VIA ELECTRONIC MAIL

May 10, 2018

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

Subject: **Quarterly Progress Report No. 6**
Former Kop-Flex Facility Site, Hanover, Maryland
Administrative Order on Consent, Docket No. RCRA-03-2016-0170 CA

Dear Erich:

On behalf of EMERSUB 16, LLC, a subsidiary of Emerson Electric Co., WSP USA, Inc. (WSP) is submitting this quarterly progress report describing the remedial and groundwater monitoring activities conducted in the first quarter of calendar year 2018 (January 1 through March 31) as part of the corrective measures implementation at the former Kop-Flex, Inc. facility property located at 7555 and 7565 Harmans Road (Site) in Hanover, Maryland. The Site is identical to the area described as the "Facility" in the Administrative Order on Consent, Docket No. RCRA-03-2016-0170 CA for the Site (Consent Order). The report also describes the activities planned for the second quarter of calendar year 2018 (April 1 through June 30). This progress report is being submitted to the U.S. Environmental Protection Agency (EPA) pursuant to Section IV.C.3 of the Consent Order.

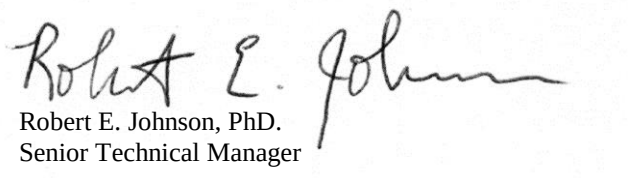
This submittal also fulfills the quarterly operation and maintenance (O&M) reporting requirement for the onsite groundwater remedial system specified in Section 14.2 of the October 2015 Response Action Plan (RAP). The inclusion of information pertaining to the system O&M in this progress report was approved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

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

Tel.: +1 703 709-6500
Fax: +1 703 709-8505
wsp.com

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

Kind regards,



Robert E. Johnson, PhD.
Senior Technical Manager

REJ:rlo
k:\emerson\kop-flex\reporting\status reports\EPA progress reports\cm progress report 6\

Encl.

cc: Mr. Stephen Clarke, EMERSUB 16 LLC.
Ms. Richelle Hanson, Maryland Department of the Environment
Mr. Raymond Goins, Trammell Crow Company

CERTIFICATION

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

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

Signature: 

Name: Stephen L. Clarke

Title: President of EMERSUB 16, LLC

Quarterly Progress Report No. 6

Former Kop-Flex Facility Site

January 2018 through March 2018

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

1.0 ACTIVITIES COMPLETED DURING JANUARY 2018 – MARCH 2018 REPORTING PERIOD

1.1 REPORTING

- In early February 2018, MDE approved the Site Maintenance Plan (SMP) and Soil Management Plan submitted on behalf of the property owner, Harmans Road Associates LLC, by its consultant ECS Mid-Atlantic LLC (ECS). The SMP provides information with respect to the inspection and maintenance of the engineering controls which were installed during property redevelopment and comprise part of the corrective measures for the Site. EMERSUB 16 will incorporate the SMP and Soil Management Plan into the Use Restriction Implementation Plan (URIP) required under the Consent Order.
- Location coordinates for the new warehouse buildings containing the sub-slab vapor intrusion mitigation systems were provided via electronic mail to the EPA and MDE on February 28, 2018. This building location information will also be included in the URIP for the Site.

1.2 HYDRAULIC CONTAINMENT SYSTEM OPERATION

- The hydraulic containment system operated continuously from January 1, 2018 through March 31, 2018, except for a 3-day shut-down period in early March due to a problem with the pH adjustment chemicals. During the reporting period, a total of approximately 8.48 million gallons of volatile organic compound (VOC)-containing groundwater were recovered and treated by the system, with a combined average withdrawal rate of approximately 69.5 gallons per minute (GPM) from the shallow and deep recovery wells.

- During system operation, water samples were regularly collected for chemical analysis to monitor and evaluate VOC concentrations in the treatment system influent and effluent. Total concentrations of VOCs (including 1,4-dioxane) for the system influent were generally consistent during the reporting period, with levels ranging from 524 micrograms per liter (µg/l) to 535 µg/l. The influent VOC concentrations were slightly higher than levels measured in samples collected during the fourth quarter of 2017, which ranged between 440 µg/l and 490 µg/l. Analysis of the treated water (i.e., effluent) indicated non-detect concentrations of chlorinated VOCs and 1,4-dioxane, except for the March 2018 sample which had a very low detection (2.4 µg/l) of 1,4-dioxane. Additional information concerning the system performance is provided in the Quarterly Operation and Maintenance (O&M) Progress Report included in Enclosure A.

- Samples of the treated effluent were collected for chemical analysis in accordance with State Discharge Permit Number 15-DP-3442 and National Pollutant Discharge Elimination System (NPDES) Permit MD 0069094 (Permit) issued by the MDE. The analytical results indicate compliance with the effluent limitations specified in the Permit. Based on the analytical results for nitrogen-containing constituents and the low total nitrogen loading to the receiving stream during the first year of system operation, WSP petitioned the MDE for a waiver from the requirement for quarterly nitrogen parameter sampling under the Permit. MDE granted WSP's request to discontinue the nitrogen-parameter monitoring and reporting for the discharge in correspondence dated March 30, 2018. A copy of the MDE approval letter is provided in Enclosure B.

Additionally, Whole Effluent Toxicity (WET) testing of the treated effluent was conducted in accordance with the revised Biomonitoring Study Plan. The fourth quarterly biomonitoring event was completed in mid-March 2018. Evaluation of the test results with respect to information provided by the MDE Water Management Administration indicates no adverse toxicity associated with the treated water discharge.

Additional information concerning the permit-related monitoring is provided in the Quarterly O&M Progress Report included in Enclosure A.

- In late March 2018, WSP and Emerging Compound Treatment Technologies (ECT^2), the contractor involved in the design and installation of the water treatment system and resin, initiated modifications to enable automation of the steam regeneration process for the two resin vessels. System modifications will include the installation of pneumatic valve actuators and additional instrumentation to monitor process temperature, pressure and flow, along with upgrading the electrical and process control systems. The automation upgrade did not interfere with existing operating conditions of the system. Detailed information concerning the automation of the resin regeneration process will be provided in the annual system O&M report.

1.3 GROUNDWATER MONITORING

- As indicated in the Groundwater Monitoring Plan for the response action, groundwater level monitoring to evaluate the head distribution in response to remedial pumping is to be conducted on a semi-annual basis beginning in 2018, with the next measurement event scheduled for the second quarter. No site-related or extraneous conditions occurred that warranted the collection of water level data from the monitoring network during the first quarter of 2018.

- Long-term groundwater quality sampling to monitor changes in VOC concentrations in the unconfined (surficial) and semi-confined portions of the Lower Patapsco aquifer during system operation is also conducted semi-annually at the Site. The next sampling event for the groundwater recovery wells and onsite monitoring wells will be performed during the second quarter of 2018.

2.0 PLANNED ONSITE ACTIVITIES FOR THE REMAINDER OF 2018

- Continue with the operation and maintenance activities for the hydraulic containment system.

- Conduct the necessary effluent monitoring and reporting activities for the system discharge pursuant to the Permit, and notify MDE of the discontinuation of further biomonitoring activities based on the quarterly WET test results during the first year of system operation.

- Submit an updated O&M Manual to MDE and EPA that includes the new system components and process control logic implemented as part of the resin regeneration automation.

- Collect a synoptic round(s) of water level measurements and evaluate the data to assess the aquifer response to remedial pumping and capture of the VOC plumes in the unconfined and confined portions of the aquifer system.

- Conduct semi-annual sampling of the monitoring wells and recovery well discharge in late May 2018 pursuant to the approved Groundwater Monitoring Plan.

3.0 KEY PERSONNEL/FACILITY CHANGES

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

ENCLOSURE A – FIRST QUARTER 2018 OPERATION AND MAINTENANCE PROGRESS REPORT

FIRST QUARTER 2018 OPERATION AND MAINTENANCE PROGRESS REPORT
GROUNDWATER EXTRACTION AND TREATMENT SYSTEM
FORMER KOP-FLEX FACILITY SITE
HANOVER, MARYLAND

INTRODUCTION

WSP USA Inc. has prepared this Quarterly Operation and Maintenance (O&M) Progress Report for the groundwater extraction and treatment system (System) at the Former Kop-Flex Facility Site (Site) located in Hanover, Maryland. The System start-up was initiated on March 10, 2017, with continuous operation beginning on March 29, 2017. This O&M Progress Report was prepared in accordance with the requirement specified in Chapter 14 of the October 2015 Response Action Plan (RAP), and covers the period of January 1, 2018 through March 31, 2018.

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

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

SYSTEM OPERATION AND MAINTENANCE

During the first quarter of 2018, WSP subcontracted the O&M of the System to a local contractor, S&S Technologies, Inc. of Elkton, Maryland. Subcontractor oversight was provided by WSP engineer Maria Kaplan, working under the direction of Steve Kretschman, P.E., the engineer of record for the System. O&M activities were conducted in accordance with the January 2018 revision of the Operation, Maintenance and Monitoring Manual.

Routine O&M activities performed during the reporting period included the following:

- regeneration of the resin
- replacement of bag filters
- replenishment of caustic soda
- cleaning and recalibration of the inline pH probe
- recording instrumentation readings (flow, pressure, temperature)

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

In addition to the routine O&M activities, annual O&M activities were performed on March 27, 2018 and included the following:

- cleaning and inspection of well vaults and tee-boxes
- draining the flow equalization tank and inspecting internals

- water level transducer accuracy check
- bag filter housing cleaning
- system wide leak inspection
- wye-strainer removal and cleaning

Based on the annual inspection findings, it was determined there are no leaks throughout the system and cleaning of the inside of the flow equalization tank was not necessary at this time.

The system operated continuously with 97% uptime during the reporting period. The system was shut down for three consecutive days between March 8, 2018 and March 10, 2018 due to an interruption in caustic delivery and replenishment. The pH of the discharge water remained within the permit specified range of 6.5-8.5 standard units for the entire quarter.

The total monthly volumes of treated groundwater discharged for the reporting period are shown in the following table.

Month	Total Discharged Volume (gallons)
January 2018	3,027,748
February 2018	2,715,536
March 2018	2,738,753

A total of approximately 8.48 million gallons of extracted groundwater was treated by the System in the first quarter of 2018, which is slightly greater than previous quarters. Since start-up, the System has treated approximately 35.0 million gallons of contaminated groundwater. The combined flows throughout the reporting period from the shallow recovery wells screened in the surficial aquifer and deep recovery wells screened in the confined Lower Patapsco Aquifer are provided below.

Extraction Zone	Q1 2018 Minimum Flow Rate (GPM[1])	Q1 2018 Maximum Flow Rate (GPM)	Q1 2018 Average[2] Flow Rate (GPM)
Unconfined (surficial) Aquifer	9.27	9.80	9.50
Confined Lower Patapsco Aquifer	60.28	63.00	60.83

1. GPM = gallons per minute
2. Average based weekly readings throughout the first quarter

A graph of the historical extraction rates using weekly flow measurements from the well heads for the five recovery wells is provided in Figure A-1.

RESIN VESSEL REGENERATION

The synthetic resin in the lead vessels was regenerated after treating approximately 400,000 gallons of contaminated groundwater based on the influent concentrations of VOCs and 1,4-dioxane and the modeled breakthrough curve. The regeneration occurred twice per week and all regenerations performed during the reporting period were conducted within the established regeneration criteria. The regeneration process is conducted over a two-day period and requires the operator to be onsite both days of the process. As a cost saving and efficiency improvement effort, WSP and its subcontractor, Emerging Compound Treatment Technologies (ECT^2) of Portland, Maine, initiated modifications to enable automation of the regeneration process. The upgrade began March 26, 2018 but did not interfere with existing operating conditions of the system. Detailed information about the regeneration process automation will be provided in the annual (2018) system O&M report.

TREATMENT SYSTEM PERFORMANCE MONITORING

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

The historical analytical results for the treatment system influent and effluent samples are summarized in Tables A-1 and A-2, respectively. Certified laboratory analytical reports for the January 2018 through March 2018 influent and effluent samples are included in Attachment 1. Influent VOC and 1,4-dioxane results were compared to the cleanup criteria, identified as the groundwater cleanup levels for Type I/II aquifers specified in Table 1 of the MDE Cleanup Standards and stated in the October 2015 Response Action Plan. Based on the analytical results, 1,1-DCE and 1,4-dioxane were the only constituents detected above their respective cleanup criteria in the influent samples collected during the reporting period. Other chlorinated VOCs detected in the treatment system influent include trichloroethene, 1,1-dichloroethane (DCA), 1,1,1-trichloroethane (TCA), cis-1,2-DCE, 1,2-DCA and chloroethane. All of these compounds, except for 1,1,1-TCA and 1,1-DCA, were present at very low concentrations (<5 µg/l) in the influent samples. The total chlorinated VOC concentrations, excluding 1,4-dioxane, in the influent ranged from 524.3 µg/l (February 2018) to 534.8 µg/l (March 2018). The 1,4-dioxane concentrations in the influent for the first quarter 2018 ranged from 150 µg/l (March 2018) to 180 µg/l (January 2018). Figure A-2 plots the concentration of VOCs and 1,4-dioxane in the treatment system influent from start-up (March 2017) through March 2018. The total chlorinated VOC and 1,4-dioxane concentrations are below anticipated concentrations used for the basis of design for the treatment system.

No chlorinated VOCs were detected above method reporting limits in the effluent samples collected during this reporting period. Based on these sampling results, the removal efficiency for chlorinated VOCs during the reporting period was 100%. The 1,4-dioxane concentrations in the effluent water sample ranged from below the method reporting limit of 1.0 µg/L (January 2018 and February 2018) to 2.4 µg/L (March 2018). The March 2018 effluent sample was collected immediately before resin regeneration which is the likely cause of the low level detection of 1,4-dioxane of 2.4 µg/L in the treated water. This low concentration of 1,4-dioxane is well below the site cleanup criteria of 15 µg/L. Since the timing of sample collection appears to explain the 1,4-dioxane detection, no modifications were made to the system flow, regeneration schedule, or regeneration process. Based on the sampling results for the reporting period, the removal efficiency for 1,4-dioxane was 99.5%.

During the first quarter of 2018, the System removed an estimated 25.11 pounds (lbs.) of the primary chlorinated VOCs – 1,1-DCE, 1,1-DCA, and 1,1,1-TCA - and 11.83 lbs. of 1,4-dioxane.

The monthly breakdown of the contaminant recovery during the first quarter of 2018 is shown in the following table:

Month	Estimated VOCs Removed (lbs.)	Estimated 1,4-dioxane Removed (lbs.)
March 2017 - December 2017	86.56	43.07
January 2018	8.74	4.55
February 2018	7.80	3.85
March 2018	8.55	3.43
Total	**111.64**	**54.90**

From March 2017 through March 2018, the System has removed a total of approximately 111.6 lbs. of chlorinated VOCs and 54.9 lbs. of 1,4-dioxane (Figure A-3).

The monthly sampling results for the treatment system effluent indicates the current regeneration frequency for the resin vessels is sufficient to ensure compliance with the discharge limits specified in the discharge permit and other applicable treatment criteria.

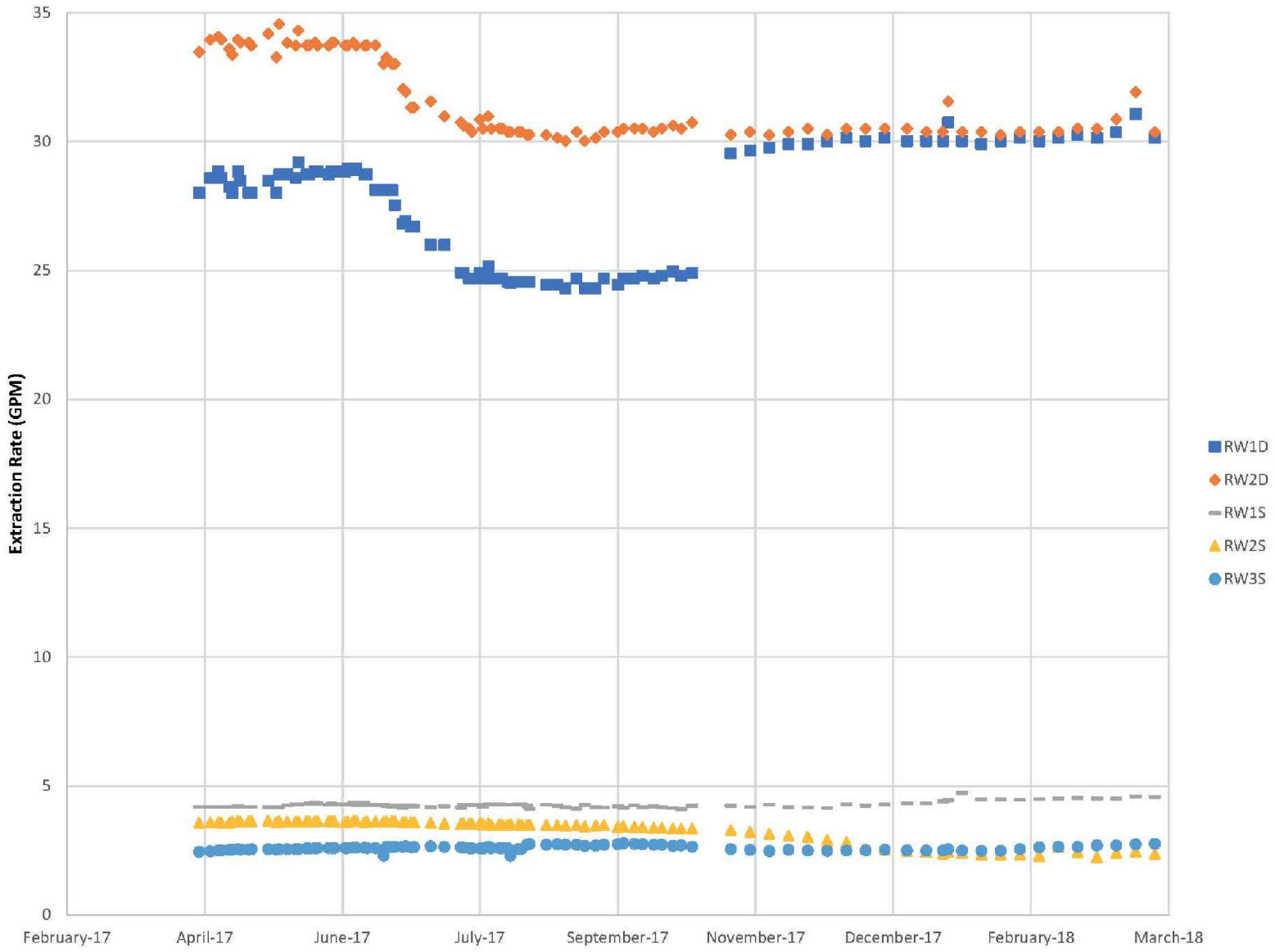
NPDES discharge monitoring reports (DMRs) are submitted to MDE monthly through the electronic data reporting system. The analytical results for the monitoring parameters demonstrate compliance with the permit limitations.

