Herndon, Herndon, VA

January 30, 2017

Project Name: Former KopFlex Facility Site
Project Location: Hanover, MD
Project ID: 31400390 - 5

Sample ID: RW-2D **Date/Time Sampled: 01/23/2017 12:25** **PSS Sample ID: 17012320-002**
Matrix: WATER **Date/Time Received: 01/23/2017 16:30**

Dissolved Organic Carbon — Analytical Method: SM20 5310B

	Result	Units	RL	Flag	Prepared	Analyzed	Analyst
Dissolved Organic Carbon	**0.84**	mg/L	0.50		01/24/17	01/24/17 11:20	4001

Total Organic Carbon — Analytical Method: SM20 5310B

	Result	Units	RL	Flag	Prepared	Analyzed	Analyst
Total Organic Carbon	**0.67**	mg/L	0.50		01/26/17	01/26/17 11:55	4001

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW-846 8015 C — Preparation Method: 3510C

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
TPH-DRO (Diesel Range Organics)	ND	mg/L	0.11		1	01/24/17	01/26/17 21:39	1045

Total Petroleum Hydrocarbons-GRO — Analytical Method: SW-846 8015C — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
TPH-GRO (Gasoline Range Organics)	**100**	ug/L	100		1	01/24/17	01/24/17 12:07	1035

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CERTIFICATE OF ANALYSIS

No: 17012320

WSP Environment & Energy - Herndon, Herndon, VA

January 30, 2017

Project Name: Former KopFlex Facility Site
Project Location: Hanover, MD
Project ID: 31400390 - 5

Sample ID: RW-2D **Date/Time Sampled: 01/23/2017 12:25** **PSS Sample ID: 17012320-002**
Matrix: WATER **Date/Time Received: 01/23/2017 16:30**

VCP Organochlorine Pesticides — Analytical Method: SW-846 8081 B — Preparation Method: 3510C

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
alpha-BHC	ND	ug/L	0.040		1	01/24/17	01/24/17 16:13	1029
gamma-BHC (Lindane)	ND	ug/L	0.040		1	01/24/17	01/24/17 16:13	1029
beta-BHC	ND	ug/L	0.040		1	01/24/17	01/24/17 16:13	1029
delta-BHC	ND	ug/L	0.040		1	01/24/17	01/24/17 16:13	1029
Heptachlor	ND	ug/L	0.040		1	01/24/17	01/24/17 16:13	1029
Aldrin	ND	ug/L	0.040		1	01/24/17	01/24/17 16:13	1029
Heptachlor epoxide	ND	ug/L	0.040		1	01/24/17	01/24/17 16:13	1029
gamma-Chlordane	ND	ug/L	0.040		1	01/24/17	01/24/17 16:13	1029
alpha-Chlordane	ND	ug/L	0.040		1	01/24/17	01/24/17 16:13	1029
4,4-DDE	ND	ug/L	0.040		1	01/24/17	01/24/17 16:13	1029
Endosulfan I	ND	ug/L	0.040		1	01/24/17	01/24/17 16:13	1029
Dieldrin	ND	ug/L	0.040		1	01/24/17	01/24/17 16:13	1029
Endrin	ND	ug/L	0.040		1	01/24/17	01/24/17 16:13	1029
4,4-DDD	ND	ug/L	0.040		1	01/24/17	01/24/17 16:13	1029
Endosulfan II	ND	ug/L	0.040		1	01/24/17	01/24/17 16:13	1029
4,4-DDT	ND	ug/L	0.040		1	01/24/17	01/24/17 16:13	1029
Endrin aldehyde	ND	ug/L	0.040		1	01/24/17	01/24/17 16:13	1029
Methoxychlor	ND	ug/L	0.040		1	01/24/17	01/24/17 16:13	1029
Endosulfan sulfate	ND	ug/L	0.040		1	01/24/17	01/24/17 16:13	1029
Endrin ketone	ND	ug/L	0.040		1	01/24/17	01/24/17 16:13	1029
Toxaphene	ND	ug/L	1.0		1	01/24/17	01/24/17 16:13	1029

VCP Chlorinated Herbicides — Analytical Method: SW-846 8151 A — Preparation Method: 8151A

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Dalapon	ND	ug/L	4.6		10	01/26/17	01/27/17 11:58	1029
2,4-D	ND	ug/L	1.9		10	01/26/17	01/27/17 11:58	1029
2,4,5-TP (Silvex)	ND	ug/L	0.19		10	01/26/17	01/27/17 11:58	1029
Dinoseb	ND	ug/L	0.95		10	01/26/17	01/27/17 11:58	1029

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CERTIFICATE OF ANALYSIS

No: 17012320

WSP Environment & Energy - Herndon, Herndon, VA

January 30, 2017

Project Name: Former KopFlex Facility Site
Project Location: Hanover, MD
Project ID: 31400390 - 5

Sample ID: RW-2D **Date/Time Sampled: 01/23/2017 12:25** **PSS Sample ID: 17012320-002**
Matrix: WATER **Date/Time Received: 01/23/2017 16:30**

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

Library search was performed and TICs (if any) are listed below, values of TICs are estimated

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	01/26/17	01/26/17 14:00	1011
Benzene	ND	ug/L	1.0		1	01/26/17	01/26/17 14:00	1011
Bromodichloromethane	ND	ug/L	1.0		1	01/26/17	01/26/17 14:00	1011
Bromoform	ND	ug/L	5.0		1	01/26/17	01/26/17 14:00	1011
Bromomethane	ND	ug/L	1.0		1	01/26/17	01/26/17 14:00	1011
2-Butanone (MEK)	ND	ug/L	10		1	01/26/17	01/26/17 14:00	1011
n-Butylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 14:00	1011
Carbon Disulfide	ND	ug/L	10		1	01/26/17	01/26/17 14:00	1011
Carbon tetrachloride	ND	ug/L	1.0		1	01/26/17	01/26/17 14:00	1011
Chlorobenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 14:00	1011
Chloroethane	ND	ug/L	1.0		1	01/26/17	01/26/17 14:00	1011
Chloroform	ND	ug/L	1.0		1	01/26/17	01/26/17 14:00	1011
Chloromethane	ND	ug/L	1.0		1	01/26/17	01/26/17 14:00	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	10		1	01/26/17	01/26/17 14:00	1011
Dibromochloromethane	ND	ug/L	1.0		1	01/26/17	01/26/17 14:00	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	01/26/17	01/26/17 14:00	1011
1,1-Dichloroethane	**80**	ug/L	1.0		1	01/26/17	01/26/17 14:00	1011
1,2-Dichloroethane	**4.6**	ug/L	1.0		1	01/26/17	01/26/17 14:00	1011
1,1-Dichloroethene	**250**	ug/L	5.0		5	01/26/17	01/27/17 14:20	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	01/26/17	01/26/17 14:00	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	01/26/17	01/26/17 14:00	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	01/26/17	01/26/17 14:00	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	01/26/17	01/26/17 14:00	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	01/26/17	01/26/17 14:00	1011
Ethylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 14:00	1011
Isopropylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 14:00	1011
Methylene chloride	ND	ug/L	1.0		1	01/26/17	01/26/17 14:00	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	01/26/17	01/26/17 14:00	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	01/26/17	01/26/17 14:00	1011
n-Propylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 14:00	1011

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CERTIFICATE OF ANALYSIS

No: 17012320

WSP Environment & Energy - Herndon, Herndon, VA

January 30, 2017

Project Name: Former KopFlex Facility Site
Project Location: Hanover, MD
Project ID: 31400390 - 5

Sample ID: RW-2D **Date/Time Sampled: 01/23/2017 12:25** **PSS Sample ID: 17012320-002**
Matrix: WATER **Date/Time Received: 01/23/2017 16:30**

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

Library search was performed and TICs (if any) are listed below, values of TICs are estimated

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Styrene	ND	ug/L	1.0		1	01/26/17	01/26/17 14:00	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	01/26/17	01/26/17 14:00	1011
Tetrachloroethene	ND	ug/L	1.0		1	01/26/17	01/26/17 14:00	1011
Toluene	ND	ug/L	1.0		1	01/26/17	01/26/17 14:00	1011
1,1,1-Trichloroethane	**31**	ug/L	1.0		1	01/26/17	01/26/17 14:00	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	01/26/17	01/26/17 14:00	1011
Trichloroethene	**1.5**	ug/L	1.0		1	01/26/17	01/26/17 14:00	1011
1,2,4-Trimethylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 14:00	1011
1,3,5-Trimethylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 14:00	1011
Vinyl chloride	ND	ug/L	1.0		1	01/26/17	01/26/17 14:00	1011
m&p-Xylene	ND	ug/L	2.0		1	01/26/17	01/26/17 14:00	1011
o-Xylene	ND	ug/L	1.0		1	01/26/17	01/26/17 14:00	1011

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WSP Environment & Energy - Herndon, Herndon, VA

January 30, 2017

Project Name: Former KopFlex Facility Site
Project Location: Hanover, MD
Project ID: 31400390 - 5

Sample ID: RW-2D **Date/Time Sampled: 01/23/2017 12:25** **PSS Sample ID: 17012320-002**
Matrix: WATER **Date/Time Received: 01/23/2017 16:30**

VCP Semivolatile Organic Compounds Analytical Method: SW-846 8270 C Preparation Method: 3510C

Library search was performed and TICs (if any) are listed below, values of TICs are estimated

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acenaphthene	ND	ug/L	0.50		1	01/24/17	01/25/17 00:10	1055
Acenaphthylene	ND	ug/L	0.50		1	01/24/17	01/25/17 00:10	1055
Anthracene	ND	ug/L	0.50		1	01/24/17	01/25/17 00:10	1055
Benzo(a)anthracene	ND	ug/L	0.50		1	01/24/17	01/25/17 00:10	1055
Benzo(a)pyrene	ND	ug/L	0.50		1	01/24/17	01/25/17 00:10	1055
Benzo(b)fluoranthene	ND	ug/L	0.50		1	01/24/17	01/25/17 00:10	1055
Benzo(g,h,i)perylene	ND	ug/L	0.50		1	01/24/17	01/25/17 00:10	1055
Benzo(k)fluoranthene	ND	ug/L	0.50		1	01/24/17	01/25/17 00:10	1055
bis(2-chloroethyl) ether	ND	ug/L	5.0		1	01/24/17	01/25/17 00:10	1055
bis(2-chloroisopropyl) ether	ND	ug/L	5.0		1	01/24/17	01/25/17 00:10	1055
bis(2-ethylhexyl) phthalate	ND	ug/L	5.0		1	01/24/17	01/25/17 00:10	1055
Di-n-butyl phthalate	ND	ug/L	5.0		1	01/24/17	01/25/17 00:10	1055
Carbazole	ND	ug/L	5.0		1	01/24/17	01/25/17 00:10	1055
4-Chloroaniline	ND	ug/L	5.0		1	01/24/17	01/25/17 00:10	1055
2-Chloronaphthalene	ND	ug/L	5.0		1	01/24/17	01/25/17 00:10	1055
2-Chlorophenol	ND	ug/L	5.0		1	01/24/17	01/25/17 00:10	1055
Chrysene	ND	ug/L	0.50		1	01/24/17	01/25/17 00:10	1055
Dibenz(a,h)anthracene	ND	ug/L	0.50		1	01/24/17	01/25/17 00:10	1055
Dibenzofuran	ND	ug/L	5.0		1	01/24/17	01/25/17 00:10	1055
1,2'-Dichlorobenzene	ND	ug/L	5.0		1	01/24/17	01/25/17 00:10	1055
1,3'-Dichlorobenzene	ND	ug/L	5.0		1	01/24/17	01/25/17 00:10	1055
1,4-Dichlorobenzene	ND	ug/L	5.0		1	01/24/17	01/25/17 00:10	1055
3,3-Dichlorobenzidine	ND	ug/L	5.0		1	01/24/17	01/25/17 00:10	1055
2,4-Dichlorophenol	ND	ug/L	5.0		1	01/24/17	01/25/17 00:10	1055
Diethyl phthalate	ND	ug/L	5.0		1	01/24/17	01/25/17 00:10	1055
2,4-Dimethylphenol	ND	ug/L	5.0		1	01/24/17	01/25/17 00:10	1055
2,4-Dinitrophenol	ND	ug/L	10		1	01/24/17	01/25/17 00:10	1055
2,4-Dinitrotoluene	ND	ug/L	5.0		1	01/24/17	01/25/17 00:10	1055
2,6-Dinitrotoluene	ND	ug/L	5.0		1	01/24/17	01/25/17 00:10	1055
Fluoranthene	ND	ug/L	0.50		1	01/24/17	01/25/17 00:10	1055

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CERTIFICATE OF ANALYSIS

No: 17012320

WSP Environment & Energy - Herndon, Herndon, VA

January 30, 2017

Project Name: Former KopFlex Facility Site
Project Location: Hanover, MD
Project ID: 31400390 - 5

Sample ID: RW-2D **Date/Time Sampled: 01/23/2017 12:25** **PSS Sample ID: 17012320-002**
Matrix: WATER **Date/Time Received: 01/23/2017 16:30**

VCP Semivolatile Organic Compounds Analytical Method: SW-846 8270 C Preparation Method: 3510C

Library search was performed and TICs (if any) are listed below, values of TICs are estimated

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Fluorene	ND	ug/L	0.50		1	01/24/17	01/25/17 00:10	1055
Hexachlorobenzene	ND	ug/L	5.0		1	01/24/17	01/25/17 00:10	1055
Hexachlorobutadiene	ND	ug/L	5.0		1	01/24/17	01/25/17 00:10	1055
Hexachlorocyclopentadiene	ND	ug/L	5.0		1	01/24/17	01/25/17 00:10	1055
Hexachloroethane	ND	ug/L	5.0		1	01/24/17	01/25/17 00:10	1055
Indeno(1,2,3-c,d)Pyrene	ND	ug/L	0.50		1	01/24/17	01/25/17 00:10	1055
Isophorone	ND	ug/L	5.0		1	01/24/17	01/25/17 00:10	1055
2-Methylnaphthalene	ND	ug/L	0.50		1	01/24/17	01/25/17 00:10	1055
2-Methylphenol	ND	ug/L	5.0		1	01/24/17	01/25/17 00:10	1055
3&4-Methylphenol	ND	ug/L	5.0		1	01/24/17	01/25/17 00:10	1055
Naphthalene	ND	ug/L	0.50		1	01/24/17	01/25/17 00:10	1055
Nitrobenzene	ND	ug/L	5.0		1	01/24/17	01/25/17 00:10	1055
N-Nitrosodi-n-propyl amine	ND	ug/L	5.0		1	01/24/17	01/25/17 00:10	1055
N-Nitrosodiphenylamine	ND	ug/L	5.0		1	01/24/17	01/25/17 00:10	1055
Pentachlorophenol	ND	ug/L	5.0		1	01/24/17	01/25/17 00:10	1055
Phenanthrene	ND	ug/L	0.50		1	01/24/17	01/25/17 00:10	1055
Phenol	ND	ug/L	5.0		1	01/24/17	01/25/17 00:10	1055
Pyrene	ND	ug/L	0.50		1	01/24/17	01/25/17 00:10	1055
1,2,4-Trichlorobenzene	ND	ug/L	5.0		1	01/24/17	01/25/17 00:10	1055
2,4,5-Trichlorophenol	ND	ug/L	5.0		1	01/24/17	01/25/17 00:10	1055
2,4,6-Trichlorophenol	ND	ug/L	5.0		1	01/24/17	01/25/17 00:10	1055
Bis(2-ethylhexyl)adipate	ND	ug/L	5.0		1	01/24/17	01/25/17 00:10	1055

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No: 17012320

WSP Environment & Energy - Herndon, Herndon, VA

January 30, 2017

Project Name: Former KopFlex Facility Site
Project Location: Hanover, MD
Project ID: 31400390 - 5

Sample ID: Trip Blank **Date/Time Sampled: 01/23/2017 16:30** **PSS Sample ID: 17012320-003**
Matrix: WATER **Date/Time Received: 01/23/2017 16:30**

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

Library search was performed and TICs (if any) are listed below, values of TICs are estimated

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	01/26/17	01/26/17 13:16	1011
Benzene	ND	ug/L	1.0		1	01/26/17	01/26/17 13:16	1011
Bromodichloromethane	ND	ug/L	1.0		1	01/26/17	01/26/17 13:16	1011
Bromoform	ND	ug/L	5.0		1	01/26/17	01/26/17 13:16	1011
Bromomethane	ND	ug/L	1.0		1	01/26/17	01/26/17 13:16	1011
2-Butanone (MEK)	ND	ug/L	10		1	01/26/17	01/26/17 13:16	1011
n-Butylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 13:16	1011
Carbon Disulfide	ND	ug/L	10		1	01/26/17	01/26/17 13:16	1011
Carbon tetrachloride	ND	ug/L	1.0		1	01/26/17	01/26/17 13:16	1011
Chlorobenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 13:16	1011
Chloroethane	ND	ug/L	1.0		1	01/26/17	01/26/17 13:16	1011
Chloroform	ND	ug/L	1.0		1	01/26/17	01/26/17 13:16	1011
Chloromethane	ND	ug/L	1.0		1	01/26/17	01/26/17 13:16	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	10		1	01/26/17	01/26/17 13:16	1011
Dibromochloromethane	ND	ug/L	1.0		1	01/26/17	01/26/17 13:16	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	01/26/17	01/26/17 13:16	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	01/26/17	01/26/17 13:16	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	01/26/17	01/26/17 13:16	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	01/26/17	01/26/17 13:16	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	01/26/17	01/26/17 13:16	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	01/26/17	01/26/17 13:16	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	01/26/17	01/26/17 13:16	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	01/26/17	01/26/17 13:16	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	01/26/17	01/26/17 13:16	1011
Ethylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 13:16	1011
Isopropylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 13:16	1011
Methylene chloride	ND	ug/L	1.0		1	01/26/17	01/26/17 13:16	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	01/26/17	01/26/17 13:16	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	01/26/17	01/26/17 13:16	1011
n-Propylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 13:16	1011

OFFICES:
6630 BALTIMORE NATIONAL PIKE
ROUTE 40 WEST
BALTIMORE, MD 21228
410-747-8770
800-932-9047
FAX 410-788-8723

PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 17012320

WSP Environment & Energy - Herndon, Herndon, VA

January 30, 2017

Project Name: Former KopFlex Facility Site
Project Location: Hanover, MD
Project ID: 31400390 - 5

Sample ID: Trip Blank **Date/Time Sampled: 01/23/2017 16:30** **PSS Sample ID: 17012320-003**
Matrix: WATER **Date/Time Received: 01/23/2017 16:30**

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

Library search was performed and TICs (if any) are listed below, values of TICs are estimated

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Styrene	ND	ug/L	1.0		1	01/26/17	01/26/17 13:16	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	01/26/17	01/26/17 13:16	1011
Tetrachloroethene	ND	ug/L	1.0		1	01/26/17	01/26/17 13:16	1011
Toluene	ND	ug/L	1.0		1	01/26/17	01/26/17 13:16	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	01/26/17	01/26/17 13:16	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	01/26/17	01/26/17 13:16	1011
Trichloroethene	ND	ug/L	1.0		1	01/26/17	01/26/17 13:16	1011
1,2,4-Trimethylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 13:16	1011
1,3,5-Trimethylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 13:16	1011
Vinyl chloride	ND	ug/L	1.0		1	01/26/17	01/26/17 13:16	1011
m&p-Xylene	ND	ug/L	2.0		1	01/26/17	01/26/17 13:16	1011
o-Xylene	ND	ug/L	1.0		1	01/26/17	01/26/17 13:16	1011

Microbac Laboratories, Inc.

Baltimore Division

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www.microbac.com

COVER LETTER

Lynn Jackson
Phase Separation
6630 Baltimore National Pike, Suite 103
Baltimore, MD 21228

RE: General Wet Chem Analysis

January 30, 2017
Report No.: 17A1224

The report of analyses contains test results for samples received at Microbac Laboratories, Inc., Baltimore Division on 01/24/2017 09:55.

The enclosed results were obtained from and applicable to the sample(s) as received at the laboratory. All sample results are reported on an "as received" basis unless otherwise noted.

All data included in this report has been reviewed and meet the applicable project and certification specific requirements, unless otherwise noted.

This report has been paginated in its entirety and shall not be reproduced except in full, without the written approval of Microbac Laboratories, Inc.

We appreciate the opportunity to service your analytical needs. If you have any questions, please feel free to contact us.

This Data Package contains the following:

- This Cover Page
- Sample Summary
- Test Results
- Certifications/Notes and Definitions
- Cooler Receipt Log
- Chain of Custody

Final report reviewed by:	Coretta S. Davis For Melanie C. Duszynski/Project Manager	1/30/2017 Report issue date

All samples received in proper condition and results conform to ISO 17025 and TNI NELAC standards unless otherwise noted.

If we have not met or exceeded your expectations, please contact Coretta S. Davis For Melanie C. Duszynski/Project Manager at 410-633-1800. You may also contact Trevor Boyce, President at trevor.boyce@microbac.com

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CERTIFICATE OF ANALYSIS

Phase Separation	Project: General Wet Chem Analysis	Report: 17A1224
6630 Baltimore National Pike, Suite 103	Project Number: 31400390-5	Reported: 01/30/2017 16:43
Baltimore, MD 21228	Project Manager: Lynn Jackson	

SAMPLE SUMMARY

Sample ID	Laboratory ID	Matrix	Type	Date Sampled	Date Received
17012320-001 - EB-01232017	17A1224-01	Water	Grab	01/23/2017 10:00	01/24/2017 09:55
17012320-002 - RW-2D	17A1224-02	Water	Grab	01/23/2017 12:25	01/24/2017 09:55

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CERTIFICATE OF ANALYSIS

Phase Separation	Project: General Wet Chem Analysis	Report: 17A1224
6630 Baltimore National Pike, Suite 103	Project Number: 31400390-5	Reported: 01/30/2017 16:43
Baltimore, MD 21228	Project Manager: Lynn Jackson	

17012320-001 - EB-01232017

17A1224-01 (Water) Sampled: 01/23/2017 10:00; Type: Grab

Analyte	Result	Reporting Limit	Units	Limits	Prepared	Analyzed	Analyst	Method	Notes
Microbac Laboratories, Inc. - Baltimore									
Wet Chemistry									
Surfactants, MBAS	**0.14**	0.020	mg LAS/L (MW 320)		012417 1216	012517 0708	LCR	SM 5540 C-11	

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CERTIFICATE OF ANALYSIS

Phase Separation	Project: General Wet Chem Analysis	Report: 17A1224
6630 Baltimore National Pike, Suite 103	Project Number: 31400390-5	Reported: 01/30/2017 16:43
Baltimore, MD 21228	Project Manager: Lynn Jackson	

17012320-002 - RW-2D

17A1224-02 (Water) Sampled: 01/23/2017 12:25; Type: Grab

Analyte	Result	Reporting Limit	Units	Limits	Prepared	Analyzed	Analyst	Method	Notes
Microbac Laboratories, Inc. - Baltimore									
Wet Chemistry									
Surfactants, MBAS	**0.045**	0.020	mg LAS/L (MW 320)		012417 1216	012517 0708	LCR	SM 5540 C-11	

Microbac Laboratories, Inc. - Baltimore

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Coretta S. Davis For Melanie C. Duszynski, Project Manager

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CERTIFICATE OF ANALYSIS

Phase Separation	Project: General Wet Chem Analysis	Report: 17A1224
6630 Baltimore National Pike, Suite 103	Project Number: 31400390-5	Reported: 01/30/2017 16:43
Baltimore, MD 21228	Project Manager: Lynn Jackson	

Project Requested Certification(s):

A2LA (Environmental)

Analyte Certification Exception Summary

No certification exceptions

All analysis performed were analyzed under the required certification unless otherwise noted in the above summary.

Certification List

Below is a list of certifications maintained by Microbac Laboratories, Inc. All data included in this report has been reviewed for and meets all project specific and quality control requirements of the applicable accreditation, unless otherwise noted. A complete list of individual analytes pursuant to each certification below is available upon request.

Code	Description	Certification Number	Expires
Microbac Laboratories, Inc. - Baltimore			
A2LA1	A2LA (Biology)	410.02	04/30/2017
A2LA2	A2LA (Environmental)	410.01	04/30/2017
VA-B	Commonwealth of Virginia (NELAC) - Baltimore	460285	03/14/2017
CPSC	CPSC Testing of Childrens Products and Jewelry	1115	04/30/2017
Pb	Environmental Lead (ELLAP)	410.01	04/30/2017
MD	State of Maryland (Drinking Water)	109	06/30/2017
WV	West Virginia	054	08/31/2017
Microbac Laboratories, Inc. - Richmond			
VA-R	Commonwealth of Virginia (NELAC) - Richmond	460022	06/14/2017

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CERTIFICATE OF ANALYSIS

Phase Separation	Project: General Wet Chem Analysis	Report: 17A1224
6630 Baltimore National Pike, Suite 103	Project Number: 31400390-5	Reported: 01/30/2017 16:43
Baltimore, MD 21228	Project Manager: Lynn Jackson	

Qualifiers/Notes and Definitions

General Definitions:

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

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Baltimore Division

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Cooler Receipt Log

Cooler ID: Default Cooler **Cooler Temp:** 4.00°C **Work Order:** 17A1224

Custody Seals Intact:	Yes	COC/Containers Agree:	Yes
Containers Intact:	Yes	Correct Preservation:	Yes
Received On Ice:	Yes	Correct Number of Containers Received:	Yes
Radiation Scan Acceptable:	Yes	Sufficient Sample Volume for Testing:	Yes
COC Present:	Yes	Samples Received in Proper Condition:	Yes

Comments:

Chain of Custody Form for Subcontracted Analyses

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

For Questions or issues please contact: Amber Confer

W.O. No. : **17012320**
P.O. No. :
Project Number : 31400390 - 5
Report To LOD : No

Report Due On :01/30/17 05:00

Samples Transferred To:
Microbac - Baltimore
2101 Van Deman Street
Baltimore, MD 21224

Contacts : sales - Mike Arbaugh / PMs (when we d
Phone : 410-633-1800

Lab Sample ID	Field Sample ID	Date Sampled	Time Sampled	Matrix	Analyses Required	Method	Type of Container	Preservative
17012320-001	EB - 01232017	01/23/17	10:00	Water	MBAS Surfactants	SM5540C	1L HDPE	COOL
17012320-002	RW-2D	01/23/17	12:25	Water	MBAS Surfactants	SM5540C	1L HDPE	COOL

Data Deliverables Required: COA

Perform Q.C. on Sample :

Send Report Attn : reporting@phaseonline.com

Send InvoiceAttn : invoicing@phaseonline.com

Airbill No.:

Carrier : ~~FE~~ FE(RUSH)

Condition Upon Receipt :

Comments : **Results are for Maryland VCP site.** 4.0°c Rec'd on ice

Samples Relinquished By : Date : 01/24/17 Time: 9:15 Samples Received By : #2035

Samples Relinquished By: Date : 01/24/17 Time : 0955 Samples Received By: /1000:11:00

Samples Relinquished By: Date: Time: Samples Received By:

17A1224

Cooler Receipt Form / Sample Acceptance & Noncompliance Form

Microbac Laboratories, Inc., Baltimore Division
Control # 606-03
Effective Date: 11/30/2016
Page 1 of 1

Number of Coolers Received: 1
Client: Phase Separation
Form Completed By: HD Dillinger
Shipper: HDD
Receipt Date / Time: 01/24/17 0955
Work Order # 17A1224

Custody Tape Intact:	☐ Microbac ☒ Client ☐ UPS ☐ FedEx
Containers Intact:	YES / NO / NA
Sample Received on Ice or refrigerated:	YES / NO
	YES / NO / NA
	Infrared (IR) Temperature: 4.0 °C
Chain of Custody Present with shipment:	YES / NO
Sample Bottle IDs agree with COC:	YES / NO
Preservation requirements met:	YES / NO / Not Checked
Correct Number of Containers / Sample Volume:	YES / NO (If No, contact client immediately)
Headspace in container:	YES / NO / NA
Type of Sample:	Water Soil Wipes Oil Filter Solid Sludge Food Swab Other

Container Type / Quantity:

A -	___ Unpreserved	___ H2SO4	___ HNO3	___ HCl	___ NaOH	___ NaOH/Ascorbic Acid:	If preserved pH <2___, pH >10___
B -	2 Unpreserved	___ H2SO4	___ HNO3	___ HCl	___ NaOH	___ NaOH/Ascorbic Acid	If preserved pH <2___, pH >10___
C -	___ Unpreserved	___ H2SO4	___ HNO3	___ HCl	___ NaOH	___ NaOH/Ascorbic Acid	If preserved pH <2___, pH >10___
D -	___ Unpreserved	___ H2SO4	___ HNO3	___ HCl	___ NaOH	___ NaOH/Ascorbic Acid	If preserved pH <2___, pH >10___
E -	___ Unpreserved	___ H2SO4	___ HNO3	___ HCl	___ NaOH	___ NaOH/Ascorbic Acid	If preserved pH <2___, pH >10___
H -	___ Unpreserved	___ H2SO4	___ HNO3	___ HCl	___ NaOH	___ NaOH/Ascorbic Acid	If preserved pH <2___, pH >10___
K -	___ Unpreserved	___ H2SO4	___ HNO3	___ HCl	___ NaOH	___ NaOH/Ascorbic Acid	If preserved pH <2___, pH >10___
L -	___ Unpreserved	___ H2SO4	___ HNO3	___ HCl	___ NaOH	___ NaOH/Ascorbic Acid	If preserved pH <2___, pH >10___
M-	___ Unpreserved	___ H2SO4	___ HNO3	___ HCl	___ NaOH	___ NaOH/Ascorbic Acid	If preserved pH <2___, pH >10___
P -	___ Unpreserved	___ H2SO4	___ HNO3	___ HCl	___ NaOH	___ NaOH/Ascorbic Acid	If preserved pH <2___, pH >10___
W-	___ Unpreserved	___ H2SO4	___ HNO3	___ HCl	___ NaOH	___ NaOH/Ascorbic Acid	If preserved pH <2___, pH >10___
V -	___ Unpreserved	___ HCl	___ HCl / Ascorbic Acid	___ HCl / NaTHIO **(Checked at time of Analysis)**			
F -	___ Unpreserved	___ NaTHIO **(Checked at time of Analysis)**					
S -	___ Unpreserved	___ NaTHIO **(Checked at time of Analysis)**					
SN-	___ Unpreserved	___NaTHIO	___NaTHIO/EDTA **(Checked at time of Analysis)**				

___ Unpreserved	___ H2SO4	___ HNO3	___ HCl	___ NaOH	___ NaOH/Ascorbic Acid	If preserved pH <2___, pH >10___
___ Unpreserved	___ H2SO4	___ HNO3	___ HCl	___ NaOH	___ NaOH/Ascorbic Acid	If preserved pH <2___, pH >10___
___ Unpreserved	___ H2SO4	___ HNO3	___ HCl	___ NaOH	___ NaOH/Ascorbic Acid	If preserved pH <2___, pH >10___

Describe preservation requirements not met:

All Acid preserved <2 pH *NaOH preserved >12 pH* *All others >2 and <10 (usually 4-8)*

Sample ID:_____ H_2SO_4 HNO_3 NaOH _____ mls added
Sample ID:_____ H_2SO_4 HNO_3 NaOH _____ mls added
Sample ID:_____ H_2SO_4 HNO_3 NaOH _____ mls added
Sample ID:_____ H_2SO_4 HNO_3 NaOH _____ mls added

H_2SO_4 – Sulfuric Acid, HNO_3 – Nitric Acid, NaOH – Sodium Hydroxide, ASC – Ascorbic Acid, NaTHIO – Sodium Thiosulfate

Describe Anomalies:_____

Contact information / Summary of Actions:

Date / Time:_____ Contact:_____ Contact By:_____
Comments:_____

Case Narrative Summary

Client Name: WSP Environment & Energy - Herndon

Project Name: Former KopFlex Facility Site

Work Order Number(s): 17012320

Project ID: 31400390 - 5

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:

Trip blank received in cooler with equipment blank sample.

17012320: Analyses associated with analyst code 4001 were performed by ALS Group USA, Corp. - PA - PA 22-00293 VA 460157

Analytical:

Total Organic Carbon

Batch: 139420

For sample 002; the result reported for the DOC analysis is higher than the result reported for the TOC analysis. The results reported are within the precision limits associated with the methods.