ANTICIPATED ACTIVITIES FOR THE REMAINDER OF 2018

WSP and its O&M contractor will perform routine monthly and quarterly O&M activities during the rest of 2018. The resin regeneration automation process was completed on April 9, 2018 and the operators were trained on the system upgrades. It is anticipated that the regeneration schedule will remain the same as it was prior to the automation with the regeneration occurring approximately every 400,000 gallons or twice per week. The O&M technicians will make two visits to the site each week to inspect the system, record operating parameters, and assist with the regeneration process for each resin vessel. The OM&M Manual will be updated to reflect the system modifications completed during the automation upgrade.

FIGURES

R:\ACAD\CADD_CLIENT\Emerson\MD_Hanover\31400390-Kopflex\CAD\314V0390-093.dwg 4/24/2018 9:22 AM USEC01012



NOTICE: THIS DRAWING HAS BEEN PREPARED UNDER THE DIRECTION OF A PROFESSIONAL. DO NOT ALTER THIS DOCUMENT IN ANY WAY WITHOUT THE WRITTEN CONSENT OF WSP USA INC.

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

A

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

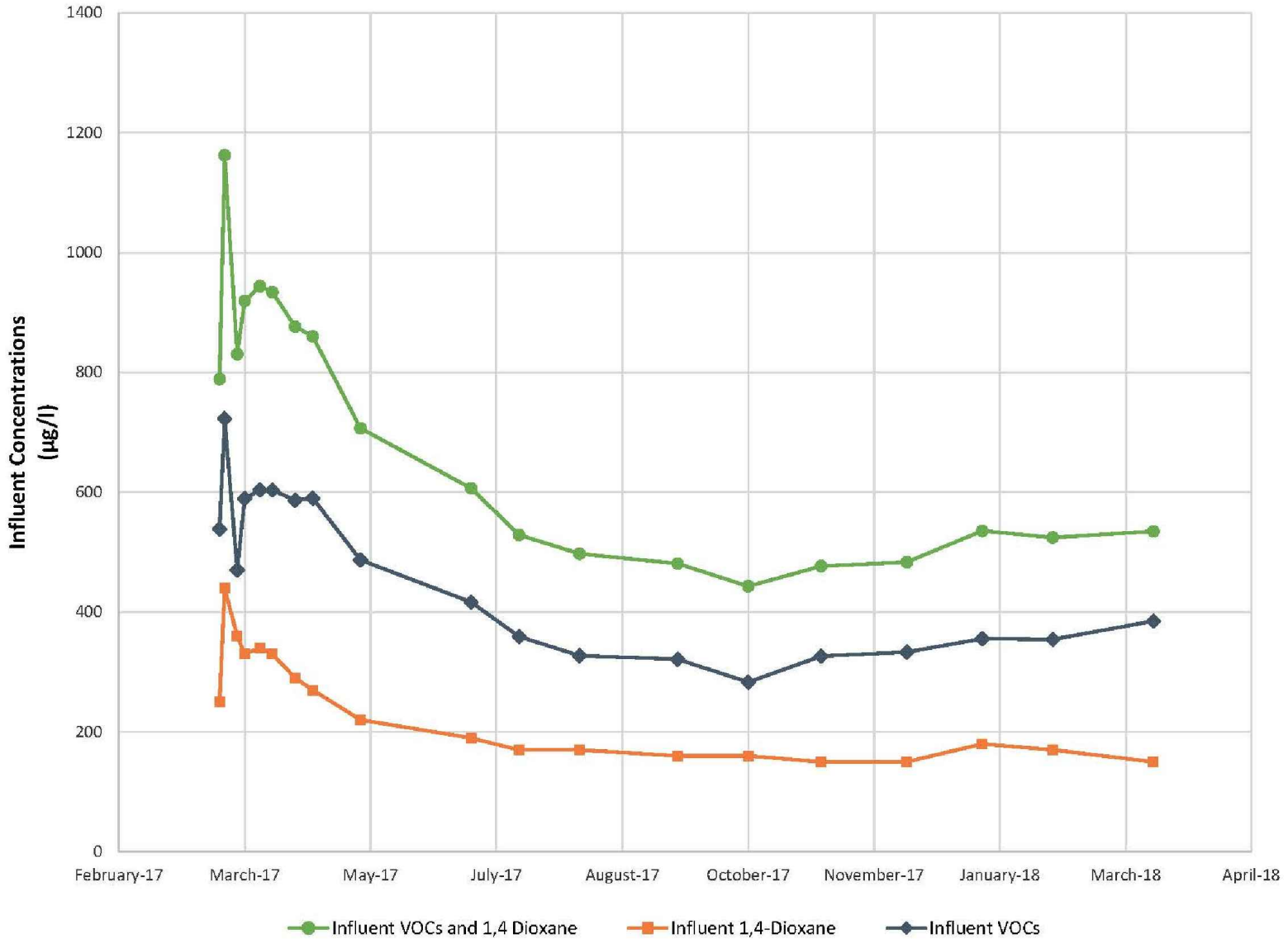
Figure A–1

EXTRACTION RATE OF RECOVERY WELLS
(MARCH 2017 THROUGH MARCH 2018)

FORMER KOP–FLEX FACILITY
HANOVER, MARYLAND

PREPARED FOR
EMERSON
ST. LOUIS, MISSOURI

Drawn By: EGC
Checked: MJK 4/24/2018
Approved: RAJ
DWG Name: 314V0390–093



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

A

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

Figure A–2

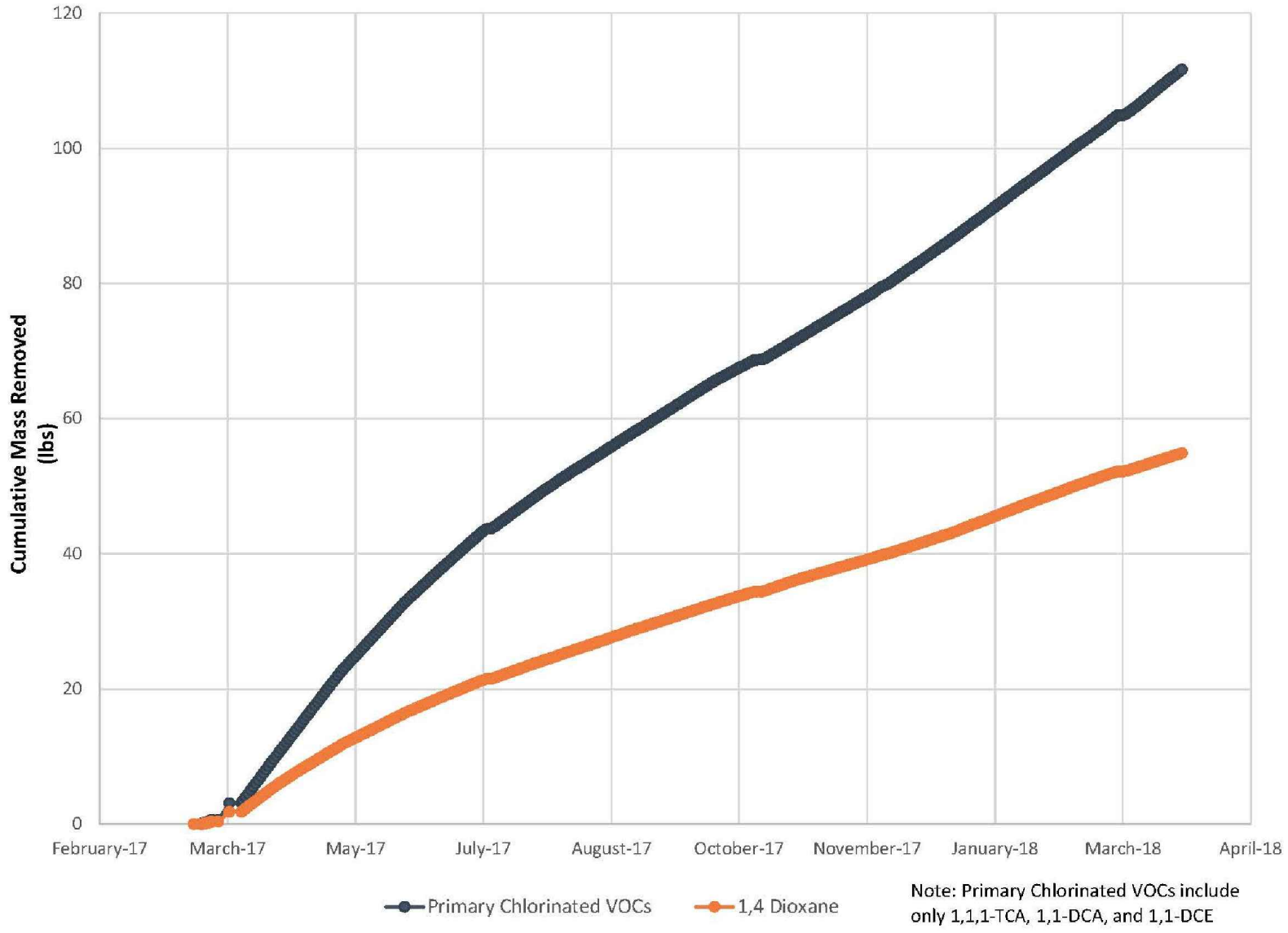
INFLUENT CONCENTRATIONS
(MARCH 2017 THROUGH MARCH 2018)

FORMER KOP–FLEX FACILITY
HANOVER, MARYLAND

PREPARED FOR
EMERSON
ST. LOUIS, MISSOURI

Drawn By: EGC
Checked: MJK 4/24/2018
Approved: RKJ
DWG Name: 314V0390–093

R:\ACAD\CADD_CLIENT\Emerson\MD_Hanover\31400390-Kopflex\CAD\314V0390-093.dwg 4/24/2018 9:25 AM USEC01012



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

A

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

Figure A–3

CUMULATIVE MASS REMOVAL FOR THE PRIMARY CHLORINATED VOCs AND 1,4–DIOXANE (MARCH 2017 THROUGH MARCH 2018)

FORMER KOP–FLEX FACILITY
HANOVER, MARYLAND

PREPARED FOR
EMERSON
ST. LOUIS, MISSOURI

Drawn By: EGC
Checked: MJK 4/24/2018
Approved: RKJ
DWG Name: 314V0390–093

TABLES

Table A-1

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

Analyte Name	Units	Cas#	Groundwater Cleanup Standards (µg/L) (c)	Influent VSP-1 3/13/2017	Influent VSP-1 3/15/2017	Influent VSP-1 3/20/2017	Influent VSP-1 3/23/2017	Influent VSP-1 3/29/2017	Influent VSP-1 4/3/2017	Influent VSP-1 4/12/2017	Influent VSP-1 4/19/2017	Influent VSP-1 5/8/2017	Influent VSP-1 6/21/2017	Influent VSP-1 7/10/2017	Influent VSP-1 8/3/2017	Influent VSP-1 9/11/2017
Volatile Organic Compounds (US EPA Method 8260)																
1,1,1-Trichloroethane	µg/L	71-55-6	200	55	150	92	81	82	62	55	49	41	39	44	41	35
1,1-Dichloroethane	µg/L	75-34-3	90	**180**	**200**	**110**	**140**	**150**	**140**	**140**	**120**	86	59	57	49	40
1,1-Dichloroethene	µg/L	75-35-4	7	**260**	**360**	**260**	**360**	**360**	**390**	**380**	**410**	**350**	**310**	**250**	**230**	**240**
1,2-Dichloroethane	µg/L	107-06-2	5	1.6	2.0	2.5	3.1	3.5	3.6	3.5	3.0	2.6	2.1	2.1	2.0	1.7
Chloroethane	µg/L	75-00-3	36	3.0	3.4	2.3	2.4	2.3	2.7	2.5	2.5	2.7	2.7	2.3	1.8	1.7
cis-1,2-Dichloroethene	µg/L	156-59-2	70	2.2	2.3	1.2	1.8	1.9	2.5	2.6	2.2	1.9	1.4	1.3	1.3	1 U
Tetrachloroethene	µg/L	127-18-4	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene	µg/L	79-01-6	5	1.9	3.4	2.2	2.8	2.8	3.0	3.0	2.9	2.6	2.2	2.2	2.0	1.7
Vinyl Chloride	µg/L	75-01-4	2	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
TOTAL VOCs:			-	538.7	722.6	470.2	591.1	603.6	603.8	586.6	589.6	486.8	416.4	358.9	327.1	320.1
Volatile Organic Compounds (US EPA Method 8260 - SIM)																
1,4-Dioxane	µg/L	71-55-6	15	**250**	**440**	**360**	**330**	**340**	**330**	**290**	**270**	**220**	**190**	**170**	**170**	**160**

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

Table A-1

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

Analyte Name	Units	Cas#	Groundwater Cleanup Standards (µg/L) (c)	Influent VSP-1 10/9/2017	Influent VSP-1 11/7/2017	Influent VSP-1 12/11/2017	Influent VSP-1 1/10/2018	Influent VSP-1 2/7/2018	Influent VSP-1 3/19/2018
Volatile Organic Compounds (US EPA Method 8260)									
1,1,1-Trichloroethane	µg/L	71-55-6	200	32	32	26	25	26	23
1,1-Dichloroethane	µg/L	75-34-3	90	44	47	48	51	58	61
1,1-Dichloroethene	µg/L	75-35-4	7	**200**	**240**	**250**	**270**	**260**	**290**
1,2-Dichloroethane	µg/L	107-06-2	5	1.6	1.8	1.8	2.0	2.4	2.3
Chloroethane	µg/L	75-00-3	36	2.6	2.6	4.2	4.0	4.1	4.6
cis-1,2-Dichloroethene	µg/L	156-59-2	70	1.2	1.3	1.6	1.7	2.0	2.2
Tetrachloroethene	µg/L	127-18-4	5	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene	µg/L	79-01-6	5	1.6	1.7	1.6	1.7	1.8	1.7
Vinyl Chloride	µg/L	75-01-4	2	1 U	1 U	1 U	1 U	1 U	1 U
TOTAL VOCs:			-	283	326.4	333.2	355.4	354.3	384.8
Volatile Organic Compounds (US EPA Method 8260 - SIM)									
1,4-Dioxane	µg/L	71-55-6	15	**160**	**150**	**150**	**180**	**170**	**150**

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

Table A-2

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

Analyte Name	Cas#	Effluent VSP-4 03/13/2017 (a)	Effluent VSP-4 03/14/2017	Effluent VSP-4 3/15/2017	Effluent VSP-4 3/20/2017 (a)	Effluent VSP-4 3/23/2017	Effluent VSP-4 4/3/2017 (a)	Effluent VSP-4 4/12/2017	Effluent VSP-4 4/19/2017	Effluent VSP-4 5/8/2017	Effluent VSP-4 6/21/2017 (a)	Effluent VSP-4 7/10/2017 (a)	Effluent VSP-4 8/3/2017 (a)	Effluent VSP-4 9/11/2017 (a)
Volatile Organic Compounds (US EPA Method 8260)														
1,1,1-Trichloroethane	71-55-6	5.0 U	1.0 U	1.0 U	5.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,1-Dichloroethane	75-34-3	5.0 U	1.0 U	1.0 U	5.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,1-Dichloroethene	75-35-4	5.0 U	1.0 U	1.0 U	5.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dichloroethane	107-06-2	5.0 U	1.0 U	1.0 U	5.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Chloroethane	75-00-3	5.0 U	1.0 U	1.0 U	5.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U
cis-1,2-Dichloroethene	156-59-2	NA	1.0 U	1.0 U	NA	1.0 U	NA	1.0 U	1.0 U	1.0 U	NA	NA	NA	NA
Tetrachloroethene	127-18-4	5.0 U	1.0 U	1.0 U	5.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Trichloroethene	79-01-6	5.0 U	1.0 U	1.0 U	5.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Vinyl Chloride	75-01-4	5.0 U	1.0 U	1.0 U	5.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U
TOTAL VOCs:		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Volatile Organic Compounds (US EPA Method 8260 - SIM)														
1,4-Dioxane	71-55-6	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.2

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

b/ All results given in micrograms/liter

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

Table A-2

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

Analyte Name	Cas#	Effluent VSP-4 10/9/2017 (a)	Effluent VSP-4 10/12/2017	Effluent VSP-4 11/7/2017 (a)	Effluent VSP-4 12/11/2017 (a)	Effluent VSP-4 1/10/2018 (a)	Effluent VSP-4 2/7/2018 (a)	Effluent VSP-4 3/19/2018 (a)
Volatile Organic Compounds (US EPA Method 8260)								
1,1,1-Trichloroethane	71-55-6	5.0 U	NA	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,1-Dichloroethane	75-34-3	5.0 U	NA	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,1-Dichloroethene	75-35-4	5.0 U	NA	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dichloroethane	107-06-2	5.0 U	NA	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Chloroethane	75-00-3	5.0 U	NA	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
cis-1,2-Dichloroethene	156-59-2	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	127-18-4	5.0 U	NA	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Trichloroethene	79-01-6	5.0 U	NA	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Vinyl Chloride	75-01-4	5.0 U	NA	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
	TOTAL VOCs:	ND	NA -	ND	ND	ND	ND	ND
Volatile Organic Compounds (US EPA Method 8260 - SIM)								
1,4-Dioxane	71-55-6	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.4

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

b/ All results given in micrograms/liter

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

ATTACHMENT 1 – LABORATORY ANALYTICAL REPORTS FOR TREATMENT SYSTEM INFLUENT AND EFFLUENT SAMPLES (JANUARY 2018 – MARCH 2018)

Analytical Report for

WSP USA - Herndon

Certificate of Analysis No.: 18011006

Project Manager: Eric Johnson

Project Name : Kop-Flex

Project Location: Hanover, MD

Project ID : 31400390/09

January 17, 2018

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.

January 17, 2018

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

Reference: PSS Work Order(s) No: **18011006**
Project Name: Kop-Flex
Project Location: Hanover, MD
Project ID.: 31400390/09

Dear Eric Johnson :

This report includes the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Phase Separation Science (PSS) Work Order(s) numbered **18011006**.

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 14, 2018, with the exception of air canisters which are cleaned immediately following analysis. This includes any samples that were received with a request to be held but lacked a specific hold period. It is your responsibility to provide a written request defining a specific disposal date if additional storage is required. Upon receipt , the request will be acknowledged by PSS, thus extending the storage period.

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

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

Sincerely,

Dan Prucnal

Dan Prucnal
Laboratory Manager

Sample Summary

Client Name: WSP USA - Herndon

Project Name: Kop-Flex

Work Order Number(s): 18011006

Project ID: 31400390/09

The following samples were received under chain of custody by Phase Separation Science (PSS) on 01/10/2018 at 10:45 am

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
18011006-001	Effluent VSP-4	WASTE WATER	01/10/18 07:55
18011006-002	Effluent VSP-4	WASTE WATER	01/10/18 07:55
18011006-003	Effluent VSP-4	WASTE WATER	01/10/18 07:55
18011006-004	Effluent VSP-4	WASTE WATER	01/10/18 07:55
18011006-005	Effluent VSP-4	WASTE WATER	01/10/18 07:55

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

Notes:

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

Standard Flags/Abbreviations:

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

Certifications:

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

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: 18011006

WSP USA - Herndon, Herndon, VA

January 17, 2018

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

Sample ID: Effluent VSP-4 **Date/Time Sampled: 01/10/2018 07:55** **PSS Sample ID: 18011006-001**
Matrix: WASTE WATER **Date/Time Received: 01/10/2018 10:45**

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

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Dichlorodifluoromethane	ND	ug/L	5.0		1	01/11/18	01/12/18 01:34	1011
Chloromethane	ND	ug/L	5.0		1	01/11/18	01/12/18 01:34	1011
Vinyl Chloride	ND	ug/L	5.0		1	01/11/18	01/12/18 01:34	1011
Bromomethane	ND	ug/L	5.0		1	01/11/18	01/12/18 01:34	1011
Chloroethane	ND	ug/L	5.0		1	01/11/18	01/12/18 01:34	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	01/11/18	01/12/18 01:34	1011
1,1-Dichloroethene	ND	ug/L	5.0		1	01/11/18	01/12/18 01:34	1011
Methylene Chloride	ND	ug/L	5.0		1	01/11/18	01/12/18 01:34	1011
trans-1,2-dichloroethene	ND	ug/L	5.0		1	01/11/18	01/12/18 01:34	1011
1,1-Dichloroethane	ND	ug/L	5.0		1	01/11/18	01/12/18 01:34	1011
Chloroform	ND	ug/L	5.0		1	01/11/18	01/12/18 01:34	1011
1,1,1-Trichloroethane	ND	ug/L	5.0		1	01/11/18	01/12/18 01:34	1011
Carbon Tetrachloride	ND	ug/L	5.0		1	01/11/18	01/12/18 01:34	1011
Benzene	ND	ug/L	5.0		1	01/11/18	01/12/18 01:34	1011
1,2-Dichloroethane	ND	ug/L	5.0		1	01/11/18	01/12/18 01:34	1011
Trichloroethene	ND	ug/L	5.0		1	01/11/18	01/12/18 01:34	1011
1,2-Dichloropropane	ND	ug/L	5.0		1	01/11/18	01/12/18 01:34	1011
Bromodichloromethane	ND	ug/L	5.0		1	01/11/18	01/12/18 01:34	1011
2-Chloroethyl Vinyl Ether	ND	ug/L	5.0		1	01/11/18	01/12/18 01:34	1011
cis-1,3-Dichloropropene	ND	ug/L	5.0		1	01/11/18	01/12/18 01:34	1011
Toluene	ND	ug/L	5.0		1	01/11/18	01/12/18 01:34	1011
trans-1,3-dichloropropene	ND	ug/L	5.0		1	01/11/18	01/12/18 01:34	1011
1,1,2-Trichloroethane	ND	ug/L	5.0		1	01/11/18	01/12/18 01:34	1011
Tetrachloroethylene	ND	ug/L	5.0		1	01/11/18	01/12/18 01:34	1011
Dibromochloromethane	ND	ug/L	5.0		1	01/11/18	01/12/18 01:34	1011
Chlorobenzene	ND	ug/L	5.0		1	01/11/18	01/12/18 01:34	1011
Ethylbenzene	ND	ug/L	5.0		1	01/11/18	01/12/18 01:34	1011
Bromoform	ND	ug/L	5.0		1	01/11/18	01/12/18 01:34	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0		1	01/11/18	01/12/18 01:34	1011
1,3-Dichlorobenzene	ND	ug/L	5.0		1	01/11/18	01/12/18 01:34	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: 18011006

WSP USA - Herndon, Herndon, VA

January 17, 2018

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

Sample ID: Effluent VSP-4 **Date/Time Sampled: 01/10/2018 07:55** **PSS Sample ID: 18011006-001**
Matrix: WASTE WATER **Date/Time Received: 01/10/2018 10:45**

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

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
1,4-Dichlorobenzene	ND	ug/L	5.0		1	01/11/18	01/12/18 01:34	1011
1,2-Dichlorobenzene	ND	ug/L	5.0		1	01/11/18	01/12/18 01:34	1011

Sample ID: Effluent VSP-4 **Date/Time Sampled: 01/10/2018 07:55** **PSS Sample ID: 18011006-002**
Matrix: WASTE WATER **Date/Time Received: 01/10/2018 10:45**

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		01/10/18	01/10/18 14:00	4005

Sample ID: Effluent VSP-4 **Date/Time Sampled: 01/10/2018 07:55** **PSS Sample ID: 18011006-003**
Matrix: WASTE WATER **Date/Time Received: 01/10/2018 10:45**

Total Suspended Solids Analytical Method: SM 2540D -2011

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Suspended Solids	ND	mg/L	1.0		1	01/10/18	01/10/18 16:21	1061

Sample ID: Effluent VSP-4 **Date/Time Sampled: 01/10/2018 07:55** **PSS Sample ID: 18011006-004**
Matrix: WASTE WATER **Date/Time Received: 01/10/2018 10:45**

Dissolved Metals Analytical Method: EPA 200.8 Preparation Method: 200.8

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Copper	**3.1**	ug/L	1.0		1	01/11/18	01/11/18 21:01	1064
Lead	ND	ug/L	1.0		1	01/11/18	01/11/18 21:01	1064
Nickel	**11.7**	ug/L	1.00		1	01/11/18	01/11/18 21:01	1064
Zinc	**20.7**	ug/L	20.0		1	01/11/18	01/11/18 21:01	1064

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: 18011006

WSP USA - Herndon, Herndon, VA

January 17, 2018

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

Sample ID: Effluent VSP-4 **Date/Time Sampled: 01/10/2018 07:55** **PSS Sample ID: 18011006-005**
Matrix: WASTE WATER **Date/Time Received: 01/10/2018 10:45**

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

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Copper	**4.2**	ug/L	1.0		1	01/11/18	01/11/18 17:51	1064
Lead	ND	ug/L	1.0		1	01/11/18	01/11/18 17:51	1064
Nickel	**11.1**	ug/L	1.00		1	01/11/18	01/11/18 17:51	1064
Zinc	**28.6**	ug/L	20.0		1	01/11/18	01/11/18 17:51	1064
Hardness (Ca & Mg)	**18**	mg/L	0.66		1	01/11/18	01/11/18 17:51	1064

Case Narrative Summary

Client Name: WSP USA - Herndon

Project Name: Kop-Flex

Work Order Number(s): 18011006

Project ID: 31400390/09

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

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

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

Sample Receipt:

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

18011006: Analyses associated with analyst code 4005 were performed by Enviro-Chem Laboratories, Inc.

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

SM 5210B -2011

Analytical Data Package Information Summary

Work Order(s): 18011006
Report Prepared For: WSP USA - Herndon, Herndon, VA
Project Name: Kop-Flex
Project Manager: Eric Johnson

Method	Client Sample Id	Analysis Type	Lab Sample Id	Analyst	Mtx	Prep Batch	Analytical Batch	Sampled	Prepared	Analyzed
EPA 200.8	69479-1-BKS	BKS	69479-1-BKS	1064	W	69479	149500	--------	01/11/2018 09:35	01/11/2018 14:16
	69479-1-BLK	BLK	69479-1-BLK	1064	W	69479	149500	--------	01/11/2018 09:35	01/11/2018 14:12
	Effluent VSP-4	Initial	18011006-005	1064	W	69479	149519	01/10/2018	01/11/2018 09:35	01/11/2018 17:51
	69479-1-BKS	BKS	69479-1-BKS	1064	W	69479	149519	--------	01/11/2018 09:35	01/11/2018 17:00
	69479-1-BLK	BLK	69479-1-BLK	1064	W	69479	149519	--------	01/11/2018 09:35	01/11/2018 16:52
	Millville 001 S	MS	18010909-001 S	1064	W	69479	149519	01/09/2018	01/11/2018 09:35	01/11/2018 17:08
	DPS Wet Well S	MS	18011022-004 S	1064	W	69479	149519	01/10/2018	01/11/2018 09:35	01/11/2018 18:53
	Millville 001 SD	MSD	18010909-001 SD	1064	W	69479	149519	01/09/2018	01/11/2018 09:35	01/11/2018 17:12
EPA 200.8	Effluent VSP-4	Initial	18011006-004	1064	W	69497	149521	01/10/2018	01/11/2018 17:07	01/11/2018 21:01
	69497-1-BKS	BKS	69497-1-BKS	1064	W	69497	149521	--------	01/11/2018 17:07	01/11/2018 20:57
	69497-1-BLK	BLK	69497-1-BLK	1064	W	69497	149521	--------	01/11/2018 17:07	01/11/2018 20:50
	Effluent VSP-4 S	MS	18011006-004 S	1064	W	69497	149521	01/10/2018	01/11/2018 17:07	01/11/2018 21:05
	Effluent VSP-4 SD	MSD	18011006-004 SD	1064	W	69497	149521	01/10/2018	01/11/2018 17:07	01/11/2018 21:09
EPA 624	Effluent VSP-4	Initial	18011006-001	1011	W	69511	149518	01/10/2018	01/11/2018 19:35	01/12/2018 01:34
	69511-1-BKS	BKS	69511-1-BKS	1011	W	69511	149518	--------	01/11/2018 19:35	01/11/2018 21:35
	69511-1-BLK	BLK	69511-1-BLK	1011	W	69511	149518	--------	01/11/2018 19:35	01/11/2018 22:15
	12642-Eff-1/18 S	MS	18010803-001 S	1011	W	69511	149518	01/05/2018	01/11/2018 19:35	01/11/2018 23:34
	12642-Eff-1/18 SD	MSD	18010803-001 SD	1011	W	69511	149518	01/05/2018	01/11/2018 19:35	01/12/2018 00:14
SM 2540D -2011	Effluent VSP-4	Initial	18011006-003	1061	W	149474	149474	01/10/2018	01/10/2018 16:21	01/10/2018 16:21
	149474-1-BLK	BLK	149474-1-BLK	1061	W	149474	149474	--------	01/10/2018 16:21	01/10/2018 16:21
	Millville 001 D	MD	18010909-001 D	1061	W	149474	149474	01/09/2018	01/10/2018 16:21	01/10/2018 16:21
SM 5210B -2011	Effluent VSP-4	Initial	18011006-002	4005	W	149613	149613	01/10/2018	01/10/2018 14:00	01/10/2018 14:00

PHASE SEPARATION SCIENCE, INC.

QC Summary 18011006

WSP USA - Herndon
Kop-Flex

Analytical Method: EPA 624 Prep Method: E624PREP
Seq Number: 149518 Matrix: Waste Water Date Prep: 01/11/2018
PSS Sample ID: 18011006-001

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
Dibromofluoromethane	109		87-114	%	01/12/18 01:34
4-Bromofluorobenzene	123	*	90-114	%	01/12/18 01:34
Toluene-D8	99		93-108	%	01/12/18 01:34

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

PHASE SEPARATION SCIENCE, INC.

QC Summary 18011006

WSP USA - Herndon
Kop-Flex

Analytical Method: SM 2540D -2011
Seq Number: 149474 Matrix: Water
MB Sample Id: 149474-1-BLK

Parameter	MB Result	LOD	RL	Units	Analysis Date	Flag
Suspended Solids	ND	0.5000	1.000	mg/L	01/10/18 16:21	

Analytical Method: EPA 200.8 Prep Method: E200.8_PREP
Seq Number: 149500 Matrix: Water Date Prep: 01/11/18
MB Sample Id: 69479-1-BLK LCS Sample Id: 69479-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Calcium	<100	400	409.7	102	85-115	ug/L	01/11/18 14:16	
Copper	<1.000	40.00	44.60	112	85-115	ug/L	01/11/18 14:16	
Lead	<1.000	40.00	38.65	97	85-115	ug/L	01/11/18 14:16	
Magnesium	<100	400	436.8	109	85-115	ug/L	01/11/18 14:16	
Nickel	<1.000	40.00	42.85	107	85-115	ug/L	01/11/18 14:16	
Zinc	<20.00	200	210.8	105	85-115	ug/L	01/11/18 14:16	

Analytical Method: EPA 200.8 Prep Method: E200.8_PREP
Seq Number: 149519 Matrix: Water Date Prep: 01/11/18
MB Sample Id: 69479-1-BLK LCS Sample Id: 69479-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Calcium	<100	400	427.4	107	85-115	ug/L	01/11/18 17:00	
Copper	<1.000	40.00	40.15	100	85-115	ug/L	01/11/18 17:00	
Lead	<1.000	40.00	41.63	104	85-115	ug/L	01/11/18 17:00	
Magnesium	<100	400	396.9	99	85-115	ug/L	01/11/18 17:00	
Nickel	<1.000	40.00	40.62	102	85-115	ug/L	01/11/18 17:00	
Zinc	<20.00	200	199.9	100	85-115	ug/L	01/11/18 17:00	

Analytical Method: EPA 200.8 Prep Method: E200.8_PREP
Seq Number: 149521 Matrix: Water Date Prep: 01/11/18
MB Sample Id: 69497-1-BLK LCS Sample Id: 69497-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Copper	<1.000	40.00	40.71	102	85-115	ug/L	01/11/18 20:57	
Lead	<1.000	40.00	37.46	94	85-115	ug/L	01/11/18 20:57	
Nickel	<1.000	40.00	42.82	107	85-115	ug/L	01/11/18 20:57	
Zinc	<20.00	200	325.3	163	85-115	ug/L	01/11/18 20:57	H

PHASE SEPARATION SCIENCE, INC.