VCP Chlorinated Herbicides

Batch: 139433

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

VCP Semivolatile Organic Compounds (w/ TICs)

Batch: 139322

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.

Analytical Data Package Information Summary

Work Order(s): 17012320
Report Prepared For: WSP Environment & Energy - Herndon, Hern
Project Name: Recovery Well Sampling
Project Manager: Eric Johnson

Method	Client Sample Id	Analysis Type	Lab Sample Id	Analyst	Mtx	Prep Batch	Analytical Batch	Sampled	Prepared	Analyzed
SM20 5310B	EB - 01232017	Initial	17012320-001	4001	W	139420	139420	01/23/2017	01/25/2017 11:01	01/25/2017 11:01
	RW-2D	Initial	17012320-002	4001	W	139420	139420	01/23/2017	01/26/2017 11:55	01/26/2017 11:55
SM20 5310B	RW-2D	Initial	17012320-002	4001	W	139420	139420	01/23/2017	01/24/2017 11:20	01/24/2017 11:20
SW-846 8015 C	EB - 01232017	Initial	17012320-001	1045	W	64522	139386	01/23/2017	01/24/2017 10:38	01/26/2017 21:14
	RW-2D	Initial	17012320-002	1045	W	64522	139386	01/23/2017	01/24/2017 10:38	01/26/2017 21:39
	64522-1-BKS	BKS	64522-1-BKS	1045	W	64522	139386	--------	01/24/2017 10:38	01/26/2017 19:10
	64522-1-BLK	BLK	64522-1-BLK	1045	W	64522	139386	--------	01/24/2017 10:38	01/26/2017 18:46
	64522-1-BSD	BSD	64522-1-BSD	1045	W	64522	139386	--------	01/24/2017 10:38	01/26/2017 19:35
SW-846 8015C	EB - 01232017	Initial	17012320-001	1035	W	64527	139297	01/23/2017	01/24/2017 09:23	01/24/2017 11:41
	RW-2D	Initial	17012320-002	1035	W	64527	139297	01/23/2017	01/24/2017 09:23	01/24/2017 12:07
	64527-2-BKS	BKS	64527-2-BKS	1035	W	64527	139297	--------	01/24/2017 09:23	01/24/2017 12:33
	64527-2-BLK	BLK	64527-2-BLK	1035	W	64527	139297	--------	01/24/2017 09:23	01/24/2017 11:16
	64527-2-BSD	BSD	64527-2-BSD	1035	W	64527	139297	--------	01/24/2017 09:23	01/24/2017 12:58
SW-846 8081 B	EB - 01232017	Initial	17012320-001	1029	W	64519	139343	01/23/2017	01/24/2017 09:47	01/24/2017 15:45
	RW-2D	Initial	17012320-002	1029	W	64519	139343	01/23/2017	01/24/2017 09:47	01/24/2017 16:13
	64519-1-BKS	BKS	64519-1-BKS	1029	W	64519	139343	--------	01/24/2017 09:47	01/24/2017 19:01
	64519-1-BLK	BLK	64519-1-BLK	1029	W	64519	139343	--------	01/24/2017 09:47	01/24/2017 18:33
	64519-1-BSD	BSD	64519-1-BSD	1029	W	64519	139343	--------	01/24/2017 09:47	01/24/2017 19:29
SW-846 8151 A	EB - 01232017	Initial	17012320-001	1029	W	64555	139433	01/23/2017	01/26/2017 11:11	01/27/2017 11:24
	RW-2D	Initial	17012320-002	1029	W	64555	139433	01/23/2017	01/26/2017 11:11	01/27/2017 11:58
	64555-1-BKS	BKS	64555-1-BKS	1029	W	64555	139433	--------	01/26/2017 11:11	01/27/2017 10:18
	64555-1-BLK	BLK	64555-1-BLK	1029	W	64555	139433	--------	01/26/2017 11:11	01/27/2017 09:45
	64555-1-BSD	BSD	64555-1-BSD	1029	W	64555	139433	--------	01/26/2017 11:11	01/27/2017 10:51
SW-846 8260 B	EB - 01232017	Initial	17012320-001	1011	W	64570	139388	01/23/2017	01/26/2017 08:33	01/26/2017 13:38
	RW-2D	Initial	17012320-002	1011	W	64570	139388	01/23/2017	01/26/2017 08:33	01/26/2017 14:00
	Trip Blank	Initial	17012320-003	1011	W	64570	139388	01/23/2017	01/26/2017 08:33	01/26/2017 13:16

Analytical Data Package Information Summary

Work Order(s): **17012320**
Report Prepared For: WSP Environment & Energy - Herndon, Hern
Project Name: Recovery Well Sampling
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	64570-1-BKS	BKS	64570-1-BKS	1011	W	64570	139388	--------	01/26/2017 08:33	01/26/2017 09:47
	64570-1-BLK	BLK	64570-1-BLK	1011	W	64570	139388	--------	01/26/2017 08:33	01/26/2017 10:42
	RW-2D S	MS	17012320-002 S	1011	W	64570	139388	01/23/2017	01/26/2017 08:33	01/26/2017 14:46
	RW-2D S	Reanalysis	17012320-002 S	1011	W	64570	139388	01/23/2017	01/26/2017 08:33	01/26/2017 14:46
	RW-2 SD	MSD	17012320-002 SD	1011	W	64570	139388	01/23/2017	01/26/2017 08:33	01/26/2017 15:07
	RW-2 SD	Reanalysis	17012320-002 SD	1011	W	64570	139388	01/23/2017	01/26/2017 08:33	01/26/2017 15:07
	64589-1-BKS	BKS	64589-1-BKS	1011	W	64589	139421	--------	01/27/2017 08:48	01/27/2017 10:02
	64589-1-BLK	BLK	64589-1-BLK	1011	W	64589	139421	--------	01/27/2017 08:48	01/27/2017 10:57
	MW-1 S	MS	17012601-001 S	1011	W	64589	139421	01/25/2017	01/27/2017 08:48	01/27/2017 13:11
	MW-1 SD	MSD	17012601-001 SD	1011	W	64589	139421	01/25/2017	01/27/2017 08:48	01/27/2017 13:34
	RW-2D	Reanalysis	17012320-002	1011	W	64570	139421	01/23/2017	01/26/2017 08:33	01/27/2017 14:20
SW-846 8270 C	EB - 01232017	Initial	17012320-001	1055	W	64510	139322	01/23/2017	01/24/2017 09:19	01/24/2017 23:39
	RW-2D	Initial	17012320-002	1055	W	64510	139322	01/23/2017	01/24/2017 09:19	01/25/2017 00:10
	64510-1-BKS	BKS	64510-1-BKS	1055	W	64510	139322	--------	01/24/2017 09:19	01/24/2017 21:38
	64510-1-BLK	BLK	64510-1-BLK	1055	W	64510	139322	--------	01/24/2017 09:19	01/24/2017 21:07
	64510-1-BSD	BSD	64510-1-BSD	1055	W	64510	139322	--------	01/24/2017 09:19	01/25/2017 05:33

PHASE SEPARATION SCIENCE, INC.

QC Summary 17012320

WSP Environment & Energy - Herndon
Former KopFlex Facility Site

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 17012320

WSP Environment & Energy - Herndon
Former KopFlex Facility Site

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 17012320

WSP | Parsons Brinckerhoff Office Address: 13530 Dulles Technology Dr. Suite 300 Herndon, VA 20171

No. 004509 — WSP | PARSONS BRINCKERHOFF

Project Name: Former Kopfley Farley Site	WSP | Parsons Brinckerhoff Contact Name: Eric Johnson
Project Location: Hanover MD	WSP | Parsons Brinckerhoff Contact E-mail: Eric.Johnson @wspgroup.com
Project Number & Task: 31400390-5	WSP | Parsons Brinckerhoff Contact Phone: 703-709-6500
Sampler(s) Name(s): Matt Richardson, Marcia Hayden, Rob Wallace	Sampler(s) Signature(s):

Laboratory Name & Location: PHASE, Baltimore MD

Laboratory Project Manager: Amber Confer

Requested Turn-Around-Time: ☐ Standard ☐ 24 HR ☐ 48 HR ☐ 72 HR ☐ ___ HR — 5 DAY

Requested Analyses & Preservatives

Sample Identification	Matrix	Collection Start* Date	Collection Start* Time	Collection Stop* Date	Collection Stop* Time	Number of Containers	VOCs 8260B	SVOCs 8270C	MBAS Surfactants 5540C	TPH-GRO 8015C	TPH-DRO 8015C	Pesticides 8081B	Herbicides 8151A	TOC 5310B	DOC 5310B	Sample Comments
EB-01232017	Ag	1/23	1000			13	X	X	X	X	X	X	X	X		Bladder pump Equipment Blank
RW-2D	Ag	1/23	1225			15	X	X	X	X	X	X	X	X	X	
Trip Blank	Ag					2	X									Las Prepared

# of Coolers: 2
Custody Seal: ABS
Ice Present: PRES Temp: 6°-10°C
Shipping Carrier: Client

Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Shipment Method	Tracking Number(s)
	1/23/17	1630				Delivery by WSP	—
Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Number of Packages	Custody Seal Number(s)
						2	—

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

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

Phase Separation Science, Inc

Sample Receipt Checklist

Work Order #	17012320	**Received By**	Thomas Wingate
Client Name	WSP Environment & Energy - Hernd	**Date Received**	01/23/2017 04:30:00 PM
Project Name	Former KopFlex Facility Site	**Delivered By**	Client
Project Number	31400390 - 5	**Tracking No**	Not Applicable
Disposal Date	02/27/2017	**Logged In By**	Thomas Wingate

Shipping Container(s)

No. of Coolers 2

		Ice	Present
Custody Seal(s) Intact?	N/A	Temp (deg C)	10
Seal(s) Signed / Dated?	N/A	Temp Blank Present	No

Documentation

		Sampler Name	MR/MK/RW
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 30

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)	Yes
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.

Trip blank received in cooler with equipment blank sample.

Samples Inspected/Checklist Completed By: Thomas Wingate Date: 01/23/2017

Thomas Wingate

PM Review and Approval: N Y Jackson Date: 01/30/2017

Lynn Jackson

Analytical Report for

WSP Environment & Energy - Herndon

Certificate of Analysis No.: 17012529

Project Manager: Eric Johnson

Project Name : Former KopFlex Facility Site

Project Location: Hanover, MD

Project ID : 31400390-5

February 2, 2017

Phase Separation Science, Inc.

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PHASE SEPARATION SCIENCE, INC.

February 2, 2017

Eric Johnson
WSP Environment & Energy - Herndon
13530 Dulles Technology Dr, Suite 300
Herndon, VA 20171

Reference: PSS Work Order(s) No: **17012529**
Project Name: Former KopFlex Facility Site
Project Location: Hanover, MD
Project ID.: 31400390-5

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 **17012529**.

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

PSS reserves the right to return any unused samples, extracts or related solutions. Otherwise, the samples are scheduled for disposal, without any further notice, on March 1, 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 Environment & Energy - Herndon

Project Name: Former KopFlex Facility Site

Work Order Number(s): 17012529

Project ID: 31400390-5

The following samples were received under chain of custody by Phase Separation Science (PSS) on 01/25/2017 at 05:00 pm

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
17012529-001	RW-1D	WATER	01/25/17 09:40
17012529-002	RW-3S	WATER	01/25/17 10:41
17012529-003	RW-2S	WATER	01/25/17 13:35
17012529-004	RW-1S	WATER	01/25/17 14:15
17012529-005	RW-1D Trip Blanks	WATER	01/25/17 14:15
17012529-006	RW-2S Trip Blanks	WATER	01/25/17 14:15
17012529-007	RW-1S Trip Blanks	WATER	01/25/17 14:15

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: 17012529

WSP Environment & Energy - Herndon, Herndon, VA

February 2, 2017

Project Name: Former KopFlex Facility Site
Project Location: Hanover, MD
Project ID: 31400390-5

Sample ID: RW-1D **Date/Time Sampled: 01/25/2017 09:40** **PSS Sample ID: 17012529-001**
Matrix: WATER **Date/Time Received: 01/25/2017 17:00**

Dissolved Organic Carbon — Analytical Method: SM20 5310B

	Result	Units	RL	Flag	Prepared	Analyzed	Analyst
Dissolved Organic Carbon	**0.95**	mg/L	0.50		01/30/17	01/30/17 10:39	4001

Total Organic Carbon — Analytical Method: SM20 5310B

	Result	Units	RL	Flag	Prepared	Analyzed	Analyst
Total Organic Carbon	ND	mg/L	0.50		01/30/17	01/30/17 10:39	4001

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW-846 8015 C — Preparation Method: 3510C

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
TPH-DRO (Diesel Range Organics)	ND	mg/L	0.11		1	01/26/17	01/27/17 14:04	1045

Total Petroleum Hydrocarbons-GRO — Analytical Method: SW-846 8015C — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
TPH-GRO (Gasoline Range Organics)	ND	ug/L	100		1	01/30/17	01/31/17 14:24	1035

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CERTIFICATE OF ANALYSIS

No: 17012529

WSP Environment & Energy - Herndon, Herndon, VA

February 2, 2017

Project Name: Former KopFlex Facility Site
Project Location: Hanover, MD
Project ID: 31400390-5

Sample ID: RW-1D **Date/Time Sampled: 01/25/2017 09:40** **PSS Sample ID: 17012529-001**
Matrix: WATER **Date/Time Received: 01/25/2017 17:00**

VCP Organochlorine Pesticides — Analytical Method: SW-846 8081 B — Preparation Method: 3510C

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
alpha-BHC	ND	ug/L	0.040		1	01/27/17	01/30/17 20:57	1029
gamma-BHC (Lindane)	ND	ug/L	0.040		1	01/27/17	01/30/17 20:57	1029
beta-BHC	ND	ug/L	0.040		1	01/27/17	01/30/17 20:57	1029
delta-BHC	ND	ug/L	0.040		1	01/27/17	01/30/17 20:57	1029
Heptachlor	ND	ug/L	0.040		1	01/27/17	01/30/17 20:57	1029
Aldrin	ND	ug/L	0.040		1	01/27/17	01/30/17 20:57	1029
Heptachlor epoxide	ND	ug/L	0.040		1	01/27/17	01/30/17 20:57	1029
gamma-Chlordane	ND	ug/L	0.040		1	01/27/17	01/30/17 20:57	1029
alpha-Chlordane	ND	ug/L	0.040		1	01/27/17	01/30/17 20:57	1029
4,4-DDE	ND	ug/L	0.040		1	01/27/17	01/30/17 20:57	1029
Endosulfan I	ND	ug/L	0.040		1	01/27/17	01/30/17 20:57	1029
Dieldrin	ND	ug/L	0.040		1	01/27/17	01/30/17 20:57	1029
Endrin	ND	ug/L	0.040		1	01/27/17	01/30/17 20:57	1029
4,4-DDD	ND	ug/L	0.040		1	01/27/17	01/30/17 20:57	1029
Endosulfan II	ND	ug/L	0.040		1	01/27/17	01/30/17 20:57	1029
4,4-DDT	ND	ug/L	0.040		1	01/27/17	01/30/17 20:57	1029
Endrin aldehyde	ND	ug/L	0.040		1	01/27/17	01/30/17 20:57	1029
Methoxychlor	ND	ug/L	0.040		1	01/27/17	01/30/17 20:57	1029
Endosulfan sulfate	ND	ug/L	0.040		1	01/27/17	01/30/17 20:57	1029
Endrin ketone	ND	ug/L	0.040		1	01/27/17	01/30/17 20:57	1029
Toxaphene	ND	ug/L	1.0		1	01/27/17	01/30/17 20:57	1029

VCP Chlorinated Herbicides — Analytical Method: SW-846 8151 A — Preparation Method: 8151A

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Dalapon	ND	ug/L	4.6		10	01/26/17	01/27/17 12:31	1029
2,4-D	ND	ug/L	1.9		10	01/26/17	01/27/17 12:31	1029
2,4,5-TP (Silvex)	ND	ug/L	0.19		10	01/26/17	01/27/17 12:31	1029
Dinoseb	ND	ug/L	0.95		10	01/26/17	01/27/17 12:31	1029

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 17012529

WSP Environment & Energy - Herndon, Herndon, VA

February 2, 2017

Project Name: Former KopFlex Facility Site
Project Location: Hanover, MD
Project ID: 31400390-5

Sample ID: RW-1D **Date/Time Sampled: 01/25/2017 09:40** **PSS Sample ID: 17012529-001**
Matrix: WATER **Date/Time Received: 01/25/2017 17:00**

VCP Volatile Organic Compounds (w/ TICs) Analytical Method: SW-846 8260 B Preparation Method: 5030B

Library search was performed and TICs (if any) are listed below, values of TICs are estimated

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	01/26/17	01/26/17 16:54	1011
Benzene	ND	ug/L	1.0		1	01/26/17	01/26/17 16:54	1011
Bromodichloromethane	ND	ug/L	1.0		1	01/26/17	01/26/17 16:54	1011
Bromoform	ND	ug/L	5.0		1	01/26/17	01/26/17 16:54	1011
Bromomethane	ND	ug/L	1.0		1	01/26/17	01/26/17 16:54	1011
2-Butanone (MEK)	ND	ug/L	10		1	01/26/17	01/26/17 16:54	1011
n-Butylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 16:54	1011
Carbon Disulfide	ND	ug/L	10		1	01/26/17	01/26/17 16:54	1011
Carbon tetrachloride	ND	ug/L	1.0		1	01/26/17	01/26/17 16:54	1011
Chlorobenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 16:54	1011
Chloroethane	ND	ug/L	1.0		1	01/26/17	01/26/17 16:54	1011
Chloroform	ND	ug/L	1.0		1	01/26/17	01/26/17 16:54	1011
Chloromethane	ND	ug/L	1.0		1	01/26/17	01/26/17 16:54	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	10		1	01/26/17	01/26/17 16:54	1011
Dibromochloromethane	ND	ug/L	1.0		1	01/26/17	01/26/17 16:54	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	01/26/17	01/26/17 16:54	1011
1,1-Dichloroethane	**4.8**	ug/L	1.0		1	01/26/17	01/26/17 16:54	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	01/26/17	01/26/17 16:54	1011
1,1-Dichloroethene	**37**	ug/L	1.0		1	01/26/17	01/26/17 16:54	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	01/26/17	01/26/17 16:54	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	01/26/17	01/26/17 16:54	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	01/26/17	01/26/17 16:54	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	01/26/17	01/26/17 16:54	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	01/26/17	01/26/17 16:54	1011
Ethylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 16:54	1011
Isopropylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 16:54	1011
Methylene chloride	ND	ug/L	1.0		1	01/26/17	01/26/17 16:54	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	01/26/17	01/26/17 16:54	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	01/26/17	01/26/17 16:54	1011
n-Propylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 16:54	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 17012529

WSP Environment & Energy - Herndon, Herndon, VA

February 2, 2017

Project Name: Former KopFlex Facility Site
Project Location: Hanover, MD
Project ID: 31400390-5

Sample ID: RW-1D **Date/Time Sampled: 01/25/2017 09:40** **PSS Sample ID: 17012529-001**
Matrix: WATER **Date/Time Received: 01/25/2017 17:00**

VCP Volatile Organic Compounds (w/ TICs) Analytical Method: SW-846 8260 B Preparation Method: 5030B

Library search was performed and TICs (if any) are listed below, values of TICs are estimated

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Styrene	ND	ug/L	1.0		1	01/26/17	01/26/17 16:54	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	01/26/17	01/26/17 16:54	1011
Tetrachloroethene	ND	ug/L	1.0		1	01/26/17	01/26/17 16:54	1011
Toluene	ND	ug/L	1.0		1	01/26/17	01/26/17 16:54	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	01/26/17	01/26/17 16:54	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	01/26/17	01/26/17 16:54	1011
Trichloroethene	ND	ug/L	1.0		1	01/26/17	01/26/17 16:54	1011
1,2,4-Trimethylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 16:54	1011
1,3,5-Trimethylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 16:54	1011
Vinyl chloride	ND	ug/L	1.0		1	01/26/17	01/26/17 16:54	1011
m&p-Xylene	ND	ug/L	2.0		1	01/26/17	01/26/17 16:54	1011
o-Xylene	ND	ug/L	1.0		1	01/26/17	01/26/17 16:54	1011

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CERTIFICATE OF ANALYSIS

No: 17012529

WSP Environment & Energy - Herndon, Herndon, VA

February 2, 2017

Project Name: Former KopFlex Facility Site
Project Location: Hanover, MD
Project ID: 31400390-5

Sample ID: RW-1D **Date/Time Sampled: 01/25/2017 09:40** **PSS Sample ID: 17012529-001**
Matrix: WATER **Date/Time Received: 01/25/2017 17:00**

VCP Semivolatile Organic Compounds (w/ TICs) Analytical Method: SW-846 8270 C Preparation Method: 3510C

Library search was performed and TICs (if any) are listed below, values of TICs are estimated

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acenaphthene	ND	ug/L	0.50		1	01/26/17	01/26/17 18:10	1055
Acenaphthylene	ND	ug/L	0.50		1	01/26/17	01/26/17 18:10	1055
Anthracene	ND	ug/L	0.50		1	01/26/17	01/26/17 18:10	1055
Benzo(a)anthracene	ND	ug/L	0.50		1	01/26/17	01/26/17 18:10	1055
Benzo(a)pyrene	ND	ug/L	0.50		1	01/26/17	01/26/17 18:10	1055
Benzo(b)fluoranthene	ND	ug/L	0.50		1	01/26/17	01/26/17 18:10	1055
Benzo(g,h,i)perylene	ND	ug/L	0.50		1	01/26/17	01/26/17 18:10	1055
Benzo(k)fluoranthene	ND	ug/L	0.50		1	01/26/17	01/26/17 18:10	1055
bis(2-chloroethyl) ether	ND	ug/L	5.0		1	01/26/17	01/26/17 18:10	1055
bis(2-chloroisopropyl) ether	ND	ug/L	5.0		1	01/26/17	01/26/17 18:10	1055
bis(2-ethylhexyl) phthalate	ND	ug/L	5.0		1	01/26/17	01/26/17 18:10	1055
Di-n-butyl phthalate	ND	ug/L	5.0		1	01/26/17	01/26/17 18:10	1055
Carbazole	ND	ug/L	5.0		1	01/26/17	01/26/17 18:10	1055
4-Chloroaniline	ND	ug/L	5.0		1	01/26/17	01/26/17 18:10	1055
2-Chloronaphthalene	ND	ug/L	5.0		1	01/26/17	01/26/17 18:10	1055
2-Chlorophenol	ND	ug/L	5.0		1	01/26/17	01/26/17 18:10	1055
Chrysene	ND	ug/L	0.50		1	01/26/17	01/26/17 18:10	1055
Dibenz(a,h)anthracene	ND	ug/L	0.50		1	01/26/17	01/26/17 18:10	1055
Dibenzofuran	ND	ug/L	5.0		1	01/26/17	01/26/17 18:10	1055
1,2'-Dichlorobenzene	ND	ug/L	5.0		1	01/26/17	01/26/17 18:10	1055
1,3'-Dichlorobenzene	ND	ug/L	5.0		1	01/26/17	01/26/17 18:10	1055
1,4-Dichlorobenzene	ND	ug/L	5.0		1	01/26/17	01/26/17 18:10	1055
3,3-Dichlorobenzidine	ND	ug/L	5.0		1	01/26/17	01/26/17 18:10	1055
2,4-Dichlorophenol	ND	ug/L	5.0		1	01/26/17	01/26/17 18:10	1055
Diethyl phthalate	ND	ug/L	5.0		1	01/26/17	01/26/17 18:10	1055
2,4-Dimethylphenol	ND	ug/L	5.0		1	01/26/17	01/26/17 18:10	1055
2,4-Dinitrophenol	ND	ug/L	10		1	01/26/17	01/26/17 18:10	1055
2,4-Dinitrotoluene	ND	ug/L	5.0		1	01/26/17	01/26/17 18:10	1055
2,6-Dinitrotoluene	ND	ug/L	5.0		1	01/26/17	01/26/17 18:10	1055

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 17012529

WSP Environment & Energy - Herndon, Herndon, VA

February 2, 2017

Project Name: Former KopFlex Facility Site
Project Location: Hanover, MD
Project ID: 31400390-5

Sample ID: RW-1D **Date/Time Sampled: 01/25/2017 09:40** **PSS Sample ID: 17012529-001**
Matrix: WATER **Date/Time Received: 01/25/2017 17:00**

VCP Semivolatile Organic Compounds (w/ TICs) Analytical Method: SW-846 8270 C Preparation Method: 3510C

Library search was performed and TICs (if any) are listed below, values of TICs are estimated

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Fluoranthene	ND	ug/L	0.50		1	01/26/17	01/26/17 18:10	1055
Fluorene	ND	ug/L	0.50		1	01/26/17	01/26/17 18:10	1055
Hexachlorobenzene	ND	ug/L	5.0		1	01/26/17	01/26/17 18:10	1055
Hexachlorobutadiene	ND	ug/L	5.0		1	01/26/17	01/26/17 18:10	1055
Hexachlorocyclopentadiene	ND	ug/L	5.0		1	01/26/17	01/26/17 18:10	1055
Hexachloroethane	ND	ug/L	5.0		1	01/26/17	01/26/17 18:10	1055
Indeno(1,2,3-c,d)Pyrene	ND	ug/L	0.50		1	01/26/17	01/26/17 18:10	1055
Isophorone	ND	ug/L	5.0		1	01/26/17	01/26/17 18:10	1055
2-Methylnaphthalene	ND	ug/L	0.50		1	01/26/17	01/26/17 18:10	1055
2-Methylphenol	ND	ug/L	5.0		1	01/26/17	01/26/17 18:10	1055
3&4-Methylphenol	ND	ug/L	5.0		1	01/26/17	01/26/17 18:10	1055
Naphthalene	ND	ug/L	0.50		1	01/26/17	01/26/17 18:10	1055
Nitrobenzene	ND	ug/L	5.0		1	01/26/17	01/26/17 18:10	1055
N-Nitrosodi-n-propyl amine	ND	ug/L	5.0		1	01/26/17	01/26/17 18:10	1055
N-Nitrosodiphenylamine	ND	ug/L	5.0		1	01/26/17	01/26/17 18:10	1055
Pentachlorophenol	ND	ug/L	5.0		1	01/26/17	01/26/17 18:10	1055
Phenanthrene	ND	ug/L	0.50		1	01/26/17	01/26/17 18:10	1055
Phenol	ND	ug/L	5.0		1	01/26/17	01/26/17 18:10	1055
Pyrene	ND	ug/L	0.50		1	01/26/17	01/26/17 18:10	1055
1,2,4-Trichlorobenzene	ND	ug/L	5.0		1	01/26/17	01/26/17 18:10	1055
2,4,5-Trichlorophenol	ND	ug/L	5.0		1	01/26/17	01/26/17 18:10	1055
2,4,6-Trichlorophenol	ND	ug/L	5.0		1	01/26/17	01/26/17 18:10	1055
Bis(2-ethylhexyl)adipate	ND	ug/L	5.0		1	01/26/17	01/26/17 18:10	1055
Squalene (TIC)	**5.1**	ug/L	5.0		1	01/26/17	01/26/17 18:10	1055

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 17012529

WSP Environment & Energy - Herndon, Herndon, VA

February 2, 2017

Project Name: Former KopFlex Facility Site
Project Location: Hanover, MD
Project ID: 31400390-5

Sample ID: RW-3S **Date/Time Sampled: 01/25/2017 10:41** **PSS Sample ID: 17012529-002**
Matrix: WATER **Date/Time Received: 01/25/2017 17:00**

Dissolved Organic Carbon — Analytical Method: SM20 5310B

	Result	Units	RL	Flag	Prepared	Analyzed	Analyst
Dissolved Organic Carbon	**1.3**	mg/L	0.50		01/30/17	01/30/17 10:39	4001

Total Organic Carbon — Analytical Method: SM20 5310B

	Result	Units	RL	Flag	Prepared	Analyzed	Analyst
Total Organic Carbon	**0.83**	mg/L	0.50		01/30/17	01/30/17 10:39	4001

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW-846 8015 C — Preparation Method: 3510C

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
TPH-DRO (Diesel Range Organics)	ND	mg/L	0.10		1	01/26/17	01/27/17 14:04	1045

Total Petroleum Hydrocarbons-GRO — Analytical Method: SW-846 8015C — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
TPH-GRO (Gasoline Range Organics)	ND	ug/L	100		1	01/30/17	01/31/17 14:51	1035

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CERTIFICATE OF ANALYSIS

No: 17012529

WSP Environment & Energy - Herndon, Herndon, VA

February 2, 2017

Project Name: Former KopFlex Facility Site
Project Location: Hanover, MD
Project ID: 31400390-5

Sample ID: RW-3S **Date/Time Sampled: 01/25/2017 10:41** **PSS Sample ID: 17012529-002**
Matrix: WATER **Date/Time Received: 01/25/2017 17:00**

VCP Organochlorine Pesticides — Analytical Method: SW-846 8081 B — Preparation Method: 3510C

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
alpha-BHC	ND	ug/L	0.040		1	01/27/17	01/30/17 20:29	1029
gamma-BHC (Lindane)	ND	ug/L	0.040		1	01/27/17	01/30/17 20:29	1029
beta-BHC	ND	ug/L	0.040		1	01/27/17	01/30/17 20:29	1029
delta-BHC	ND	ug/L	0.040		1	01/27/17	01/30/17 20:29	1029
Heptachlor	ND	ug/L	0.040		1	01/27/17	01/30/17 20:29	1029
Aldrin	ND	ug/L	0.040		1	01/27/17	01/30/17 20:29	1029
Heptachlor epoxide	ND	ug/L	0.040		1	01/27/17	01/30/17 20:29	1029
gamma-Chlordane	ND	ug/L	0.040		1	01/27/17	01/30/17 20:29	1029
alpha-Chlordane	ND	ug/L	0.040		1	01/27/17	01/30/17 20:29	1029
4,4-DDE	ND	ug/L	0.040		1	01/27/17	01/30/17 20:29	1029
Endosulfan I	ND	ug/L	0.040		1	01/27/17	01/30/17 20:29	1029
Dieldrin	ND	ug/L	0.040		1	01/27/17	01/30/17 20:29	1029
Endrin	ND	ug/L	0.040		1	01/27/17	01/30/17 20:29	1029
4,4-DDD	ND	ug/L	0.040		1	01/27/17	01/30/17 20:29	1029
Endosulfan II	ND	ug/L	0.040		1	01/27/17	01/30/17 20:29	1029
4,4-DDT	ND	ug/L	0.040		1	01/27/17	01/30/17 20:29	1029
Endrin aldehyde	ND	ug/L	0.040		1	01/27/17	01/30/17 20:29	1029
Methoxychlor	ND	ug/L	0.040		1	01/27/17	01/30/17 20:29	1029
Endosulfan sulfate	ND	ug/L	0.040		1	01/27/17	01/30/17 20:29	1029
Endrin ketone	ND	ug/L	0.040		1	01/27/17	01/30/17 20:29	1029
Toxaphene	ND	ug/L	1.0		1	01/27/17	01/30/17 20:29	1029

VCP Chlorinated Herbicides — Analytical Method: SW-846 8151 A — Preparation Method: 8151A

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Dalapon	ND	ug/L	4.6		10	01/26/17	01/27/17 13:04	1029
2,4-D	ND	ug/L	1.9		10	01/26/17	01/27/17 13:04	1029
2,4,5-TP (Silvex)	ND	ug/L	0.19		10	01/26/17	01/27/17 13:04	1029
Dinoseb	ND	ug/L	0.95		10	01/26/17	01/27/17 13:04	1029

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 17012529

WSP Environment & Energy - Herndon, Herndon, VA

February 2, 2017

Project Name: Former KopFlex Facility Site
Project Location: Hanover, MD
Project ID: 31400390-5

Sample ID: RW-3S **Date/Time Sampled: 01/25/2017 10:41** **PSS Sample ID: 17012529-002**
Matrix: WATER **Date/Time Received: 01/25/2017 17:00**

VCP Volatile Organic Compounds (w/ TICs) Analytical Method: SW-846 8260 B Preparation Method: 5030B

Library search was performed and TICs (if any) are listed below, values of TICs are estimated