QC Summary 18011006

WSP USA - Herndon
Kop-Flex

Analytical Method: EPA 200.8 Prep Method: E200.8_PREP
Seq Number: 149521 Matrix: Waste Water Date Prep: 01/11/18
Parent Sample Id: 18011006-004 MS Sample Id: 18011006-004 S MSD Sample Id: 18011006-004 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Copper	3.130	40.00	44.30	103	44.40	103	70-130	0	25	ug/L	01/11/18 21:05	
Lead	<1.000	40.00	37.05	93	39.31	98	70-130	6	25	ug/L	01/11/18 21:05	
Nickel	11.66	40.00	53.48	105	54.06	106	70-130	1	25	ug/L	01/11/18 21:05	
Zinc	20.67	200	231.7	106	234.9	107	70-130	1	25	ug/L	01/11/18 21:05	

Analytical Method: EPA 624 Prep Method: E624PREP
Seq Number: 149518 Matrix: Water Date Prep: 01/11/18
MB Sample Id: 69511-1-BLK LCS Sample Id: 69511-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Dichlorodifluoromethane	<5.000	60.00	56.57	94	51-139	ug/L	01/11/18 21:35	
Chloromethane	<5.000	60.00	57.99	97	56-144	ug/L	01/11/18 21:35	
Vinyl Chloride	<5.000	60.00	57.77	96	46-157	ug/L	01/11/18 21:35	
Bromomethane	<5.000	60.00	59.86	100	63-134	ug/L	01/11/18 21:35	
Chloroethane	<5.000	60.00	58.26	97	56-143	ug/L	01/11/18 21:35	
Trichlorofluoromethane	<5.000	60.00	59.30	99	56-138	ug/L	01/11/18 21:35	
1,1-Dichloroethene	<5.000	60.00	55.72	93	63-134	ug/L	01/11/18 21:35	
Methylene Chloride	<5.000	60.00	58.66	98	65-126	ug/L	01/11/18 21:35	
trans-1,2-dichloroethene	<5.000	60.00	58.11	97	67-129	ug/L	01/11/18 21:35	
1,1-Dichloroethane	<5.000	60.00	62.02	103	66-131	ug/L	01/11/18 21:35	
Chloroform	<5.000	60.00	62.58	104	69-130	ug/L	01/11/18 21:35	
1,1,1-Trichloroethane	<5.000	60.00	61.18	102	66-129	ug/L	01/11/18 21:35	
Carbon Tetrachloride	<5.000	60.00	60.58	101	70-133	ug/L	01/11/18 21:35	
Benzene	<5.000	60.00	61.98	103	69-127	ug/L	01/11/18 21:35	
1,2-Dichloroethane	<5.000	60.00	66.62	111	62-133	ug/L	01/11/18 21:35	
Trichloroethene	<5.000	60.00	62.87	105	71-127	ug/L	01/11/18 21:35	
1,2-Dichloropropane	<5.000	60.00	62.95	105	67-133	ug/L	01/11/18 21:35	
Bromodichloromethane	<5.000	60.00	65.78	110	63-132	ug/L	01/11/18 21:35	
2-Chloroethyl Vinyl Ether	<5.000	60.00	44.29	74	21-140	ug/L	01/11/18 21:35	
cis-1,3-Dichloropropene	<5.000	60.00	58.65	98	65-128	ug/L	01/11/18 21:35	
Toluene	<5.000	60.00	61.41	102	67-130	ug/L	01/11/18 21:35	
trans-1,3-dichloropropene	<5.000	60.00	60.14	100	63-127	ug/L	01/11/18 21:35	
1,1,2-Trichloroethane	<5.000	60.00	65.57	109	62-136	ug/L	01/11/18 21:35	
Tetrachloroethylene	<5.000	60.00	59.18	99	64-135	ug/L	01/11/18 21:35	
Dibromochloromethane	<5.000	60.00	64.29	107	65-126	ug/L	01/11/18 21:35	
Chlorobenzene	<5.000	60.00	60.62	101	70-127	ug/L	01/11/18 21:35	
Ethylbenzene	<5.000	60.00	60.39	101	71-131	ug/L	01/11/18 21:35	
Bromoform	<5.000	60.00	66.16	110	58-128	ug/L	01/11/18 21:35	
1,1,2,2-Tetrachloroethane	<5.000	60.00	58.84	98	63-134	ug/L	01/11/18 21:35	
1,3-Dichlorobenzene	<5.000	60.00	59.83	100	67-128	ug/L	01/11/18 21:35	
1,4-Dichlorobenzene	<5.000	60.00	59.61	99	67-127	ug/L	01/11/18 21:35	
1,2-Dichlorobenzene	<5.000	60.00	63.67	106	67-126	ug/L	01/11/18 21:35	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	Limits	Units	Analysis Date
Dibromofluoromethane	110		105		87-114	%	01/11/18 21:35
4-Bromofluorobenzene	123	*	97		90-114	%	01/11/18 21:35
Toluene-D8	97		103		93-108	%	01/11/18 21:35

PHASE SEPARATION SCIENCE, INC.

QC Summary 18011006

WSP USA - Herndon
Kop-Flex

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

SAMPLE CHAIN OF CUSTODY/AGREEMENT FORM

PHASE SEPARATION SCIENCE, INC.

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

NDDES monthly

(1) *CLIENT: WSP *OFFICE LOC. Herndon, VA
*PROJECT MGR: Eric Johnson *PHONE NO.: (703) 709-6500
EMAIL: eric.johnson@wsp.com FAX NO.:
*PROJECT NAME: Hop Flex PROJECT NO.: 31700381/09
SITE LOCATION: Hanover, MD P.O. NO.:
SAMPLER(S): MJK DW CERT NO.:

PSS Work Order #: 1801 1006 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												REMARKS
							Analysis/ Method Required (3) *	VOCs (624)	BOD5	TSS	Total dissolved metals (Zn, Cu, Pb, Ni)	Total metals (Zn, Cu, Pb, Ni)	Hardness ($CaCO_3$)						
1	Effluent VSP-4	1/10/18	0755	WW	3	G	X												
2	Effluent VSP-4	1/10/18	0755	WW	1	G		X											
3	Effluent VSP-4	1/10/18	0755	WW	1	G			X										
4	Effluent VSP-4	1/10/18	0755	WW	1	G				X									Lab to filter
5	Effluent VSP-4	1/10/18	0755	WW	1	G					X	X							

1/10/18

(5)

Relinquished By: (1)	Date	Time	Received By:
	1/10/18	1000	Alex
Relinquished By: (2) Alex	1/10	10:45	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date	Time	Received By:

(4)

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

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

# of Coolers: 1 (temp blank 8°C)
Custody Seal: Cooler intact
Ice Present: Pres Temp: 7-9°C
Shipping Carrier: TTE

Special Instructions:

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

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

Phase Separation Science, Inc

Sample Receipt Checklist

Work Order #	18011006	**Received By**	Barb Weber
Client Name	WSP USA - Herndon	**Date Received**	01/10/2018 10:45:00 AM
Project Name	Kop-Flex	**Delivered By**	Trans Time Express
Project Number	31400390/09	**Tracking No**	Not Applicable
Disposal Date	02/14/2018	**Logged In By**	Barb Weber

Shipping Container(s)

No. of Coolers 1

		Ice	Present
Custody Seal(s) Intact?	Yes	Temp (deg C)	9
Seal(s) Signed / Dated?	Yes	Temp Blank Present	Yes

Documentation

		Sampler Name	MK
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 5 Total No. of Containers Received 7

Preservation

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

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

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

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

Samples Inspected/Checklist Completed By: Barb Weber Date: 01/10/2018

Barb Weber

PM Review and Approval: Amber Confer Date: 01/10/2018

Amber Confer

Analytical Report for

WSP USA - Herndon

Certificate of Analysis No.: 18011007

Project Manager: Eric Johnson

Project Name : Kop-Flex

Project Location: Hanover, MD

Project ID : 31400390/09

January 17, 2018

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.

January 17, 2018

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

Reference: PSS Work Order(s) No: **18011007**
Project Name: Kop-Flex
Project Location: Hanover, MD
Project ID.: 31400390/09

Dear Eric Johnson :

This report includes the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Phase Separation Science (PSS) Work Order(s) numbered **18011007**.

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 14, 2018, with the exception of air canisters which are cleaned immediately following analysis. This includes any samples that were received with a request to be held but lacked a specific hold period. It is your responsibility to provide a written request defining a specific disposal date if additional storage is required. Upon receipt , the request will be acknowledged by PSS, thus extending the storage period.

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

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

Sincerely,

Dan Prucnal

Dan Prucnal
Laboratory Manager

Sample Summary

Client Name: WSP USA - Herndon

Project Name: Kop-Flex

Work Order Number(s): 18011007

Project ID: 31400390/09

The following samples were received under chain of custody by Phase Separation Science (PSS) on 01/10/2018 at 10:45 am

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
18011007-001	Effluent VSP-4	WASTE WATER	01/10/18 07:55
18011007-002	Effluent VSP-4	WASTE WATER	01/10/18 07:55
18011007-003	Effluent VSP-4	WASTE WATER	01/10/18 07:55

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

Notes:

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

Standard Flags/Abbreviations:

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

Certifications:

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

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: 18011007

WSP USA - Herndon, Herndon, VA

January 17, 2018

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

Sample ID: Effluent VSP-4 **Date/Time Sampled: 01/10/2018 07:55** **PSS Sample ID: 18011007-001**
Matrix: WASTE WATER **Date/Time Received: 01/10/2018 10:45**

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

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Nitrogen, Ammonia (as N)	ND	mg/L	0.20		1	01/12/18	01/12/18 14:43	1053

Sample ID: Effluent VSP-4 **Date/Time Sampled: 01/10/2018 07:55** **PSS Sample ID: 18011007-002**
Matrix: WASTE WATER **Date/Time Received: 01/10/2018 10:45**

Total Kjeldahl Nitrogen — Analytical Method: EPA 351.2

	Result	Units	RL	Flag	Prepared	Analyzed	Analyst
Nitrogen, Total Kjeldahl	ND	mg/L	0.4		01/12/18	01/12/18 13:44	4005

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

	Result	Units	RL	Flag	Prepared	Analyzed	Analyst
Nitrogen, Organic (as N)	ND	mg/L	0.4		01/12/18	01/12/18 13:44	4005

Sample ID: Effluent VSP-4 **Date/Time Sampled: 01/10/2018 07:55** **PSS Sample ID: 18011007-003**
Matrix: WASTE WATER **Date/Time Received: 01/10/2018 10:45**

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

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Nitrite (as N)	ND	mg/L	0.10		1	01/10/18	01/10/18 15:01	1059
Nitrate (as N)	**1.4**	mg/L	0.10		1	01/10/18	01/10/18 15:01	1059

Case Narrative Summary

Client Name: WSP USA - Herndon

Project Name: Kop-Flex

Work Order Number(s): 18011007

Project ID: 31400390/09

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

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

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

Sample Receipt:

All sample receipt conditions were acceptable.

18011007: 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.

EPA 351.2

Analytical Data Package Information Summary

Work Order(s): 18011007
Report Prepared For: WSP USA - Herndon, Herndon, VA
Project Name: Kop-Flex
Project Manager: Eric Johnson

Method	Client Sample Id	Analysis Type	Lab Sample Id	Analyst	Mtx	Prep Batch	Analytical Batch	Sampled	Prepared	Analyzed
EPA 300.0	Effluent VSP-4	Initial	18011007-003	1059	W	69470	149507	01/10/2018	01/10/2018 14:32	01/10/2018 15:01
	69470-1-BKS	BKS	69470-1-BKS	1059	W	69470	149507	--------	01/10/2018 14:32	01/10/2018 11:37
	69470-1-BLK	BLK	69470-1-BLK	1059	W	69470	149507	--------	01/10/2018 14:32	01/10/2018 11:15
	69470-1-BSD	BSD	69470-1-BSD	1059	W	69470	149507	--------	01/10/2018 14:32	01/10/2018 12:00
	Effluent VSP-4 S	MS	18011007-003 S	1059	W	69470	149507	01/10/2018	01/10/2018 14:32	01/10/2018 15:24
EPA 351.2	Effluent VSP-4	Initial	18011007-002	4005	W	149614	149614	01/10/2018	01/12/2018 13:44	01/12/2018 13:44
N_ORG Calc. TKN-NH3	Effluent VSP-4	Initial	18011007-002	4005	W	149614	149614	01/10/2018	01/12/2018 13:44	01/12/2018 13:44
SM 4500-NH3-F - 2011	Effluent VSP-4	Initial	18011007-001	1053	W	69514	149535	01/10/2018	01/12/2018 11:45	01/12/2018 14:43
	69514-1-BKS	BKS	69514-1-BKS	1053	W	69514	149535	--------	01/12/2018 11:45	01/12/2018 14:15
	69514-1-BLK	BLK	69514-1-BLK	1053	W	69514	149535	--------	01/12/2018 11:45	01/12/2018 14:11
	69514-1-BSD	BSD	69514-1-BSD	1053	W	69514	149535	--------	01/12/2018 11:45	01/12/2018 14:19
	Cox Creek S	MS	18010905-002 S	1053	W	69514	149535	01/09/2018	01/12/2018 11:45	01/12/2018 14:35
	Cox Creek SD	MSD	18010905-002 SD	1053	W	69514	149535	01/09/2018	01/12/2018 11:45	01/12/2018 14:39

PHASE SEPARATION SCIENCE, INC.

QC Summary 18011007

WSP USA - Herndon
Kop-Flex

Analytical Method: SM 4500-NH3-F -2011 Prep Method: SM4500-NH3B
Seq Number: 149535 Matrix: Water Date Prep: 01/12/18
MB Sample Id: 69514-1-BLK LCS Sample Id: 69514-1-BKS LCSD Sample Id: 69514-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Nitrogen, Ammonia (as N)	<0.2000	2.500	2.460	98	2.418	97	85-115	2	20	mg/L	01/12/18 14:15	

Analytical Method: EPA 300.0 Prep Method: E300.0P
Seq Number: 149507 Matrix: Water Date Prep: 01/10/18
MB Sample Id: 69470-1-BLK LCS Sample Id: 69470-1-BKS LCSD Sample Id: 69470-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Fluoride	<0.1000	5.000	5.069	101	5.021	100	90-110	1	20	mg/L	01/10/18 11:37	
Chloride	<5.000	50.00	50.68	101	50.44	101	90-110	0	20	mg/L	01/10/18 11:37	
Nitrite (as N)	<0.1000	5.000	5.085	102	5.052	101	90-110	1	20	mg/L	01/10/18 11:37	
Sulfate	<5.000	50.00	50.79	102	50.32	101	90-110	1	20	mg/L	01/10/18 11:37	
Bromide	<1.000	50.00	50.35	101	49.94	100	90-110	1	20	mg/L	01/10/18 11:37	
Nitrate (as N)	<0.1000	5.000	5.063	101	5.032	101	90-110	1	20	mg/L	01/10/18 11:37	

Analytical Method: EPA 300.0 Prep Method: E300.0P
Seq Number: 149507 Matrix: Waste Water Date Prep: 01/10/18
Parent Sample Id: 18011007-003 MS Sample Id: 18011007-003 S

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	Limits	Units	Analysis Date	Flag
Nitrite (as N)	<0.1000	5.000	4.680	94	80-112	mg/L	01/10/18 15:24	
Nitrate (as N)	1.381	5.000	6.408	101	87-115	mg/L	01/10/18 15:24	

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

SAMPLE CHAIN OF CUSTODY/AGREEMENT FORM

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

(*) NPDES quarterly Nitrogens (*)

PSS Work Order #: 18011007 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

1 *CLIENT: WSP *OFFICE LOC. Herndon VA

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

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

*PROJECT NAME: Kopflex PROJECT NO.: 31403906.9

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

SAMPLER(S): MSK DW CERT NO.:

2

LAB NO.	*SAMPLE IDENTIFICATION	*DATE (SAMPLED)	*TIME (SAMPLED)	MATRIX (See Codes)	No. CONTAINERS	SAMPLE TYPE C = COMP G = GRAB	Preservatives Used	H2SO4	H2SO4													REMARKS
							Analysis/ Method Required (3) *	Nitrogen, ammonia (as N) - 4500-NH3 F	TKN (EPA 351.2)	Inorganic anions (as N) (EPA 300.0)												
1	Effluent VSP-4	1/10/18	0755	WW	1	G	X															
2	Effluent VSP-4	1/10/18	0755	WW	1	G		X														
3	Effluent VSP-4	1/10/18	0755	WW	1	G			X													

1/10/18

5

	Relinquished By:	Date	Time	Received By:
(1)		1/10/18	1000	Alex
(2)	Alex	1/10	10:45	Bart Welch
(3)				
(4)				

4

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

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

Special Instructions:

DW COMPLIANCE? YES ☐ EDD FORMAT TYPE

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

# of Coolers: 1 (temp blank 8°C)

Custody Seal: cooler intact

Ice Present: Pres Temp: 8-9°C

Shipping Carrier: TTE

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

Phase Separation Science, Inc

Sample Receipt Checklist

Work Order #	18011007	**Received By**	Barb Weber
Client Name	WSP USA - Herndon	**Date Received**	01/10/2018 10:45:00 AM
Project Name	Kop-Flex	**Delivered By**	Trans Time Express
Project Number	31400390/09	**Tracking No**	Not Applicable
Disposal Date	02/14/2018	**Logged In By**	Barb Weber

Shipping Container(s)

No. of Coolers 1

		Ice	Present
Custody Seal(s) Intact?	Yes	Temp (deg C)	9
Seal(s) Signed / Dated?	Yes	Temp Blank Present	Yes

Documentation

		Sampler Name	MK
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 3

Preservation

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

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

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

Samples Inspected/Checklist Completed By: Barb Weber Date: 01/10/2018

Barb Weber

PM Review and Approval: Amber J Confer Date: 01/10/2018

Amber Confer

Analytical Report for

WSP USA - Herndon

Certificate of Analysis No.: 18011008

Project Manager: Eric Johnson

Project Name : Kop-Flex

Project Location: Hanover, MD

Project ID : 31400390-09

January 17, 2018

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.

January 17, 2018

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

Reference: PSS Work Order(s) No: **18011008**
Project Name: Kop-Flex
Project Location: Hanover, MD
Project ID.: 31400390-09

Dear Eric Johnson :

This report includes the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Phase Separation Science (PSS) Work Order(s) numbered **18011008**.

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 14, 2018, with the exception of air canisters which are cleaned immediately following analysis. This includes any samples that were received with a request to be held but lacked a specific hold period. It is your responsibility to provide a written request defining a specific disposal date if additional storage is required. Upon receipt , the request will be acknowledged by PSS, thus extending the storage period.

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

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

Sincerely,

Dan Prucnal

Dan Prucnal
Laboratory Manager

Sample Summary

Client Name: WSP USA - Herndon

Project Name: Kop-Flex

Work Order Number(s): 18011008

Project ID: 31400390-09

The following samples were received under chain of custody by Phase Separation Science (PSS) on 01/10/2018 at 10:45 am

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
18011008-001	Effluent VSP-4	WATER	01/10/18 07:55
18011008-002	Influent VSP-1	WATER	01/10/18 08:20
18011008-003	TB-011018	WATER	01/10/18 10:45

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: 18011008

WSP USA - Herndon, Herndon, VA

January 17, 2018

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

Sample ID: Effluent VSP-4 **Date/Time Sampled: 01/10/2018 07:55** **PSS Sample ID: 18011008-001**
Matrix: WATER **Date/Time Received: 01/10/2018 10:45**

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

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
1,4-Dioxane (P-Dioxane)	ND	ug/L	1.0		1	01/16/18	01/16/18 19:03	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: 18011008

WSP USA - Herndon, Herndon, VA

January 17, 2018

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

Sample ID: Influent VSP-1 **Date/Time Sampled: 01/10/2018 08:20** **PSS Sample ID: 18011008-002**
Matrix: WATER **Date/Time Received: 01/10/2018 10:45**

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

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	01/12/18	01/12/18 14:26	1011
Benzene	ND	ug/L	1.0		1	01/12/18	01/12/18 14:26	1011
Bromochloromethane	ND	ug/L	1.0		1	01/12/18	01/12/18 14:26	1011
Bromodichloromethane	ND	ug/L	1.0		1	01/12/18	01/12/18 14:26	1011
Bromoform	ND	ug/L	5.0		1	01/12/18	01/12/18 14:26	1011
Bromomethane	ND	ug/L	1.0		1	01/12/18	01/12/18 14:26	1011
2-Butanone (MEK)	ND	ug/L	10		1	01/12/18	01/12/18 14:26	1011
Carbon Disulfide	ND	ug/L	10		1	01/12/18	01/12/18 14:26	1011
Carbon tetrachloride	ND	ug/L	1.0		1	01/12/18	01/12/18 14:26	1011
Chlorobenzene	ND	ug/L	1.0		1	01/12/18	01/12/18 14:26	1011
Chloroethane	**4.0**	ug/L	1.0		1	01/12/18	01/12/18 14:26	1011
Chloroform	ND	ug/L	1.0		1	01/12/18	01/12/18 14:26	1011
Chloromethane	ND	ug/L	1.0		1	01/12/18	01/12/18 14:26	1011
Cyclohexane	ND	ug/L	10		1	01/12/18	01/12/18 14:26	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	01/12/18	01/12/18 14:26	1011
Dibromochloromethane	ND	ug/L	1.0		1	01/12/18	01/12/18 14:26	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	01/12/18	01/12/18 14:26	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	01/12/18	01/12/18 14:26	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	01/12/18	01/12/18 14:26	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	01/12/18	01/12/18 14:26	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	01/12/18	01/12/18 14:26	1011
1,1-Dichloroethane	**51**	ug/L	1.0		1	01/12/18	01/12/18 14:26	1011
1,2-Dichloroethane	**2.0**	ug/L	1.0		1	01/12/18	01/12/18 14:26	1011
cis-1,2-Dichloroethene	**1.7**	ug/L	1.0		1	01/12/18	01/12/18 14:26	1011
1,1-Dichloroethene	**270**	ug/L	10		10	01/12/18	01/12/18 14:50	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	01/12/18	01/12/18 14:26	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	01/12/18	01/12/18 14:26	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	01/12/18	01/12/18 14:26	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	01/12/18	01/12/18 14:26	1011
Ethylbenzene	ND	ug/L	1.0		1	01/12/18	01/12/18 14:26	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: 18011008

WSP USA - Herndon, Herndon, VA

January 17, 2018

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

Sample ID: Influent VSP-1 **Date/Time Sampled: 01/10/2018 08:20** **PSS Sample ID: 18011008-002**
Matrix: WATER **Date/Time Received: 01/10/2018 10:45**

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

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	01/12/18	01/12/18 14:26	1011
Isopropylbenzene	ND	ug/L	1.0		1	01/12/18	01/12/18 14:26	1011
Methyl Acetate	ND	ug/L	10		1	01/12/18	01/12/18 14:26	1011
Methylcyclohexane	ND	ug/L	10		1	01/12/18	01/12/18 14:26	1011
Methylene chloride	ND	ug/L	1.0		1	01/12/18	01/12/18 14:26	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	01/12/18	01/12/18 14:26	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	01/12/18	01/12/18 14:26	1011
Naphthalene	ND	ug/L	1.0		1	01/12/18	01/12/18 14:26	1011
Styrene	ND	ug/L	1.0		1	01/12/18	01/12/18 14:26	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	01/12/18	01/12/18 14:26	1011
Tetrachloroethene	ND	ug/L	1.0		1	01/12/18	01/12/18 14:26	1011
Toluene	ND	ug/L	1.0		1	01/12/18	01/12/18 14:26	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	01/12/18	01/12/18 14:26	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	01/12/18	01/12/18 14:26	1011
1,1,1-Trichloroethane	**25**	ug/L	1.0		1	01/12/18	01/12/18 14:26	1011
Trichloroethene	**1.7**	ug/L	1.0		1	01/12/18	01/12/18 14:26	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	01/12/18	01/12/18 14:26	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	01/12/18	01/12/18 14:26	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	01/12/18	01/12/18 14:26	1011
Vinyl chloride	ND	ug/L	1.0		1	01/12/18	01/12/18 14:26	1011
m&p-Xylene	ND	ug/L	2.0		1	01/12/18	01/12/18 14:26	1011
o-Xylene	ND	ug/L	1.0		1	01/12/18	01/12/18 14:26	1011

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

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
1,4-Dioxane (P-Dioxane)	**180**	ug/L	10		10	01/16/18	01/16/18 19:26	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: 18011008

WSP USA - Herndon, Herndon, VA

January 17, 2018

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

Sample ID: TB-011018 **Date/Time Sampled: 01/10/2018 10:45** **PSS Sample ID: 18011008-003**
Matrix: WATER **Date/Time Received: 01/10/2018 10:45**

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

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	01/12/18	01/12/18 14:03	1011
Benzene	ND	ug/L	1.0		1	01/12/18	01/12/18 14:03	1011
Bromochloromethane	ND	ug/L	1.0		1	01/12/18	01/12/18 14:03	1011
Bromodichloromethane	ND	ug/L	1.0		1	01/12/18	01/12/18 14:03	1011
Bromoform	ND	ug/L	5.0		1	01/12/18	01/12/18 14:03	1011
Bromomethane	ND	ug/L	1.0		1	01/12/18	01/12/18 14:03	1011
2-Butanone (MEK)	ND	ug/L	10		1	01/12/18	01/12/18 14:03	1011
Carbon Disulfide	ND	ug/L	10		1	01/12/18	01/12/18 14:03	1011
Carbon tetrachloride	ND	ug/L	1.0		1	01/12/18	01/12/18 14:03	1011
Chlorobenzene	ND	ug/L	1.0		1	01/12/18	01/12/18 14:03	1011
Chloroethane	ND	ug/L	1.0		1	01/12/18	01/12/18 14:03	1011
Chloroform	ND	ug/L	1.0		1	01/12/18	01/12/18 14:03	1011
Chloromethane	ND	ug/L	1.0		1	01/12/18	01/12/18 14:03	1011
Cyclohexane	ND	ug/L	10		1	01/12/18	01/12/18 14:03	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	01/12/18	01/12/18 14:03	1011
Dibromochloromethane	ND	ug/L	1.0		1	01/12/18	01/12/18 14:03	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	01/12/18	01/12/18 14:03	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	01/12/18	01/12/18 14:03	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	01/12/18	01/12/18 14:03	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	01/12/18	01/12/18 14:03	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	01/12/18	01/12/18 14:03	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	01/12/18	01/12/18 14:03	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	01/12/18	01/12/18 14:03	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	01/12/18	01/12/18 14:03	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	01/12/18	01/12/18 14:03	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	01/12/18	01/12/18 14:03	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	01/12/18	01/12/18 14:03	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	01/12/18	01/12/18 14:03	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	01/12/18	01/12/18 14:03	1011
Ethylbenzene	ND	ug/L	1.0		1	01/12/18	01/12/18 14:03	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: 18011008

WSP USA - Herndon, Herndon, VA

January 17, 2018

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

Sample ID: TB-011018 **Date/Time Sampled: 01/10/2018 10:45** **PSS Sample ID: 18011008-003**
Matrix: WATER **Date/Time Received: 01/10/2018 10:45**

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

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	01/12/18	01/12/18 14:03	1011
Isopropylbenzene	ND	ug/L	1.0		1	01/12/18	01/12/18 14:03	1011
Methyl Acetate	ND	ug/L	10		1	01/12/18	01/12/18 14:03	1011
Methylcyclohexane	ND	ug/L	10		1	01/12/18	01/12/18 14:03	1011
Methylene chloride	ND	ug/L	1.0		1	01/12/18	01/12/18 14:03	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	01/12/18	01/12/18 14:03	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	01/12/18	01/12/18 14:03	1011
Naphthalene	ND	ug/L	1.0		1	01/12/18	01/12/18 14:03	1011
Styrene	ND	ug/L	1.0		1	01/12/18	01/12/18 14:03	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	01/12/18	01/12/18 14:03	1011
Tetrachloroethene	ND	ug/L	1.0		1	01/12/18	01/12/18 14:03	1011
Toluene	ND	ug/L	1.0		1	01/12/18	01/12/18 14:03	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	01/12/18	01/12/18 14:03	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	01/12/18	01/12/18 14:03	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	01/12/18	01/12/18 14:03	1011
Trichloroethene	ND	ug/L	1.0		1	01/12/18	01/12/18 14:03	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	01/12/18	01/12/18 14:03	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	01/12/18	01/12/18 14:03	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	01/12/18	01/12/18 14:03	1011
Vinyl chloride	ND	ug/L	1.0		1	01/12/18	01/12/18 14:03	1011
m&p-Xylene	ND	ug/L	2.0		1	01/12/18	01/12/18 14:03	1011
o-Xylene	ND	ug/L	1.0		1	01/12/18	01/12/18 14:03	1011

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

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
1,4-Dioxane (P-Dioxane)	ND	ug/L	1.0		1	01/16/18	01/16/18 18:41	1011

Case Narrative Summary

Client Name: WSP USA - Herndon

Project Name: Kop-Flex

Work Order Number(s): 18011008

Project ID: 31400390-09

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

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

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

Sample Receipt:

All sample receipt conditions were acceptable.

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

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

Analytical Data Package Information Summary

Work Order(s): 18011008
Report Prepared For: WSP USA - Herndon, Herndon, VA
Project Name: Kop-Flex
Project Manager: Eric Johnson

Method	Client Sample Id	Analysis Type	Lab Sample Id	Analyst	Mtx	Prep Batch	Analytical Batch	Sampled	Prepared	Analyzed
SW-846 8260 B	Influent VSP-1	Initial	18011008-002	1011	W	69519	149534	01/10/2018	01/12/2018 09:18	01/12/2018 14:26
	TB-011018	Initial	18011008-003	1011	W	69519	149534	01/10/2018	01/12/2018 09:18	01/12/2018 14:03
	69519-1-BKS	BKS	69519-1-BKS	1011	W	69519	149534	--------	01/12/2018 09:18	01/12/2018 10:35
	69519-1-BLK	BLK	69519-1-BLK	1011	W	69519	149534	--------	01/12/2018 09:18	01/12/2018 11:28
	Bldg 9 Outfall - Re:Bldg5 S	MS	18011015-001 S	1011	W	69519	149534	01/08/2018	01/12/2018 09:18	01/12/2018 12:49
	Bldg 9 Outfall - Re:Bldg5 SD	MSD	18011015-001 SD	1011	W	69519	149534	01/08/2018	01/12/2018 09:18	01/12/2018 13:11
	Influent VSP-1	Reanalysis	18011008-002	1011	W	69519	149534	01/10/2018	01/12/2018 09:18	01/12/2018 14:50
SW-846 8260 B-Modified	Effluent VSP-4	Initial	18011008-001	1011	W	69569	149633	01/10/2018	01/16/2018 10:37	01/16/2018 19:03
	TB-011018	Initial	18011008-003	1011	W	69569	149633	01/10/2018	01/16/2018 10:37	01/16/2018 18:41
	69569-1-BKS	BKS	69569-1-BKS	1011	W	69569	149633	--------	01/16/2018 10:37	01/16/2018 16:46
	69569-1-BLK	BLK	69569-1-BLK	1011	W	69569	149633	--------	01/16/2018 10:37	01/16/2018 18:19
	69569-1-BSD	BSD	69569-1-BSD	1011	W	69569	149633	--------	01/16/2018 10:37	01/16/2018 17:12
	Influent VSP-1	Reanalysis	18011008-002	1011	W	69569	149633	01/10/2018	01/16/2018 10:37	01/16/2018 19:26

PHASE SEPARATION SCIENCE, INC.

QC Summary 18011008

WSP USA - Herndon
Kop-Flex

Analytical Method: SW-846 8260 B-Modified Prep Method: SW5030B
Seq Number: 149633 Matrix: Water Date Prep: 01/16/2018
PSS Sample ID: 18011008-001

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
Toluene-D8	97		80-120	%	01/16/18 19:03

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 149534 Matrix: Water Date Prep: 01/12/2018
PSS Sample ID: 18011008-002

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	97		86-111	%	01/12/18 14:26
Dibromofluoromethane	102		91-119	%	01/12/18 14:26
Toluene-D8	101		90-117	%	01/12/18 14:26

Analytical Method: SW-846 8260 B-Modified Prep Method: SW5030B
Seq Number: 149633 Matrix: Water Date Prep: 01/16/2018
PSS Sample ID: 18011008-002

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
Toluene-D8	101		80-120	%	01/16/18 19:47

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 149534 Matrix: Water Date Prep: 01/12/2018
PSS Sample ID: 18011008-003

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	101		86-111	%	01/12/18 14:03
Dibromofluoromethane	101		91-119	%	01/12/18 14:03
Toluene-D8	101		90-117	%	01/12/18 14:03

Analytical Method: SW-846 8260 B-Modified Prep Method: SW5030B
Seq Number: 149633 Matrix: Water Date Prep: 01/16/2018
PSS Sample ID: 18011008-003

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
Toluene-D8	99		80-120	%	01/16/18 18:41