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	01/26/17	01/26/17 17:14	1011
Benzene	ND	ug/L	1.0		1	01/26/17	01/26/17 17:14	1011
Bromodichloromethane	ND	ug/L	1.0		1	01/26/17	01/26/17 17:14	1011
Bromoform	ND	ug/L	5.0		1	01/26/17	01/26/17 17:14	1011
Bromomethane	ND	ug/L	1.0		1	01/26/17	01/26/17 17:14	1011
2-Butanone (MEK)	ND	ug/L	10		1	01/26/17	01/26/17 17:14	1011
n-Butylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 17:14	1011
Carbon Disulfide	ND	ug/L	10		1	01/26/17	01/26/17 17:14	1011
Carbon tetrachloride	ND	ug/L	1.0		1	01/26/17	01/26/17 17:14	1011
Chlorobenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 17:14	1011
Chloroethane	ND	ug/L	1.0		1	01/26/17	01/26/17 17:14	1011
Chloroform	ND	ug/L	1.0		1	01/26/17	01/26/17 17:14	1011
Chloromethane	ND	ug/L	1.0		1	01/26/17	01/26/17 17:14	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	10		1	01/26/17	01/26/17 17:14	1011
Dibromochloromethane	ND	ug/L	1.0		1	01/26/17	01/26/17 17:14	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	01/26/17	01/26/17 17:14	1011
1,1-Dichloroethane	**9.7**	ug/L	1.0		1	01/26/17	01/26/17 17:14	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	01/26/17	01/26/17 17:14	1011
1,1-Dichloroethene	**10**	ug/L	1.0		1	01/26/17	01/26/17 17:14	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	01/26/17	01/26/17 17:14	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	01/26/17	01/26/17 17:14	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	01/26/17	01/26/17 17:14	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	01/26/17	01/26/17 17:14	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	01/26/17	01/26/17 17:14	1011
Ethylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 17:14	1011
Isopropylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 17:14	1011
Methylene chloride	ND	ug/L	1.0		1	01/26/17	01/26/17 17:14	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	01/26/17	01/26/17 17:14	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	01/26/17	01/26/17 17:14	1011
n-Propylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 17:14	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 17012529

WSP Environment & Energy - Herndon, Herndon, VA

February 2, 2017

Project Name: Former KopFlex Facility Site
Project Location: Hanover, MD
Project ID: 31400390-5

Sample ID: RW-3S **Date/Time Sampled: 01/25/2017 10:41** **PSS Sample ID: 17012529-002**
Matrix: WATER **Date/Time Received: 01/25/2017 17:00**

VCP Volatile Organic Compounds (w/ TICs) Analytical Method: SW-846 8260 B Preparation Method: 5030B

Library search was performed and TICs (if any) are listed below, values of TICs are estimated

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Styrene	ND	ug/L	1.0		1	01/26/17	01/26/17 17:14	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	01/26/17	01/26/17 17:14	1011
Tetrachloroethene	ND	ug/L	1.0		1	01/26/17	01/26/17 17:14	1011
Toluene	**2.6**	ug/L	1.0		1	01/26/17	01/26/17 17:14	1011
1,1,1-Trichloroethane	**1.9**	ug/L	1.0		1	01/26/17	01/26/17 17:14	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	01/26/17	01/26/17 17:14	1011
Trichloroethene	ND	ug/L	1.0		1	01/26/17	01/26/17 17:14	1011
1,2,4-Trimethylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 17:14	1011
1,3,5-Trimethylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 17:14	1011
Vinyl chloride	ND	ug/L	1.0		1	01/26/17	01/26/17 17:14	1011
m&p-Xylene	ND	ug/L	2.0		1	01/26/17	01/26/17 17:14	1011
o-Xylene	ND	ug/L	1.0		1	01/26/17	01/26/17 17:14	1011

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CERTIFICATE OF ANALYSIS

No: 17012529

WSP Environment & Energy - Herndon, Herndon, VA

February 2, 2017

Project Name: Former KopFlex Facility Site
Project Location: Hanover, MD
Project ID: 31400390-5

Sample ID: RW-3S **Date/Time Sampled: 01/25/2017 10:41** **PSS Sample ID: 17012529-002**
Matrix: WATER **Date/Time Received: 01/25/2017 17:00**

VCP Semivolatile Organic Compounds (w/ TICs) Analytical Method: SW-846 8270 C Preparation Method: 3510C

Library search was performed and TICs (if any) are listed below, values of TICs are estimated

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acenaphthene	ND	ug/L	0.50		1	01/26/17	01/26/17 18:38	1055
Acenaphthylene	ND	ug/L	0.50		1	01/26/17	01/26/17 18:38	1055
Anthracene	ND	ug/L	0.50		1	01/26/17	01/26/17 18:38	1055
Benzo(a)anthracene	ND	ug/L	0.50		1	01/26/17	01/26/17 18:38	1055
Benzo(a)pyrene	ND	ug/L	0.50		1	01/26/17	01/26/17 18:38	1055
Benzo(b)fluoranthene	ND	ug/L	0.50		1	01/26/17	01/26/17 18:38	1055
Benzo(g,h,i)perylene	ND	ug/L	0.50		1	01/26/17	01/26/17 18:38	1055
Benzo(k)fluoranthene	ND	ug/L	0.50		1	01/26/17	01/26/17 18:38	1055
bis(2-chloroethyl) ether	ND	ug/L	5.0		1	01/26/17	01/26/17 18:38	1055
bis(2-chloroisopropyl) ether	ND	ug/L	5.0		1	01/26/17	01/26/17 18:38	1055
bis(2-ethylhexyl) phthalate	ND	ug/L	5.0		1	01/26/17	01/26/17 18:38	1055
Di-n-butyl phthalate	ND	ug/L	5.0		1	01/26/17	01/26/17 18:38	1055
Carbazole	ND	ug/L	5.0		1	01/26/17	01/26/17 18:38	1055
4-Chloroaniline	ND	ug/L	5.0		1	01/26/17	01/26/17 18:38	1055
2-Chloronaphthalene	ND	ug/L	5.0		1	01/26/17	01/26/17 18:38	1055
2-Chlorophenol	ND	ug/L	5.0		1	01/26/17	01/26/17 18:38	1055
Chrysene	ND	ug/L	0.50		1	01/26/17	01/26/17 18:38	1055
Dibenz(a,h)anthracene	ND	ug/L	0.50		1	01/26/17	01/26/17 18:38	1055
Dibenzofuran	ND	ug/L	5.0		1	01/26/17	01/26/17 18:38	1055
1,2'-Dichlorobenzene	ND	ug/L	5.0		1	01/26/17	01/26/17 18:38	1055
1,3'-Dichlorobenzene	ND	ug/L	5.0		1	01/26/17	01/26/17 18:38	1055
1,4-Dichlorobenzene	ND	ug/L	5.0		1	01/26/17	01/26/17 18:38	1055
3,3-Dichlorobenzidine	ND	ug/L	5.0		1	01/26/17	01/26/17 18:38	1055
2,4-Dichlorophenol	ND	ug/L	5.0		1	01/26/17	01/26/17 18:38	1055
Diethyl phthalate	ND	ug/L	5.0		1	01/26/17	01/26/17 18:38	1055
2,4-Dimethylphenol	ND	ug/L	5.0		1	01/26/17	01/26/17 18:38	1055
2,4-Dinitrophenol	ND	ug/L	10		1	01/26/17	01/26/17 18:38	1055
2,4-Dinitrotoluene	ND	ug/L	5.0		1	01/26/17	01/26/17 18:38	1055
2,6-Dinitrotoluene	ND	ug/L	5.0		1	01/26/17	01/26/17 18:38	1055

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 17012529

WSP Environment & Energy - Herndon, Herndon, VA

February 2, 2017

Project Name: Former KopFlex Facility Site
Project Location: Hanover, MD
Project ID: 31400390-5

Sample ID: RW-3S **Date/Time Sampled: 01/25/2017 10:41** **PSS Sample ID: 17012529-002**
Matrix: WATER **Date/Time Received: 01/25/2017 17:00**

VCP Semivolatile Organic Compounds (w/ TICs) Analytical Method: SW-846 8270 C Preparation Method: 3510C

Library search was performed and TICs (if any) are listed below, values of TICs are estimated

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Fluoranthene	ND	ug/L	0.50		1	01/26/17	01/26/17 18:38	1055
Fluorene	ND	ug/L	0.50		1	01/26/17	01/26/17 18:38	1055
Hexachlorobenzene	ND	ug/L	5.0		1	01/26/17	01/26/17 18:38	1055
Hexachlorobutadiene	ND	ug/L	5.0		1	01/26/17	01/26/17 18:38	1055
Hexachlorocyclopentadiene	ND	ug/L	5.0		1	01/26/17	01/26/17 18:38	1055
Hexachloroethane	ND	ug/L	5.0		1	01/26/17	01/26/17 18:38	1055
Indeno(1,2,3-c,d)Pyrene	ND	ug/L	0.50		1	01/26/17	01/26/17 18:38	1055
Isophorone	ND	ug/L	5.0		1	01/26/17	01/26/17 18:38	1055
2-Methylnaphthalene	ND	ug/L	0.50		1	01/26/17	01/26/17 18:38	1055
2-Methylphenol	ND	ug/L	5.0		1	01/26/17	01/26/17 18:38	1055
3&4-Methylphenol	ND	ug/L	5.0		1	01/26/17	01/26/17 18:38	1055
Naphthalene	ND	ug/L	0.50		1	01/26/17	01/26/17 18:38	1055
Nitrobenzene	ND	ug/L	5.0		1	01/26/17	01/26/17 18:38	1055
N-Nitrosodi-n-propyl amine	ND	ug/L	5.0		1	01/26/17	01/26/17 18:38	1055
N-Nitrosodiphenylamine	ND	ug/L	5.0		1	01/26/17	01/26/17 18:38	1055
Pentachlorophenol	ND	ug/L	5.0		1	01/26/17	01/26/17 18:38	1055
Phenanthrene	ND	ug/L	0.50		1	01/26/17	01/26/17 18:38	1055
Phenol	ND	ug/L	5.0		1	01/26/17	01/26/17 18:38	1055
Pyrene	ND	ug/L	0.50		1	01/26/17	01/26/17 18:38	1055
1,2,4-Trichlorobenzene	ND	ug/L	5.0		1	01/26/17	01/26/17 18:38	1055
2,4,5-Trichlorophenol	ND	ug/L	5.0		1	01/26/17	01/26/17 18:38	1055
2,4,6-Trichlorophenol	ND	ug/L	5.0		1	01/26/17	01/26/17 18:38	1055
Bis(2-ethylhexyl)adipate	ND	ug/L	5.0		1	01/26/17	01/26/17 18:38	1055
No TICs Found	ND	ug/L	5.0		1	01/26/17	01/26/17 18:38	1055

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 17012529

WSP Environment & Energy - Herndon, Herndon, VA

February 2, 2017

Project Name: Former KopFlex Facility Site
Project Location: Hanover, MD
Project ID: 31400390-5

Sample ID: RW-2S **Date/Time Sampled: 01/25/2017 13:35** **PSS Sample ID: 17012529-003**
Matrix: WATER **Date/Time Received: 01/25/2017 17:00**

Dissolved Organic Carbon — Analytical Method: SM20 5310B

	Result	Units	RL	Flag	Prepared	Analyzed	Analyst
Dissolved Organic Carbon	**2.7**	mg/L	0.50		01/30/17	01/30/17 10:39	4001

Total Organic Carbon — Analytical Method: SM20 5310B

	Result	Units	RL	Flag	Prepared	Analyzed	Analyst
Total Organic Carbon	**2.7**	mg/L	0.50		01/30/17	01/30/17 10:39	4001

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW-846 8015 C — Preparation Method: 3510C

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
TPH-DRO (Diesel Range Organics)	ND	mg/L	0.11		1	01/26/17	01/27/17 14:29	1045

Total Petroleum Hydrocarbons-GRO — Analytical Method: SW-846 8015C — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
TPH-GRO (Gasoline Range Organics)	**970**	ug/L	100		1	01/30/17	01/31/17 15:18	1035

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CERTIFICATE OF ANALYSIS

No: 17012529

WSP Environment & Energy - Herndon, Herndon, VA

February 2, 2017

Project Name: Former KopFlex Facility Site
Project Location: Hanover, MD
Project ID: 31400390-5

Sample ID: RW-2S **Date/Time Sampled: 01/25/2017 13:35** **PSS Sample ID: 17012529-003**
Matrix: WATER **Date/Time Received: 01/25/2017 17:00**

VCP Organochlorine Pesticides — Analytical Method: SW-846 8081 B — Preparation Method: 3510C

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
alpha-BHC	ND	ug/L	0.040		1	01/27/17	01/30/17 20:01	1029
gamma-BHC (Lindane)	ND	ug/L	0.040		1	01/27/17	01/30/17 20:01	1029
beta-BHC	ND	ug/L	0.040		1	01/27/17	01/30/17 20:01	1029
delta-BHC	ND	ug/L	0.040		1	01/27/17	01/30/17 20:01	1029
Heptachlor	ND	ug/L	0.040		1	01/27/17	01/30/17 20:01	1029
Aldrin	ND	ug/L	0.040		1	01/27/17	01/30/17 20:01	1029
Heptachlor epoxide	ND	ug/L	0.040		1	01/27/17	01/30/17 20:01	1029
gamma-Chlordane	ND	ug/L	0.040		1	01/27/17	01/30/17 20:01	1029
alpha-Chlordane	ND	ug/L	0.040		1	01/27/17	01/30/17 20:01	1029
4,4-DDE	ND	ug/L	0.040		1	01/27/17	01/30/17 20:01	1029
Endosulfan I	ND	ug/L	0.040		1	01/27/17	01/30/17 20:01	1029
Dieldrin	ND	ug/L	0.040		1	01/27/17	01/30/17 20:01	1029
Endrin	ND	ug/L	0.040		1	01/27/17	01/30/17 20:01	1029
4,4-DDD	ND	ug/L	0.040		1	01/27/17	01/30/17 20:01	1029
Endosulfan II	ND	ug/L	0.040		1	01/27/17	01/30/17 20:01	1029
4,4-DDT	ND	ug/L	0.040		1	01/27/17	01/30/17 20:01	1029
Endrin aldehyde	ND	ug/L	0.040		1	01/27/17	01/30/17 20:01	1029
Methoxychlor	ND	ug/L	0.040		1	01/27/17	01/30/17 20:01	1029
Endosulfan sulfate	ND	ug/L	0.040		1	01/27/17	01/30/17 20:01	1029
Endrin ketone	ND	ug/L	0.040		1	01/27/17	01/30/17 20:01	1029
Toxaphene	ND	ug/L	1.0		1	01/27/17	01/30/17 20:01	1029

VCP Chlorinated Herbicides — Analytical Method: SW-846 8151 A — Preparation Method: 8151A

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Dalapon	ND	ug/L	4.6		10	01/26/17	01/27/17 14:11	1029
2,4-D	ND	ug/L	1.9		10	01/26/17	01/27/17 14:11	1029
2,4,5-TP (Silvex)	ND	ug/L	0.19		10	01/26/17	01/27/17 14:11	1029
Dinoseb	ND	ug/L	0.95		10	01/26/17	01/27/17 14:11	1029

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CERTIFICATE OF ANALYSIS

No: 17012529

WSP Environment & Energy - Herndon, Herndon, VA

February 2, 2017

Project Name: Former KopFlex Facility Site
Project Location: Hanover, MD
Project ID: 31400390-5

Sample ID: RW-2S **Date/Time Sampled: 01/25/2017 13:35** **PSS Sample ID: 17012529-003**
Matrix: WATER **Date/Time Received: 01/25/2017 17:00**

VCP Volatile Organic Compounds (w/ TICs) Analytical Method: SW-846 8260 B Preparation Method: 5030B

Library search was performed and TICs (if any) are listed below, values of TICs are estimated

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	01/26/17	01/26/17 17:35	1011
Benzene	ND	ug/L	1.0		1	01/26/17	01/26/17 17:35	1011
Bromodichloromethane	ND	ug/L	1.0		1	01/26/17	01/26/17 17:35	1011
Bromoform	ND	ug/L	5.0		1	01/26/17	01/26/17 17:35	1011
Bromomethane	ND	ug/L	1.0		1	01/26/17	01/26/17 17:35	1011
2-Butanone (MEK)	ND	ug/L	10		1	01/26/17	01/26/17 17:35	1011
n-Butylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 17:35	1011
Carbon Disulfide	ND	ug/L	10		1	01/26/17	01/26/17 17:35	1011
Carbon tetrachloride	ND	ug/L	1.0		1	01/26/17	01/26/17 17:35	1011
Chlorobenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 17:35	1011
Chloroethane	ND	ug/L	1.0		1	01/26/17	01/26/17 17:35	1011
Chloroform	**1.0**	ug/L	1.0		1	01/26/17	01/26/17 17:35	1011
Chloromethane	ND	ug/L	1.0		1	01/26/17	01/26/17 17:35	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	10		1	01/26/17	01/26/17 17:35	1011
Dibromochloromethane	ND	ug/L	1.0		1	01/26/17	01/26/17 17:35	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	01/26/17	01/26/17 17:35	1011
1,1-Dichloroethane	**220**	ug/L	1.0		1	01/26/17	01/26/17 17:35	1011
1,2-Dichloroethane	**4.6**	ug/L	1.0		1	01/26/17	01/26/17 17:35	1011
1,1-Dichloroethene	**1,300**	ug/L	50		50	01/26/17	01/27/17 14:41	1011
cis-1,2-Dichloroethene	**1.6**	ug/L	1.0		1	01/26/17	01/26/17 17:35	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	01/26/17	01/26/17 17:35	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	01/26/17	01/26/17 17:35	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	01/26/17	01/26/17 17:35	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	01/26/17	01/26/17 17:35	1011
Ethylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 17:35	1011
Isopropylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 17:35	1011
Methylene chloride	**9.0**	ug/L	1.0		1	01/26/17	01/26/17 17:35	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	01/26/17	01/26/17 17:35	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	01/26/17	01/26/17 17:35	1011
n-Propylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 17:35	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 17012529

WSP Environment & Energy - Herndon, Herndon, VA

February 2, 2017

Project Name: Former KopFlex Facility Site
Project Location: Hanover, MD
Project ID: 31400390-5

Sample ID: RW-2S **Date/Time Sampled: 01/25/2017 13:35** **PSS Sample ID: 17012529-003**
Matrix: WATER **Date/Time Received: 01/25/2017 17:00**

VCP Volatile Organic Compounds (w/ TICs) Analytical Method: SW-846 8260 B Preparation Method: 5030B

Library search was performed and TICs (if any) are listed below, values of TICs are estimated

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Styrene	ND	ug/L	1.0		1	01/26/17	01/26/17 17:35	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	01/26/17	01/26/17 17:35	1011
Tetrachloroethene	ND	ug/L	1.0		1	01/26/17	01/26/17 17:35	1011
Toluene	**1.5**	ug/L	1.0		1	01/26/17	01/26/17 17:35	1011
1,1,1-Trichloroethane	**1,300**	ug/L	50		50	01/26/17	01/27/17 14:41	1011
1,1,2-Trichloroethane	**1.5**	ug/L	1.0		1	01/26/17	01/26/17 17:35	1011
Trichloroethene	**13**	ug/L	1.0		1	01/26/17	01/26/17 17:35	1011
1,2,4-Trimethylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 17:35	1011
1,3,5-Trimethylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 17:35	1011
Vinyl chloride	ND	ug/L	1.0		1	01/26/17	01/26/17 17:35	1011
m&p-Xylene	ND	ug/L	2.0		1	01/26/17	01/26/17 17:35	1011
o-Xylene	ND	ug/L	1.0		1	01/26/17	01/26/17 17:35	1011

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No: 17012529

WSP Environment & Energy - Herndon, Herndon, VA

February 2, 2017

Project Name: Former KopFlex Facility Site
Project Location: Hanover, MD
Project ID: 31400390-5

Sample ID: RW-2S **Date/Time Sampled: 01/25/2017 13:35** **PSS Sample ID: 17012529-003**
Matrix: WATER **Date/Time Received: 01/25/2017 17:00**

VCP Semivolatile Organic Compounds (w/ TICs) Analytical Method: SW-846 8270 C Preparation Method: 3510C

Library search was performed and TICs (if any) are listed below, values of TICs are estimated

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acenaphthene	ND	ug/L	0.50		1	01/26/17	01/26/17 19:06	1055
Acenaphthylene	ND	ug/L	0.50		1	01/26/17	01/26/17 19:06	1055
Anthracene	ND	ug/L	0.50		1	01/26/17	01/26/17 19:06	1055
Benzo(a)anthracene	ND	ug/L	0.50		1	01/26/17	01/26/17 19:06	1055
Benzo(a)pyrene	ND	ug/L	0.50		1	01/26/17	01/26/17 19:06	1055
Benzo(b)fluoranthene	ND	ug/L	0.50		1	01/26/17	01/26/17 19:06	1055
Benzo(g,h,i)perylene	ND	ug/L	0.50		1	01/26/17	01/26/17 19:06	1055
Benzo(k)fluoranthene	ND	ug/L	0.50		1	01/26/17	01/26/17 19:06	1055
bis(2-chloroethyl) ether	ND	ug/L	5.0		1	01/26/17	01/26/17 19:06	1055
bis(2-chloroisopropyl) ether	ND	ug/L	5.0		1	01/26/17	01/26/17 19:06	1055
bis(2-ethylhexyl) phthalate	ND	ug/L	5.0		1	01/26/17	01/26/17 19:06	1055
Di-n-butyl phthalate	ND	ug/L	5.0		1	01/26/17	01/26/17 19:06	1055
Carbazole	ND	ug/L	5.0		1	01/26/17	01/26/17 19:06	1055
4-Chloroaniline	ND	ug/L	5.0		1	01/26/17	01/26/17 19:06	1055
2-Chloronaphthalene	ND	ug/L	5.0		1	01/26/17	01/26/17 19:06	1055
2-Chlorophenol	ND	ug/L	5.0		1	01/26/17	01/26/17 19:06	1055
Chrysene	ND	ug/L	0.50		1	01/26/17	01/26/17 19:06	1055
Dibenz(a,h)anthracene	ND	ug/L	0.50		1	01/26/17	01/26/17 19:06	1055
Dibenzofuran	ND	ug/L	5.0		1	01/26/17	01/26/17 19:06	1055
1,2'-Dichlorobenzene	ND	ug/L	5.0		1	01/26/17	01/26/17 19:06	1055
1,3'-Dichlorobenzene	ND	ug/L	5.0		1	01/26/17	01/26/17 19:06	1055
1,4-Dichlorobenzene	ND	ug/L	5.0		1	01/26/17	01/26/17 19:06	1055
3,3-Dichlorobenzidine	ND	ug/L	5.0		1	01/26/17	01/26/17 19:06	1055
2,4-Dichlorophenol	ND	ug/L	5.0		1	01/26/17	01/26/17 19:06	1055
Diethyl phthalate	ND	ug/L	5.0		1	01/26/17	01/26/17 19:06	1055
2,4-Dimethylphenol	ND	ug/L	5.0		1	01/26/17	01/26/17 19:06	1055
2,4-Dinitrophenol	ND	ug/L	10		1	01/26/17	01/26/17 19:06	1055
2,4-Dinitrotoluene	ND	ug/L	5.0		1	01/26/17	01/26/17 19:06	1055
2,6-Dinitrotoluene	ND	ug/L	5.0		1	01/26/17	01/26/17 19:06	1055

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CERTIFICATE OF ANALYSIS

No: 17012529

WSP Environment & Energy - Herndon, Herndon, VA

February 2, 2017

Project Name: Former KopFlex Facility Site
Project Location: Hanover, MD
Project ID: 31400390-5

Sample ID: RW-2S **Date/Time Sampled: 01/25/2017 13:35** **PSS Sample ID: 17012529-003**
Matrix: WATER **Date/Time Received: 01/25/2017 17:00**

VCP Semivolatile Organic Compounds (w/ TICs) Analytical Method: SW-846 8270 C Preparation Method: 3510C

Library search was performed and TICs (if any) are listed below, values of TICs are estimated

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Fluoranthene	ND	ug/L	0.50		1	01/26/17	01/26/17 19:06	1055
Fluorene	ND	ug/L	0.50		1	01/26/17	01/26/17 19:06	1055
Hexachlorobenzene	ND	ug/L	5.0		1	01/26/17	01/26/17 19:06	1055
Hexachlorobutadiene	ND	ug/L	5.0		1	01/26/17	01/26/17 19:06	1055
Hexachlorocyclopentadiene	ND	ug/L	5.0		1	01/26/17	01/26/17 19:06	1055
Hexachloroethane	ND	ug/L	5.0		1	01/26/17	01/26/17 19:06	1055
Indeno(1,2,3-c,d)Pyrene	ND	ug/L	0.50		1	01/26/17	01/26/17 19:06	1055
Isophorone	ND	ug/L	5.0		1	01/26/17	01/26/17 19:06	1055
2-Methylnaphthalene	ND	ug/L	0.50		1	01/26/17	01/26/17 19:06	1055
2-Methylphenol	ND	ug/L	5.0		1	01/26/17	01/26/17 19:06	1055
3&4-Methylphenol	ND	ug/L	5.0		1	01/26/17	01/26/17 19:06	1055
Naphthalene	ND	ug/L	0.50		1	01/26/17	01/26/17 19:06	1055
Nitrobenzene	ND	ug/L	5.0		1	01/26/17	01/26/17 19:06	1055
N-Nitrosodi-n-propyl amine	ND	ug/L	5.0		1	01/26/17	01/26/17 19:06	1055
N-Nitrosodiphenylamine	ND	ug/L	5.0		1	01/26/17	01/26/17 19:06	1055
Pentachlorophenol	ND	ug/L	5.0		1	01/26/17	01/26/17 19:06	1055
Phenanthrene	ND	ug/L	0.50		1	01/26/17	01/26/17 19:06	1055
Phenol	ND	ug/L	5.0		1	01/26/17	01/26/17 19:06	1055
Pyrene	ND	ug/L	0.50		1	01/26/17	01/26/17 19:06	1055
1,2,4-Trichlorobenzene	ND	ug/L	5.0		1	01/26/17	01/26/17 19:06	1055
2,4,5-Trichlorophenol	ND	ug/L	5.0		1	01/26/17	01/26/17 19:06	1055
2,4,6-Trichlorophenol	ND	ug/L	5.0		1	01/26/17	01/26/17 19:06	1055
Bis(2-ethylhexyl)adipate	ND	ug/L	5.0		1	01/26/17	01/26/17 19:06	1055
Squalene (TIC)	**5.4**	ug/L	5.0		1	01/26/17	01/26/17 19:06	1055

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CERTIFICATE OF ANALYSIS

No: 17012529

WSP Environment & Energy - Herndon, Herndon, VA

February 2, 2017

Project Name: Former KopFlex Facility Site
Project Location: Hanover, MD
Project ID: 31400390-5

Sample ID: RW-1S **Date/Time Sampled: 01/25/2017 14:15** **PSS Sample ID: 17012529-004**
Matrix: WATER **Date/Time Received: 01/25/2017 17:00**

Dissolved Organic Carbon — Analytical Method: SM20 5310B

	Result	Units	RL	Flag	Prepared	Analyzed	Analyst
Dissolved Organic Carbon	**2.3**	mg/L	0.50		01/30/17	01/30/17 10:39	4001

Total Organic Carbon — Analytical Method: SM20 5310B

	Result	Units	RL	Flag	Prepared	Analyzed	Analyst
Total Organic Carbon	**1.9**	mg/L	0.50		01/30/17	01/30/17 10:39	4001

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW-846 8015 C — Preparation Method: 3510C

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
TPH-DRO (Diesel Range Organics)	ND	mg/L	0.11		1	01/26/17	01/27/17 14:29	1045

Total Petroleum Hydrocarbons-GRO — Analytical Method: SW-846 8015C — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
TPH-GRO (Gasoline Range Organics)	**710**	ug/L	100		1	01/30/17	01/31/17 15:45	1035

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 17012529

WSP Environment & Energy - Herndon, Herndon, VA

February 2, 2017

Project Name: Former KopFlex Facility Site
Project Location: Hanover, MD
Project ID: 31400390-5

Sample ID: RW-1S **Date/Time Sampled: 01/25/2017 14:15** **PSS Sample ID: 17012529-004**
Matrix: WATER **Date/Time Received: 01/25/2017 17:00**

VCP Organochlorine Pesticides — Analytical Method: SW-846 8081 B — Preparation Method: 3510C

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
alpha-BHC	ND	ug/L	0.040		1	01/27/17	01/30/17 19:33	1029
gamma-BHC (Lindane)	ND	ug/L	0.040		1	01/27/17	01/30/17 19:33	1029
beta-BHC	ND	ug/L	0.040		1	01/27/17	01/30/17 19:33	1029
delta-BHC	ND	ug/L	0.040		1	01/27/17	01/30/17 19:33	1029
Heptachlor	ND	ug/L	0.040		1	01/27/17	01/30/17 19:33	1029
Aldrin	ND	ug/L	0.040		1	01/27/17	01/30/17 19:33	1029
Heptachlor epoxide	ND	ug/L	0.040		1	01/27/17	01/30/17 19:33	1029
gamma-Chlordane	ND	ug/L	0.040		1	01/27/17	01/30/17 19:33	1029
alpha-Chlordane	ND	ug/L	0.040		1	01/27/17	01/30/17 19:33	1029
4,4-DDE	ND	ug/L	0.040		1	01/27/17	01/30/17 19:33	1029
Endosulfan I	ND	ug/L	0.040		1	01/27/17	01/30/17 19:33	1029
Dieldrin	ND	ug/L	0.040		1	01/27/17	01/30/17 19:33	1029
Endrin	ND	ug/L	0.040		1	01/27/17	01/30/17 19:33	1029
4,4-DDD	ND	ug/L	0.040		1	01/27/17	01/30/17 19:33	1029
Endosulfan II	ND	ug/L	0.040		1	01/27/17	01/30/17 19:33	1029
4,4-DDT	ND	ug/L	0.040		1	01/27/17	01/30/17 19:33	1029
Endrin aldehyde	ND	ug/L	0.040		1	01/27/17	01/30/17 19:33	1029
Methoxychlor	ND	ug/L	0.040		1	01/27/17	01/30/17 19:33	1029
Endosulfan sulfate	ND	ug/L	0.040		1	01/27/17	01/30/17 19:33	1029
Endrin ketone	ND	ug/L	0.040		1	01/27/17	01/30/17 19:33	1029
Toxaphene	ND	ug/L	1.0		1	01/27/17	01/30/17 19:33	1029

VCP Chlorinated Herbicides — Analytical Method: SW-846 8151 A — Preparation Method: 8151A

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Dalapon	ND	ug/L	4.6		10	01/26/17	01/27/17 13:37	1029
2,4-D	ND	ug/L	1.9		10	01/26/17	01/27/17 13:37	1029
2,4,5-TP (Silvex)	ND	ug/L	0.19		10	01/26/17	01/27/17 13:37	1029
Dinoseb	ND	ug/L	0.95		10	01/26/17	01/27/17 13:37	1029

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CERTIFICATE OF ANALYSIS

No: 17012529

WSP Environment & Energy - Herndon, Herndon, VA

February 2, 2017

Project Name: Former KopFlex Facility Site
Project Location: Hanover, MD
Project ID: 31400390-5

Sample ID: RW-1S **Date/Time Sampled: 01/25/2017 14:15** **PSS Sample ID: 17012529-004**
Matrix: WATER **Date/Time Received: 01/25/2017 17:00**

VCP Volatile Organic Compounds (w/ TICs) Analytical Method: SW-846 8260 B Preparation Method: 5030B

Library search was performed and TICs (if any) are listed below, values of TICs are estimated