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 18011008

WSP USA - Herndon

Kop-Flex

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

Seq Number: 149534 Matrix: Water Date Prep: 01/12/18

MB Sample Id: 69519-1-BLK LCS Sample Id: 69519-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Acetone	<10.00	50.00	40.65	81	29-149	ug/L	01/12/18 10:35	
Benzene	<1.000	50.00	46.67	93	85-123	ug/L	01/12/18 10:35	
Bromochloromethane	<1.000	50.00	47.27	95	82-136	ug/L	01/12/18 10:35	
Bromodichloromethane	<1.000	50.00	47.06	94	88-133	ug/L	01/12/18 10:35	
Bromoform	<5.000	50.00	46.98	94	80-126	ug/L	01/12/18 10:35	
Bromomethane	<1.000	50.00	42.37	85	64-139	ug/L	01/12/18 10:35	
2-Butanone (MEK)	<10.00	50.00	44.29	89	39-135	ug/L	01/12/18 10:35	
Carbon Disulfide	<10.00	50.00	47.03	94	85-124	ug/L	01/12/18 10:35	
Carbon tetrachloride	<1.000	50.00	48.43	97	81-138	ug/L	01/12/18 10:35	
Chlorobenzene	<1.000	50.00	48.34	97	85-120	ug/L	01/12/18 10:35	
Chloroethane	<1.000	50.00	46.26	93	75-129	ug/L	01/12/18 10:35	
Chloroform	<1.000	50.00	43.22	86	85-128	ug/L	01/12/18 10:35	
Chloromethane	<1.000	50.00	43.78	88	60-139	ug/L	01/12/18 10:35	
Cyclohexane	<10.00	50.00	49.54	99	55-131	ug/L	01/12/18 10:35	
1,2-Dibromo-3-chloropropane	<5.000	50.00	48.64	97	69-127	ug/L	01/12/18 10:35	
Dibromochloromethane	<1.000	50.00	48.85	98	82-127	ug/L	01/12/18 10:35	
1,2-Dibromoethane	<1.000	50.00	48.64	97	82-121	ug/L	01/12/18 10:35	
1,2-Dichlorobenzene	<1.000	50.00	48.81	98	82-123	ug/L	01/12/18 10:35	
1,3-Dichlorobenzene	<1.000	50.00	49.19	98	81-123	ug/L	01/12/18 10:35	
1,4-Dichlorobenzene	<1.000	50.00	46.68	93	81-121	ug/L	01/12/18 10:35	
Dichlorodifluoromethane	<1.000	50.00	47.60	95	69-147	ug/L	01/12/18 10:35	
1,1-Dichloroethane	<1.000	50.00	45.94	92	83-123	ug/L	01/12/18 10:35	
1,2-Dichloroethane	<1.000	50.00	47.37	95	86-138	ug/L	01/12/18 10:35	
1,1-Dichloroethene	<1.000	50.00	46.98	94	85-127	ug/L	01/12/18 10:35	
cis-1,2-Dichloroethene	<1.000	50.00	46.93	94	87-127	ug/L	01/12/18 10:35	
1,2-Dichloropropane	<1.000	50.00	48.58	97	79-125	ug/L	01/12/18 10:35	
cis-1,3-Dichloropropene	<1.000	50.00	50.60	101	79-131	ug/L	01/12/18 10:35	
trans-1,3-Dichloropropene	<1.000	50.00	51.96	104	82-133	ug/L	01/12/18 10:35	
trans-1,2-Dichloroethene	<1.000	50.00	46.33	93	85-125	ug/L	01/12/18 10:35	
Ethylbenzene	<1.000	50.00	49.82	100	83-123	ug/L	01/12/18 10:35	
2-Hexanone (MBK)	<5.000	50.00	41.53	83	37-137	ug/L	01/12/18 10:35	
Isopropylbenzene	<1.000	50.00	51.07	102	70-131	ug/L	01/12/18 10:35	
Methyl Acetate	<10.00	50.00	44.16	88	69-127	ug/L	01/12/18 10:35	
Methylcyclohexane	<10.00	50.00	49.84	100	75-129	ug/L	01/12/18 10:35	
Methylene chloride	<1.000	50.00	45.84	92	86-124	ug/L	01/12/18 10:35	
4-Methyl-2-Pentanone (MIBK)	<5.000	50.00	42.56	85	39-143	ug/L	01/12/18 10:35	
Methyl-t-Butyl Ether	<1.000	50.00	52.24	104	75-134	ug/L	01/12/18 10:35	
Naphthalene	<1.000	50.00	46.02	92	61-118	ug/L	01/12/18 10:35	
Styrene	<1.000	50.00	45.26	91	80-120	ug/L	01/12/18 10:35	
1,1,2,2-Tetrachloroethane	<1.000	50.00	46.85	94	64-125	ug/L	01/12/18 10:35	
Tetrachloroethene	<1.000	50.00	48.31	97	83-138	ug/L	01/12/18 10:35	
Toluene	<1.000	50.00	48.45	97	88-126	ug/L	01/12/18 10:35	
1,2,3-Trichlorobenzene	<1.000	50.00	45.13	90	75-124	ug/L	01/12/18 10:35	
1,2,4-Trichlorobenzene	<1.000	50.00	48.10	96	77-131	ug/L	01/12/18 10:35	
1,1,1-Trichloroethane	<1.000	50.00	48.18	96	68-146	ug/L	01/12/18 10:35	
1,1,2-Trichloroethane	<1.000	50.00	46.75	94	85-124	ug/L	01/12/18 10:35	
Trichloroethene	<1.000	50.00	48.08	96	87-127	ug/L	01/12/18 10:35	
Trichlorofluoromethane	<5.000	50.00	46.80	94	77-147	ug/L	01/12/18 10:35	
1,1,2-Trichlorotrifluoroethane	<1.000	50.00	48.04	96	68-135	ug/L	01/12/18 10:35	
Vinyl chloride	<1.000	50.00	47.57	95	74-138	ug/L	01/12/18 10:35	
m&p-Xylene	<2.000	100	102.5	103	84-124	ug/L	01/12/18 10:35	

PHASE SEPARATION SCIENCE, INC.

QC Summary 18011008

WSP USA - Herndon
Kop-Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 149534 Matrix: Water Date Prep: 01/12/18
MB Sample Id: 69519-1-BLK LCS Sample Id: 69519-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
o-Xylene	<1.000	50.00	45.28	91	79-126	ug/L	01/12/18 10:35	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	102		99		86-111	%	01/12/18 10:35
Dibromofluoromethane	101		100		91-119	%	01/12/18 10:35
Toluene-D8	100		101		90-117	%	01/12/18 10:35

Analytical Method: SW-846 8260 B-Modified Prep Method: SW5030B
Seq Number: 149633 Matrix: Water Date Prep: 01/16/18
MB Sample Id: 69569-1-BLK LCS Sample Id: 69569-1-BKS LCSD Sample Id: 69569-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
1,4-Dioxane (P-Dioxane)	<1.000	30.00	32.32	108	32.27	108	50-150	0	20	ug/L	01/16/18 16:46	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	LCSD Result	LCSD Flag	Limits	Units	Analysis Date
Toluene-D8	99		102		99		80-120	%	01/16/18 16:46

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

18011008

CHAIN-OF-CUSTODY RECORD

(4) Monthly Interval (4)

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

Project Name: Kopflex

WSP | Parsons Brinckerhoff Contact Name: Eric Johnson

Project Location: Hanover MD

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

Project Number & Task: 31400390/09

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

Sampler(s) Name(s): MSK

Sampler(s) Signature(s):

No. 004569

WSP | PARSONS BRINCKERHOFF

Laboratory Name & Location: PSS

Laboratory Project Manager: Amber Conlon

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

Sample Identification	Matrix	Collection Start* Date	Collection Start* Time	Collection Stop* Date	Collection Stop* Time	Number of Containers	Requested Analyses & Preservatives: 1,4 Dioxane (E260SIM)	Requested Analyses & Preservatives: VOCs (E260)	Sample Comments
Effluent VSP-4	Aq	1/10/17	0755	—	—	3	X		
Influent VSP-1	Aq	1/10/17	0820	—	—	6	X	X	
TB-011018	Aq	—	—	—	—	4	X	X	

1/10/18

# of Coolers: 1 (temp blank 8°C)

Custody Seal: Cooler intact

Ice Present: Pres Temp: 7-10°C

Shipping Carrier: FYE

Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Shipment Method	Tracking Number(s)
	1/10/18	1000	Alex				
Relinquished By (Signature)	**Date**	**Time**	**Received By (Signature)**	**Date**	**Time**	**Number of Packages**	**Custody Seal Number(s)**
Alex	1/10	10:45	Dal Wilson				

*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 #	18011008	**Received By**	Barb Weber
Client Name	WSP USA - Herndon	**Date Received**	01/10/2018 10:45:00 AM
Project Name	Kop-Flex	**Delivered By**	Trans Time Express
Project Number	31400390-09	**Tracking No**	Not Applicable
Disposal Date	02/14/2018	**Logged In By**	Thomas Wingate

Shipping Container(s)

No. of Coolers 1

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

Documentation

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

Sample Container

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

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

Preservation

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

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

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

Samples Inspected/Checklist Completed By: Thomas Wingate Date: 01/10/2018

Thomas Wingate

PM Review and Approval: Amber Confer Date: 01/10/2018

Amber Confer

Analytical Report for

WSP USA - Herndon

Certificate of Analysis No.: 18020727

Project Manager: Eric Johnson

Project Name : Kop-Flex

Project Location: Hanover, MD

Project ID : 31400390-09

February 21, 2018

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, 2018

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

Reference: PSS Work Order(s) No: **18020727**
Project Name: Kop-Flex
Project Location: Hanover, MD
Project ID.: 31400390-09

Dear Eric Johnson :

This report includes the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Phase Separation Science (PSS) Work Order(s) numbered **18020727**.

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 14, 2018, with the exception of air canisters which are cleaned immediately following analysis. This includes any samples that were received with a request to be held but lacked a specific hold period. It is your responsibility to provide a written request defining a specific disposal date if additional storage is required. Upon receipt , the request will be acknowledged by PSS, thus extending the storage period.

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

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

Sincerely,

Dan Prucnal
Laboratory Manager

Sample Summary

Client Name: WSP USA - Herndon

Project Name: Kop-Flex

Work Order Number(s): 18020727

Project ID: 31400390-09

The following samples were received under chain of custody by Phase Separation Science (PSS) on 02/07/2018 at 02:18 pm

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
18020727-001	Effluent VSP-4	WATER	02/07/18 11:05

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: 18020727

WSP USA - Herndon, Herndon, VA

February 21, 2018

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

Sample ID: Effluent VSP-4 **Date/Time Sampled: 02/07/2018 11:05** **PSS Sample ID: 18020727-001**
Matrix: WATER **Date/Time Received: 02/07/2018 14:18**

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

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Copper	**2.7**	ug/L	1.0		1	02/08/18	02/12/18 17:36	1051
Lead	ND	ug/L	1.0		1	02/08/18	02/12/18 17:36	1051
Nickel	**10.8**	ug/L	1.00		1	02/08/18	02/12/18 17:36	1051
Zinc	ND	ug/L	20		1	02/08/18	02/12/18 17:36	1051

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

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Calcium	**3,980**	ug/L	100		1	02/08/18	02/08/18 20:26	1051
Copper	**4.0**	ug/L	1.0		1	02/08/18	02/08/18 20:26	1051
Lead	ND	ug/L	1.0		1	02/08/18	02/08/18 20:26	1051
Magnesium	**1,560**	ug/L	100		1	02/08/18	02/08/18 20:26	1051
Nickel	**11.2**	ug/L	1.00		1	02/08/18	02/08/18 20:26	1051
Zinc	**22.0**	ug/L	20.0		1	02/08/18	02/08/18 20:26	1051
Hardness (Ca & Mg)	**16**	mg/L	0.66		1	02/08/18	02/08/18 20:26	1051

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: 18020727

WSP USA - Herndon, Herndon, VA

February 21, 2018

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

Sample ID: Effluent VSP-4 **Date/Time Sampled: 02/07/2018 11:05** **PSS Sample ID: 18020727-001**
Matrix: WATER **Date/Time Received: 02/07/2018 14:18**

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

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Dichlorodifluoromethane	ND	ug/L	5.0		1	02/08/18	02/08/18 19:51	1011
Chloromethane	ND	ug/L	5.0		1	02/08/18	02/08/18 19:51	1011
Vinyl Chloride	ND	ug/L	5.0		1	02/08/18	02/08/18 19:51	1011
Bromomethane	ND	ug/L	5.0		1	02/08/18	02/08/18 19:51	1011
Chloroethane	ND	ug/L	5.0		1	02/08/18	02/08/18 19:51	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	02/08/18	02/08/18 19:51	1011
1,1-Dichloroethene	ND	ug/L	5.0		1	02/08/18	02/08/18 19:51	1011
Methylene Chloride	ND	ug/L	5.0		1	02/08/18	02/08/18 19:51	1011
trans-1,2-dichloroethene	ND	ug/L	5.0		1	02/08/18	02/08/18 19:51	1011
1,1-Dichloroethane	ND	ug/L	5.0		1	02/08/18	02/08/18 19:51	1011
Chloroform	ND	ug/L	5.0		1	02/08/18	02/08/18 19:51	1011
1,1,1-Trichloroethane	ND	ug/L	5.0		1	02/08/18	02/08/18 19:51	1011
Carbon Tetrachloride	ND	ug/L	5.0		1	02/08/18	02/08/18 19:51	1011
Benzene	ND	ug/L	5.0		1	02/08/18	02/08/18 19:51	1011
1,2-Dichloroethane	ND	ug/L	5.0		1	02/08/18	02/08/18 19:51	1011
Trichloroethene	ND	ug/L	5.0		1	02/08/18	02/08/18 19:51	1011
1,2-Dichloropropane	ND	ug/L	5.0		1	02/08/18	02/08/18 19:51	1011
Bromodichloromethane	ND	ug/L	5.0		1	02/08/18	02/08/18 19:51	1011
2-Chloroethyl Vinyl Ether	ND	ug/L	5.0		1	02/08/18	02/08/18 19:51	1011
cis-1,3-Dichloropropene	ND	ug/L	5.0		1	02/08/18	02/08/18 19:51	1011
Toluene	ND	ug/L	5.0		1	02/08/18	02/08/18 19:51	1011
trans-1,3-dichloropropene	ND	ug/L	5.0		1	02/08/18	02/08/18 19:51	1011
1,1,2-Trichloroethane	ND	ug/L	5.0		1	02/08/18	02/08/18 19:51	1011
Tetrachloroethylene	ND	ug/L	5.0		1	02/08/18	02/08/18 19:51	1011
Dibromochloromethane	ND	ug/L	5.0		1	02/08/18	02/08/18 19:51	1011
Chlorobenzene	ND	ug/L	5.0		1	02/08/18	02/08/18 19:51	1011
Ethylbenzene	ND	ug/L	5.0		1	02/08/18	02/08/18 19:51	1011
Bromoform	ND	ug/L	5.0		1	02/08/18	02/08/18 19:51	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0		1	02/08/18	02/08/18 19:51	1011
1,3-Dichlorobenzene	ND	ug/L	5.0		1	02/08/18	02/08/18 19:51	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: 18020727

WSP USA - Herndon, Herndon, VA

February 21, 2018

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

Sample ID: Effluent VSP-4 **Date/Time Sampled: 02/07/2018 11:05** **PSS Sample ID: 18020727-001**
Matrix: WATER **Date/Time Received: 02/07/2018 14:18**

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

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
1,4-Dichlorobenzene	ND	ug/L	5.0		1	02/08/18	02/08/18 19:51	1011
1,2-Dichlorobenzene	ND	ug/L	5.0		1	02/08/18	02/08/18 19:51	1011

Total Suspended Solids Analytical Method: SM 2540D -2011

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Suspended Solids	ND	mg/L	1.0		1	02/07/18	02/07/18 16:32	1061

Biochemical Oxygen Demand Analytical Method: SM 5210B -2011

	Result	Units	RL	Flag	Prepared	Analyzed	Analyst
Biochemical Oxygen Demand, 5 day	ND	mg/L	5.0		02/08/18	02/08/18 17:00	4005

Case Narrative Summary

Client Name: WSP USA - Herndon

Project Name: Kop-Flex

Work Order Number(s): 18020727
Project ID: 31400390-09

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

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

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

Sample Receipt:

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

18020727: Analyses associated with analyst code 4005 were performed by Enviro-Chem Laboratories, Inc.

Analytical:

Total Metals + Hardness

Batch: 150288

Matrix spike and/or matrix spike duplicate (MS/MSD) exceedances identified; see MS summary form.
The concentration of the following analyte(s) in the reference sample was greater than four times the matrix spike concentration : calcium

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

SM 5210B -2011

Analytical Data Package Information Summary

Work Order(s): 18020727
Report Prepared For: WSP USA - Herndon, Herndon, VA
Project Name: Kop-Flex
Project Manager: Eric Johnson

Method	Client Sample Id	Analysis Type	Lab Sample Id	Analyst	Mtx	Prep Batch	Analytical Batch	Sampled	Prepared	Analyzed
EPA 200.8	Effluent VSP-4	Initial	18020727-001	1051	W	69882	150288	02/07/2018	02/08/2018 12:04	02/08/2018 20:26
	69882-1-BKS	BKS	69882-1-BKS	1051	W	69882	150288	--------	02/08/2018 12:04	02/08/2018 20:22
	69882-1-BLK	BLK	69882-1-BLK	1051	W	69882	150288	--------	02/08/2018 12:04	02/08/2018 20:14
	17483 S	MS	18020725-010 S	1051	W	69882	150288	02/06/2018	02/08/2018 12:04	02/08/2018 21:42
	Effluent VSP-4 S	MS	18020727-001 S	1051	W	69882	150288	02/07/2018	02/08/2018 12:04	02/08/2018 20:29
	Effluent VSP-4 SD	MSD	18020727-001 SD	1051	W	69882	150288	02/07/2018	02/08/2018 12:04	02/08/2018 20:33
EPA 200.8	Effluent VSP-4	Initial	18020727-001	1051	W	69888	150384	02/07/2018	02/08/2018 17:10	02/12/2018 17:36
	69888-1-BKS	BKS	69888-1-BKS	1051	W	69888	150384	--------	02/08/2018 17:10	02/12/2018 17:07
	69888-1-BLK	BLK	69888-1-BLK	1051	W	69888	150384	--------	02/08/2018 17:10	02/12/2018 17:14
	12006-Eff-02/18 S	MS	18020609-001 S	1051	W	69888	150384	02/06/2018	02/08/2018 17:10	02/12/2018 17:25
	12006-Eff-02/18 SD	MSD	18020609-001 SD	1051	W	69888	150384	02/06/2018	02/08/2018 17:10	02/12/2018 17:29
EPA 624	Effluent VSP-4	Initial	18020727-001	1011	W	69902	150289	02/07/2018	02/08/2018 10:46	02/08/2018 19:51
	69902-1-BKS	BKS	69902-1-BKS	1011	W	69902	150289	--------	02/08/2018 10:46	02/08/2018 15:50
	69902-1-BLK	BLK	69902-1-BLK	1011	W	69902	150289	--------	02/08/2018 10:46	02/08/2018 16:31
	L-Dewater-020618 S	MS	18020620-001 S	1011	W	69902	150289	02/06/2018	02/08/2018 10:46	02/08/2018 17:51
	L-Dewater-020618 SD	MSD	18020620-001 SD	1011	W	69902	150289	02/06/2018	02/08/2018 10:46	02/08/2018 18:31
SM 2540D -2011	Effluent VSP-4	Initial	18020727-001	1061	W	150241	150241	02/07/2018	02/07/2018 16:32	02/07/2018 16:32
	150241-1-BLK	BLK	150241-1-BLK	1061	W	150241	150241	--------	02/07/2018 16:32	02/07/2018 16:32
	001 D	MD	18020615-001 D	1061	W	150241	150241	02/06/2018	02/07/2018 16:32	02/07/2018 16:32
	GTA-1V-4A D	MD	18020722-001 D	1061	W	150241	150241	02/07/2018	02/07/2018 16:32	02/07/2018 16:32
SM 5210B -2011	Effluent VSP-4	Initial	18020727-001	4005	W	150470	150470	02/07/2018	02/08/2018 17:00	02/08/2018 17:00

PHASE SEPARATION SCIENCE, INC.