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	01/26/17	01/26/17 17:56	1011
Benzene	ND	ug/L	1.0		1	01/26/17	01/26/17 17:56	1011
Bromodichloromethane	ND	ug/L	1.0		1	01/26/17	01/26/17 17:56	1011
Bromoform	ND	ug/L	5.0		1	01/26/17	01/26/17 17:56	1011
Bromomethane	ND	ug/L	1.0		1	01/26/17	01/26/17 17:56	1011
2-Butanone (MEK)	ND	ug/L	10		1	01/26/17	01/26/17 17:56	1011
n-Butylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 17:56	1011
Carbon Disulfide	ND	ug/L	10		1	01/26/17	01/26/17 17:56	1011
Carbon tetrachloride	ND	ug/L	1.0		1	01/26/17	01/26/17 17:56	1011
Chlorobenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 17:56	1011
Chloroethane	**10**	ug/L	1.0		1	01/26/17	01/26/17 17:56	1011
Chloroform	ND	ug/L	1.0		1	01/26/17	01/26/17 17:56	1011
Chloromethane	ND	ug/L	1.0		1	01/26/17	01/26/17 17:56	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	10		1	01/26/17	01/26/17 17:56	1011
Dibromochloromethane	ND	ug/L	1.0		1	01/26/17	01/26/17 17:56	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	01/26/17	01/26/17 17:56	1011
1,1-Dichloroethane	**690**	ug/L	50		50	01/26/17	01/27/17 15:02	1011
1,2-Dichloroethane	**6.3**	ug/L	1.0		1	01/26/17	01/26/17 17:56	1011
cis-1,2-Dichloroethene	**8.0**	ug/L	1.0		1	01/26/17	01/26/17 17:56	1011
1,1-Dichloroethene	**1,000**	ug/L	50		50	01/26/17	01/27/17 15:02	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	01/26/17	01/26/17 17:56	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	01/26/17	01/26/17 17:56	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	01/26/17	01/26/17 17:56	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	01/26/17	01/26/17 17:56	1011
Ethylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 17:56	1011
Isopropylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 17:56	1011
Methylene chloride	**3.9**	ug/L	1.0		1	01/26/17	01/26/17 17:56	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	01/26/17	01/26/17 17:56	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	01/26/17	01/26/17 17:56	1011
n-Propylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 17:56	1011

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CERTIFICATE OF ANALYSIS

No: 17012529

WSP Environment & Energy - Herndon, Herndon, VA

February 2, 2017

Project Name: Former KopFlex Facility Site
Project Location: Hanover, MD
Project ID: 31400390-5

Sample ID: RW-1S **Date/Time Sampled: 01/25/2017 14:15** **PSS Sample ID: 17012529-004**
Matrix: WATER **Date/Time Received: 01/25/2017 17:00**

VCP Volatile Organic Compounds (w/ TICs) Analytical Method: SW-846 8260 B Preparation Method: 5030B

Library search was performed and TICs (if any) are listed below, values of TICs are estimated

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Styrene	ND	ug/L	1.0		1	01/26/17	01/26/17 17:56	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	01/26/17	01/26/17 17:56	1011
Tetrachloroethene	ND	ug/L	1.0		1	01/26/17	01/26/17 17:56	1011
Toluene	ND	ug/L	1.0		1	01/26/17	01/26/17 17:56	1011
1,1,1-Trichloroethane	**59**	ug/L	1.0		1	01/26/17	01/26/17 17:56	1011
Trichloroethene	**7.0**	ug/L	1.0		1	01/26/17	01/26/17 17:56	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	01/26/17	01/26/17 17:56	1011
1,2,4-Trimethylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 17:56	1011
1,3,5-Trimethylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 17:56	1011
Vinyl chloride	**1.3**	ug/L	1.0		1	01/26/17	01/26/17 17:56	1011
m&p-Xylene	ND	ug/L	2.0		1	01/26/17	01/26/17 17:56	1011
o-Xylene	ND	ug/L	1.0		1	01/26/17	01/26/17 17:56	1011

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February 2, 2017

Project Name: Former KopFlex Facility Site
Project Location: Hanover, MD
Project ID: 31400390-5

Sample ID: RW-1S **Date/Time Sampled: 01/25/2017 14:15** **PSS Sample ID: 17012529-004**
Matrix: WATER **Date/Time Received: 01/25/2017 17:00**

VCP Semivolatile Organic Compounds (w/ TICs) Analytical Method: SW-846 8270 C Preparation Method: 3510C

Library search was performed and TICs (if any) are listed below, values of TICs are estimated

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acenaphthene	ND	ug/L	0.50		1	01/26/17	01/26/17 19:35	1055
Acenaphthylene	ND	ug/L	0.50		1	01/26/17	01/26/17 19:35	1055
Anthracene	ND	ug/L	0.50		1	01/26/17	01/26/17 19:35	1055
Benzo(a)anthracene	ND	ug/L	0.50		1	01/26/17	01/26/17 19:35	1055
Benzo(a)pyrene	ND	ug/L	0.50		1	01/26/17	01/26/17 19:35	1055
Benzo(b)fluoranthene	ND	ug/L	0.50		1	01/26/17	01/26/17 19:35	1055
Benzo(g,h,i)perylene	ND	ug/L	0.50		1	01/26/17	01/26/17 19:35	1055
Benzo(k)fluoranthene	ND	ug/L	0.50		1	01/26/17	01/26/17 19:35	1055
bis(2-chloroethyl) ether	ND	ug/L	5.0		1	01/26/17	01/26/17 19:35	1055
bis(2-chloroisopropyl) ether	ND	ug/L	5.0		1	01/26/17	01/26/17 19:35	1055
bis(2-ethylhexyl) phthalate	ND	ug/L	5.0		1	01/26/17	01/26/17 19:35	1055
Di-n-butyl phthalate	ND	ug/L	5.0		1	01/26/17	01/26/17 19:35	1055
Carbazole	ND	ug/L	5.0		1	01/26/17	01/26/17 19:35	1055
4-Chloroaniline	ND	ug/L	5.0		1	01/26/17	01/26/17 19:35	1055
2-Chloronaphthalene	ND	ug/L	5.0		1	01/26/17	01/26/17 19:35	1055
2-Chlorophenol	ND	ug/L	5.0		1	01/26/17	01/26/17 19:35	1055
Chrysene	ND	ug/L	0.50		1	01/26/17	01/26/17 19:35	1055
Dibenz(a,h)anthracene	ND	ug/L	0.50		1	01/26/17	01/26/17 19:35	1055
Dibenzofuran	ND	ug/L	5.0		1	01/26/17	01/26/17 19:35	1055
1,2'-Dichlorobenzene	ND	ug/L	5.0		1	01/26/17	01/26/17 19:35	1055
1,3'-Dichlorobenzene	ND	ug/L	5.0		1	01/26/17	01/26/17 19:35	1055
1,4-Dichlorobenzene	ND	ug/L	5.0		1	01/26/17	01/26/17 19:35	1055
3,3-Dichlorobenzidine	ND	ug/L	5.0		1	01/26/17	01/26/17 19:35	1055
2,4-Dichlorophenol	ND	ug/L	5.0		1	01/26/17	01/26/17 19:35	1055
Diethyl phthalate	ND	ug/L	5.0		1	01/26/17	01/26/17 19:35	1055
2,4-Dimethylphenol	ND	ug/L	5.0		1	01/26/17	01/26/17 19:35	1055
2,4-Dinitrophenol	ND	ug/L	10		1	01/26/17	01/26/17 19:35	1055
2,4-Dinitrotoluene	ND	ug/L	5.0		1	01/26/17	01/26/17 19:35	1055
2,6-Dinitrotoluene	ND	ug/L	5.0		1	01/26/17	01/26/17 19:35	1055

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February 2, 2017

Project Name: Former KopFlex Facility Site
Project Location: Hanover, MD
Project ID: 31400390-5

Sample ID: RW-1S **Date/Time Sampled: 01/25/2017 14:15** **PSS Sample ID: 17012529-004**
Matrix: WATER **Date/Time Received: 01/25/2017 17:00**

VCP Semivolatile Organic Compounds (w/ TICs) Analytical Method: SW-846 8270 C Preparation Method: 3510C

Library search was performed and TICs (if any) are listed below, values of TICs are estimated

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Fluoranthene	ND	ug/L	0.50		1	01/26/17	01/26/17 19:35	1055
Fluorene	ND	ug/L	0.50		1	01/26/17	01/26/17 19:35	1055
Hexachlorobenzene	ND	ug/L	5.0		1	01/26/17	01/26/17 19:35	1055
Hexachlorobutadiene	ND	ug/L	5.0		1	01/26/17	01/26/17 19:35	1055
Hexachlorocyclopentadiene	ND	ug/L	5.0		1	01/26/17	01/26/17 19:35	1055
Hexachloroethane	ND	ug/L	5.0		1	01/26/17	01/26/17 19:35	1055
Indeno(1,2,3-c,d)Pyrene	ND	ug/L	0.50		1	01/26/17	01/26/17 19:35	1055
Isophorone	ND	ug/L	5.0		1	01/26/17	01/26/17 19:35	1055
2-Methylnaphthalene	ND	ug/L	0.50		1	01/26/17	01/26/17 19:35	1055
2-Methylphenol	ND	ug/L	5.0		1	01/26/17	01/26/17 19:35	1055
3&4-Methylphenol	ND	ug/L	5.0		1	01/26/17	01/26/17 19:35	1055
Naphthalene	ND	ug/L	0.50		1	01/26/17	01/26/17 19:35	1055
Nitrobenzene	ND	ug/L	5.0		1	01/26/17	01/26/17 19:35	1055
N-Nitrosodi-n-propyl amine	ND	ug/L	5.0		1	01/26/17	01/26/17 19:35	1055
N-Nitrosodiphenylamine	ND	ug/L	5.0		1	01/26/17	01/26/17 19:35	1055
Pentachlorophenol	ND	ug/L	5.0		1	01/26/17	01/26/17 19:35	1055
Phenanthrene	ND	ug/L	0.50		1	01/26/17	01/26/17 19:35	1055
Phenol	ND	ug/L	5.0		1	01/26/17	01/26/17 19:35	1055
Pyrene	ND	ug/L	0.50		1	01/26/17	01/26/17 19:35	1055
1,2,4-Trichlorobenzene	ND	ug/L	5.0		1	01/26/17	01/26/17 19:35	1055
2,4,5-Trichlorophenol	ND	ug/L	5.0		1	01/26/17	01/26/17 19:35	1055
2,4,6-Trichlorophenol	ND	ug/L	5.0		1	01/26/17	01/26/17 19:35	1055
Bis(2-ethylhexyl)adipate	ND	ug/L	5.0		1	01/26/17	01/26/17 19:35	1055
Squalene (TIC)	**5.0**	ug/L	5.0		1	01/26/17	01/26/17 19:35	1055

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WSP Environment & Energy - Herndon, Herndon, VA

February 2, 2017

Project Name: Former KopFlex Facility Site
Project Location: Hanover, MD
Project ID: 31400390-5

Sample ID: RW-1D Trip Blanks **Date/Time Sampled: 01/25/2017 14:15** **PSS Sample ID: 17012529-005**
Matrix: WATER **Date/Time Received: 01/25/2017 17:00**

VCP Volatile Organic Compounds (w/ TICs) Analytical Method: SW-846 8260 B Preparation Method: 5030B

Library search was performed and TICs (if any) are listed below, values of TICs are estimated

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	01/26/17	01/26/17 15:51	1011
Benzene	ND	ug/L	1.0		1	01/26/17	01/26/17 15:51	1011
Bromodichloromethane	ND	ug/L	1.0		1	01/26/17	01/26/17 15:51	1011
Bromoform	ND	ug/L	5.0		1	01/26/17	01/26/17 15:51	1011
Bromomethane	ND	ug/L	1.0		1	01/26/17	01/26/17 15:51	1011
2-Butanone (MEK)	ND	ug/L	10		1	01/26/17	01/26/17 15:51	1011
n-Butylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 15:51	1011
Carbon Disulfide	ND	ug/L	10		1	01/26/17	01/26/17 15:51	1011
Carbon tetrachloride	ND	ug/L	1.0		1	01/26/17	01/26/17 15:51	1011
Chlorobenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 15:51	1011
Chloroethane	ND	ug/L	1.0		1	01/26/17	01/26/17 15:51	1011
Chloroform	ND	ug/L	1.0		1	01/26/17	01/26/17 15:51	1011
Chloromethane	ND	ug/L	1.0		1	01/26/17	01/26/17 15:51	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	10		1	01/26/17	01/26/17 15:51	1011
Dibromochloromethane	ND	ug/L	1.0		1	01/26/17	01/26/17 15:51	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	01/26/17	01/26/17 15:51	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	01/26/17	01/26/17 15:51	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	01/26/17	01/26/17 15:51	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	01/26/17	01/26/17 15:51	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	01/26/17	01/26/17 15:51	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	01/26/17	01/26/17 15:51	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	01/26/17	01/26/17 15:51	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	01/26/17	01/26/17 15:51	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	01/26/17	01/26/17 15:51	1011
Ethylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 15:51	1011
Isopropylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 15:51	1011
Methylene chloride	ND	ug/L	1.0		1	01/26/17	01/26/17 15:51	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	01/26/17	01/26/17 15:51	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	01/26/17	01/26/17 15:51	1011
n-Propylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 15:51	1011

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CERTIFICATE OF ANALYSIS

No: 17012529

WSP Environment & Energy - Herndon, Herndon, VA

February 2, 2017

Project Name: Former KopFlex Facility Site
Project Location: Hanover, MD
Project ID: 31400390-5

Sample ID: RW-1D Trip Blanks **Date/Time Sampled: 01/25/2017 14:15** **PSS Sample ID: 17012529-005**
Matrix: WATER **Date/Time Received: 01/25/2017 17:00**

VCP Volatile Organic Compounds (w/ TICs) Analytical Method: SW-846 8260 B Preparation Method: 5030B

Library search was performed and TICs (if any) are listed below, values of TICs are estimated

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Styrene	ND	ug/L	1.0		1	01/26/17	01/26/17 15:51	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	01/26/17	01/26/17 15:51	1011
Tetrachloroethene	ND	ug/L	1.0		1	01/26/17	01/26/17 15:51	1011
Toluene	ND	ug/L	1.0		1	01/26/17	01/26/17 15:51	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	01/26/17	01/26/17 15:51	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	01/26/17	01/26/17 15:51	1011
Trichloroethene	ND	ug/L	1.0		1	01/26/17	01/26/17 15:51	1011
1,2,4-Trimethylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 15:51	1011
1,3,5-Trimethylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 15:51	1011
Vinyl chloride	ND	ug/L	1.0		1	01/26/17	01/26/17 15:51	1011
m&p-Xylene	ND	ug/L	2.0		1	01/26/17	01/26/17 15:51	1011
o-Xylene	ND	ug/L	1.0		1	01/26/17	01/26/17 15:51	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 17012529

WSP Environment & Energy - Herndon, Herndon, VA

February 2, 2017

Project Name: Former KopFlex Facility Site
Project Location: Hanover, MD
Project ID: 31400390-5

Sample ID: RW-2S Trip Blanks **Date/Time Sampled: 01/25/2017 14:15** **PSS Sample ID: 17012529-006**
Matrix: WATER **Date/Time Received: 01/25/2017 17:00**

VCP Volatile Organic Compounds (w/ TICs) Analytical Method: SW-846 8260 B Preparation Method: 5030B

Library search was performed and TICs (if any) are listed below, values of TICs are estimated

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	01/26/17	01/26/17 16:12	1011
Benzene	ND	ug/L	1.0		1	01/26/17	01/26/17 16:12	1011
Bromodichloromethane	ND	ug/L	1.0		1	01/26/17	01/26/17 16:12	1011
Bromoform	ND	ug/L	5.0		1	01/26/17	01/26/17 16:12	1011
Bromomethane	ND	ug/L	1.0		1	01/26/17	01/26/17 16:12	1011
2-Butanone (MEK)	ND	ug/L	10		1	01/26/17	01/26/17 16:12	1011
n-Butylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 16:12	1011
Carbon Disulfide	ND	ug/L	10		1	01/26/17	01/26/17 16:12	1011
Carbon tetrachloride	ND	ug/L	1.0		1	01/26/17	01/26/17 16:12	1011
Chlorobenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 16:12	1011
Chloroethane	ND	ug/L	1.0		1	01/26/17	01/26/17 16:12	1011
Chloroform	ND	ug/L	1.0		1	01/26/17	01/26/17 16:12	1011
Chloromethane	ND	ug/L	1.0		1	01/26/17	01/26/17 16:12	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	10		1	01/26/17	01/26/17 16:12	1011
Dibromochloromethane	ND	ug/L	1.0		1	01/26/17	01/26/17 16:12	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	01/26/17	01/26/17 16:12	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	01/26/17	01/26/17 16:12	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	01/26/17	01/26/17 16:12	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	01/26/17	01/26/17 16:12	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	01/26/17	01/26/17 16:12	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	01/26/17	01/26/17 16:12	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	01/26/17	01/26/17 16:12	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	01/26/17	01/26/17 16:12	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	01/26/17	01/26/17 16:12	1011
Ethylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 16:12	1011
Isopropylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 16:12	1011
Methylene chloride	ND	ug/L	1.0		1	01/26/17	01/26/17 16:12	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	01/26/17	01/26/17 16:12	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	01/26/17	01/26/17 16:12	1011
n-Propylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 16:12	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 17012529

WSP Environment & Energy - Herndon, Herndon, VA

February 2, 2017

Project Name: Former KopFlex Facility Site
Project Location: Hanover, MD
Project ID: 31400390-5

Sample ID: RW-2S Trip Blanks **Date/Time Sampled: 01/25/2017 14:15** **PSS Sample ID: 17012529-006**
Matrix: WATER **Date/Time Received: 01/25/2017 17:00**

VCP Volatile Organic Compounds (w/ TICs) Analytical Method: SW-846 8260 B Preparation Method: 5030B

Library search was performed and TICs (if any) are listed below, values of TICs are estimated

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Styrene	ND	ug/L	1.0		1	01/26/17	01/26/17 16:12	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	01/26/17	01/26/17 16:12	1011
Tetrachloroethene	ND	ug/L	1.0		1	01/26/17	01/26/17 16:12	1011
Toluene	ND	ug/L	1.0		1	01/26/17	01/26/17 16:12	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	01/26/17	01/26/17 16:12	1011
Trichloroethene	ND	ug/L	1.0		1	01/26/17	01/26/17 16:12	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	01/26/17	01/26/17 16:12	1011
1,2,4-Trimethylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 16:12	1011
1,3,5-Trimethylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 16:12	1011
Vinyl chloride	ND	ug/L	1.0		1	01/26/17	01/26/17 16:12	1011
m&p-Xylene	ND	ug/L	2.0		1	01/26/17	01/26/17 16:12	1011
o-Xylene	ND	ug/L	1.0		1	01/26/17	01/26/17 16:12	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 17012529

WSP Environment & Energy - Herndon, Herndon, VA

February 2, 2017

Project Name: Former KopFlex Facility Site
Project Location: Hanover, MD
Project ID: 31400390-5

Sample ID: RW-1S Trip Blanks **Date/Time Sampled: 01/25/2017 14:15** **PSS Sample ID: 17012529-007**
Matrix: WATER **Date/Time Received: 01/25/2017 17:00**

VCP Volatile Organic Compounds (w/ TICs) Analytical Method: SW-846 8260 B Preparation Method: 5030B

Library search was performed and TICs (if any) are listed below, values of TICs are estimated

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	01/26/17	01/26/17 16:33	1011
Benzene	ND	ug/L	1.0		1	01/26/17	01/26/17 16:33	1011
Bromodichloromethane	ND	ug/L	1.0		1	01/26/17	01/26/17 16:33	1011
Bromoform	ND	ug/L	5.0		1	01/26/17	01/26/17 16:33	1011
Bromomethane	ND	ug/L	1.0		1	01/26/17	01/26/17 16:33	1011
2-Butanone (MEK)	ND	ug/L	10		1	01/26/17	01/26/17 16:33	1011
n-Butylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 16:33	1011
Carbon Disulfide	ND	ug/L	10		1	01/26/17	01/26/17 16:33	1011
Carbon tetrachloride	ND	ug/L	1.0		1	01/26/17	01/26/17 16:33	1011
Chlorobenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 16:33	1011
Chloroethane	ND	ug/L	1.0		1	01/26/17	01/26/17 16:33	1011
Chloroform	ND	ug/L	1.0		1	01/26/17	01/26/17 16:33	1011
Chloromethane	ND	ug/L	1.0		1	01/26/17	01/26/17 16:33	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	10		1	01/26/17	01/26/17 16:33	1011
Dibromochloromethane	ND	ug/L	1.0		1	01/26/17	01/26/17 16:33	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	01/26/17	01/26/17 16:33	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	01/26/17	01/26/17 16:33	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	01/26/17	01/26/17 16:33	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	01/26/17	01/26/17 16:33	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	01/26/17	01/26/17 16:33	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	01/26/17	01/26/17 16:33	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	01/26/17	01/26/17 16:33	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	01/26/17	01/26/17 16:33	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	01/26/17	01/26/17 16:33	1011
Ethylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 16:33	1011
Isopropylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 16:33	1011
Methylene chloride	ND	ug/L	1.0		1	01/26/17	01/26/17 16:33	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	01/26/17	01/26/17 16:33	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	01/26/17	01/26/17 16:33	1011
n-Propylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 16:33	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 17012529

WSP Environment & Energy - Herndon, Herndon, VA

February 2, 2017

Project Name: Former KopFlex Facility Site
Project Location: Hanover, MD
Project ID: 31400390-5

Sample ID: RW-1S Trip Blanks **Date/Time Sampled: 01/25/2017 14:15** **PSS Sample ID: 17012529-007**
Matrix: WATER **Date/Time Received: 01/25/2017 17:00**

VCP Volatile Organic Compounds (w/ TICs) Analytical Method: SW-846 8260 B Preparation Method: 5030B

Library search was performed and TICs (if any) are listed below, values of TICs are estimated

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Styrene	ND	ug/L	1.0		1	01/26/17	01/26/17 16:33	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	01/26/17	01/26/17 16:33	1011
Tetrachloroethene	ND	ug/L	1.0		1	01/26/17	01/26/17 16:33	1011
Toluene	ND	ug/L	1.0		1	01/26/17	01/26/17 16:33	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	01/26/17	01/26/17 16:33	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	01/26/17	01/26/17 16:33	1011
Trichloroethene	ND	ug/L	1.0		1	01/26/17	01/26/17 16:33	1011
1,2,4-Trimethylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 16:33	1011
1,3,5-Trimethylbenzene	ND	ug/L	1.0		1	01/26/17	01/26/17 16:33	1011
Vinyl chloride	ND	ug/L	1.0		1	01/26/17	01/26/17 16:33	1011
m&p-Xylene	ND	ug/L	2.0		1	01/26/17	01/26/17 16:33	1011
o-Xylene	ND	ug/L	1.0		1	01/26/17	01/26/17 16:33	1011

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COVER LETTER

Lynn Jackson
Phase Separation
6630 Baltimore National Pike, Suite 103
Baltimore, MD 21228

RE: General Wet Chem Analysis

February 02, 2017
Report No.: 17A1375

The report of analyses contains test results for samples received at Microbac Laboratories, Inc., Baltimore Division on 01/26/2017 11:10.

The enclosed results were obtained from and applicable to the sample(s) as received at the laboratory. All sample results are reported on an "as received" basis unless otherwise noted.

All data included in this report has been reviewed and meet the applicable project and certification specific requirements, unless otherwise noted.

This report has been paginated in its entirety and shall not be reproduced except in full, without the written approval of Microbac Laboratories, Inc.

We appreciate the opportunity to service your analytical needs. If you have any questions, please feel free to contact us.

This Data Package contains the following:

- This Cover Page
- Sample Summary
- Test Results
- Certifications/Notes and Definitions
- Cooler Receipt Log
- Chain of Custody

Final report reviewed by:	Coretta S. Davis For Melanie C. Duszynski/Project Manager	2/2/2017 Report issue date

All samples received in proper condition and results conform to ISO 17025 and TNI NELAC standards unless otherwise noted.

If we have not met or exceeded your expectations, please contact Coretta S. Davis For Melanie C. Duszynski/Project Manager at 410-633-1800. You may also contact Trevor Boyce, President at trevor.boyce@microbac.com

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CERTIFICATE OF ANALYSIS

Phase Separation	Project: General Wet Chem Analysis	Report: 17A1375
6630 Baltimore National Pike, Suite 103	Project Number: 31400390-5, WO # 17012529	Reported: 02/02/2017 10:06
Baltimore, MD 21228	Project Manager: Lynn Jackson	

SAMPLE SUMMARY

Sample ID	Laboratory ID	Matrix	Type	Date Sampled	Date Received
17012529-001 - RW-1D	17A1375-01	Water	Grab	01/25/2017 09:40	01/26/2017 11:10
17012529-002 - RW-3S	17A1375-02	Water	Grab	01/25/2017 10:41	01/26/2017 11:10
17012529-003 - RW-2S	17A1375-03	Water	Grab	01/25/2017 13:35	01/26/2017 11:10
17012529-004 - RW-1S	17A1375-04	Water	Grab	01/25/2017 14:15	01/26/2017 11:10

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CERTIFICATE OF ANALYSIS

Phase Separation	Project: General Wet Chem Analysis	Report: 17A1375
6630 Baltimore National Pike, Suite 103	Project Number: 31400390-5, WO # 17012529	Reported: 02/02/2017 10:06
Baltimore, MD 21228	Project Manager: Lynn Jackson	

17012529-001 - RW-1D

17A1375-01 (Water) Sampled: 01/25/2017 09:40; Type: Grab

Analyte	Result	Reporting Limit	Units	Limits	Prepared	Analyzed	Analyst	Method	Notes
Microbac Laboratories, Inc. - Baltimore									
Wet Chemistry									
Surfactants, MBAS	ND	0.020	mg LAS/L (MW 320)		012717 0515	012717 0835	VAS	SM 5540 C-11	

Microbac Laboratories, Inc. - Baltimore

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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CERTIFICATE OF ANALYSIS

Phase Separation	Project: General Wet Chem Analysis	Report: 17A1375
6630 Baltimore National Pike, Suite 103	Project Number: 31400390-5, WO # 17012529	Reported: 02/02/2017 10:06
Baltimore, MD 21228	Project Manager: Lynn Jackson	

17012529-002 - RW-3S

17A1375-02 (Water) Sampled: 01/25/2017 10:41; Type: Grab

Analyte	Result	Reporting Limit	Units	Limits	Prepared	Analyzed	Analyst	Method	Notes
Microbac Laboratories, Inc. - Baltimore									
Wet Chemistry									
Surfactants, MBAS	**0.023**	0.020	mg LAS/L (MW 320)		012717 0515	012717 0835	VAS	SM 5540 C-11	

Microbac Laboratories, Inc. - Baltimore

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Coretta S. Davis For Melanie C. Duszynski, Project Manager

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CERTIFICATE OF ANALYSIS

Phase Separation	Project: General Wet Chem Analysis	Report: 17A1375
6630 Baltimore National Pike, Suite 103	Project Number: 31400390-5, WO # 17012529	Reported: 02/02/2017 10:06
Baltimore, MD 21228	Project Manager: Lynn Jackson	

17012529-003 - RW-2S

17A1375-03 (Water) Sampled: 01/25/2017 13:35; Type: Grab

Analyte	Result	Reporting Limit	Units	Limits	Prepared	Analyzed	Analyst	Method	Notes
Microbac Laboratories, Inc. - Baltimore									
Wet Chemistry									
Surfactants, MBAS	**0.045**	0.020	mg LAS/L (MW 320)		012717 0515	012717 0835	VAS	SM 5540 C-11	

Microbac Laboratories, Inc. - Baltimore

Coretta S. Davis For Melanie C. Duszynski, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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CERTIFICATE OF ANALYSIS

Phase Separation	Project: General Wet Chem Analysis	Report: 17A1375
6630 Baltimore National Pike, Suite 103	Project Number: 31400390-5, WO # 17012529	Reported: 02/02/2017 10:06
Baltimore, MD 21228	Project Manager: Lynn Jackson	

17012529-004 - RW-1S

17A1375-04 (Water) Sampled: 01/25/2017 14:15; Type: Grab

Analyte	Result	Reporting Limit	Units	Limits	Prepared	Analyzed	Analyst	Method	Notes
Microbac Laboratories, Inc. - Baltimore									
Wet Chemistry									
Surfactants, MBAS	ND	0.020	mg LAS/L (MW 320)		012717 0515	012717 0835	VAS	SM 5540 C-11	

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CERTIFICATE OF ANALYSIS

Phase Separation	Project: General Wet Chem Analysis	Report: 17A1375
6630 Baltimore National Pike, Suite 103	Project Number: 31400390-5, WO # 17012529	Reported: 02/02/2017 10:06
Baltimore, MD 21228	Project Manager: Lynn Jackson	

Project Requested Certification(s):

A2LA (Environmental)

Analyte Certification Exception Summary

No certification exceptions

All analysis performed were analyzed under the required certification unless otherwise noted in the above summary.

Certification List

Below is a list of certifications maintained by Microbac Laboratories, Inc. All data included in this report has been reviewed for and meets all project specific and quality control requirements of the applicable accreditation, unless otherwise noted. A complete list of individual analytes pursuant to each certification below is available upon request.