QC Summary 18020727

WSP USA - Herndon
Kop-Flex

Analytical Method: EPA 624 Prep Method: E624PREP
Seq Number: 150289 Matrix: Water Date Prep: 02/08/2018
PSS Sample ID: 18020727-001

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
Dibromofluoromethane	109		87-114	%	02/08/18 19:51
4-Bromofluorobenzene	131	*	90-114	%	02/08/18 19:51
Toluene-D8	97		93-108	%	02/08/18 19:51

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 18020727

WSP USA - Herndon
Kop-Flex

Analytical Method: SM 2540D -2011
Seq Number: 150241 Matrix: Water
MB Sample Id: 150241-1-BLK

Parameter	MB Result	LOD	RL	Units	Analysis Date	Flag
Suspended Solids	ND	0.5000	1.000	mg/L	02/07/18 16:32	

Analytical Method: EPA 200.8 Prep Method: E200.8_PREP
Seq Number: 150288 Matrix: Water Date Prep: 02/08/18
MB Sample Id: 69882-1-BLK LCS Sample Id: 69882-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Calcium	<100	400	427.1	107	85-115	ug/L	02/08/18 20:22	
Copper	<1.000	40.00	43.39	108	85-115	ug/L	02/08/18 20:22	
Lead	<1.000	40.00	44.60	112	85-115	ug/L	02/08/18 20:22	
Magnesium	<100	400	407.6	102	85-115	ug/L	02/08/18 20:22	
Nickel	<1.000	40.00	42.31	106	85-115	ug/L	02/08/18 20:22	
Zinc	<20.00	200	210.2	105	85-115	ug/L	02/08/18 20:22	

Analytical Method: EPA 200.8 Prep Method: E200.8_PREP
Seq Number: 150384 Matrix: Water Date Prep: 02/08/18
MB Sample Id: 69888-1-BLK LCS Sample Id: 69888-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Copper	<1.000	40.00	40.01	100	85-115	ug/L	02/12/18 17:07	
Lead	<1.000	40.00	40.16	100	85-115	ug/L	02/12/18 17:07	
Nickel	<1.000	40.00	39.56	99	85-115	ug/L	02/12/18 17:07	
Zinc	<20.00	200	202.5	101	85-115	ug/L	02/12/18 17:07	

Analytical Method: EPA 200.8 Prep Method: E200.8_PREP
Seq Number: 150288 Matrix: Water Date Prep: 02/08/18
Parent Sample Id: 18020727-001 MS Sample Id: 18020727-001 S MSD Sample Id: 18020727-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Calcium	3976	400	4115	35	4643	167	70-130	12	25	ug/L	02/08/18 20:29	X
Copper	4.043	40.00	46.37	106	44.42	101	70-130	4	25	ug/L	02/08/18 20:29	
Lead	<1.000	40.00	43.26	108	41.35	103	70-130	5	25	ug/L	02/08/18 20:29	
Magnesium	1564	400	1920	89	1890	82	70-130	2	25	ug/L	02/08/18 20:29	
Nickel	11.24	40.00	52.37	103	49.84	97	70-130	5	25	ug/L	02/08/18 20:29	
Zinc	21.97	200	230	104	219.3	99	70-130	5	25	ug/L	02/08/18 20:29	

PHASE SEPARATION SCIENCE, INC.

QC Summary 18020727

WSP USA - Herndon
Kop-Flex

Analytical Method: EPA 624 Prep Method: E624PREP

Seq Number: 150289 Matrix: Water Date Prep: 02/08/18

MB Sample Id: 69902-1-BLK LCS Sample Id: 69902-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Dichlorodifluoromethane	<5.000	60.00	63.03	105	51-139	ug/L	02/08/18 15:50	
Chloromethane	<5.000	60.00	57.77	96	56-144	ug/L	02/08/18 15:50	
Vinyl Chloride	<5.000	60.00	61.91	103	46-157	ug/L	02/08/18 15:50	
Bromomethane	<5.000	60.00	64.74	108	63-134	ug/L	02/08/18 15:50	
Chloroethane	<5.000	60.00	63.78	106	56-143	ug/L	02/08/18 15:50	
Trichlorofluoromethane	<5.000	60.00	67.54	113	56-138	ug/L	02/08/18 15:50	
1,1-Dichloroethene	<5.000	60.00	63.86	106	63-134	ug/L	02/08/18 15:50	
Methylene Chloride	<5.000	60.00	67.89	113	65-126	ug/L	02/08/18 15:50	
trans-1,2-dichloroethene	<5.000	60.00	69.39	116	67-129	ug/L	02/08/18 15:50	
1,1-Dichloroethane	<5.000	60.00	68.85	115	66-131	ug/L	02/08/18 15:50	
Chloroform	<5.000	60.00	70.40	117	69-130	ug/L	02/08/18 15:50	
1,1,1-Trichloroethane	<5.000	60.00	70.33	117	66-129	ug/L	02/08/18 15:50	
Carbon Tetrachloride	<5.000	60.00	70.81	118	70-133	ug/L	02/08/18 15:50	
Benzene	<5.000	60.00	71.39	119	69-127	ug/L	02/08/18 15:50	
1,2-Dichloroethane	<5.000	60.00	72.41	121	62-133	ug/L	02/08/18 15:50	
Trichloroethene	<5.000	60.00	67.36	112	71-127	ug/L	02/08/18 15:50	
1,2-Dichloropropane	<5.000	60.00	69.37	116	67-133	ug/L	02/08/18 15:50	
Bromodichloromethane	<5.000	60.00	71.63	119	63-132	ug/L	02/08/18 15:50	
2-Chloroethyl Vinyl Ether	<5.000	60.00	38.56	64	21-140	ug/L	02/08/18 15:50	
cis-1,3-Dichloropropene	<5.000	60.00	63.09	105	65-128	ug/L	02/08/18 15:50	
Toluene	<5.000	60.00	70.12	117	67-130	ug/L	02/08/18 15:50	
trans-1,3-dichloropropene	<5.000	60.00	63.17	105	63-127	ug/L	02/08/18 15:50	
1,1,2-Trichloroethane	<5.000	60.00	69.65	116	62-136	ug/L	02/08/18 15:50	
Tetrachloroethylene	<5.000	60.00	69.66	116	64-135	ug/L	02/08/18 15:50	
Dibromochloromethane	<5.000	60.00	74.56	124	65-126	ug/L	02/08/18 15:50	
Chlorobenzene	<5.000	60.00	72.65	121	70-127	ug/L	02/08/18 15:50	
Ethylbenzene	<5.000	60.00	74.99	125	71-131	ug/L	02/08/18 15:50	
Bromoform	<5.000	60.00	76.56	128	58-128	ug/L	02/08/18 15:50	
1,1,2,2-Tetrachloroethane	<5.000	60.00	90.58	151	63-134	ug/L	02/08/18 15:50	H
1,3-Dichlorobenzene	<5.000	60.00	96.08	160	67-128	ug/L	02/08/18 15:50	H
1,4-Dichlorobenzene	<5.000	60.00	91.07	152	67-127	ug/L	02/08/18 15:50	H
1,2-Dichlorobenzene	<5.000	60.00	99.04	165	67-126	ug/L	02/08/18 15:50	H

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	Limits	Units	Analysis Date
Dibromofluoromethane	106		105		87-114	%	02/08/18 15:50
4-Bromofluorobenzene	121	*	108		90-114	%	02/08/18 15:50
Toluene-D8	98		99		93-108	%	02/08/18 15:50

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

SAMPLE CHAIN OF CUSTODY/AGREEMENT FORM

PHASE SEPARATION SCIENCE, INC.

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

(A) NPDES Monthly (B)

1

*CLIENT: WSP *OFFICE LOC. Herndon VA

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

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

*PROJECT NAME: Icpflex PROJECT NO.: 31400390/09

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

SAMPLER(S): MJL DW CERT NO.:

PSS Work Order #: 1802072?

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	HCl				HNO3	H2SO4							REMARKS
							Analysis/ Method Required ③ *	VOCs (624)	BOD5	TSS	Total Dissolved Metals Sn, Cu, Pb, Cr	Total Metals Sn, Cu, Pb, Cr	Hardness							
1	Effluent VSP-4	2/7/18	1105	Aq	3	G		X												
1	Effluent VSP-4	2/7/18	1105	Aq	1	G			X											
1	Effluent VSP-4	2/7/18	1105	Aq	1	G				X										Lab to filter
1	Effluent VSP-4	2/7/18	1105	Aq	1	G					X	X								
1	Effluent VSP-4	2/7/18	1105	Aq	1	G														

2/7/18

5

Relinquished By: (1)	Date	Time	Received By:
	2/7/18	1418	
Relinquished By: (2)	Date	Time	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date	Time	Received By:

4

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

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

# of Coolers: 1 Temp Blank 8°C

Custody Seal: Cooler-Intact

Ice Present: PRES Temp: 7°-8°C

Shipping Carrier: Client

Special Instructions:
Standard 10 day TAT

DW COMPLIANCE? YES ☐

EDD FORMAT TYPE _____

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

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

Phase Separation Science, Inc

Sample Receipt Checklist

Work Order #	18020727	**Received By**	Thomas Wingate
Client Name	WSP USA - Herndon	**Date Received**	02/07/2018 02:18:00 PM
Project Name	Kop-Flex	**Delivered By**	Client
Project Number	31400390-09	**Tracking No**	Not Applicable
Disposal Date	03/14/2018	**Logged In By**	Thomas Wingate

Shipping Container(s)

No. of Coolers 1

		Ice	Present
Custody Seal(s) Intact?	Yes	Temp (deg C)	8
Seal(s) Signed / Dated?	Yes	Temp Blank Present	Yes

Documentation

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

Sample Container

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

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

Preservation

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

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

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

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

Samples Inspected/Checklist Completed By: Thomas Wingate Date: 02/07/2018

Thomas Wingate

PM Review and Approval: Amber Confer Date: 02/08/2018

Amber Confer

Analytical Report for

WSP USA - Herndon

Certificate of Analysis No.: 18020728

Project Manager: Eric Johnson

Project Name : Kop-Flex

Project Location: Hanover, MD

Project ID : 31400390/09

February 21, 2018

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, 2018

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

Reference: PSS Work Order(s) No: **18020728**
Project Name: Kop-Flex
Project Location: Hanover, MD
Project ID.: 31400390/09

Dear Eric Johnson :

This report includes the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Phase Separation Science (PSS) Work Order(s) numbered **18020728**.

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 14, 2018, with the exception of air canisters which are cleaned immediately following analysis. This includes any samples that were received with a request to be held but lacked a specific hold period. It is your responsibility to provide a written request defining a specific disposal date if additional storage is required. Upon receipt , the request will be acknowledged by PSS, thus extending the storage period.

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

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

Sincerely,

Dan Prucnal
Laboratory Manager

Sample Summary

Client Name: WSP USA - Herndon

Project Name: Kop-Flex

Work Order Number(s): 18020728

Project ID: 31400390/09

The following samples were received under chain of custody by Phase Separation Science (PSS) on 02/07/2018 at 02:18 pm

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
18020728-001	Effluent VSP-4	WATER	02/07/18 11:05
18020728-002	Influent VSP-1	WATER	02/07/18 11:30
18020728-003	TB-020718	WATER	02/07/18 14:18

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: 18020728

WSP USA - Herndon, Herndon, VA

February 21, 2018

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

Sample ID: Effluent VSP-4 **Date/Time Sampled: 02/07/2018 11:05** **PSS Sample ID: 18020728-001**
Matrix: WATER **Date/Time Received: 02/07/2018 14:18**

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

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
1,4-Dioxane (P-Dioxane)	ND	ug/L	1.0		1	02/19/18	02/19/18 18:41	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: 18020728

WSP USA - Herndon, Herndon, VA

February 21, 2018

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

Sample ID: Influent VSP-1 **Date/Time Sampled: 02/07/2018 11:30** **PSS Sample ID: 18020728-002**
Matrix: WATER **Date/Time Received: 02/07/2018 14:18**

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

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	02/16/18	02/16/18 19:18	1011
Benzene	ND	ug/L	1.0		1	02/16/18	02/16/18 19:18	1011
Bromochloromethane	ND	ug/L	1.0		1	02/16/18	02/16/18 19:18	1011
Bromodichloromethane	ND	ug/L	1.0		1	02/16/18	02/16/18 19:18	1011
Bromoform	ND	ug/L	5.0		1	02/16/18	02/16/18 19:18	1011
Bromomethane	ND	ug/L	1.0		1	02/16/18	02/16/18 19:18	1011
2-Butanone (MEK)	ND	ug/L	10		1	02/16/18	02/16/18 19:18	1011
Carbon Disulfide	ND	ug/L	10		1	02/16/18	02/16/18 19:18	1011
Carbon tetrachloride	ND	ug/L	1.0		1	02/16/18	02/16/18 19:18	1011
Chlorobenzene	ND	ug/L	1.0		1	02/16/18	02/16/18 19:18	1011
Chloroethane	**4.1**	ug/L	1.0		1	02/16/18	02/16/18 19:18	1011
Chloroform	ND	ug/L	1.0		1	02/16/18	02/16/18 19:18	1011
Chloromethane	ND	ug/L	1.0		1	02/16/18	02/16/18 19:18	1011
Cyclohexane	ND	ug/L	10		1	02/16/18	02/16/18 19:18	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	02/16/18	02/16/18 19:18	1011
Dibromochloromethane	ND	ug/L	1.0		1	02/16/18	02/16/18 19:18	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	02/16/18	02/16/18 19:18	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	02/16/18	02/16/18 19:18	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	02/16/18	02/16/18 19:18	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	02/16/18	02/16/18 19:18	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	02/16/18	02/16/18 19:18	1011
1,1-Dichloroethane	**58**	ug/L	1.0		1	02/16/18	02/16/18 19:18	1011
1,2-Dichloroethane	**2.4**	ug/L	1.0		1	02/16/18	02/16/18 19:18	1011
1,1-Dichloroethene	**260**	ug/L	10		10	02/16/18	02/16/18 19:42	1011
cis-1,2-Dichloroethene	**2.0**	ug/L	1.0		1	02/16/18	02/16/18 19:18	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	02/16/18	02/16/18 19:18	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	02/16/18	02/16/18 19:18	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	02/16/18	02/16/18 19:18	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	02/16/18	02/16/18 19:18	1011
Ethylbenzene	ND	ug/L	1.0		1	02/16/18	02/16/18 19:18	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: 18020728

WSP USA - Herndon, Herndon, VA

February 21, 2018

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

Sample ID: Influent VSP-1 **Date/Time Sampled: 02/07/2018 11:30** **PSS Sample ID: 18020728-002**
Matrix: WATER **Date/Time Received: 02/07/2018 14:18**

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

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	02/16/18	02/16/18 19:18	1011
Isopropylbenzene	ND	ug/L	1.0		1	02/16/18	02/16/18 19:18	1011
Methyl Acetate	ND	ug/L	10		1	02/16/18	02/16/18 19:18	1011
Methylcyclohexane	ND	ug/L	10		1	02/16/18	02/16/18 19:18	1011
Methylene chloride	ND	ug/L	1.0		1	02/16/18	02/16/18 19:18	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	02/16/18	02/16/18 19:18	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	02/16/18	02/16/18 19:18	1011
Naphthalene	ND	ug/L	1.0		1	02/16/18	02/16/18 19:18	1011
Styrene	ND	ug/L	1.0		1	02/16/18	02/16/18 19:18	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	02/16/18	02/16/18 19:18	1011
Tetrachloroethene	ND	ug/L	1.0		1	02/16/18	02/16/18 19:18	1011
Toluene	ND	ug/L	1.0		1	02/16/18	02/16/18 19:18	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	02/16/18	02/16/18 19:18	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	02/16/18	02/16/18 19:18	1011
1,1,1-Trichloroethane	**26**	ug/L	1.0		1	02/16/18	02/16/18 19:18	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	02/16/18	02/16/18 19:18	1011
Trichloroethene	**1.8**	ug/L	1.0		1	02/16/18	02/16/18 19:18	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	02/16/18	02/16/18 19:18	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	02/16/18	02/16/18 19:18	1011
Vinyl chloride	ND	ug/L	1.0		1	02/16/18	02/16/18 19:18	1011
m&p-Xylene	ND	ug/L	2.0		1	02/16/18	02/16/18 19:18	1011
o-Xylene	ND	ug/L	1.0		1	02/16/18	02/16/18 19:18	1011