Code	Description	Certification Number	Expires
Microbac Laboratories, Inc. - Baltimore			
A2LA1	A2LA (Biology)	410.02	04/30/2017
A2LA2	A2LA (Environmental)	410.01	04/30/2017
VA-B	Commonwealth of Virginia (NELAC) - Baltimore	460285	03/14/2017
CPSC	CPSC Testing of Childrens Products and Jewelry	1115	04/30/2017
Pb	Environmental Lead (ELLAP)	410.01	04/30/2017
MD	State of Maryland (Drinking Water)	109	06/30/2017
WV	West Virginia	054	08/31/2017
Microbac Laboratories, Inc. - Richmond			
VA-R	Commonwealth of Virginia (NELAC) - Richmond	460022	06/14/2017

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CERTIFICATE OF ANALYSIS

Phase Separation	Project: General Wet Chem Analysis	Report: 17A1375
6630 Baltimore National Pike, Suite 103	Project Number: 31400390-5, WO # 17012529	Reported: 02/02/2017 10:06
Baltimore, MD 21228	Project Manager: Lynn Jackson	

Qualifiers/Notes and Definitions

General Definitions:

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

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Cooler Receipt Log

Cooler ID: Default Cooler **Cooler Temp:** 2.00°C **Work Order:** 17A1375

Custody Seals Intact:	Yes	COC/Containers Agree:	Yes
Containers Intact:	Yes	Correct Preservation:	Yes
Received On Ice:	Yes	Correct Number of Containers Received:	Yes
Radiation Scan Acceptable:	Yes	Sufficient Sample Volume for Testing:	Yes
COC Present:	Yes	Samples Received in Proper Condition:	Yes

Comments:

Chain of Custody Form for Subcontracted Analyses

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

For Questions or issues please contact: Amber Confer

W.O. No. : **17012529**
P.O. No. :
Project Number : 31400390-5
Report To LOD : No

Report Due On :02/01/17 05:00

Samples Transferred To:
Microbac - Baltimore
2101 Van Deman Street
Baltimore, MD 21224
Contacts : sales - Mike Arbaugh / PMs (when we d
Phone : 410-633-1800

Lab Sample ID	Field Sample ID	Date Sampled	Time Sampled	Matrix	Analyses Required	Method	Type of Container	Preservative
17012529-001	RW-1D	01/25/17	09:40	Water	MBAS Surfactants	SM5540C	500 ml HDPE	COOL
17012529-002	RW-3S	01/25/17	10:41	Water	MBAS Surfactants	SM5540C	500 ml HDPE	COOL
17012529-003	RW-2S	01/25/17	13:35	Water	MBAS Surfactants	SM5540C	500 ml HDPE	COOL
17012529-004	RW-1S	01/25/17	14:15	Water	MBAS Surfactants	SM5540C	500 ml HDPE	COOL

Data Deliverables Required: COA

Perform Q.C. on Sample :

Send Report Attn : reporting@phaseonline.com

Send InvoiceAttn : invoicing@phaseonline.com

Airbill No.: _____ Carrier : Microbac Courier

Condition Upon Receipt : _____

Comments : **Results are for Maryland VCP site.**

Samples Relinquished By : Barb Weber Date : 1/26/17 Time: 8:45 Samples Received By : _____

Samples Relinquished By: _____ Date : 1/26/17 Time 1410 Samples Received By: _____

Samples Relinquished By: _____ Date: _____ Time: _____ Samples Received By: _____

Received on ICE 2.0

17A1375

Cooler Receipt Form / Sample Acceptance & Noncompliance Form

Number of Coolers Received: 1
Client: Phase Separation
Form Completed By: [illegible]
Shipper: [illegible]

Receipt Date / Time: 01/26/17 1110
Work Order # 17A1375

☒ Microbac ☐ Client ☐ UPS ☐ FedEx

Custody Tape Intact:	YES / NO / NA
Containers Intact:	YES / NO
Sample Received on Ice or refrigerated:	YES / NO / NA
	Infrared (IR) Temperature: 2.0 °C
Chain of Custody Present with shipment:	YES / NO
Sample Bottle IDs agree with COC:	YES / NO
Preservation requirements met:	YES / NO / Not Checked
Correct Number of Containers / Sample Volume:	YES / NO (If No, contact client immediately)
Headspace in container:	YES / NO / NA
Type of Sample:	Water Soil Wipes Oil Filter Solid Sludge Food Swab Other_____

***Container Type / Quantity*:**

A - ___ Unpreserved ___ H2SO4 ___ HNO3 ___ HCl ___ NaOH ___ NaOH/Ascorbic Acid: If preserved pH <2___, pH >10___
B - 4 Unpreserved ___ H2SO4 ___ HNO3 ___ HCl ___ NaOH ___ NaOH/Ascorbic Acid If preserved pH <2___, pH >10___
C - ___ Unpreserved ___ H2SO4 ___ HNO3 ___ HCl ___ NaOH ___ NaOH/Ascorbic Acid If preserved pH <2___, pH >10___
D - ___ Unpreserved ___ H2SO4 ___ HNO3 ___ HCl ___ NaOH ___ NaOH/Ascorbic Acid If preserved pH <2___, pH >10___
E - ___ Unpreserved ___ H2SO4 ___ HNO3 ___ HCl ___ NaOH ___ NaOH/Ascorbic Acid If preserved pH <2___, pH >10___
H - ___ Unpreserved ___ H2SO4 ___ HNO3 ___ HCl ___ NaOH ___ NaOH/Ascorbic Acid If preserved pH <2___, pH >10___
K - ___ Unpreserved ___ H2SO4 ___ HNO3 ___ HCl ___ NaOH ___ NaOH/Ascorbic Acid If preserved pH <2___, pH >10___
L - ___ Unpreserved ___ H2SO4 ___ HNO3 ___ HCl ___ NaOH ___ NaOH/Ascorbic Acid If preserved pH <2___, pH >10___
M- ___ Unpreserved ___ H2SO4 ___ HNO3 ___ HCl ___ NaOH ___ NaOH/Ascorbic Acid If preserved pH <2___, pH >10___
P - ___ Unpreserved ___ H2SO4 ___ HNO3 ___ HCl ___ NaOH ___ NaOH/Ascorbic Acid If preserved pH <2___, pH >10___
W- ___ Unpreserved ___ H2SO4 ___ HNO3 ___ HCl ___ NaOH ___ NaOH/Ascorbic Acid If preserved pH <2___, pH >10___
V - ___ Unpreserved ___ HCl ___ HCl / Ascorbic Acid ___ HCl / NaTHIO **(Checked at time of Analysis)**
F - ___ Unpreserved ___ NaTHIO **(Checked at time of Analysis)**
S - ___ Unpreserved ___ NaTHIO **(Checked at time of Analysis)**
SN- ___ Unpreserved ___NaTHIO ___NaTHIO/EDTA **(Checked at time of Analysis)**

___ Unpreserved ___ H2SO4 ___ HNO3 ___ HCl ___ NaOH ___ NaOH/Ascorbic Acid If preserved pH <2___, pH >10___
___ Unpreserved ___ H2SO4 ___ HNO3 ___ HCl ___ NaOH ___ NaOH/Ascorbic Acid If preserved pH <2___, pH >10___
___ Unpreserved ___ H2SO4 ___ HNO3 ___ HCl ___ NaOH ___ NaOH/Ascorbic Acid If preserved pH <2___, pH >10___

Describe preservation requirements not met:

All Acid preserved <2 pH *NaOH preserved >12 pH* *All others >2 and <10 (usually 4-8)*

Sample ID:_____ H_2SO_4 HNO_3 NaOH _____ mls added
Sample ID:_____ H_2SO_4 HNO_3 NaOH _____ mls added
Sample ID:_____ H_2SO_4 HNO_3 NaOH _____ mls added
Sample ID:_____ H_2SO_4 HNO_3 NaOH _____ mls added

H_2SO_4 – Sulfuric Acid, HNO_3 – Nitric Acid, NaOH – Sodium Hydroxide, ASC – Ascorbic Acid, NaTHIO – Sodium Thiosulfate

Describe Anomalies:_____

Contact information / Summary of Actions:

Date / Time:_____ Contact:_____ Contact By:_____
Comments:_____

Case Narrative Summary

Client Name: WSP Environment & Energy - Herndon

Project Name: Former KopFlex Facility Site

Work Order Number(s): 17012529
Project ID: 31400390-5

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:

Received 3 sets of trip blanks in coolers with samples RW-1D, RW-2S, and RW-1S. Sample RW-3S received in a cooler without a trip blank.

17012529: Analyses associated with analyst code 4001 were performed by ALS Group USA, Corp. - PA - PA 22-00293 VA 460157

Analytical:

Total Organic Carbon

Batch: 139575
For samples 001, 002, 003, and 004; the result reported for the DOC analysis is higher than the result reported for the TOC analysis. The results reported are within the precision limits associated with the methods.

VCP Chlorinated Herbicides

Batch: 139433
Laboratory control sample and/or laboratory control sample duplicate (LCS/LCSD) exceedances identified; see LCS summary form. Exceedances meet marginal exceedance criteria.

VCP Semivolatile Organic Compounds (w/ TICs)

Batch: 139394
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.

Analytical Data Package Information Summary

Work Order(s): 17012529
Report Prepared For: WSP Environment & Energy - Herndon, Hern
Project Name: Recovery Well Sampling
Project Manager: Eric Johnson

Method	Client Sample Id	Analysis Type	Lab Sample Id	Analyst	Mtx	Prep Batch	Analytical Batch	Sampled	Prepared	Analyzed
SM20 5310B	RW-1D	Initial	17012529-001	4001	W	139575	139575	01/25/2017	01/30/2017 10:39	01/30/2017 10:39
	RW-3S	Initial	17012529-002	4001	W	139575	139575	01/25/2017	01/30/2017 10:39	01/30/2017 10:39
	RW-2S	Initial	17012529-003	4001	W	139575	139575	01/25/2017	01/30/2017 10:39	01/30/2017 10:39
	RW-1S	Initial	17012529-004	4001	W	139575	139575	01/25/2017	01/30/2017 10:39	01/30/2017 10:39
SM20 5310B	RW-1D	Initial	17012529-001	4001	W	139575	139575	01/25/2017	01/30/2017 10:39	01/30/2017 10:39
	RW-3S	Initial	17012529-002	4001	W	139575	139575	01/25/2017	01/30/2017 10:39	01/30/2017 10:39
	RW-2S	Initial	17012529-003	4001	W	139575	139575	01/25/2017	01/30/2017 10:39	01/30/2017 10:39
	RW-1S	Initial	17012529-004	4001	W	139575	139575	01/25/2017	01/30/2017 10:39	01/30/2017 10:39
SW-846 8015 C	RW-1D	Initial	17012529-001	1045	W	64543	139417	01/25/2017	01/26/2017 08:07	01/27/2017 14:04
	RW-3S	Initial	17012529-002	1045	W	64543	139417	01/25/2017	01/26/2017 08:07	01/27/2017 14:04
	RW-2S	Initial	17012529-003	1045	W	64543	139417	01/25/2017	01/26/2017 08:07	01/27/2017 14:29
	RW-1S	Initial	17012529-004	1045	W	64543	139417	01/25/2017	01/26/2017 08:07	01/27/2017 14:29
	64543-1-BKS	BKS	64543-1-BKS	1045	W	64543	139417	--------	01/26/2017 08:07	01/27/2017 11:10
	64543-1-BLK	BLK	64543-1-BLK	1045	W	64543	139417	--------	01/26/2017 08:07	01/27/2017 10:45
	64543-1-BSD	BSD	64543-1-BSD	1045	W	64543	139417	--------	01/26/2017 08:07	01/27/2017 11:34
	OF-015 S	MS	17012401-002 S	1045	W	64543	139417	01/23/2017	01/26/2017 08:07	01/27/2017 11:10
	OF-015 SD	MSD	17012401-002 SD	1045	W	64543	139417	01/23/2017	01/26/2017 08:07	01/27/2017 11:34
SW-846 8015C	RW-1D	Initial	17012529-001	1035	W	64613	139461	01/25/2017	01/30/2017 14:22	01/31/2017 14:24
	RW-3S	Initial	17012529-002	1035	W	64613	139461	01/25/2017	01/30/2017 14:22	01/31/2017 14:51
	RW-2S	Initial	17012529-003	1035	W	64613	139461	01/25/2017	01/30/2017 14:22	01/31/2017 15:18
	RW-1S	Initial	17012529-004	1035	W	64613	139461	01/25/2017	01/30/2017 14:22	01/31/2017 15:45
	64613-2-BKS	BKS	64613-2-BKS	1035	W	64613	139461	--------	01/30/2017 14:22	01/31/2017 17:59
	64613-2-BLK	BLK	64613-2-BLK	1035	W	64613	139461	--------	01/30/2017 14:22	01/30/2017 16:19
	MW-1 S	MS	17012601-001 S	1035	W	64613	139461	01/25/2017	01/30/2017 14:22	01/31/2017 16:12
	MW-1 SD	MSD	17012601-001 SD	1035	W	64613	139461	01/25/2017	01/30/2017 14:22	01/31/2017 16:38
SW-846 8081 B	RW-1D	Initial	17012529-001	1029	W	64572	139470	01/25/2017	01/27/2017 10:57	01/30/2017 20:57
	RW-3S	Initial	17012529-002	1029	W	64572	139470	01/25/2017	01/27/2017 10:57	01/30/2017 20:29

Analytical Data Package Information Summary

Work Order(s): 17012529
Report Prepared For: WSP Environment & Energy - Herndon, Hern
Project Name: Recovery Well Sampling
Project Manager: Eric Johnson

Method	Client Sample Id	Analysis Type	Lab Sample Id	Analyst	Mtx	Prep Batch	Analytical Batch	Sampled	Prepared	Analyzed
SW-846 8081 B	RW-2S	Initial	17012529-003	1029	W	64572	139470	01/25/2017	01/27/2017 10:57	01/30/2017 20:01
	RW-1S	Initial	17012529-004	1029	W	64572	139470	01/25/2017	01/27/2017 10:57	01/30/2017 19:33
	64572-1-BKS	BKS	64572-1-BKS	1029	W	64572	139470	--------	01/27/2017 10:57	01/30/2017 12:59
	64572-1-BLK	BLK	64572-1-BLK	1029	W	64572	139470	--------	01/27/2017 10:57	01/30/2017 12:32
	64572-1-BSD	BSD	64572-1-BSD	1029	W	64572	139470	--------	01/27/2017 10:57	01/30/2017 13:27
SW-846 8151 A	RW-1D	Initial	17012529-001	1029	W	64555	139433	01/25/2017	01/26/2017 11:11	01/27/2017 12:31
	RW-3S	Initial	17012529-002	1029	W	64555	139433	01/25/2017	01/26/2017 11:11	01/27/2017 13:04
	RW-2S	Initial	17012529-003	1029	W	64555	139433	01/25/2017	01/26/2017 11:11	01/27/2017 14:11
	RW-1S	Initial	17012529-004	1029	W	64555	139433	01/25/2017	01/26/2017 11:11	01/27/2017 13:37
	64555-1-BKS	BKS	64555-1-BKS	1029	W	64555	139433	--------	01/26/2017 11:11	01/27/2017 10:18
	64555-1-BLK	BLK	64555-1-BLK	1029	W	64555	139433	--------	01/26/2017 11:11	01/27/2017 09:45
	64555-1-BSD	BSD	64555-1-BSD	1029	W	64555	139433	--------	01/26/2017 11:11	01/27/2017 10:51
SW-846 8260 B	RW-1D	Initial	17012529-001	1011	W	64570	139388	01/25/2017	01/26/2017 08:33	01/26/2017 16:54
	RW-3S	Initial	17012529-002	1011	W	64570	139388	01/25/2017	01/26/2017 08:33	01/26/2017 17:14
	RW-2S	Initial	17012529-003	1011	W	64570	139388	01/25/2017	01/26/2017 08:33	01/26/2017 17:35
	RW-1S	Initial	17012529-004	1011	W	64570	139388	01/25/2017	01/26/2017 08:33	01/26/2017 17:56
	RW-1D Trip Blanks	Initial	17012529-005	1011	W	64570	139388	01/25/2017	01/26/2017 08:33	01/26/2017 15:51
	RW-2S Trip Blanks	Initial	17012529-006	1011	W	64570	139388	01/25/2017	01/26/2017 08:33	01/26/2017 16:12
	RW-1S Trip Blanks	Initial	17012529-007	1011	W	64570	139388	01/25/2017	01/26/2017 08:33	01/26/2017 16:33
	64570-1-BKS	BKS	64570-1-BKS	1011	W	64570	139388	--------	01/26/2017 08:33	01/26/2017 09:47
	64570-1-BLK	BLK	64570-1-BLK	1011	W	64570	139388	--------	01/26/2017 08:33	01/26/2017 10:42
	RW-2D S	MS	17012320-002 S	1011	W	64570	139388	01/23/2017	01/26/2017 08:33	01/26/2017 14:46
	RW-2 SD	MSD	17012320-002 SD	1011	W	64570	139388	01/23/2017	01/26/2017 08:33	01/26/2017 15:07
	64589-1-BKS	BKS	64589-1-BKS	1011	W	64589	139421	--------	01/27/2017 08:48	01/27/2017 10:02
	64589-1-BLK	BLK	64589-1-BLK	1011	W	64589	139421	--------	01/27/2017 08:48	01/27/2017 10:57
	MW-1 S	MS	17012601-001 S	1011	W	64589	139421	01/25/2017	01/27/2017 08:48	01/27/2017 13:11
	MW-1 SD	MSD	17012601-001 SD	1011	W	64589	139421	01/25/2017	01/27/2017 08:48	01/27/2017 13:34
	RW-2S	Reanalysis	17012529-003	1011	W	64570	139421	01/25/2017	01/26/2017 08:33	01/27/2017 14:41

Analytical Data Package Information Summary

Work Order(s): **17012529**
Report Prepared For: WSP Environment & Energy - Herndon, Hern
Project Name: Recovery Well Sampling
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	RW-1S	Reanalysis	17012529-004	1011	W	64570	139421	01/25/2017	01/26/2017 08:33	01/27/2017 15:02
SW-846 8270 C	RW-1D	Initial	17012529-001	1055	W	64558	139394	01/25/2017	01/26/2017 13:17	01/26/2017 18:10
	RW-3S	Initial	17012529-002	1055	W	64558	139394	01/25/2017	01/26/2017 13:17	01/26/2017 18:38
	RW-2S	Initial	17012529-003	1055	W	64558	139394	01/25/2017	01/26/2017 13:17	01/26/2017 19:06
	RW-1S	Initial	17012529-004	1055	W	64558	139394	01/25/2017	01/26/2017 13:17	01/26/2017 19:35
	64558-1-BKS	BKS	64558-1-BKS	1055	W	64558	139394	--------	01/26/2017 13:17	01/26/2017 15:22
	64558-1-BLK	BLK	64558-1-BLK	1055	W	64558	139394	--------	01/26/2017 13:17	01/26/2017 14:54
	64558-1-BSD	BSD	64558-1-BSD	1055	W	64558	139394	--------	01/26/2017 13:17	01/26/2017 15:50

PHASE SEPARATION SCIENCE, INC.

QC Summary 17012529

WSP Environment & Energy - Herndon
Former KopFlex Facility Site

Analytical Method: SW-846 8151 A Prep Method: SW8151A_PREP
Seq Number: 139433 Matrix: Water Date Prep: 01/26/2017
PSS Sample ID: 17012529-001

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
2,4-Dichlorophenylacetic Acid	65		64-126	%	01/27/17 12:31

Analytical Method: SW-846 8081 B Prep Method: SW3510C
Seq Number: 139470 Matrix: Water Date Prep: 01/27/2017
PSS Sample ID: 17012529-001

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
Decachlorobiphenyl	99		43-150	%	01/30/17 20:57
Tetrachloro-m-xylene	53		40-126	%	01/30/17 20:57

Analytical Method: SW-846 8270 C Prep Method: SW3510C
Seq Number: 139394 Matrix: Water Date Prep: 01/26/2017
PSS Sample ID: 17012529-001

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
2-Fluorobiphenyl	90		35-107	%	01/26/17 18:10
2-Fluorophenol	73		32-106	%	01/26/17 18:10
Nitrobenzene-d5	78		34-123	%	01/26/17 18:10
Phenol-d6	72		36-111	%	01/26/17 18:10
Terphenyl-D14	107		43-143	%	01/26/17 18:10
2,4,6-Tribromophenol	94		26-122	%	01/26/17 18:10

Analytical Method: SW-846 8015 C Prep Method: SW3510C
Seq Number: 139417 Matrix: Water Date Prep: 01/26/2017
PSS Sample ID: 17012529-001

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
o-Terphenyl	86		46-111	%	01/27/17 14:04

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 139388 Matrix: Water Date Prep: 01/26/2017
PSS Sample ID: 17012529-001

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	103		86-111	%	01/26/17 16:54
Dibromofluoromethane	104		91-119	%	01/26/17 16:54
Toluene-D8	99		90-117	%	01/26/17 16:54

PHASE SEPARATION SCIENCE, INC.

QC Summary 17012529

WSP Environment & Energy - Herndon
Former KopFlex Facility Site

Analytical Method: SW-846 8015C Prep Method: SW5030B
Seq Number: 139461 Matrix: Water Date Prep: 01/30/2017
PSS Sample ID: 17012529-001

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
a,a,a-Trifluorotoluene	80		55-114	%	01/31/17 14:24

Analytical Method: SW-846 8151 A Prep Method: SW8151A_PREP
Seq Number: 139433 Matrix: Water Date Prep: 01/26/2017
PSS Sample ID: 17012529-002

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
2,4-Dichlorophenylacetic Acid	87		64-126	%	01/27/17 13:04

Analytical Method: SW-846 8081 B Prep Method: SW3510C
Seq Number: 139470 Matrix: Water Date Prep: 01/27/2017
PSS Sample ID: 17012529-002

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
Decachlorobiphenyl	101		43-150	%	01/30/17 20:29
Tetrachloro-m-xylene	59		40-126	%	01/30/17 20:29

Analytical Method: SW-846 8270 C Prep Method: SW3510C
Seq Number: 139394 Matrix: Water Date Prep: 01/26/2017
PSS Sample ID: 17012529-002

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
2-Fluorobiphenyl	94		35-107	%	01/26/17 18:38
2-Fluorophenol	76		32-106	%	01/26/17 18:38
Nitrobenzene-d5	78		34-123	%	01/26/17 18:38
Phenol-d6	75		36-111	%	01/26/17 18:38
Terphenyl-D14	107		43-143	%	01/26/17 18:38
2,4,6-Tribromophenol	98		26-122	%	01/26/17 18:38

Analytical Method: SW-846 8015 C Prep Method: SW3510C
Seq Number: 139417 Matrix: Water Date Prep: 01/26/2017
PSS Sample ID: 17012529-002

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
o-Terphenyl	86		46-111	%	01/27/17 14:04

PHASE SEPARATION SCIENCE, INC.

QC Summary 17012529

WSP Environment & Energy - Herndon
Former KopFlex Facility Site

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 139388 Matrix: Water Date Prep: 01/26/2017
PSS Sample ID: 17012529-002

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	103		86-111	%	01/26/17 17:14
Dibromofluoromethane	105		91-119	%	01/26/17 17:14
Toluene-D8	99		90-117	%	01/26/17 17:14

Analytical Method: SW-846 8015C Prep Method: SW5030B
Seq Number: 139461 Matrix: Water Date Prep: 01/30/2017
PSS Sample ID: 17012529-002

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
a,a,a-Trifluorotoluene	78		55-114	%	01/31/17 14:51

Analytical Method: SW-846 8151 A Prep Method: SW8151A_PREP
Seq Number: 139433 Matrix: Water Date Prep: 01/26/2017
PSS Sample ID: 17012529-003

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
2,4-Dichlorophenylacetic Acid	92		64-126	%	01/27/17 14:11

Analytical Method: SW-846 8081 B Prep Method: SW3510C
Seq Number: 139470 Matrix: Water Date Prep: 01/27/2017
PSS Sample ID: 17012529-003

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
Decachlorobiphenyl	125		43-150	%	01/30/17 20:01
Tetrachloro-m-xylene	114		40-126	%	01/30/17 20:01

Analytical Method: SW-846 8270 C Prep Method: SW3510C
Seq Number: 139394 Matrix: Water Date Prep: 01/26/2017
PSS Sample ID: 17012529-003

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
2-Fluorobiphenyl	101		35-107	%	01/26/17 19:06
2-Fluorophenol	82		32-106	%	01/26/17 19:06
Nitrobenzene-d5	83		34-123	%	01/26/17 19:06
Phenol-d6	80		36-111	%	01/26/17 19:06
Terphenyl-D14	114		43-143	%	01/26/17 19:06
2,4,6-Tribromophenol	109		26-122	%	01/26/17 19:06

PHASE SEPARATION SCIENCE, INC.

QC Summary 17012529

WSP Environment & Energy - Herndon
Former KopFlex Facility Site

Analytical Method: SW-846 8015 C Prep Method: SW3510C
Seq Number: 139417 Matrix: Water Date Prep: 01/26/2017
PSS Sample ID: 17012529-003

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
o-Terphenyl	82		46-111	%	01/27/17 14:29

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 139388 Matrix: Water Date Prep: 01/26/2017
PSS Sample ID: 17012529-003

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	103		86-111	%	01/26/17 17:35
Dibromofluoromethane	107		91-119	%	01/26/17 17:35
Toluene-D8	98		90-117	%	01/26/17 17:35

Analytical Method: SW-846 8015C Prep Method: SW5030B
Seq Number: 139461 Matrix: Water Date Prep: 01/30/2017
PSS Sample ID: 17012529-003

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
a,a,a-Trifluorotoluene	92		55-114	%	01/31/17 15:18

Analytical Method: SW-846 8151 A Prep Method: SW8151A_PREP
Seq Number: 139433 Matrix: Water Date Prep: 01/26/2017
PSS Sample ID: 17012529-004

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
2,4-Dichlorophenylacetic Acid	75		64-126	%	01/27/17 13:37

Analytical Method: SW-846 8081 B Prep Method: SW3510C
Seq Number: 139470 Matrix: Water Date Prep: 01/27/2017
PSS Sample ID: 17012529-004

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
Decachlorobiphenyl	141		43-150	%	01/30/17 19:33
Tetrachloro-m-xylene	81		40-126	%	01/30/17 19:33

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Analytical Method: SW-846 8270 C Prep Method: SW3510C
Seq Number: 139394 Matrix: Water Date Prep: 01/26/2017
PSS Sample ID: 17012529-004

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
2-Fluorobiphenyl	92		35-107	%	01/26/17 19:35
2-Fluorophenol	73		32-106	%	01/26/17 19:35
Nitrobenzene-d5	77		34-123	%	01/26/17 19:35
Phenol-d6	73		36-111	%	01/26/17 19:35
Terphenyl-D14	109		43-143	%	01/26/17 19:35
2,4,6-Tribromophenol	101		26-122	%	01/26/17 19:35

Analytical Method: SW-846 8015 C Prep Method: SW3510C
Seq Number: 139417 Matrix: Water Date Prep: 01/26/2017
PSS Sample ID: 17012529-004

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
o-Terphenyl	86		46-111	%	01/27/17 14:29

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 139388 Matrix: Water Date Prep: 01/26/2017
PSS Sample ID: 17012529-004

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	103		86-111	%	01/26/17 17:56
Dibromofluoromethane	102		91-119	%	01/26/17 17:56
Toluene-D8	99		90-117	%	01/26/17 17:56

Analytical Method: SW-846 8015C Prep Method: SW5030B
Seq Number: 139461 Matrix: Water Date Prep: 01/30/2017
PSS Sample ID: 17012529-004

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
a,a,a-Trifluorotoluene	90		55-114	%	01/31/17 15:45

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 139388 Matrix: Water Date Prep: 01/26/2017
PSS Sample ID: 17012529-005

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	101		86-111	%	01/26/17 15:51
Dibromofluoromethane	109		91-119	%	01/26/17 15:51
Toluene-D8	102		90-117	%	01/26/17 15:51

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Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 139388 Matrix: Water Date Prep: 01/26/2017
PSS Sample ID: 17012529-006

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	101		86-111	%	01/26/17 16:12
Dibromofluoromethane	104		91-119	%	01/26/17 16:12
Toluene-D8	99		90-117	%	01/26/17 16:12

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 139388 Matrix: Water Date Prep: 01/26/2017
PSS Sample ID: 17012529-007

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	103		86-111	%	01/26/17 16:33
Dibromofluoromethane	102		91-119	%	01/26/17 16:33
Toluene-D8	98		90-117	%	01/26/17 16:33

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

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QC Summary 17012529

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Analytical Method: SW-846 8081 B Prep Method: SW3510C
Seq Number: 139470 Matrix: Water Date Prep: 01/27/17
MB Sample Id: 64572-1-BLK LCS Sample Id: 64572-1-BKS LCSD Sample Id: 64572-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
alpha-BHC	<0.04000	0.2000	0.1778	89	0.1662	83	57-118	7	20	ug/L	01/30/17 12:59	
gamma-BHC (Lindane)	<0.04000	0.2000	0.1820	91	0.1701	85	57-120	7	20	ug/L	01/30/17 12:59	
beta-BHC	<0.04000	0.2000	0.1795	90	0.1675	84	56-113	7	20	ug/L	01/30/17 12:59	
delta-BHC	<0.04000	0.2000	0.1789	89	0.1682	84	48-125	6	20	ug/L	01/30/17 12:59	
Heptachlor	<0.04000	0.2000	0.1925	96	0.1657	83	49-127	15	20	ug/L	01/30/17 12:59	
Aldrin	<0.04000	0.2000	0.1860	93	0.1746	87	57-119	6	20	ug/L	01/30/17 12:59	
Heptachlor epoxide	<0.04000	0.2000	0.1950	98	0.1814	91	62-116	7	20	ug/L	01/30/17 12:59	
gamma-Chlordane	<0.04000	0.2000	0.1975	99	0.1849	92	59-116	7	20	ug/L	01/30/17 12:59	
alpha-Chlordane	<0.04000	0.2000	0.1972	99	0.1846	92	68-109	7	20	ug/L	01/30/17 12:59	
4,4-DDE	<0.04000	0.2000	0.2067	103	0.1936	97	49-122	7	20	ug/L	01/30/17 12:59	
Endosulfan I	<0.04000	0.2000	0.1993	100	0.1871	94	71-108	6	20	ug/L	01/30/17 12:59	
Dieldrin	<0.04000	0.2000	0.2023	101	0.1881	94	60-117	7	20	ug/L	01/30/17 12:59	
Endrin	<0.04000	0.2000	0.1762	88	0.1609	80	48-132	9	20	ug/L	01/30/17 12:59	
4,4-DDD	<0.04000	0.2000	0.2079	104	0.1997	100	48-128	4	20	ug/L	01/30/17 12:59	
Endosulfan II	<0.04000	0.2000	0.2207	110	0.2091	105	59-118	5	20	ug/L	01/30/17 12:59	
4,4-DDT	<0.04000	0.2000	0.2397	120	0.2020	101	29-147	17	20	ug/L	01/30/17 12:59	
Endrin aldehyde	<0.04000	0.2000	0.2233	112	0.2100	105	54-122	6	20	ug/L	01/30/17 12:59	
Methoxychlor	<0.04000	0.2000	0.2511	126	0.2129	106	26-156	16	20	ug/L	01/30/17 12:59	
Endosulfan sulfate	<0.04000	0.2000	0.2123	106	0.1979	99	57-130	7	20	ug/L	01/30/17 12:59	
Endrin ketone	<0.04000	0.2000	0.2245	112	0.2121	106	55-123	6	20	ug/L	01/30/17 12:59	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	LCSD Result	LCSD Flag	Limits	Units	Analysis Date
Decachlorobiphenyl	113		137		133		43-150	%	01/30/17 12:59
Tetrachloro-m-xylene	70		79		78		40-126	%	01/30/17 12:59

Analytical Method: SW-846 8151 A Prep Method: SW8151A_PREP
Seq Number: 139433 Matrix: Water Date Prep: 01/26/17
MB Sample Id: 64555-1-BLK LCS Sample Id: 64555-1-BKS LCSD Sample Id: 64555-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Dalapon	<4.550	13.65	8.859	65	8.066	59	33-127	9	20	ug/L	01/27/17 10:18	
2,4-D	<1.880	5.640	5.360	95	6.295	112	70-104	16	20	ug/L	01/27/17 10:18	H
2,4,5-TP (Silvex)	<0.1900	0.5700	0.5225	92	0.6071	107	59-122	15	20	ug/L	01/27/17 10:18	
Dinoseb	<0.9500	2.850	2.252	79	2.504	88	48-110	11	20	ug/L	01/27/17 10:18	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	LCSD Result	LCSD Flag	Limits	Units	Analysis Date
2,4-Dichlorophenylacetic Acid	97		92		95		64-126	%	01/27/17 10:18

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Analytical Method: SW-846 8015 C Prep Method: SW3510C
Seq Number: 139417 Matrix: Water Date Prep: 01/26/17
MB Sample Id: 64543-1-BLK LCS Sample Id: 64543-1-BKS LCSD Sample Id: 64543-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
TPH-DRO (Diesel Range Organics)	<0.1000	1.000	0.7392	74	0.7797	78	41-123	5	20	mg/L	01/27/17 11:10	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	LCSD Result	LCSD Flag	Limits	Units	Analysis Date
o-Terphenyl	80		69		72		46-111	%	01/27/17 11:10

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QC Summary 17012529

WSP Environment & Energy - Herndon
Former KopFlex Facility Site

Analytical Method: SW-846 8270 C Prep Method: SW3510C
Seq Number: 139394 Matrix: Water Date Prep: 01/26/17
MB Sample Id: 64558-1-BLK LCS Sample Id: 64558-1-BKS LCSD Sample Id: 64558-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Acenaphthene	<0.5000	40.00	41.17	103	44.03	110	67-110	7	20	ug/L	01/26/17 15:22	
Acenaphthylene	<0.5000	40.00	41.22	103	44.07	110	69-106	7	20	ug/L	01/26/17 15:22	H
Anthracene	<0.5000	40.00	37.74	94	40.96	102	79-108	8	20	ug/L	01/26/17 15:22	
Benzo(a)anthracene	<0.5000	40.00	38.28	96	41.19	103	76-109	7	20	ug/L	01/26/17 15:22	
Benzo(a)pyrene	<0.5000	40.00	35.01	88	38.05	95	76-114	8	20	ug/L	01/26/17 15:22	
Benzo(b)fluoranthene	<0.5000	40.00	34.39	86	36.85	92	67-121	7	20	ug/L	01/26/17 15:22	
Benzo(g,h,i)perylene	<0.5000	40.00	34.42	86	39.33	98	75-107	13	20	ug/L	01/26/17 15:22	
Benzo(k)fluoranthene	<0.5000	40.00	35.51	89	38.00	95	62-132	7	20	ug/L	01/26/17 15:22	
bis(2-chloroethyl) ether	<5.000	40.00	30.20	76	32.51	81	62-103	7	20	ug/L	01/26/17 15:22	
bis(2-chloroisopropyl) ether	<5.000	40.00	32.93	82	34.57	86	50-103	5	20	ug/L	01/26/17 15:22	
bis(2-ethylhexyl) phthalate	<5.000	40.00	40.48	101	43.43	109	78-114	7	20	ug/L	01/26/17 15:22	
Di-n-butyl phthalate	<5.000	40.00	39.62	99	43.60	109	71-115	10	20	ug/L	01/26/17 15:22	
Carbazole	<5.000	40.00	40.02	100	42.97	107	52-134	7	20	ug/L	01/26/17 15:22	
4-Chloroaniline	<5.000	40.00	30.89	77	33.49	84	54-103	8	20	ug/L	01/26/17 15:22	
2-Chloronaphthalene	<5.000	40.00	43.47	109	45.31	113	66-105	4	20	ug/L	01/26/17 15:22	H
2-Chlorophenol	<5.000	40.00	31.83	80	33.48	84	63-109	5	20	ug/L	01/26/17 15:22	
Chrysene	<0.5000	40.00	38.66	97	41.00	103	78-111	6	20	ug/L	01/26/17 15:22	
Dibenz(a,h)anthracene	<0.5000	40.00	36.54	91	41.41	104	76-106	12	20	ug/L	01/26/17 15:22	
Dibenzofuran	<5.000	40.00	40.99	102	43.13	108	70-111	5	20	ug/L	01/26/17 15:22	
1,2'-Dichlorobenzene	<5.000	40.00	33.99	85	36.30	91	64-108	7	20	ug/L	01/26/17 15:22	
1,3'-Dichlorobenzene	<5.000	40.00	33.43	84	35.28	88	62-104	5	20	ug/L	01/26/17 15:22	
1,4-Dichlorobenzene	<5.000	40.00	33.41	84	34.94	87	63-108	4	20	ug/L	01/26/17 15:22	
3,3-Dichlorobenzidine	<5.000	40.00	50.11	125	54.43	136	79-132	8	20	ug/L	01/26/17 15:22	H
2,4-Dichlorophenol	<5.000	40.00	32.17	80	33.97	85	65-118	5	20	ug/L	01/26/17 15:22	
Diethyl phthalate	<5.000	40.00	45.05	113	47.77	119	60-114	6	20	ug/L	01/26/17 15:22	H
2,4-Dimethylphenol	<5.000	40.00	35.02	88	37.36	93	60-119	6	20	ug/L	01/26/17 15:22	
2,4-Dinitrophenol	<10.00	40.00	38.77	97	42.65	107	36-136	10	20	ug/L	01/26/17 15:22	
2,4-Dinitrotoluene	<5.000	40.00	43.36	108	46.48	116	70-119	7	20	ug/L	01/26/17 15:22	
2,6-Dinitrotoluene	<5.000	40.00	40.90	102	44.57	111	68-117	9	20	ug/L	01/26/17 15:22	
Fluoranthene	<0.5000	40.00	40.47	101	43.99	110	79-112	8	20	ug/L	01/26/17 15:22	
Fluorene	<0.5000	40.00	41.80	105	43.93	110	71-109	5	20	ug/L	01/26/17 15:22	H
Hexachlorobenzene	<5.000	40.00	40.61	102	43.76	109	76-110	7	20	ug/L	01/26/17 15:22	
Hexachlorobutadiene	<5.000	40.00	37.45	94	39.71	99	64-113	6	20	ug/L	01/26/17 15:22	
Hexachlorocyclopentadiene	<5.000	40.00	60.52	151	63.07	158	49-124	4	20	ug/L	01/26/17 15:22	H
Hexachloroethane	<5.000	40.00	34.49	86	36.96	92	62-105	7	20	ug/L	01/26/17 15:22	
Indeno(1,2,3-c,d)Pyrene	<0.5000	40.00	36.61	92	41.37	103	69-120	12	20	ug/L	01/26/17 15:22	
Isophorone	<5.000	40.00	33.65	84	36.90	92	68-108	9	20	ug/L	01/26/17 15:22	
2-Methylnaphthalene	<0.5000	40.00	32.62	82	34.79	87	64-117	6	20	ug/L	01/26/17 15:22	
2-Methylphenol	<5.000	40.00	31.05	78	33.14	83	67-111	7	20	ug/L	01/26/17 15:22	
3&4-Methylphenol	<5.000	40.00	31.17	78	33.57	84	67-107	7	20	ug/L	01/26/17 15:22	
Naphthalene	<0.5000	40.00	32.49	81	34.46	86	65-103	6	20	ug/L	01/26/17 15:22	
Nitrobenzene	<5.000	40.00	32.42	81	34.04	85	60-107	5	20	ug/L	01/26/17 15:22	
N-Nitrosodi-n-propyl amine	<5.000	40.00	32.04	80	35.21	88	60-98	9	20	ug/L	01/26/17 15:22	
N-Nitrosodiphenylamine	<5.000	40.00	35.56	89	38.62	97	68-106	8	20	ug/L	01/26/17 15:22	
Pentachlorophenol	<5.000	40.00	38.73	97	42.36	106	63-119	9	20	ug/L	01/26/17 15:22	
Phenanthrene	<0.5000	40.00	36.67	92	40.04	100	73-109	9	20	ug/L	01/26/17 15:22	
Phenol	<5.000	40.00	30.40	76	32.51	81	65-110	7	20	ug/L	01/26/17 15:22	
Pyrene	<0.5000	40.00	35.09	88	37.52	94	78-111	7	20	ug/L	01/26/17 15:22	
1,2,4-Trichlorobenzene	<5.000	40.00	33.01	83	34.61	87	67-108	5	20	ug/L	01/26/17 15:22	
2,4,5-Trichlorophenol	<5.000	40.00	39.90	100	42.86	107	69-114	7	20	ug/L	01/26/17 15:22	
2,4,6-Trichlorophenol	<5.000	40.00	38.92	97	40.84	102	68-118	5	20	ug/L	01/26/17 15:22	

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Analytical Method: SW-846 8270 C Prep Method: SW3510C
Seq Number: 139394 Matrix: Water Date Prep: 01/26/17
MB Sample Id: 64558-1-BLK LCS Sample Id: 64558-1-BKS LCSD Sample Id: 64558-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Bis(2-ethylhexyl)adipate	<5.000	40.00	35.53	89	38.15	95	78-116	7	20	ug/L	01/26/17 15:22	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	LCSD Result	LCSD Flag	Limits	Units	Analysis Date
2-Fluorobiphenyl	105		102		101		35-107	%	01/26/17 15:22
2-Fluorophenol	92		85		83		32-106	%	01/26/17 15:22
Nitrobenzene-d5	89		86		85		34-123	%	01/26/17 15:22
Phenol-d6	86		84		83		36-111	%	01/26/17 15:22
Terphenyl-D14	114		107		108		43-143	%	01/26/17 15:22
2,4,6-Tribromophenol	97		122		119		26-122	%	01/26/17 15:22

Analytical Method: SW-846 8015C Prep Method: SW5030B
Seq Number: 139461 Matrix: Water Date Prep: 01/30/17
MB Sample Id: 64613-2-BLK LCS Sample Id: 64613-2-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
TPH-GRO (Gasoline Range Organics	<100	5000	5177	104	74-132	ug/L	01/31/17 17:59	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	Limits	Units	Analysis Date
a,a,a-Trifluorotoluene	78		89		55-114	%	01/31/17 17:59

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QC Summary 17012529

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Former KopFlex Facility Site

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

Seq Number: 139388 Matrix: Water Date Prep: 01/26/17

MB Sample Id: 64570-1-BLK LCS Sample Id: 64570-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Acetone	<10.00	50.00	52.75	106	29-149	ug/L	01/26/17 09:47	
Benzene	<1.000	50.00	50.70	101	85-123	ug/L	01/26/17 09:47	
Bromodichloromethane	<1.000	50.00	54.77	110	88-133	ug/L	01/26/17 09:47	
Bromoform	<5.000	50.00	47.69	95	80-126	ug/L	01/26/17 09:47	
Bromomethane	<1.000	50.00	56.58	113	64-139	ug/L	01/26/17 09:47	
2-Butanone (MEK)	<10.00	50.00	50.98	102	39-135	ug/L	01/26/17 09:47	
n-Butylbenzene	<1.000	50.00	52.44	105	68-133	ug/L	01/26/17 09:47	
Carbon Disulfide	<10.00	50.00	51.39	103	85-124	ug/L	01/26/17 09:47	
Carbon tetrachloride	<1.000	50.00	52.62	105	81-138	ug/L	01/26/17 09:47	
Chlorobenzene	<1.000	50.00	51.16	102	85-120	ug/L	01/26/17 09:47	
Chloroethane	<1.000	50.00	53.77	108	75-129	ug/L	01/26/17 09:47	
Chloroform	<1.000	50.00	51.64	103	85-128	ug/L	01/26/17 09:47	
Chloromethane	<1.000	50.00	52.87	106	60-139	ug/L	01/26/17 09:47	
1,2-Dibromo-3-chloropropane	<10.00	50.00	44.72	89	69-127	ug/L	01/26/17 09:47	
Dibromochloromethane	<1.000	50.00	51.57	103	82-127	ug/L	01/26/17 09:47	
1,2-Dibromoethane	<1.000	50.00	53.31	107	82-121	ug/L	01/26/17 09:47	
1,1-Dichloroethane	<1.000	50.00	55.33	111	83-123	ug/L	01/26/17 09:47	
1,2-Dichloroethane	<1.000	50.00	57.62	115	86-138	ug/L	01/26/17 09:47	
1,1-Dichloroethene	<1.000	50.00	55.03	110	85-127	ug/L	01/26/17 09:47	
cis-1,2-Dichloroethene	<1.000	50.00	52.28	105	87-127	ug/L	01/26/17 09:47	
1,2-Dichloropropane	<1.000	50.00	53.74	107	79-125	ug/L	01/26/17 09:47	
cis-1,3-Dichloropropene	<1.000	50.00	52.02	104	79-131	ug/L	01/26/17 09:47	
trans-1,3-Dichloropropene	<1.000	50.00	52.05	104	82-133	ug/L	01/26/17 09:47	
trans-1,2-Dichloroethene	<1.000	50.00	54.18	108	85-125	ug/L	01/26/17 09:47	
Ethylbenzene	<1.000	50.00	49.34	99	83-123	ug/L	01/26/17 09:47	
Isopropylbenzene	<1.000	50.00	50.62	101	70-131	ug/L	01/26/17 09:47	
Methylene chloride	<1.000	50.00	53.78	108	86-124	ug/L	01/26/17 09:47	
4-Methyl-2-Pentanone (MIBK)	<5.000	50.00	52.78	106	39-143	ug/L	01/26/17 09:47	
Methyl-t-Butyl Ether	<1.000	50.00	51.44	103	75-134	ug/L	01/26/17 09:47	
n-Propylbenzene	<1.000	50.00	51.31	103	78-127	ug/L	01/26/17 09:47	
Styrene	<1.000	50.00	50.83	102	80-120	ug/L	01/26/17 09:47	
1,1,2,2-Tetrachloroethane	<1.000	50.00	51.76	104	64-125	ug/L	01/26/17 09:47	
Tetrachloroethene	<1.000	50.00	52.23	104	83-138	ug/L	01/26/17 09:47	
Toluene	<1.000	50.00	52.17	104	88-126	ug/L	01/26/17 09:47	
1,1,1-Trichloroethane	<1.000	50.00	53.62	107	68-146	ug/L	01/26/17 09:47	
1,1,2-Trichloroethane	<1.000	50.00	55.06	110	85-124	ug/L	01/26/17 09:47	
Trichloroethene	<1.000	50.00	53.75	108	87-127	ug/L	01/26/17 09:47	
1,2,4-Trimethylbenzene	<1.000	50.00	51.54	103	73-130	ug/L	01/26/17 09:47	
1,3,5-Trimethylbenzene	<1.000	50.00	50.57	101	72-131	ug/L	01/26/17 09:47	
Vinyl chloride	<1.000	50.00	66.25	133	74-138	ug/L	01/26/17 09:47	
m&p-Xylene	<2.000	100	102.7	103	84-124	ug/L	01/26/17 09:47	
o-Xylene	<1.000	50.00	50.83	102	79-126	ug/L	01/26/17 09:47	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	103		104		86-111	%	01/26/17 09:47
Dibromofluoromethane	102		108		91-119	%	01/26/17 09:47
Toluene-D8	98		102		90-117	%	01/26/17 09:47

PHASE SEPARATION SCIENCE, INC.

QC Summary 17012529

WSP Environment & Energy - Herndon
Former KopFlex Facility Site

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

Seq Number: 139421 Matrix: Water Date Prep: 01/27/17

MB Sample Id: 64589-1-BLK LCS Sample Id: 64589-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
1,1-Dichloroethane	<1.000	50.00	48.58	97	83-123	ug/L	01/27/17 10:02	
1,1-Dichloroethene	<1.000	50.00	48.32	97	85-127	ug/L	01/27/17 10:02	
1,1,1-Trichloroethane	<1.000	50.00	47.19	94	68-146	ug/L	01/27/17 10:02	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	103		103		86-111	%	01/27/17 10:02
Dibromofluoromethane	107		108		91-119	%	01/27/17 10:02
Toluene-D8	97		100		90-117	%	01/27/17 10:02

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 17612529

No. 004510 WSP | PARSONS BRINCKERHOFF

WSP | Parsons Brinckerhoff Office Address	13530 Dulles Technology Dr. Suite 300 Herndon, VA 20171
Project Name	Former Kuflex Faulby Site
WSP | Parsons Brinckerhoff Contact Name	Eric Johnson
Project Location	Hanover, MD
WSP | Parsons Brinckerhoff Contact E-mail	Eric.Johnson@wspgroup.com
Project Number & Task	31400390-5
WSP | Parsons Brinckerhoff Contact Phone	703-709-6500
Sampler(s) Name(s)	Matt Richardson, Rob Wallace
Sampler(s) Signature(s)	
Laboratory Name & Location	PHASE, Baltimore MD
Laboratory Project Manager	Amber Confer
Requested Turn-Around-Time	☐ Standard ☐ 24 HR ☐ 48 HR ☐ 72 HR ☐ ___ HR 5 DAY

Sample Identification	Matrix	Collection Start* Date	Collection Start* Time	Collection Stop* Date	Collection Stop* Time	Number of Containers	VOCs 8260B	SVOCs 8270C	MBAS Surfactants 5540C	TPH-GRO 8015C	TPH-DRO 8015C	Pesticides 8081B	Herbicides 8151A	TOC 5310B	Field Filtered DOC 5310B	Sample Comments
RW-1D	Ag	1/25	0940			15	X	X	X	X	X	X	X	X	X	
RW-3S	Ag	1/25	1041			15	X	X	X	X	X	X	X	X	X	
RW-2S	Ag	1/25	1335			15	X	X	X	X	X	X	X	X	X	
RW-1S	Ag	1/25	1415			15	X	X	X	X	X	X	X	X	X	
Trip Blank	Ag					3	X									Lab Prepared

# of Coolers: 4
Custody Seal: ABS
Ice Present: PRES Temp: 1-6°C
Shipping Carrier: Client

Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Shipment Method	Tracking Number(s)
	1/25/17	1700				WSP Delivery	—
Relinquished By (Signature)	**Date**	**Time**	**Received By (Signature)**	**Date**	**Time**	**Number of Packages**	**Custody Seal Number(s)**
						4	—

*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 #	17012529	**Received By**	Thomas Wingate
Client Name	WSP Environment & Energy - Hernd	**Date Received**	01/25/2017 05:00:00 PM
Project Name	Former KopFlex Facility Site	**Delivered By**	Client
Project Number	31400390-5	**Tracking No**	Not Applicable
Disposal Date	03/01/2017	**Logged In By**	Thomas Wingate

Shipping Container(s)

No. of Coolers 4

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

Documentation

		Sampler Name	M. Richardson/R. W
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 7 Total No. of Containers Received 66

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)	Yes
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.

Received 3 sets of trip blanks in coolers with samples RW-1D, RW-2S, and RW-1S. Sample RW-3S received in a cooler without a trip blank.

Samples Inspected/Checklist Completed By: Thomas Wingate Date: 01/25/2017

Thomas Wingate

PM Review and Approval: Amber Confer Date: 01/26/2017

Amber Confer

Enclosure B – Certified Laboratory Report for Surfactant Analysis of Recovery Well Samples (February 2017)

Analytical Report for

WSP Environment & Energy - Herndon

Certificate of Analysis No.: 17021520

Project Manager: Eric Johnson

Project Name : Kop-Flex

Project Location: 7555 Harmans Rd Hanover, MD

February 21, 2017

Phase Separation Science, Inc.

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

OFFICES:
6630 BALTIMORE NATIONAL PIKE
ROUTE 40 WEST
BALTIMORE, MD 21228
410-747-8770
800-932-9047
FAX 410-788-8723

PHASE SEPARATION SCIENCE, INC.

February 21, 2017

Eric Johnson
WSP Environment & Energy - Herndon
13530 Dulles Technology Dr, Suite 300
Herndon, VA 20171

Reference: PSS Work Order(s) No: **17021520**
Project Name: Kop-Flex
Project Location: 7555 Harmans Rd 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 **17021520**.

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

PSS reserves the right to return any unused samples, extracts or related solutions. Otherwise, the samples are scheduled for disposal, without any further notice, on March 22, 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 Environment & Energy - Herndon

Project Name: Kop-Flex

Work Order Number(s): 17021520

The following samples were received under chain of custody by Phase Separation Science (PSS) on 02/15/2017 at 03:30 pm

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
17021520-001	RW2D	GROUND WATER	02/15/17 12:15
17021520-002	RW1D	GROUND WATER	02/15/17 12:35
17021520-003	RW3S	GROUND WATER	02/15/17 13:35
17021520-004	RW2S	GROUND WATER	02/15/17 13:48
17021520-005	RW1S	GROUND WATER	02/15/17 14:05
17021520-006	EQ Tank	GROUND WATER	02/15/17 14:35

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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Baltimore Division

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COVER LETTER

Lynn Jackson
Phase Separation
6630 Baltimore National Pike, Suite 103
Baltimore, MD 21228

RE: General Analysis

February 20, 2017
Report No.: 17B0977

The report of analyses contains test results for samples received at Microbac Laboratories, Inc., Baltimore Division on 02/16/2017 11:40.

The enclosed results were obtained from and applicable to the sample(s) as received at the laboratory. All sample results are reported on an "as received" basis unless otherwise noted.

All data included in this report has been reviewed and meet the applicable project and certification specific requirements, unless otherwise noted.

This report has been paginated in its entirety and shall not be reproduced except in full, without the written approval of Microbac Laboratories, Inc.

We appreciate the opportunity to service your analytical needs. If you have any questions, please feel free to contact us.

This Data Package contains the following:

- This Cover Page
- Sample Summary
- Test Results
- Certifications/Notes and Definitions
- Cooler Receipt Log
- Chain of Custody

Final report reviewed by:	Coretta S. Davis/Project Manager	2/20/2017 Report issue date

All samples received in proper condition and results conform to ISO 17025 and TNI NELAC standards unless otherwise noted.

If we have not met or exceeded your expectations, please contact Coretta S. Davis/Project Manager at 410-633-1800. You may also contact Trevor Boyce, President at trevor.boyce@microbac.com

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CERTIFICATE OF ANALYSIS

Phase Separation	Project: General Analysis	Report: 17B0977
6630 Baltimore National Pike, Suite 103	Project Number: 31400390.05	Reported: 02/20/2017 17:13
Baltimore, MD 21228	Project Manager: Lynn Jackson	

SAMPLE SUMMARY

Sample ID	Laboratory ID	Matrix	Type	Date Sampled	Date Received
17021520-001 - RW2D	17B0977-01	Water	Grab	02/15/2017 12:15	02/16/2017 11:40
17021520-002 - RW1D	17B0977-02	Water	Grab	02/15/2017 12:35	02/16/2017 11:40
17021520-003 - RW3S	17B0977-03	Water	Grab	02/15/2017 13:35	02/16/2017 11:40
17021520-004 - RW2S	17B0977-04	Water	Grab	02/15/2017 13:48	02/16/2017 11:40
17021520-005 - RW1S	17B0977-05	Water	Grab	02/15/2017 14:05	02/16/2017 11:40
17021520-006 - EQ Tank	17B0977-06	Water	Grab	02/15/2017 14:35	02/16/2017 11:40

Microbac Laboratories, Inc. - Baltimore

Coretta S. Davis, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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CERTIFICATE OF ANALYSIS

Phase Separation	Project: General Analysis	Report: 17B0977
6630 Baltimore National Pike, Suite 103	Project Number: 31400390.05	Reported: 02/20/2017 17:13
Baltimore, MD 21228	Project Manager: Lynn Jackson	

17021520-001 - RW2D

17B0977-01 (Water) Sampled: 02/15/2017 12:15; Type: Grab

Analyte	Result	Reporting Limit	Units	Limits	Prepared	Analyzed	Analyst	Method	Notes
Microbac Laboratories, Inc. - Baltimore									
Wet Chemistry									
Surfactants, MBAS	**0.042**	0.020	mg LAS/L (MW 320)		021717 0634	021717 0649	VAS	SM 5540 C-11	

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CERTIFICATE OF ANALYSIS

Phase Separation	Project: General Analysis	Report: 17B0977
6630 Baltimore National Pike, Suite 103	Project Number: 31400390.05	Reported: 02/20/2017 17:13
Baltimore, MD 21228	Project Manager: Lynn Jackson	

17021520-002 - RW1D

17B0977-02 (Water) Sampled: 02/15/2017 12:35; Type: Grab

Analyte	Result	Reporting Limit	Units	Limits	Prepared	Analyzed	Analyst	Method	Notes
Microbac Laboratories, Inc. - Baltimore									
Wet Chemistry									
Surfactants, MBAS	**0.023**	0.020	mg LAS/L (MW 320)		021717 0634	021717 0649	VAS	SM 5540 C-11	

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CERTIFICATE OF ANALYSIS

Phase Separation	Project: General Analysis	Report: 17B0977
6630 Baltimore National Pike, Suite 103	Project Number: 31400390.05	Reported: 02/20/2017 17:13
Baltimore, MD 21228	Project Manager: Lynn Jackson	

17021520-003 - RW3S

17B0977-03 (Water) Sampled: 02/15/2017 13:35; Type: Grab

Analyte	Result	Reporting Limit	Units	Limits	Prepared	Analyzed	Analyst	Method	Notes
Microbac Laboratories, Inc. - Baltimore									
Wet Chemistry									
Surfactants, MBAS	ND	0.020	mg LAS/L (MW 320)		021717 0634	021717 0649	VAS	SM 5540 C-11	

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CERTIFICATE OF ANALYSIS

Phase Separation	Project: General Analysis	Report: 17B0977
6630 Baltimore National Pike, Suite 103	Project Number: 31400390.05	Reported: 02/20/2017 17:13
Baltimore, MD 21228	Project Manager: Lynn Jackson	

17021520-004 - RW2S

17B0977-04 (Water) Sampled: 02/15/2017 13:48; Type: Grab

Analyte	Result	Reporting Limit	Units	Limits	Prepared	Analyzed	Analyst	Method	Notes
Microbac Laboratories, Inc. - Baltimore									
Wet Chemistry									
Surfactants, MBAS	**0.24**	0.020	mg LAS/L (MW 320)		021717 0634	021717 0649	VAS	SM 5540 C-11	

Microbac Laboratories, Inc. - Baltimore

Coretta S. Davis, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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CERTIFICATE OF ANALYSIS

Phase Separation	Project: General Analysis	Report: 17B0977
6630 Baltimore National Pike, Suite 103	Project Number: 31400390.05	Reported: 02/20/2017 17:13
Baltimore, MD 21228	Project Manager: Lynn Jackson	

17021520-005 - RW1S

17B0977-05 (Water) Sampled: 02/15/2017 14:05; Type: Grab

Analyte	Result	Reporting Limit	Units	Limits	Prepared	Analyzed	Analyst	Method	Notes
Microbac Laboratories, Inc. - Baltimore									
Wet Chemistry									
Surfactants, MBAS	**0.093**	0.020	mg LAS/L (MW 320)		021717 0634	021717 0649	VAS	SM 5540 C-11	

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CERTIFICATE OF ANALYSIS

Phase Separation	Project: General Analysis	Report: 17B0977
6630 Baltimore National Pike, Suite 103	Project Number: 31400390.05	Reported: 02/20/2017 17:13
Baltimore, MD 21228	Project Manager: Lynn Jackson	

17021520-006 - EQ Tank

17B0977-06 (Water) Sampled: 02/15/2017 14:35; Type: Grab

Analyte	Result	Reporting Limit	Units	Limits	Prepared	Analyzed	Analyst	Method	Notes
Microbac Laboratories, Inc. - Baltimore									
Wet Chemistry									
Surfactants, MBAS	**0.036**	0.020	mg LAS/L (MW 320)		021717 0634	021717 0649	VAS	SM 5540 C-11	

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CERTIFICATE OF ANALYSIS

Phase Separation	Project: General Analysis	Report: 17B0977
6630 Baltimore National Pike, Suite 103	Project Number: 31400390.05	Reported: 02/20/2017 17:13
Baltimore, MD 21228	Project Manager: Lynn Jackson	

Project Requested Certification(s):

A2LA (Environmental)

Analyte Certification Exception Summary

No certification exceptions

All analysis performed were analyzed under the required certification unless otherwise noted in the above summary.

Certification List

Below is a list of certifications maintained by Microbac Laboratories, Inc. All data included in this report has been reviewed for and meets all project specific and quality control requirements of the applicable accreditation, unless otherwise noted. A complete list of individual analytes pursuant to each certification below is available upon request.

Code	Description	Certification Number	Expires
Microbac Laboratories, Inc. - Baltimore			
A2LA1	A2LA (Biology)	410.02	04/30/2017
A2LA2	A2LA (Environmental)	410.01	04/30/2017
VA-B	Commonwealth of Virginia (NELAC) - Baltimore	460285	03/14/2017
CPSC	CPSC Testing of Childrens Products and Jewelry	1115	04/30/2017
Pb	Environmental Lead (ELLAP)	410.01	04/30/2017
MD	State of Maryland (Drinking Water)	109	06/30/2017
WV	West Virginia	054	08/31/2017
Microbac Laboratories, Inc. - Richmond			
VA-R	Commonwealth of Virginia (NELAC) - Richmond	460022	06/14/2017

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CERTIFICATE OF ANALYSIS

Phase Separation	Project: General Analysis	Report: 17B0977
6630 Baltimore National Pike, Suite 103	Project Number: 31400390.05	Reported: 02/20/2017 17:13
Baltimore, MD 21228	Project Manager: Lynn Jackson	

Qualifiers/Notes and Definitions

General Definitions:

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

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Cooler Receipt Log

Cooler ID: Default Cooler **Cooler Temp:** -1.10°C **Work Order:** 17B0977

Custody Seals Intact:	Yes	COC/Containers Agree:	Yes
Containers Intact:	Yes	Correct Preservation:	Yes
Received On Ice:	Yes	Correct Number of Containers Received:	Yes
Radiation Scan Acceptable:	Yes	Sufficient Sample Volume for Testing:	Yes
COC Present:	Yes	Samples Received in Proper Condition:	Yes

Comments:

Chain of Custody Form for Subcontracted Analyses

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

W.O. No. : **17021520**
P.O. No. :
Project Number : 31400390.05
Report To LOD : No

Samples Transferred To:
Microbac - Baltimore
2101 Van Deman Street
Baltimore, MD 21224
Contacts : sales - Mike Arbaugh / PMs (when we d
Phone : 410-633-1800

For Questions or issues please contact: Amber Confer

Report Due On :02/17/17 05:00

Lab Sample ID	Field Sample ID	Date Sampled	Time Sampled	Matrix	Analyses Required	Method	Type of Container	Preservati
17021520-001	RW2D	02/15/17	12:15	Water	MBAS Surfactants	SM5540C	1L HDPE	COOL
17021520-002	RW1D	02/15/17	12:35	Water	MBAS Surfactants	SM5540C	1L HDPE	COOL
17021520-003	RW3S	02/15/17	13:35	Water	MBAS Surfactants	SM5540C	1L HDPE	COOL
17021520-004	RW2S	02/15/17	13:48	Water	MBAS Surfactants	SM5540C	1L HDPE	COOL
17021520-005	RW1S	02/15/17	14:05	Water	MBAS Surfactants	SM5540C	1L HDPE	COOL
17021520-006	EQ Tank	02/15/17	14:35	Water	MBAS Surfactants	SM5540C	1L HDPE	COOL

17B0977

Data Deliverables Required: COA

Perform Q.C. on Sample : _____

Send Report Attn : reporting@phaseonline.com

Send InvoiceAttn : invoicing@phaseonline.com

Airbill No.: _____ Carrier : TTE

Condition Upon Receipt : _____

Comments : **Results are for Maryland VCP site.**

Samples Relinquished By : Karl Weber Date : 2/16/17 Time: 10:20 Samples Received By : _____

Samples Relinquished By: _____ Date : 2/16/17 Time : 1140 Samples Received By: _____

Samples Relinquished By: _____ Date: _____ Time: _____ Samples Received By: _____

-1.1°C Rec'd on ice 02/16/17

Cooler Receipt Form / Sample Acceptance & Noncompliance Form

Microbac Laboratories, Inc., Baltimore Division
Control # 606-03
Effective Date: 11/30/2016
Page 1 of 1

Number of Coolers Received: 1
Client: Phase Separation
Form Completed By: HN Dillinger
Shipper:
Custody Tape Intact:
Containers Intact:
Sample Received on Ice or refrigerated:

Receipt Date / Time: 02/16/17 1142
Work Order # 17B0977

☐ Microbac ☒ Client ☐ UPS ☐ FedEx
YES / NO / NA
YES / NO
YES / NO / NA
Infrared (IR) Temperature: -1.1 °C

Chain of Custody Present with shipment:
Sample Bottle IDs agree with COC:
Preservation requirements met:
Correct Number of Containers / Sample Volume:
Headspace in container:
Type of Sample:

YES / NO
YES / NO
YES / NO / Not Checked
YES / NO (If No, contact client immediately)
YES / NO / NA
Water Soil Wipes Oil Filter Solid Sludge Food Swab Other_____

Container Type / Quantity:

A - ___ Unpreserved ___ H2SO4 ___ HNO3 ___ HCl ___ NaOH ___ NaOH/Ascorbic Acid: If preserved pH <2___, pH >10___
B - 6 Unpreserved ___ H2SO4 ___ HNO3 ___ HCl ___ NaOH ___ NaOH/Ascorbic Acid If preserved pH <2___, pH >10___
C - ___ Unpreserved ___ H2SO4 ___ HNO3 ___ HCl ___ NaOH ___ NaOH/Ascorbic Acid If preserved pH <2___, pH >10___
D - ___ Unpreserved ___ H2SO4 ___ HNO3 ___ HCl ___ NaOH ___ NaOH/Ascorbic Acid If preserved pH <2___, pH >10___
E - ___ Unpreserved ___ H2SO4 ___ HNO3 ___ HCl ___ NaOH ___ NaOH/Ascorbic Acid If preserved pH <2___, pH >10___
H - ___ Unpreserved ___ H2SO4 ___ HNO3 ___ HCl ___ NaOH ___ NaOH/Ascorbic Acid If preserved pH <2___, pH >10___
K - ___ Unpreserved ___ H2SO4 ___ HNO3 ___ HCl ___ NaOH ___ NaOH/Ascorbic Acid If preserved pH <2___, pH >10___
L - ___ Unpreserved ___ H2SO4 ___ HNO3 ___ HCl ___ NaOH ___ NaOH/Ascorbic Acid If preserved pH <2___, pH >10___
M- ___ Unpreserved ___ H2SO4 ___ HNO3 ___ HCl ___ NaOH ___ NaOH/Ascorbic Acid If preserved pH <2___, pH >10___
P - ___ Unpreserved ___ H2SO4 ___ HNO3 ___ HCl ___ NaOH ___ NaOH/Ascorbic Acid If preserved pH <2___, pH >10___
W- ___ Unpreserved ___ H2SO4 ___ HNO3 ___ HCl ___ NaOH ___ NaOH/Ascorbic Acid If preserved pH <2___, pH >10___
V - ___ Unpreserved ___ HCl ___ HCl / Ascorbic Acid ___ HCl / NaTHIO **(Checked at time of Analysis)**
F - ___ Unpreserved ___ NaTHIO **(Checked at time of Analysis)**
S - ___ Unpreserved ___ NaTHIO **(Checked at time of Analysis)**
SN- ___ Unpreserved ___ NaTHIO ___ NaTHIO/EDTA **(Checked at time of Analysis)**

___ Unpreserved ___ H2SO4 ___ HNO3 ___ HCl ___ NaOH ___ NaOH/Ascorbic Acid If preserved pH <2___, pH >10___
___ Unpreserved ___ H2SO4 ___ HNO3 ___ HCl ___ NaOH ___ NaOH/Ascorbic Acid If preserved pH <2___, pH >10___
___ Unpreserved ___ H2SO4 ___ HNO3 ___ HCl ___ NaOH ___ NaOH/Ascorbic Acid If preserved pH <2___, pH >10___

Describe preservation requirements not met:

All Acid preserved <2 pH *NaOH preserved >12 pH* *All others >2 and <10 (usually 4-8)*

Sample ID:_____ H_2SO_4 HNO_3 NaOH _____ mls added
Sample ID:_____ H_2SO_4 HNO_3 NaOH _____ mls added
Sample ID:_____ H_2SO_4 HNO_3 NaOH _____ mls added
Sample ID:_____ H_2SO_4 HNO_3 NaOH _____ mls added

H_2SO_4 – Sulfuric Acid, HNO_3 – Nitric Acid, NaOH – Sodium Hydroxide, ASC – Ascorbic Acid, NaTHIO – Sodium Thiosulfate

Describe Anomalies:_____

Contact information / Summary of Actions:

Date / Time:_____ Contact:_____ Contact By:_____
Comments:_____

Case Narrative Summary

Client Name: WSP Environment & Energy - Herndon

Project Name: Kop-Flex

Work Order Number(s): 17021520

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:

Trip blank listed on COC, but not received with samples.

17021520: Analyses associated with analyst code 4006 were performed by Microbac - Baltimore - VA 460285

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

SAMPLE CHAIN OF CUSTODY/AGREEMENT FORM

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: FAX NO.: ( )
*PROJECT NAME: Kop-Flex PROJECT NO.:
SITE LOCATION: 7555 Hermans Rd Hanover, MD P.O. NO.:
SAMPLER(S): Maria Kaplan + Pam Graff DW CERT NO.:

PSS Work Order #: 1702152O 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	(3) * Analysis/ Method Required: MBAS Surfactants (SM 5540C)	REMARKS
+	Trip Blank	—	—	L	1				
BW2 1	RW2D	2/15/17	1215	GW	1	G		X	
3 2	RW1D	2/15/17	1235	GW	1	G		X	
4 3	RW3S	2/15/17	1395	GW	1	G		X	
5 4	RW2S	2/15/17	1348	GW	1	G		X	
6 5	RW1S	2/15/17	1405	GW	1	G		X	
76	EQTank	2/15/17	1435	GW	1	C		X	

(5)

	Date	Time	
Relinquished By: (1)	12/15/17	17:55	Received By:
Relinquished By: (2)	12/15/17	3:30	Received By: Barb Weber
Relinquished By: (3)			Received By:
Relinquished By: (4)			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 Blank PRES
Custody Seal: Abs
Ice Present: Pres Temp: 7-10°C
Shipping Carrier: FTE

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 #	17021520	**Received By**	Barb Weber
Client Name	WSP Environment & Energy - Hernd	**Date Received**	02/15/2017 03:30:00 PM
Project Name	Kop-Flex	**Delivered By**	Trans Time Express
Disposal Date	03/22/2017	**Tracking No**	Not Applicable
		Logged In By	Barb Weber

Shipping Container(s)

No. of Coolers 1

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

Documentation

		Sampler Name	M. Kaplan/P. Groff
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 6 Total No. of Containers Received 6

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)	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

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.

Trip blank listed on COC, but not received with samples.

Samples Inspected/Checklist Completed By: Barb Weber Date: 02/15/2017

Barb Weber

PM Review and Approval: Amber J Confer Date: 02/16/2017

Amber Confer

Enclosure C – Certified Laboratory Report of BOD Analysis for Stream Samples (March 2017)

Analytical Report for

WSP Environment & Energy - Herndon

Certificate of Analysis No.: 17030820

Project Manager: Eric Johnson

Project Name : KopFlex

Project Location: Hanover, MD

Project ID : 31400390 Task 1.00

March 15, 2017

Phase Separation Science, Inc.

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

OFFICES:
6630 BALTIMORE NATIONAL PIKE
ROUTE 40 WEST
BALTIMORE, MD 21228
410-747-8770
800-932-9047
FAX 410-788-8723

PHASE SEPARATION SCIENCE, INC.

March 15, 2017

Eric Johnson
WSP Environment & Energy - Herndon
13530 Dulles Technology Dr, Suite 300
Herndon, VA 20171

Reference: PSS Work Order(s) No: **17030820**
Project Name: KopFlex
Project Location: Hanover, MD
Project ID.: 31400390 Task 1.00

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 **17030820**.

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 April 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
Laboratory Manager

Sample Summary

Client Name: WSP Environment & Energy - Herndon

Project Name: KopFlex

Work Order Number(s): 17030820

Project ID: 31400390 Task 1.00

The following samples were received under chain of custody by Phase Separation Science (PSS) on 03/08/2017 at 04:00 pm

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
17030820-001	StonyRun-01	SURFACE WATER	03/08/17 12:40
17030820-002	StonyRun-02	SURFACE WATER	03/08/17 12:45
17030820-003	StonyRun-03	SURFACE WATER	03/08/17 12:50

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

OFFICES:
6630 BALTIMORE NATIONAL PIKE
ROUTE 40 WEST
BALTIMORE, MD 21228
410-747-8770
800-932-9047
FAX 410-788-8723

PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 17030820

WSP Environment & Energy - Herndon, Herndon, VA

March 15, 2017

Project Name: KopFlex
Project Location: Hanover, MD
Project ID: 31400390 Task 1.00

Sample ID: StonyRun-01 **Date/Time Sampled: 03/08/2017 12:40** **PSS Sample ID: 17030820-001**
Matrix: SURFACE WATER **Date/Time Received: 03/08/2017 16:00**

Carbonaceous Biochemical Oxygen Demand — Analytical Method: SM 5210B

	Result	Units	RL	Flag	Prepared	Analyzed	Analyst
Carbonaceous BOD	ND	mg/L	5.0		03/09/17	03/09/17 13:15	4005

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		03/09/17	03/09/17 13:15	4005

Sample ID: StonyRun-02 **Date/Time Sampled: 03/08/2017 12:45** **PSS Sample ID: 17030820-002**
Matrix: SURFACE WATER **Date/Time Received: 03/08/2017 16:00**

Carbonaceous Biochemical Oxygen Demand — Analytical Method: SM 5210B

	Result	Units	RL	Flag	Prepared	Analyzed	Analyst
Carbonaceous BOD	ND	mg/L	5.0		03/09/17	03/09/17 13:15	4005

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		03/09/17	03/09/17 13:15	4005

Sample ID: StonyRun-03 **Date/Time Sampled: 03/08/2017 12:50** **PSS Sample ID: 17030820-003**
Matrix: SURFACE WATER **Date/Time Received: 03/08/2017 16:00**

Carbonaceous Biochemical Oxygen Demand — Analytical Method: SM 5210B

	Result	Units	RL	Flag	Prepared	Analyzed	Analyst
Carbonaceous BOD	ND	mg/L	5.0		03/09/17	03/09/17 13:15	4005

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		03/09/17	03/09/17 13:15	4005

Case Narrative Summary

Client Name: WSP Environment & Energy - Herndon

Project Name: KopFlex

Work Order Number(s): 17030820

Project ID: 31400390 Task 1.00

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(s) received at a temperature greater than 6 degrees C and ice was not present.

17030820: 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, SM 5210B -2011

Analytical Data Package Information Summary

Work Order(s): **17030820**
Report Prepared For: WSP Environment & Energy - Herndon, Hern
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
SM 5210B	StonyRun-01	Initial	17030820-001	4005	W	140829	140829	03/08/2017	03/09/2017 13:15	03/09/2017 13:15
	StonyRun-02	Initial	17030820-002	4005	W	140829	140829	03/08/2017	03/09/2017 13:15	03/09/2017 13:15
	StonyRun-03	Initial	17030820-003	4005	W	140829	140829	03/08/2017	03/09/2017 13:15	03/09/2017 13:15
SM 5210B -2011	StonyRun-01	Initial	17030820-001	4005	W	140829	140829	03/08/2017	03/09/2017 13:15	03/09/2017 13:15
	StonyRun-02	Initial	17030820-002	4005	W	140829	140829	03/08/2017	03/09/2017 13:15	03/09/2017 13:15
	StonyRun-03	Initial	17030820-003	4005	W	140829	140829	03/08/2017	03/09/2017 13:15	03/09/2017 13:15

SAMPLE CHAIN OF CUSTODY/AGREEMENT FORM

PHASE SEPARATION SCIENCE, INC.

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

(1) *CLIENT: WSP PB *OFFICE LOC. Herndon
*PROJECT MGR: Eric Johnson *PHONE NO.:( )
EMAIL: Eric.Johnson@wspgroup.com FAX NO.: ( )
*PROJECT NAME: KopFlex PROJECT NO.: 31400370
SITE LOCATION: Hanover, MD P.O. NO.: Task 1.20
SAMPLER(S): BJF CC DW CERT NO.:

PSS Work Order #: 1703020 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) * BOD	CBOD	REMARKS
1	StonyRun-01	3/8/17	1240	SW	2	C		X	X	
2	StonyRun-02	"	1245	SW	2	C		X	X	
3	StonyRun-03	"	1250	SW	2	C		X	X	

(5)

Relinquished By: (1)	Date	Time	Received By:
Ben Foster	3/8/17	1600	Bart Weber
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: Abs
Ice Present: Abs Temp: 13°c
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 #	17030820	**Received By**	Barb Weber
Client Name	WSP Environment & Energy - Hernd	**Date Received**	03/08/2017 04:00:00 PM
Project Name	KopFlex	**Delivered By**	Client
Project Number	31400390 Task 1.00	**Tracking No**	Not Applicable
Disposal Date	04/12/2017	**Logged In By**	Thomas Wingate

Shipping Container(s)

No. of Coolers 1

		Ice	Absent
Custody Seal(s) Intact?	N/A	Temp (deg C)	13
Seal(s) Signed / Dated?	N/A	Temp Blank Present	No

Documentation

		Sampler Name	BJF, CC
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 6

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)	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

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(s) received at a temperature greater than 6 degrees C and ice was not present.

Samples Inspected/Checklist Completed By: Thomas Wingate Date: 03/08/2017

Thomas Wingate

PM Review and Approval: Amber T Confer Date: 03/09/2017

Amber Confer

Enclosure D – Boring Log and Well Constriction Diagram for Well MW-45

Boring Log: MW-45

Project: Kop-Flex

Project No.: 31400389

Location: Hanover, MD

Completion Date: March 12, 2017

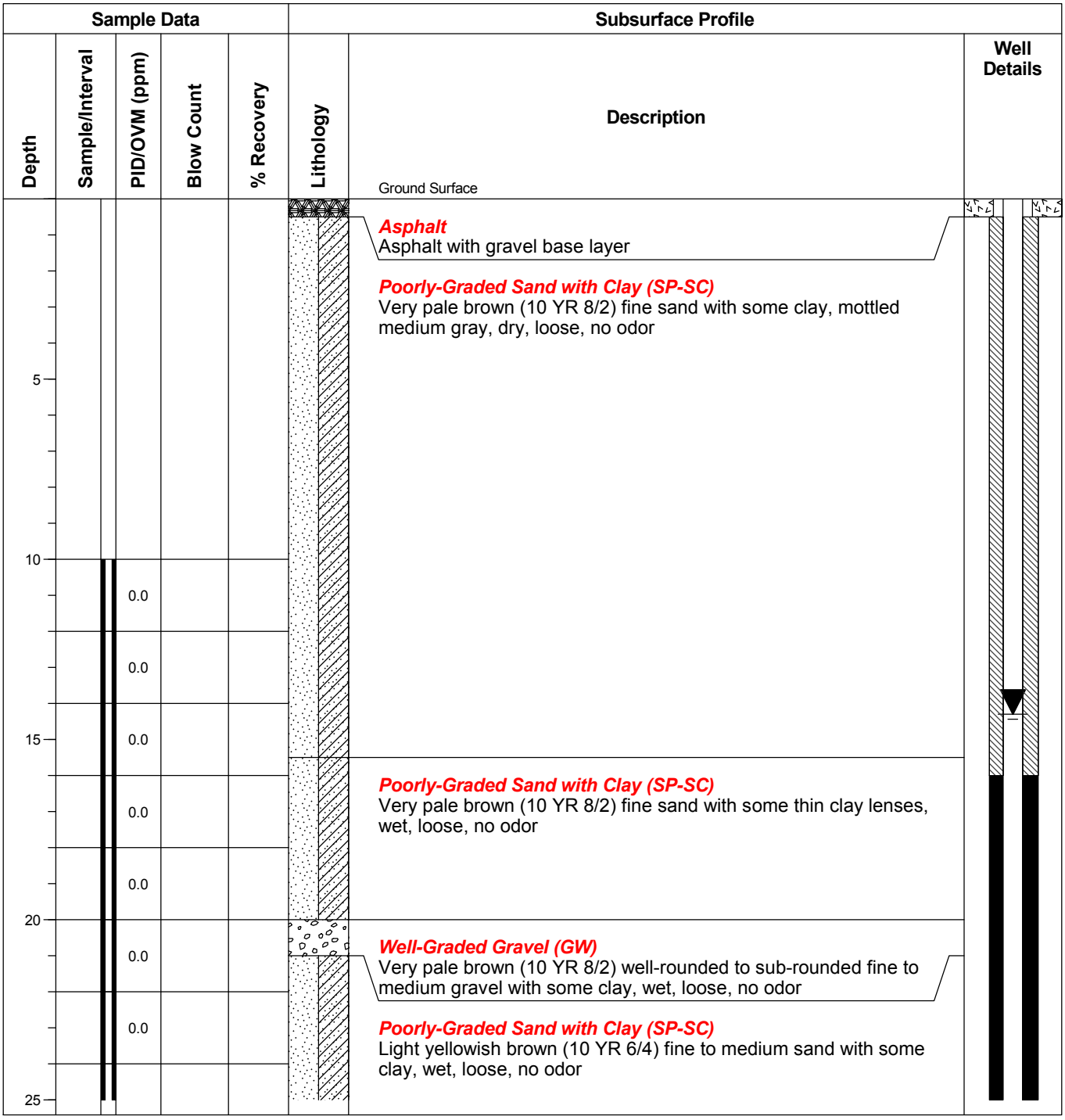
Surface Elevation (feet AMSL*): 126.97

TOC Elevation (feet AMSL*): 126.72

Total Depth (feet): 60

Borehole Diameter (inches): 6

**AMSL = Above mean sea level*



Geologist(s): Rob Wallace

Subcontractor: Cascade Drilling

Driller/Operator: Larry Hunsberger

Method: Rotosonic

WSP|Parsons Brinckerhoff

11353 Dulles Technology Drive, Suite 300

Herndon, VA 20171

703-709-6500

Boring Log: MW-45

Project: Kop-Flex

Project No.: 31400389

Location: Hanover, MD

Completion Date: March 12, 2017

Surface Elevation (feet AMSL*): 126.97

TOC Elevation (feet AMSL*): 126.72

Total Depth (feet): 60

Borehole Diameter (inches): 6

**AMSL = Above mean sea level*

Sample Data					Subsurface Profile		
Depth	Sample/Interval	PID/OVM (ppm)	Blow Count	% Recovery	Lithology	Description	Well Details
		0.1				***Poorly-Graded Sand with Clay (SP-SC)*** Light yellowish brown (10 YR 6/4) fine to medium sand with some clay, wet, loose, no odor *(continued)*	
		0.2					
		0.8					
30		0.0					
		0.0					
35		0.0					
		0.0					
		0.0				***Lean Clay (CL)*** Red (5 R 4/8) clay, stiff, dry, no odor	
40						***Lean Clay (CL)*** Dark grey (N3) clay, stiff, dry, no odor	
45							
50							

Geologist(s): Rob Wallace

Subcontractor: Cascade Drilling

Driller/Operator: Larry Hunsberger

Method: Rotosonic

WSP|Parsons Brinckerhoff
11353 Dulles Technology Drive, Suite 300
Herndon, VA 20171
703-709-6500

Boring Log: MW-45

Project: Kop-Flex

Project No.: 31400389

Location: Hanover, MD

Completion Date: March 12, 2017

Surface Elevation (feet AMSL*): 126.97

TOC Elevation (feet AMSL*): 126.72

Total Depth (feet): 60

Borehole Diameter (inches): 6

**AMSL = Above mean sea level*

Sample Data					Subsurface Profile		
Depth	Sample/Interval	PID/OVM (ppm)	Blow Count	% Recovery	Lithology	Description	Well Details
						Lean Clay (CL) Dark grey (N3) clay, stiff, dry, no odor *(continued)*	
55						***Lean Clay (CL)*** Very dusky red (5 R 2.5/2) clay, stiff, dry, no odor	
60						Bottom of Boring at 60 feet	
65							
70							
75							

Geologist(s): Rob Wallace

Subcontractor: Cascade Drilling

Driller/Operator: Larry Hunsberger

Method: Rotosonic

WSP|Parsons Brinckerhoff
11353 Dulles Technology Drive, Suite 300
Herndon, VA 20171
703-709-6500

Enclosure E - Certified Laboratory Report for MW-45 Sample (March 2017)

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

April 03, 2017

Eric Johnson
WSP Environmental Strategies
11190 Sunrise Valley Dr.
Suite #300
Reston, VA 20191

RE: Project: 31400389-02 FORMER KOP-FLEX
Pace Project No.: 92334701

Dear Eric Johnson:
Enclosed are the analytical results for sample(s) received by the laboratory on March 25, 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,

Kevin Godwin
kevin.godwin@pacelabs.com
1(704)875-9092
Project Manager

Enclosures

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

CERTIFICATIONS

Project: 31400389-02 FORMER KOP-FLEX
Pace Project No.: 92334701

Charlotte Certification IDs

9800 Kincey Ave. Ste 100, Huntersville, NC 28078
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: 31400389-02 FORMER KOP-FLEX
Pace Project No.: 92334701

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92334701001	**MW-45-032417**	Water	03/24/17 10:55	03/25/17 09:15
92334701003	**TRIP BLANK**	Water	03/24/17 00:00	03/25/17 09:15

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

SAMPLE ANALYTE COUNT

Project: 31400389-02 FORMER KOP-FLEX
Pace Project No.: 92334701

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92334701001	**MW-45-032417**	EPA 8260	ZDO	63	PASI-C
		EPA 8260B Mod.	DLK	3	PASI-C
92334701003	**TRIP BLANK**	EPA 8260	ZDO	63	PASI-C
		EPA 8260B Mod.	DLK	3	PASI-C

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

ANALYTICAL RESULTS

Project: 31400389-02 FORMER KOP-FLEX
Pace Project No.: 92334701

Sample: MW-45-032417 **Lab ID: 92334701001** Collected: 03/24/17 10:55 Received: 03/25/17 09:15 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		03/30/17 13:17	67-64-1	
Benzene	ND	ug/L	1.0	1		03/30/17 13:17	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		03/30/17 13:17	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		03/30/17 13:17	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		03/30/17 13:17	75-27-4	
Bromoform	ND	ug/L	1.0	1		03/30/17 13:17	75-25-2	
Bromomethane	ND	ug/L	2.0	1		03/30/17 13:17	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		03/30/17 13:17	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	1		03/30/17 13:17	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		03/30/17 13:17	108-90-7	
Chloroethane	ND	ug/L	1.0	1		03/30/17 13:17	75-00-3	
Chloroform	ND	ug/L	1.0	1		03/30/17 13:17	67-66-3	
Chloromethane	ND	ug/L	1.0	1		03/30/17 13:17	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		03/30/17 13:17	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		03/30/17 13:17	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.0	1		03/30/17 13:17	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		03/30/17 13:17	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		03/30/17 13:17	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		03/30/17 13:17	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		03/30/17 13:17	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		03/30/17 13:17	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		03/30/17 13:17	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		03/30/17 13:17	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		03/30/17 13:17	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		03/30/17 13:17	107-06-2	
1,1-Dichloroethene	**1.9**	ug/L	1.0	1		03/30/17 13:17	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		03/30/17 13:17	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		03/30/17 13:17	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		03/30/17 13:17	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		03/30/17 13:17	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		03/30/17 13:17	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		03/30/17 13:17	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		03/30/17 13:17	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		03/30/17 13:17	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	1		03/30/17 13:17	108-20-3	
Ethylbenzene	ND	ug/L	1.0	1		03/30/17 13:17	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		03/30/17 13:17	87-68-3	
2-Hexanone	ND	ug/L	5.0	1		03/30/17 13:17	591-78-6	
p-Isopropyltoluene	ND	ug/L	1.0	1		03/30/17 13:17	99-87-6	
Methylene Chloride	ND	ug/L	2.0	1		03/30/17 13:17	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		03/30/17 13:17	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		03/30/17 13:17	1634-04-4	
Naphthalene	ND	ug/L	1.0	1		03/30/17 13:17	91-20-3	
Styrene	ND	ug/L	1.0	1		03/30/17 13:17	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		03/30/17 13:17	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		03/30/17 13:17	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		03/30/17 13:17	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: 31400389-02 FORMER KOP-FLEX
Pace Project No.: 92334701

Sample: MW-45-032417 **Lab ID: 92334701001** Collected: 03/24/17 10:55 Received: 03/25/17 09:15 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		03/30/17 13:17	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		03/30/17 13:17	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		03/30/17 13:17	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		03/30/17 13:17	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		03/30/17 13:17	79-00-5	
Trichloroethene	ND	ug/L	1.0	1		03/30/17 13:17	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		03/30/17 13:17	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	1		03/30/17 13:17	96-18-4	
Vinyl acetate	ND	ug/L	2.0	1		03/30/17 13:17	108-05-4	
Vinyl chloride	ND	ug/L	1.0	1		03/30/17 13:17	75-01-4	
Xylene (Total)	ND	ug/L	1.0	1		03/30/17 13:17	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	1		03/30/17 13:17	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		03/30/17 13:17	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	97	%	70-130	1		03/30/17 13:17	460-00-4	
1,2-Dichloroethane-d4 (S)	88	%	70-130	1		03/30/17 13:17	17060-07-0	
Toluene-d8 (S)	102	%	70-130	1		03/30/17 13:17	2037-26-5	
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	**2.3**	ug/L	2.0	1		03/31/17 14:52	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	92	%	50-150	1		03/31/17 14:52	17060-07-0	
Toluene-d8 (S)	89	%	50-150	1		03/31/17 14:52	2037-26-5	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: 31400389-02 FORMER KOP-FLEX
Pace Project No.: 92334701

Sample: TRIP BLANK **Lab ID: 92334701003** Collected: 03/24/17 00:00 Received: 03/25/17 09:15 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		03/29/17 15:28	67-64-1	
Benzene	ND	ug/L	1.0	1		03/29/17 15:28	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		03/29/17 15:28	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		03/29/17 15:28	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		03/29/17 15:28	75-27-4	
Bromoform	ND	ug/L	1.0	1		03/29/17 15:28	75-25-2	
Bromomethane	ND	ug/L	2.0	1		03/29/17 15:28	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		03/29/17 15:28	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	1		03/29/17 15:28	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		03/29/17 15:28	108-90-7	
Chloroethane	ND	ug/L	1.0	1		03/29/17 15:28	75-00-3	
Chloroform	ND	ug/L	1.0	1		03/29/17 15:28	67-66-3	
Chloromethane	ND	ug/L	1.0	1		03/29/17 15:28	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		03/29/17 15:28	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		03/29/17 15:28	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.0	1		03/29/17 15:28	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		03/29/17 15:28	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		03/29/17 15:28	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		03/29/17 15:28	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		03/29/17 15:28	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		03/29/17 15:28	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		03/29/17 15:28	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		03/29/17 15:28	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		03/29/17 15:28	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		03/29/17 15:28	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		03/29/17 15:28	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		03/29/17 15:28	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		03/29/17 15:28	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		03/29/17 15:28	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		03/29/17 15:28	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		03/29/17 15:28	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		03/29/17 15:28	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		03/29/17 15:28	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		03/29/17 15:28	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	1		03/29/17 15:28	108-20-3	
Ethylbenzene	ND	ug/L	1.0	1		03/29/17 15:28	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		03/29/17 15:28	87-68-3	
2-Hexanone	ND	ug/L	5.0	1		03/29/17 15:28	591-78-6	
p-Isopropyltoluene	ND	ug/L	1.0	1		03/29/17 15:28	99-87-6	
Methylene Chloride	ND	ug/L	2.0	1		03/29/17 15:28	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		03/29/17 15:28	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		03/29/17 15:28	1634-04-4	
Naphthalene	ND	ug/L	1.0	1		03/29/17 15:28	91-20-3	
Styrene	ND	ug/L	1.0	1		03/29/17 15:28	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		03/29/17 15:28	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		03/29/17 15:28	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		03/29/17 15:28	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: 31400389-02 FORMER KOP-FLEX
Pace Project No.: 92334701

Sample: TRIP BLANK **Lab ID: 92334701003** Collected: 03/24/17 00:00 Received: 03/25/17 09:15 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		03/29/17 15:28	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		03/29/17 15:28	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		03/29/17 15:28	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		03/29/17 15:28	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		03/29/17 15:28	79-00-5	
Trichloroethene	ND	ug/L	1.0	1		03/29/17 15:28	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		03/29/17 15:28	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	1		03/29/17 15:28	96-18-4	
Vinyl acetate	ND	ug/L	2.0	1		03/29/17 15:28	108-05-4	
Vinyl chloride	ND	ug/L	1.0	1		03/29/17 15:28	75-01-4	
Xylene (Total)	ND	ug/L	1.0	1		03/29/17 15:28	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	1		03/29/17 15:28	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		03/29/17 15:28	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	100	%	70-130	1		03/29/17 15:28	460-00-4	
1,2-Dichloroethane-d4 (S)	87	%	70-130	1		03/29/17 15:28	17060-07-0	
Toluene-d8 (S)	104	%	70-130	1		03/29/17 15:28	2037-26-5	
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	ND	ug/L	2.0	1		03/31/17 15:48	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	119	%	50-150	1		03/31/17 15:48	17060-07-0	
Toluene-d8 (S)	113	%	50-150	1		03/31/17 15:48	2037-26-5	

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: 31400389-02 FORMER KOP-FLEX
Pace Project No.: 92334701

QC Batch: 354264 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV Low Level
Associated Lab Samples: 92334701003

METHOD BLANK: 1965024 Matrix: Water
Associated Lab Samples: 92334701003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	03/29/17 12:51	
1,1,1-Trichloroethane	ug/L	ND	1.0	03/29/17 12:51	
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	03/29/17 12:51	
1,1,2-Trichloroethane	ug/L	ND	1.0	03/29/17 12:51	
1,1-Dichloroethane	ug/L	ND	1.0	03/29/17 12:51	
1,1-Dichloroethene	ug/L	ND	1.0	03/29/17 12:51	
1,1-Dichloropropene	ug/L	ND	1.0	03/29/17 12:51	
1,2,3-Trichlorobenzene	ug/L	ND	1.0	03/29/17 12:51	
1,2,3-Trichloropropane	ug/L	ND	1.0	03/29/17 12:51	
1,2,4-Trichlorobenzene	ug/L	ND	1.0	03/29/17 12:51	
1,2-Dibromo-3-chloropropane	ug/L	ND	2.0	03/29/17 12:51	
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	03/29/17 12:51	
1,2-Dichlorobenzene	ug/L	ND	1.0	03/29/17 12:51	
1,2-Dichloroethane	ug/L	ND	1.0	03/29/17 12:51	
1,2-Dichloropropane	ug/L	ND	1.0	03/29/17 12:51	
1,3-Dichlorobenzene	ug/L	ND	1.0	03/29/17 12:51	
1,3-Dichloropropane	ug/L	ND	1.0	03/29/17 12:51	
1,4-Dichlorobenzene	ug/L	ND	1.0	03/29/17 12:51	
2,2-Dichloropropane	ug/L	ND	1.0	03/29/17 12:51	
2-Butanone (MEK)	ug/L	ND	5.0	03/29/17 12:51	
2-Chlorotoluene	ug/L	ND	1.0	03/29/17 12:51	
2-Hexanone	ug/L	ND	5.0	03/29/17 12:51	
4-Chlorotoluene	ug/L	ND	1.0	03/29/17 12:51	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	5.0	03/29/17 12:51	
Acetone	ug/L	ND	25.0	03/29/17 12:51	
Benzene	ug/L	ND	1.0	03/29/17 12:51	
Bromobenzene	ug/L	ND	1.0	03/29/17 12:51	
Bromochloromethane	ug/L	ND	1.0	03/29/17 12:51	
Bromodichloromethane	ug/L	ND	1.0	03/29/17 12:51	
Bromoform	ug/L	ND	1.0	03/29/17 12:51	
Bromomethane	ug/L	ND	2.0	03/29/17 12:51	
Carbon tetrachloride	ug/L	ND	1.0	03/29/17 12:51	
Chlorobenzene	ug/L	ND	1.0	03/29/17 12:51	
Chloroethane	ug/L	ND	1.0	03/29/17 12:51	
Chloroform	ug/L	ND	1.0	03/29/17 12:51	
Chloromethane	ug/L	ND	1.0	03/29/17 12:51	
cis-1,2-Dichloroethene	ug/L	ND	1.0	03/29/17 12:51	
cis-1,3-Dichloropropene	ug/L	ND	1.0	03/29/17 12:51	
Dibromochloromethane	ug/L	ND	1.0	03/29/17 12:51	
Dibromomethane	ug/L	ND	1.0	03/29/17 12:51	
Dichlorodifluoromethane	ug/L	ND	1.0	03/29/17 12:51	

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REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: 31400389-02 FORMER KOP-FLEX
Pace Project No.: 92334701

METHOD BLANK: 1965024 Matrix: Water
Associated Lab Samples: 92334701003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diisopropyl ether	ug/L	ND	1.0	03/29/17 12:51	
Ethylbenzene	ug/L	ND	1.0	03/29/17 12:51	
Hexachloro-1,3-butadiene	ug/L	ND	1.0	03/29/17 12:51	
m&p-Xylene	ug/L	ND	2.0	03/29/17 12:51	
Methyl-tert-butyl ether	ug/L	ND	1.0	03/29/17 12:51	
Methylene Chloride	ug/L	ND	2.0	03/29/17 12:51	
Naphthalene	ug/L	ND	1.0	03/29/17 12:51	
o-Xylene	ug/L	ND	1.0	03/29/17 12:51	
p-Isopropyltoluene	ug/L	ND	1.0	03/29/17 12:51	
Styrene	ug/L	ND	1.0	03/29/17 12:51	
Tetrachloroethene	ug/L	ND	1.0	03/29/17 12:51	
Toluene	ug/L	ND	1.0	03/29/17 12:51	
trans-1,2-Dichloroethene	ug/L	ND	1.0	03/29/17 12:51	
trans-1,3-Dichloropropene	ug/L	ND	1.0	03/29/17 12:51	
Trichloroethene	ug/L	ND	1.0	03/29/17 12:51	
Trichlorofluoromethane	ug/L	ND	1.0	03/29/17 12:51	
Vinyl acetate	ug/L	ND	2.0	03/29/17 12:51	
Vinyl chloride	ug/L	ND	1.0	03/29/17 12:51	
Xylene (Total)	ug/L	ND	1.0	03/29/17 12:51	
1,2-Dichloroethane-d4 (S)	%	88	70-130	03/29/17 12:51	
4-Bromofluorobenzene (S)	%	101	70-130	03/29/17 12:51	
Toluene-d8 (S)	%	101	70-130	03/29/17 12:51	

LABORATORY CONTROL SAMPLE: 1965025

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	50	48.9	98	70-130	
1,1,1-Trichloroethane	ug/L	50	47.1	94	70-130	
1,1,2,2-Tetrachloroethane	ug/L	50	50.6	101	70-130	
1,1,2-Trichloroethane	ug/L	50	50.4	101	70-130	
1,1-Dichloroethane	ug/L	50	45.8	92	70-130	
1,1-Dichloroethene	ug/L	50	49.2	98	70-132	
1,1-Dichloropropene	ug/L	50	49.3	99	70-130	
1,2,3-Trichlorobenzene	ug/L	50	53.3	107	70-135	
1,2,3-Trichloropropane	ug/L	50	49.0	98	70-130	
1,2,4-Trichlorobenzene	ug/L	50	52.5	105	70-134	
1,2-Dibromo-3-chloropropane	ug/L	50	48.7	97	70-130	
1,2-Dibromoethane (EDB)	ug/L	50	52.3	105	70-130	
1,2-Dichlorobenzene	ug/L	50	52.8	106	70-130	
1,2-Dichloroethane	ug/L	50	42.6	85	70-130	
1,2-Dichloropropane	ug/L	50	50.3	101	70-130	
1,3-Dichlorobenzene	ug/L	50	52.3	105	70-130	
1,3-Dichloropropane	ug/L	50	52.8	106	70-130	
1,4-Dichlorobenzene	ug/L	50	50.3	101	70-130	

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REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: 31400389-02 FORMER KOP-FLEX
Pace Project No.: 92334701

LABORATORY CONTROL SAMPLE: 1965025

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,2-Dichloropropane	ug/L	50	47.3	95	58-145	
2-Butanone (MEK)	ug/L	100	93.2	93	70-145	
2-Chlorotoluene	ug/L	50	51.9	104	70-130	
2-Hexanone	ug/L	100	101	101	70-144	
4-Chlorotoluene	ug/L	50	51.8	104	70-130	
4-Methyl-2-pentanone (MIBK)	ug/L	100	95.1	95	70-140	
Acetone	ug/L	100	99.0	99	50-175	
Benzene	ug/L	50	51.2	102	70-130	
Bromobenzene	ug/L	50	50.8	102	70-130	
Bromochloromethane	ug/L	50	47.9	96	70-130	
Bromodichloromethane	ug/L	50	53.0	106	70-130	
Bromoform	ug/L	50	43.9	88	70-130	
Bromomethane	ug/L	50	51.8	104	54-130	
Carbon tetrachloride	ug/L	50	52.0	104	70-132	
Chlorobenzene	ug/L	50	52.1	104	70-130	
Chloroethane	ug/L	50	42.6	85	64-134	
Chloroform	ug/L	50	45.5	91	70-130	
Chloromethane	ug/L	50	49.9	100	64-130	
cis-1,2-Dichloroethene	ug/L	50	45.0	90	70-131	
cis-1,3-Dichloropropene	ug/L	50	52.2	104	70-130	
Dibromochloromethane	ug/L	50	47.6	95	70-130	
Dibromomethane	ug/L	50	48.9	98	70-131	
Dichlorodifluoromethane	ug/L	50	46.1	92	56-130	
Diisopropyl ether	ug/L	50	48.0	96	70-130	
Ethylbenzene	ug/L	50	50.2	100	70-130	
Hexachloro-1,3-butadiene	ug/L	50	55.3	111	70-130	
m&p-Xylene	ug/L	100	102	102	70-130	
Methyl-tert-butyl ether	ug/L	50	47.8	96	70-130	
Methylene Chloride	ug/L	50	45.6	91	63-130	
Naphthalene	ug/L	50	51.2	102	70-138	
o-Xylene	ug/L	50	50.4	101	70-130	
p-Isopropyltoluene	ug/L	50	50.9	102	70-130	
Styrene	ug/L	50	51.4	103	70-130	
Tetrachloroethene	ug/L	50	50.2	100	70-130	
Toluene	ug/L	50	49.1	98	70-130	
trans-1,2-Dichloroethene	ug/L	50	47.7	95	70-130	
trans-1,3-Dichloropropene	ug/L	50	51.1	102	70-132	
Trichloroethene	ug/L	50	51.2	102	70-130	
Trichlorofluoromethane	ug/L	50	48.7	97	62-133	
Vinyl acetate	ug/L	100	99.9	100	66-157	
Vinyl chloride	ug/L	50	40.3	81	50-150	
Xylene (Total)	ug/L	150	153	102	70-130	
1,2-Dichloroethane-d4 (S)	%			94	70-130	
4-Bromofluorobenzene (S)	%			102	70-130	
Toluene-d8 (S)	%			97	70-130	

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REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: 31400389-02 FORMER KOP-FLEX
Pace Project No.: 92334701

MATRIX SPIKE SAMPLE: 1966603

Parameter	Units	92334544005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	20	20.1	101	70-130	
1,1,1-Trichloroethane	ug/L	ND	20	21.4	107	70-130	
1,1,2,2-Tetrachloroethane	ug/L	ND	20	20.2	101	70-130	
1,1,2-Trichloroethane	ug/L	ND	20	21.3	106	70-130	
1,1-Dichloroethane	ug/L	ND	20	19.8	99	70-130	
1,1-Dichloroethene	ug/L	ND	20	23.0	115	70-166	
1,1-Dichloropropene	ug/L	ND	20	22.2	111	70-130	
1,2,3-Trichlorobenzene	ug/L	ND	20	21.7	108	70-130	
1,2,3-Trichloropropane	ug/L	ND	20	21.1	106	70-130	
1,2,4-Trichlorobenzene	ug/L	ND	20	22.0	110	70-130	
1,2-Dibromo-3-chloropropane	ug/L	ND	20	18.8	94	70-130	
1,2-Dibromoethane (EDB)	ug/L	ND	20	21.4	107	70-130	
1,2-Dichlorobenzene	ug/L	ND	20	22.0	110	70-130	
1,2-Dichloroethane	ug/L	ND	20	17.8	88	70-130	
1,2-Dichloropropane	ug/L	ND	20	21.7	109	70-130	
1,3-Dichlorobenzene	ug/L	ND	20	22.0	110	70-130	
1,3-Dichloropropane	ug/L	ND	20	21.3	107	70-130	
1,4-Dichlorobenzene	ug/L	ND	20	21.9	109	70-130	
2,2-Dichloropropane	ug/L	ND	20	18.5	93	70-130	
2-Butanone (MEK)	ug/L	ND	40	41.6	104	70-130	
2-Chlorotoluene	ug/L	ND	20	22.5	113	70-130	
2-Hexanone	ug/L	ND	40	45.7	114	70-130	
4-Chlorotoluene	ug/L	ND	20	22.2	111	70-130	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	40	42.3	106	70-130	
Acetone	ug/L	ND	40	44.6	96	70-130	
Benzene	ug/L	ND	20	22.9	115	70-148	
Bromobenzene	ug/L	ND	20	22.1	110	70-130	
Bromochloromethane	ug/L	ND	20	19.8	99	70-130	
Bromodichloromethane	ug/L	ND	20	22.4	112	70-130	
Bromoform	ug/L	ND	20	17.9	90	70-130	
Bromomethane	ug/L	ND	20	22.2	111	70-130	
Carbon tetrachloride	ug/L	ND	20	24.7	123	70-130	
Chlorobenzene	ug/L	ND	20	22.4	112	70-146	
Chloroethane	ug/L	ND	20	19.3	97	70-130	
Chloroform	ug/L	ND	20	19.7	98	70-130	
Chloromethane	ug/L	ND	20	22.4	112	70-130	
cis-1,2-Dichloroethene	ug/L	ND	20	20.2	99	70-130	
cis-1,3-Dichloropropene	ug/L	ND	20	19.6	98	70-130	
Dibromochloromethane	ug/L	ND	20	19.3	97	70-130	
Dibromomethane	ug/L	ND	20	21.6	108	70-130	
Dichlorodifluoromethane	ug/L	ND	20	20.7	104	70-130	
Diisopropyl ether	ug/L	ND	20	20.2	101	70-130	
Ethylbenzene	ug/L	ND	20	22.1	110	70-130	
Hexachloro-1,3-butadiene	ug/L	ND	20	21.6	108	70-130	
m&p-Xylene	ug/L	ND	40	43.9	110	70-130	
Methyl-tert-butyl ether	ug/L	ND	20	18.7	93	70-130	
Methylene Chloride	ug/L	ND	20	19.7	98	70-130	

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REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: 31400389-02 FORMER KOP-FLEX
Pace Project No.: 92334701

MATRIX SPIKE SAMPLE: 1966603

Parameter	Units	92334544005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Naphthalene	ug/L	ND	20	21.1	105	70-130	
o-Xylene	ug/L	ND	20	21.8	109	70-130	
p-Isopropyltoluene	ug/L	ND	20	20.7	103	70-130	
Styrene	ug/L	ND	20	21.1	105	70-130	
Tetrachloroethene	ug/L	1.6	20	23.7	110	70-130	
Toluene	ug/L	ND	20	22.5	112	70-155	
trans-1,2-Dichloroethene	ug/L	ND	20	21.1	105	70-130	
trans-1,3-Dichloropropene	ug/L	ND	20	20.0	100	70-130	
Trichloroethene	ug/L	ND	20	22.5	112	69-151	
Trichlorofluoromethane	ug/L	ND	20	22.7	114	70-130	
Vinyl acetate	ug/L	ND	40	32.3	81	70-130	
Vinyl chloride	ug/L	ND	20	18.9	94	70-130	
1,2-Dichloroethane-d4 (S)	%				90	70-130	
4-Bromofluorobenzene (S)	%				99	70-130	
Toluene-d8 (S)	%				99	70-130	

SAMPLE DUPLICATE: 1966121

Parameter	Units	92334544016 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	ND		30	
1,1,1-Trichloroethane	ug/L	ND	ND		30	
1,1,2,2-Tetrachloroethane	ug/L	ND	ND		30	
1,1,2-Trichloroethane	ug/L	ND	ND		30	
1,1-Dichloroethane	ug/L	ND	ND		30	
1,1-Dichloroethene	ug/L	ND	ND		30	
1,1-Dichloropropene	ug/L	ND	ND		30	
1,2,3-Trichlorobenzene	ug/L	ND	ND		30	
1,2,3-Trichloropropane	ug/L	ND	ND		30	
1,2,4-Trichlorobenzene	ug/L	ND	ND		30	
1,2-Dibromo-3-chloropropane	ug/L	ND	ND		30	
1,2-Dibromoethane (EDB)	ug/L	ND	ND		30	
1,2-Dichlorobenzene	ug/L	ND	ND		30	
1,2-Dichloroethane	ug/L	ND	ND		30	
1,2-Dichloropropane	ug/L	ND	ND		30	
1,3-Dichlorobenzene	ug/L	ND	ND		30	
1,3-Dichloropropane	ug/L	ND	ND		30	
1,4-Dichlorobenzene	ug/L	ND	ND		30	
2,2-Dichloropropane	ug/L	ND	ND		30	
2-Butanone (MEK)	ug/L	ND	ND		30	
2-Chlorotoluene	ug/L	ND	ND		30	
2-Hexanone	ug/L	ND	ND		30	
4-Chlorotoluene	ug/L	ND	ND		30	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	ND		30	
Acetone	ug/L	ND	ND		30	
Benzene	ug/L	ND	ND		30	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALITY CONTROL DATA

Project: 31400389-02 FORMER KOP-FLEX
Pace Project No.: 92334701

SAMPLE DUPLICATE: 1966121

Parameter	Units	92334544016 Result	Dup Result	RPD	Max RPD	Qualifiers
Bromobenzene	ug/L	ND	ND		30	
Bromochloromethane	ug/L	ND	ND		30	
Bromodichloromethane	ug/L	ND	ND		30	
Bromoform	ug/L	ND	ND		30	
Bromomethane	ug/L	ND	ND		30	
Carbon tetrachloride	ug/L	ND	ND		30	
Chlorobenzene	ug/L	ND	ND		30	
Chloroethane	ug/L	ND	ND		30	
Chloroform	ug/L	ND	5.5J		30	
Chloromethane	ug/L	ND	ND		30	
cis-1,2-Dichloroethene	ug/L	144	144	0	30	
cis-1,3-Dichloropropene	ug/L	ND	ND		30	
Dibromochloromethane	ug/L	ND	ND		30	
Dibromomethane	ug/L	ND	ND		30	
Dichlorodifluoromethane	ug/L	ND	ND		30	
Diisopropyl ether	ug/L	ND	ND		30	
Ethylbenzene	ug/L	ND	ND		30	
Hexachloro-1,3-butadiene	ug/L	ND	ND		30	
m&p-Xylene	ug/L	ND	ND		30	
Methyl-tert-butyl ether	ug/L	ND	ND		30	
Methylene Chloride	ug/L	ND	ND		30	
Naphthalene	ug/L	ND	ND		30	
o-Xylene	ug/L	ND	ND		30	
p-Isopropyltoluene	ug/L	ND	ND		30	
Styrene	ug/L	ND	ND		30	
Tetrachloroethene	ug/L	1260	1320	4	30	
Toluene	ug/L	ND	ND		30	
trans-1,2-Dichloroethene	ug/L	ND	ND		30	
trans-1,3-Dichloropropene	ug/L	ND	ND		30	
Trichloroethene	ug/L	37.2	39.2	5	30	
Trichlorofluoromethane	ug/L	ND	ND		30	
Vinyl acetate	ug/L	ND	ND		30	
Vinyl chloride	ug/L	ND	ND		30	
Xylene (Total)	ug/L	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%	85	86	0		
4-Bromofluorobenzene (S)	%	98	100	2		
Toluene-d8 (S)	%	101	101	0		

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REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: 31400389-02 FORMER KOP-FLEX
Pace Project No.: 92334701

QC Batch: 354437 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV Low Level
Associated Lab Samples: 92334701001

METHOD BLANK: 1966122 Matrix: Water
Associated Lab Samples: 92334701001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	03/30/17 12:43	
1,1,1-Trichloroethane	ug/L	ND	1.0	03/30/17 12:43	
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	03/30/17 12:43	
1,1,2-Trichloroethane	ug/L	ND	1.0	03/30/17 12:43	
1,1-Dichloroethane	ug/L	ND	1.0	03/30/17 12:43	
1,1-Dichloroethene	ug/L	ND	1.0	03/30/17 12:43	
1,1-Dichloropropene	ug/L	ND	1.0	03/30/17 12:43	
1,2,3-Trichlorobenzene	ug/L	ND	1.0	03/30/17 12:43	
1,2,3-Trichloropropane	ug/L	ND	1.0	03/30/17 12:43	
1,2,4-Trichlorobenzene	ug/L	ND	1.0	03/30/17 12:43	
1,2-Dibromo-3-chloropropane	ug/L	ND	2.0	03/30/17 12:43	
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	03/30/17 12:43	
1,2-Dichlorobenzene	ug/L	ND	1.0	03/30/17 12:43	
1,2-Dichloroethane	ug/L	ND	1.0	03/30/17 12:43	
1,2-Dichloropropane	ug/L	ND	1.0	03/30/17 12:43	
1,3-Dichlorobenzene	ug/L	ND	1.0	03/30/17 12:43	
1,3-Dichloropropane	ug/L	ND	1.0	03/30/17 12:43	
1,4-Dichlorobenzene	ug/L	ND	1.0	03/30/17 12:43	
2,2-Dichloropropane	ug/L	ND	1.0	03/30/17 12:43	
2-Butanone (MEK)	ug/L	ND	5.0	03/30/17 12:43	
2-Chlorotoluene	ug/L	ND	1.0	03/30/17 12:43	
2-Hexanone	ug/L	ND	5.0	03/30/17 12:43	
4-Chlorotoluene	ug/L	ND	1.0	03/30/17 12:43	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	5.0	03/30/17 12:43	
Acetone	ug/L	ND	25.0	03/30/17 12:43	
Benzene	ug/L	ND	1.0	03/30/17 12:43	
Bromobenzene	ug/L	ND	1.0	03/30/17 12:43	
Bromochloromethane	ug/L	ND	1.0	03/30/17 12:43	
Bromodichloromethane	ug/L	ND	1.0	03/30/17 12:43	
Bromoform	ug/L	ND	1.0	03/30/17 12:43	
Bromomethane	ug/L	ND	2.0	03/30/17 12:43	
Carbon tetrachloride	ug/L	ND	1.0	03/30/17 12:43	
Chlorobenzene	ug/L	ND	1.0	03/30/17 12:43	
Chloroethane	ug/L	ND	1.0	03/30/17 12:43	
Chloroform	ug/L	ND	1.0	03/30/17 12:43	
Chloromethane	ug/L	ND	1.0	03/30/17 12:43	
cis-1,2-Dichloroethene	ug/L	ND	1.0	03/30/17 12:43	
cis-1,3-Dichloropropene	ug/L	ND	1.0	03/30/17 12:43	
Dibromochloromethane	ug/L	ND	1.0	03/30/17 12:43	
Dibromomethane	ug/L	ND	1.0	03/30/17 12:43	
Dichlorodifluoromethane	ug/L	ND	1.0	03/30/17 12:43	

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REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: 31400389-02 FORMER KOP-FLEX
Pace Project No.: 92334701

METHOD BLANK: 1966122 Matrix: Water
Associated Lab Samples: 92334701001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diisopropyl ether	ug/L	ND	1.0	03/30/17 12:43	
Ethylbenzene	ug/L	ND	1.0	03/30/17 12:43	
Hexachloro-1,3-butadiene	ug/L	ND	1.0	03/30/17 12:43	
m&p-Xylene	ug/L	ND	2.0	03/30/17 12:43	
Methyl-tert-butyl ether	ug/L	ND	1.0	03/30/17 12:43	
Methylene Chloride	ug/L	ND	2.0	03/30/17 12:43	
Naphthalene	ug/L	ND	1.0	03/30/17 12:43	
o-Xylene	ug/L	ND	1.0	03/30/17 12:43	
p-Isopropyltoluene	ug/L	ND	1.0	03/30/17 12:43	
Styrene	ug/L	ND	1.0	03/30/17 12:43	
Tetrachloroethene	ug/L	ND	1.0	03/30/17 12:43	
Toluene	ug/L	ND	1.0	03/30/17 12:43	
trans-1,2-Dichloroethene	ug/L	ND	1.0	03/30/17 12:43	
trans-1,3-Dichloropropene	ug/L	ND	1.0	03/30/17 12:43	
Trichloroethene	ug/L	ND	1.0	03/30/17 12:43	
Trichlorofluoromethane	ug/L	ND	1.0	03/30/17 12:43	
Vinyl acetate	ug/L	ND	2.0	03/30/17 12:43	
Vinyl chloride	ug/L	ND	1.0	03/30/17 12:43	
Xylene (Total)	ug/L	ND	1.0	03/30/17 12:43	
1,2-Dichloroethane-d4 (S)	%	91	70-130	03/30/17 12:43	
4-Bromofluorobenzene (S)	%	99	70-130	03/30/17 12:43	
Toluene-d8 (S)	%	102	70-130	03/30/17 12:43	

LABORATORY CONTROL SAMPLE: 1966123

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	50	48.7	97	70-130	
1,1,1-Trichloroethane	ug/L	50	46.7	93	70-130	
1,1,2,2-Tetrachloroethane	ug/L	50	49.1	98	70-130	
1,1,2-Trichloroethane	ug/L	50	50.0	100	70-130	
1,1-Dichloroethane	ug/L	50	45.3	91	70-130	
1,1-Dichloroethene	ug/L	50	50.0	100	70-132	
1,1-Dichloropropene	ug/L	50	49.0	98	70-130	
1,2,3-Trichlorobenzene	ug/L	50	50.8	102	70-135	
1,2,3-Trichloropropane	ug/L	50	49.8	100	70-130	
1,2,4-Trichlorobenzene	ug/L	50	51.2	102	70-134	
1,2-Dibromo-3-chloropropane	ug/L	50	49.0	98	70-130	
1,2-Dibromoethane (EDB)	ug/L	50	52.8	106	70-130	
1,2-Dichlorobenzene	ug/L	50	51.9	104	70-130	
1,2-Dichloroethane	ug/L	50	42.9	86	70-130	
1,2-Dichloropropane	ug/L	50	50.6	101	70-130	
1,3-Dichlorobenzene	ug/L	50	51.7	103	70-130	
1,3-Dichloropropane	ug/L	50	52.8	106	70-130	
1,4-Dichlorobenzene	ug/L	50	50.8	102	70-130	

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REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: 31400389-02 FORMER KOP-FLEX
Pace Project No.: 92334701

LABORATORY CONTROL SAMPLE: 1966123

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,2-Dichloropropane	ug/L	50	47.1	94	58-145	
2-Butanone (MEK)	ug/L	100	97.7	98	70-145	
2-Chlorotoluene	ug/L	50	51.9	104	70-130	
2-Hexanone	ug/L	100	106	106	70-144	
4-Chlorotoluene	ug/L	50	50.8	102	70-130	
4-Methyl-2-pentanone (MIBK)	ug/L	100	98.0	98	70-140	
Acetone	ug/L	100	105	105	50-175	
Benzene	ug/L	50	51.6	103	70-130	
Bromobenzene	ug/L	50	50.1	100	70-130	
Bromochloromethane	ug/L	50	46.1	92	70-130	
Bromodichloromethane	ug/L	50	52.7	105	70-130	
Bromoform	ug/L	50	42.9	86	70-130	
Bromomethane	ug/L	50	45.1	90	54-130	
Carbon tetrachloride	ug/L	50	53.1	106	70-132	
Chlorobenzene	ug/L	50	52.3	105	70-130	
Chloroethane	ug/L	50	42.0	84	64-134	
Chloroform	ug/L	50	44.6	89	70-130	
Chloromethane	ug/L	50	48.7	97	64-130	
cis-1,2-Dichloroethene	ug/L	50	44.9	90	70-131	
cis-1,3-Dichloropropene	ug/L	50	50.0	100	70-130	
Dibromochloromethane	ug/L	50	46.8	94	70-130	
Dibromomethane	ug/L	50	49.3	99	70-131	
Dichlorodifluoromethane	ug/L	50	46.8	94	56-130	
Diisopropyl ether	ug/L	50	48.1	96	70-130	
Ethylbenzene	ug/L	50	51.2	102	70-130	
Hexachloro-1,3-butadiene	ug/L	50	52.8	106	70-130	
m&p-Xylene	ug/L	100	101	101	70-130	
Methyl-tert-butyl ether	ug/L	50	46.9	94	70-130	
Methylene Chloride	ug/L	50	45.7	91	63-130	
Naphthalene	ug/L	50	50.1	100	70-138	
o-Xylene	ug/L	50	50.4	101	70-130	
p-Isopropyltoluene	ug/L	50	49.6	99	70-130	
Styrene	ug/L	50	51.1	102	70-130	
Tetrachloroethene	ug/L	50	51.4	103	70-130	
Toluene	ug/L	50	49.2	98	70-130	
trans-1,2-Dichloroethene	ug/L	50	47.4	95	70-130	
trans-1,3-Dichloropropene	ug/L	50	48.6	97	70-132	
Trichloroethene	ug/L	50	52.4	105	70-130	
Trichlorofluoromethane	ug/L	50	48.4	97	62-133	
Vinyl acetate	ug/L	100	98.0	98	66-157	
Vinyl chloride	ug/L	50	40.4	81	50-150	
Xylene (Total)	ug/L	150	151	101	70-130	
1,2-Dichloroethane-d4 (S)	%			93	70-130	
4-Bromofluorobenzene (S)	%			100	70-130	
Toluene-d8 (S)	%			97	70-130	

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REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: 31400389-02 FORMER KOP-FLEX
Pace Project No.: 92334701

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1966124 1966125

Parameter	Units	92334701001 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	22.0	19.9	110	99	70-130	10	30	
1,1,1-Trichloroethane	ug/L	ND	20	20	23.2	21.1	116	106	70-130	9	30	
1,1,2,2-Tetrachloroethane	ug/L	ND	20	20	22.4	19.9	112	99	70-130	12	30	
1,1,2-Trichloroethane	ug/L	ND	20	20	22.8	21.1	114	105	70-130	8	30	
1,1-Dichloroethane	ug/L	ND	20	20	22.3	21.3	109	104	70-130	5	30	
1,1-Dichloroethene	ug/L	1.9	20	20	26.0	24.5	120	113	70-166	6	30	
1,1-Dichloropropene	ug/L	ND	20	20	23.1	21.2	116	106	70-130	8	30	
1,2,3-Trichlorobenzene	ug/L	ND	20	20	20.9	19.8	104	99	70-130	5	30	
1,2,3-Trichloropropane	ug/L	ND	20	20	23.4	20.3	117	101	70-130	14	30	
1,2,4-Trichlorobenzene	ug/L	ND	20	20	21.4	20.6	107	103	70-130	4	30	
1,2-Dibromo-3-chloropropane	ug/L	ND	20	20	20.5	19.3	103	96	70-130	6	30	
1,2-Dibromoethane (EDB)	ug/L	ND	20	20	23.3	20.9	117	105	70-130	11	30	
1,2-Dichlorobenzene	ug/L	ND	20	20	22.6	21.1	113	106	70-130	7	30	
1,2-Dichloroethane	ug/L	ND	20	20	19.7	18.6	98	92	70-130	6	30	
1,2-Dichloropropane	ug/L	ND	20	20	23.5	22.1	117	110	70-130	6	30	
1,3-Dichlorobenzene	ug/L	ND	20	20	22.0	20.7	110	103	70-130	6	30	
1,3-Dichloropropane	ug/L	ND	20	20	23.5	21.8	118	109	70-130	8	30	
1,4-Dichlorobenzene	ug/L	ND	20	20	21.8	20.4	109	102	70-130	7	30	
2,2-Dichloropropane	ug/L	ND	20	20	19.0	18.1	95	91	70-130	5	30	
2-Butanone (MEK)	ug/L	ND	40	40	47.9	40.6	120	102	70-130	16	30	
2-Chlorotoluene	ug/L	ND	20	20	23.2	22.1	116	111	70-130	5	30	
2-Hexanone	ug/L	ND	40	40	49.6	43.5	124	109	70-130	13	30	
4-Chlorotoluene	ug/L	ND	20	20	23.0	21.0	115	105	70-130	9	30	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	40	40	47.5	41.0	119	103	70-130	15	30	
Acetone	ug/L	ND	40	40	45.6	44.7	104	102	70-130	2	30	
Benzene	ug/L	ND	20	20	24.5	22.8	123	114	70-148	7	30	
Bromobenzene	ug/L	ND	20	20	22.6	20.9	113	105	70-130	8	30	
Bromochloromethane	ug/L	ND	20	20	21.0	20.9	105	104	70-130	0	30	
Bromodichloromethane	ug/L	ND	20	20	24.1	22.6	121	113	70-130	7	30	
Bromoform	ug/L	ND	20	20	19.4	17.9	97	90	70-130	8	30	
Bromomethane	ug/L	ND	20	20	18.9	18.1	95	91	70-130	4	30	
Carbon tetrachloride	ug/L	ND	20	20	25.3	24.3	127	122	70-130	4	30	
Chlorobenzene	ug/L	ND	20	20	23.5	22.0	117	110	70-146	7	30	
Chloroethane	ug/L	ND	20	20	21.8	20.5	109	102	70-130	6	30	
Chloroform	ug/L	ND	20	20	21.7	19.8	108	99	70-130	9	30	
Chloromethane	ug/L	ND	20	20	23.3	22.4	116	112	70-130	4	30	
cis-1,2-Dichloroethene	ug/L	ND	20	20	21.1	19.9	106	99	70-130	6	30	
cis-1,3-Dichloropropene	ug/L	ND	20	20	21.0	20.3	105	102	70-130	3	30	
Dibromochloromethane	ug/L	ND	20	20	20.8	19.1	104	96	70-130	8	30	
Dibromomethane	ug/L	ND	20	20	23.6	21.8	118	109	70-130	8	30	
Dichlorodifluoromethane	ug/L	ND	20	20	22.1	20.3	111	102	70-130	9	30	
Diisopropyl ether	ug/L	ND	20	20	22.3	20.3	111	102	70-130	9	30	
Ethylbenzene	ug/L	ND	20	20	23.6	22.2	118	111	70-130	6	30	
Hexachloro-1,3-butadiene	ug/L	ND	20	20	23.2	21.4	116	107	70-130	8	30	

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REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: 31400389-02 FORMER KOP-FLEX
Pace Project No.: 92334701

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1966124 1966125

Parameter	Units	92334701001 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	45.7	43.6	114	109	70-130	5	30	
Methyl-tert-butyl ether	ug/L	ND	20	20	20.7	19.1	104	96	70-130	8	30	
Methylene Chloride	ug/L	ND	20	20	21.4	20.4	107	102	70-130	5	30	
Naphthalene	ug/L	ND	20	20	21.0	19.5	105	97	70-130	8	30	
o-Xylene	ug/L	ND	20	20	22.5	21.5	112	108	70-130	4	30	
p-Isopropyltoluene	ug/L	ND	20	20	21.4	19.8	107	99	70-130	8	30	
Styrene	ug/L	ND	20	20	22.8	21.9	114	110	70-130	4	30	
Tetrachloroethene	ug/L	ND	20	20	23.3	21.5	117	108	70-130	8	30	
Toluene	ug/L	ND	20	20	23.2	21.7	116	108	70-155	7	30	
trans-1,2-Dichloroethene	ug/L	ND	20	20	22.6	21.1	113	105	70-130	7	30	
trans-1,3-Dichloropropene	ug/L	ND	20	20	20.5	19.3	103	96	70-130	6	30	
Trichloroethene	ug/L	ND	20	20	24.8	22.7	124	113	69-151	9	30	
Trichlorofluoromethane	ug/L	ND	20	20	24.4	23.1	122	115	70-130	5	30	
Vinyl acetate	ug/L	ND	40	40	35.6	33.6	89	84	70-130	6	30	
Vinyl chloride	ug/L	ND	20	20	19.0	18.2	95	91	70-130	4	30	
1,2-Dichloroethane-d4 (S)	%						92	93	70-130			
4-Bromofluorobenzene (S)	%						102	103	70-130			
Toluene-d8 (S)	%						99	97	70-130			

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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Huntersville, NC 28078
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QUALITY CONTROL DATA

Project: 31400389-02 FORMER KOP-FLEX
Pace Project No.: 92334701

QC Batch: 354652 Analysis Method: EPA 8260B Mod.
QC Batch Method: EPA 8260B Mod. Analysis Description: 8260 MSV SIM
Associated Lab Samples: 92334701001, 92334701003

METHOD BLANK: 1967414 Matrix: Water
Associated Lab Samples: 92334701001, 92334701003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	ND	2.0	03/31/17 14:33	
1,2-Dichloroethane-d4 (S)	%	96	50-150	03/31/17 14:33	
Toluene-d8 (S)	%	92	50-150	03/31/17 14:33	

LABORATORY CONTROL SAMPLE: 1967415

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	20	20.2	101	71-125	
1,2-Dichloroethane-d4 (S)	%			97	50-150	
Toluene-d8 (S)	%			94	50-150	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1967416 1967417

Parameter	Units	92334701001 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	2.3	20	20	21.5	22.8	96	102	50-150	6	30	
1,2-Dichloroethane-d4 (S)	%						97	94	50-150		150	
Toluene-d8 (S)	%						94	90	50-150		150	

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REPORT OF LABORATORY ANALYSIS

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

QUALIFIERS

Project: 31400389-02 FORMER KOP-FLEX
Pace Project No.: 92334701

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.

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: 31400389-02 FORMER KOP-FLEX
Pace Project No.: 92334701

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92334701001	**MW-45-032417**	EPA 8260	354437		
92334701003	**TRIP BLANK**	EPA 8260	354264		
92334701001	**MW-45-032417**	EPA 8260B Mod.	354652		
92334701003	**TRIP BLANK**	EPA 8260B Mod.	354652		

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

Sample Condition Upon Receipt

Client Name: WSP

Project: WO# : 92334701

92334701

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

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

Date/Initials Person Examining Contents: JM 3/27

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

Thermometer: ☐ IR Gun ID: T1603 **Type of Ice:** ☑ Wet ☐ Blue ☐ None ☑ Samples on ice, cooling process has begun

Correction Factor: **Cooler Temp Corrected (°C):** 3 **Biological Tissue Frozen?** ☐ Yes ☐ No ☑ N/A

Temp should be above freezing to 6°C

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.
Samples Field Filtered?	☐ Yes	☐ No	☑ N/A	8. Note if sediment is visible in the dissolved container
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: _____

Project Manager SCURF Review: JD **Date:** 3/28/17

Project Manager SRF Review: JD **Date:** 3/28/17

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)

WO# : 92334701

PM: KRG Due Date: 04/03/17

CLIENT: 92-WSP

*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 #

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)	BP3S-250 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP3Z-250 mL Plastic ZN Acetate & NaOH (>9)	BP3C-250 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																2												
3																4												
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 #

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page : 1 Of 1

Section A Required Client Information:		Section B Required Project Information:	Section C Invoice Information:	
Company: WSP Environmental Strategies		Report To: Johnson, Eric	Attention:	Regulatory Agency
Address: 11190 Sunrise Valley Dr		Copy To:	Company Name:	
Suite 300, Reston, VA 20191			Address:	State / Location
Email:		Purchase Order #:	Pace Quote:	VA
Phone:	Fax	Project Name: 31400389-02 Former Kop-FLex	Pace Project Manager: kevin.godwin@pacelabs.com,	
Requested Due Date:		Project #:	Pace Profile #: 4362-1	

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test Y/N	Trip BLANK	8260	8260 SIM 1,4-Dioxane	Residual Chlorine (Y/N)	92334701
1	MW-45-032417	WT	G	3/24/17	1055			13°C	6				X							X	X		001
2	MS/MSD	WT	G	3/24/17	1055			13°C	12				X							X	X		002 ~~002~~ 003 ~~003=002~~ KG 3/28/17
3	Trip Blank	WT	Lab Provided						4				X						X				
4																							
5																							
6																							
7																							
8																							
9																							
10																							
11																							
12																							

MATRIX CODE: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Other OT; Tissue TS

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
	WSP	3/24/17	1330	FedEx	3/25/17	9:15

SAMPLE CONDITIONS

TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
3.1	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Rob Wallace

SIGNATURE of SAMPLER: [signature]

DATE Signed: 3/24/17