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

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
1,4-Dioxane (P-Dioxane)	**170**	ug/L	10		10	02/19/18	02/19/18 19:26	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: 18020728

WSP USA - Herndon, Herndon, VA

February 21, 2018

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

Sample ID: TB-020718 **Date/Time Sampled: 02/07/2018 14:18** **PSS Sample ID: 18020728-003**
Matrix: WATER **Date/Time Received: 02/07/2018 14:18**

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

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	02/16/18	02/16/18 18:55	1011
Benzene	ND	ug/L	1.0		1	02/16/18	02/16/18 18:55	1011
Bromochloromethane	ND	ug/L	1.0		1	02/16/18	02/16/18 18:55	1011
Bromodichloromethane	ND	ug/L	1.0		1	02/16/18	02/16/18 18:55	1011
Bromoform	ND	ug/L	5.0		1	02/16/18	02/16/18 18:55	1011
Bromomethane	ND	ug/L	1.0		1	02/16/18	02/16/18 18:55	1011
2-Butanone (MEK)	ND	ug/L	10		1	02/16/18	02/16/18 18:55	1011
Carbon Disulfide	ND	ug/L	10		1	02/16/18	02/16/18 18:55	1011
Carbon tetrachloride	ND	ug/L	1.0		1	02/16/18	02/16/18 18:55	1011
Chlorobenzene	ND	ug/L	1.0		1	02/16/18	02/16/18 18:55	1011
Chloroethane	ND	ug/L	1.0		1	02/16/18	02/16/18 18:55	1011
Chloroform	ND	ug/L	1.0		1	02/16/18	02/16/18 18:55	1011
Chloromethane	ND	ug/L	1.0		1	02/16/18	02/16/18 18:55	1011
Cyclohexane	ND	ug/L	10		1	02/16/18	02/16/18 18:55	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	02/16/18	02/16/18 18:55	1011
Dibromochloromethane	ND	ug/L	1.0		1	02/16/18	02/16/18 18:55	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	02/16/18	02/16/18 18:55	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	02/16/18	02/16/18 18:55	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	02/16/18	02/16/18 18:55	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	02/16/18	02/16/18 18:55	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	02/16/18	02/16/18 18:55	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	02/16/18	02/16/18 18:55	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	02/16/18	02/16/18 18:55	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	02/16/18	02/16/18 18:55	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	02/16/18	02/16/18 18:55	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	02/16/18	02/16/18 18:55	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	02/16/18	02/16/18 18:55	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	02/16/18	02/16/18 18:55	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	02/16/18	02/16/18 18:55	1011
Ethylbenzene	ND	ug/L	1.0		1	02/16/18	02/16/18 18:55	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: 18020728

WSP USA - Herndon, Herndon, VA

February 21, 2018

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

Sample ID: TB-020718 **Date/Time Sampled: 02/07/2018 14:18** **PSS Sample ID: 18020728-003**
Matrix: WATER **Date/Time Received: 02/07/2018 14:18**

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

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	02/16/18	02/16/18 18:55	1011
Isopropylbenzene	ND	ug/L	1.0		1	02/16/18	02/16/18 18:55	1011
Methyl Acetate	ND	ug/L	10		1	02/16/18	02/16/18 18:55	1011
Methylcyclohexane	ND	ug/L	10		1	02/16/18	02/16/18 18:55	1011
Methylene chloride	ND	ug/L	1.0		1	02/16/18	02/16/18 18:55	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	02/16/18	02/16/18 18:55	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	02/16/18	02/16/18 18:55	1011
Naphthalene	ND	ug/L	1.0		1	02/16/18	02/16/18 18:55	1011
Styrene	ND	ug/L	1.0		1	02/16/18	02/16/18 18:55	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	02/16/18	02/16/18 18:55	1011
Tetrachloroethene	ND	ug/L	1.0		1	02/16/18	02/16/18 18:55	1011
Toluene	ND	ug/L	1.0		1	02/16/18	02/16/18 18:55	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	02/16/18	02/16/18 18:55	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	02/16/18	02/16/18 18:55	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	02/16/18	02/16/18 18:55	1011
Trichloroethene	ND	ug/L	1.0		1	02/16/18	02/16/18 18:55	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	02/16/18	02/16/18 18:55	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	02/16/18	02/16/18 18:55	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	02/16/18	02/16/18 18:55	1011
Vinyl chloride	ND	ug/L	1.0		1	02/16/18	02/16/18 18:55	1011
m&p-Xylene	ND	ug/L	2.0		1	02/16/18	02/16/18 18:55	1011
o-Xylene	ND	ug/L	1.0		1	02/16/18	02/16/18 18:55	1011

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

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
1,4-Dioxane (P-Dioxane)	ND	ug/L	1.0		1	02/19/18	02/19/18 18:20	1011

Case Narrative Summary

Client Name: WSP USA - Herndon

Project Name: Kop-Flex

Work Order Number(s): 18020728

Project ID: 31400390/09

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

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

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

Sample Receipt:

All sample receipt conditions were acceptable.

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

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

Analytical Data Package Information Summary

Work Order(s): 18020728
Report Prepared For: WSP USA - Herndon, Herndon, VA
Project Name: Kop-Flex
Project Manager: Eric Johnson

Method	Client Sample Id	Analysis Type	Lab Sample Id	Analyst	Mtx	Prep Batch	Analytical Batch	Sampled	Prepared	Analyzed
SW-846 8260 B	Influent VSP-1	Initial	18020728-002	1011	W	70016	150540	02/07/2018	02/16/2018 08:28	02/16/2018 19:18
	TB-020718	Initial	18020728-003	1011	W	70016	150540	02/07/2018	02/16/2018 08:28	02/16/2018 18:55
	70016-1-BKS	BKS	70016-1-BKS	1011	W	70016	150540	--------	02/16/2018 08:28	02/16/2018 09:34
	70016-1-BLK	BLK	70016-1-BLK	1011	W	70016	150540	--------	02/16/2018 08:28	02/16/2018 12:22
	13082 - B1 - GW S	MS	18021512-004 S	1011	W	70016	150540	02/14/2018	02/16/2018 08:28	02/16/2018 17:06
	13082 - B1 - GW SD	MSD	18021512-004 SD	1011	W	70016	150540	02/14/2018	02/16/2018 08:28	02/16/2018 17:28
	Influent VSP-1	Reanalysis	18020728-002	1011	W	70016	150540	02/07/2018	02/16/2018 08:28	02/16/2018 19:42
SW-846 8260 B-Modified	Effluent VSP-4	Initial	18020728-001	1011	W	70050	150601	02/07/2018	02/19/2018 08:53	02/19/2018 18:41
	TB-020718	Initial	18020728-003	1011	W	70050	150601	02/07/2018	02/19/2018 08:53	02/19/2018 18:20
	70050-1-BKS	BKS	70050-1-BKS	1011	W	70050	150601	--------	02/19/2018 08:53	02/19/2018 16:26
	70050-1-BLK	BLK	70050-1-BLK	1011	W	70050	150601	--------	02/19/2018 08:53	02/19/2018 17:58
	70050-1-BSD	BSD	70050-1-BSD	1011	W	70050	150601	--------	02/19/2018 08:53	02/19/2018 16:49
	Influent VSP-1	Reanalysis	18020728-002	1011	W	70050	150601	02/07/2018	02/19/2018 08:53	02/19/2018 19:26

PHASE SEPARATION SCIENCE, INC.

QC Summary 18020728

WSP USA - Herndon
Kop-Flex

Analytical Method: SW-846 8260 B-Modified Prep Method: SW5030B
Seq Number: 150601 Matrix: Water Date Prep: 02/19/2018
PSS Sample ID: 18020728-001

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
Toluene-D8	96		80-120	%	02/19/18 18:41

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 150540 Matrix: Water Date Prep: 02/16/2018
PSS Sample ID: 18020728-002

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	95		86-111	%	02/16/18 19:18
Dibromofluoromethane	102		91-119	%	02/16/18 19:18
Toluene-D8	97		90-117	%	02/16/18 19:18

Analytical Method: SW-846 8260 B-Modified Prep Method: SW5030B
Seq Number: 150601 Matrix: Water Date Prep: 02/19/2018
PSS Sample ID: 18020728-002

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
Toluene-D8	99		80-120	%	02/19/18 19:03

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 150540 Matrix: Water Date Prep: 02/16/2018
PSS Sample ID: 18020728-003

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	99		86-111	%	02/16/18 18:55
Dibromofluoromethane	103		91-119	%	02/16/18 18:55
Toluene-D8	100		90-117	%	02/16/18 18:55

Analytical Method: SW-846 8260 B-Modified Prep Method: SW5030B
Seq Number: 150601 Matrix: Water Date Prep: 02/19/2018
PSS Sample ID: 18020728-003

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
Toluene-D8	92		80-120	%	02/19/18 18:20

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 18020728

WSP USA - Herndon

Kop-Flex

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

Seq Number: 150540 Matrix: Water Date Prep: 02/16/18

MB Sample Id: 70016-1-BLK LCS Sample Id: 70016-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Acetone	<10.00	50.00	44.00	88	29-149	ug/L	02/16/18 09:34	
Benzene	<1.000	50.00	49.95	100	85-123	ug/L	02/16/18 09:34	
Bromochloromethane	<1.000	50.00	49.00	98	82-136	ug/L	02/16/18 09:34	
Bromodichloromethane	<1.000	50.00	48.05	96	88-133	ug/L	02/16/18 09:34	
Bromoform	<5.000	50.00	49.28	99	80-126	ug/L	02/16/18 09:34	
Bromomethane	<1.000	50.00	54.11	108	64-139	ug/L	02/16/18 09:34	
2-Butanone (MEK)	<10.00	50.00	48.82	98	39-135	ug/L	02/16/18 09:34	
Carbon Disulfide	<10.00	50.00	47.72	95	85-124	ug/L	02/16/18 09:34	
Carbon tetrachloride	<1.000	50.00	50.90	102	81-138	ug/L	02/16/18 09:34	
Chlorobenzene	<1.000	50.00	49.21	98	85-120	ug/L	02/16/18 09:34	
Chloroethane	<1.000	50.00	46.57	93	75-129	ug/L	02/16/18 09:34	
Chloroform	<1.000	50.00	50.25	101	85-128	ug/L	02/16/18 09:34	
Chloromethane	<1.000	50.00	38.67	77	60-139	ug/L	02/16/18 09:34	
Cyclohexane	<10.00	50.00	51.36	103	55-131	ug/L	02/16/18 09:34	
1,2-Dibromo-3-chloropropane	<5.000	50.00	51.46	103	69-127	ug/L	02/16/18 09:34	
Dibromochloromethane	<1.000	50.00	52.57	105	82-127	ug/L	02/16/18 09:34	
1,2-Dibromoethane	<1.000	50.00	47.25	95	82-121	ug/L	02/16/18 09:34	
1,2-Dichlorobenzene	<1.000	50.00	50.09	100	82-123	ug/L	02/16/18 09:34	
1,3-Dichlorobenzene	<1.000	50.00	49.87	100	81-123	ug/L	02/16/18 09:34	
1,4-Dichlorobenzene	<1.000	50.00	48.67	97	81-121	ug/L	02/16/18 09:34	
Dichlorodifluoromethane	<1.000	50.00	47.73	95	69-147	ug/L	02/16/18 09:34	
1,1-Dichloroethane	<1.000	50.00	49.02	98	83-123	ug/L	02/16/18 09:34	
1,2-Dichloroethane	<1.000	50.00	52.57	105	86-138	ug/L	02/16/18 09:34	
1,1-Dichloroethene	<1.000	50.00	47.33	95	85-127	ug/L	02/16/18 09:34	
cis-1,2-Dichloroethene	<1.000	50.00	49.62	99	87-127	ug/L	02/16/18 09:34	
1,2-Dichloropropane	<1.000	50.00	46.56	93	79-125	ug/L	02/16/18 09:34	
cis-1,3-Dichloropropene	<1.000	50.00	47.23	94	79-131	ug/L	02/16/18 09:34	
trans-1,3-Dichloropropene	<1.000	50.00	48.23	96	82-133	ug/L	02/16/18 09:34	
trans-1,2-Dichloroethene	<1.000	50.00	48.19	96	85-125	ug/L	02/16/18 09:34	
Ethylbenzene	<1.000	50.00	50.38	101	83-123	ug/L	02/16/18 09:34	
2-Hexanone (MBK)	<5.000	50.00	41.55	83	37-137	ug/L	02/16/18 09:34	
Isopropylbenzene	<1.000	50.00	49.06	98	70-131	ug/L	02/16/18 09:34	
Methyl Acetate	<10.00	50.00	46.54	93	69-127	ug/L	02/16/18 09:34	
Methylcyclohexane	<10.00	50.00	46.58	93	75-129	ug/L	02/16/18 09:34	
Methylene chloride	<1.000	50.00	47.10	94	86-124	ug/L	02/16/18 09:34	
4-Methyl-2-Pentanone (MIBK)	<5.000	50.00	42.92	86	39-143	ug/L	02/16/18 09:34	
Methyl-t-Butyl Ether	<1.000	50.00	47.77	96	75-134	ug/L	02/16/18 09:34	
Naphthalene	<1.000	50.00	49.52	99	61-118	ug/L	02/16/18 09:34	
Styrene	<1.000	50.00	49.09	98	80-120	ug/L	02/16/18 09:34	
1,1,2,2-Tetrachloroethane	<1.000	50.00	47.04	94	64-125	ug/L	02/16/18 09:34	
Tetrachloroethene	<1.000	50.00	48.82	98	83-138	ug/L	02/16/18 09:34	
Toluene	<1.000	50.00	47.71	95	88-126	ug/L	02/16/18 09:34	
1,2,3-Trichlorobenzene	<1.000	50.00	49.40	99	75-124	ug/L	02/16/18 09:34	
1,2,4-Trichlorobenzene	<1.000	50.00	48.91	98	77-131	ug/L	02/16/18 09:34	
1,1,1-Trichloroethane	<1.000	50.00	49.60	99	68-146	ug/L	02/16/18 09:34	
1,1,2-Trichloroethane	<1.000	50.00	47.35	95	85-124	ug/L	02/16/18 09:34	
Trichloroethene	<1.000	50.00	47.87	96	87-127	ug/L	02/16/18 09:34	
Trichlorofluoromethane	<5.000	50.00	50.41	101	77-147	ug/L	02/16/18 09:34	
1,1,2-Trichlorotrifluoroethane	<1.000	50.00	50.14	100	68-135	ug/L	02/16/18 09:34	
Vinyl chloride	<1.000	50.00	50.04	100	74-138	ug/L	02/16/18 09:34	
m&p-Xylene	<2.000	100	97.58	98	84-124	ug/L	02/16/18 09:34	

PHASE SEPARATION SCIENCE, INC.

QC Summary 18020728

WSP USA - Herndon
Kop-Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 150540 Matrix: Water Date Prep: 02/16/18
MB Sample Id: 70016-1-BLK LCS Sample Id: 70016-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
o-Xylene	<1.000	50.00	49.77	100	79-126	ug/L	02/16/18 09:34	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	100		97		86-111	%	02/16/18 09:34
Dibromofluoromethane	102		104		91-119	%	02/16/18 09:34
Toluene-D8	98		98		90-117	%	02/16/18 09:34

Analytical Method: SW-846 8260 B-Modified Prep Method: SW5030B
Seq Number: 150601 Matrix: Water Date Prep: 02/19/18
MB Sample Id: 70050-1-BLK LCS Sample Id: 70050-1-BKS LCSD Sample Id: 70050-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
1,4-Dioxane (P-Dioxane)	<1.000	30.00	31.40	105	33.25	111	50-150	6	20	ug/L	02/19/18 16:26	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	LCSD Result	LCSD Flag	Limits	Units	Analysis Date
Toluene-D8	99		99		104		80-120	%	02/19/18 16:26

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

SAMPLE CHAIN OF CUSTODY/AGREEMENT FORM

PHASE SEPARATION SCIENCE, INC.

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

External monthly samples

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

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

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

*PROJECT NAME: Kapflex PROJECT NO.: 31400390/09

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

SAMPLER(S): MJC DW CERT NO.:

PSS Work Order #: 1802072S PAGE 1 OF 1

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

(2)

LAB NO.	*SAMPLE IDENTIFICATION	*DATE (SAMPLED)	*TIME (SAMPLED)	MATRIX (See Codes)	No. CONTAINERS	SAMPLE TYPE (C = COMP, G = GRAB)	Preservatives Used	Analysis/ Method Required (3) * 1,4 Dioxane (8260 SIM)	VOCs (8260)	REMARKS
								HCl	HCl	
1	Effluent VSP-4	2/7/18	1105	Aq	3	G		X		
2	Influent VSP-1	2/7/18	1130	Aq	6	G		X	X	
3	TB-020718	—	—	DW	4	~~G~~		X	X	

2/7/18

(5)

Relinquished By: (1)	Date	Time	Received By:
	2/7/18	1418	
Relinquished By: (2)	Date	Time	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date	Time	Received By:

(4)

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

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

# of Coolers: 1 Temp Blank 8°C

Custody Seal: Cooler-Intact

Ice Present: PRES Temp: 7°-8°C

Shipping Carrier: Client

Special Instructions:
Standard 10 day TAT

DW COMPLIANCE? YES ☐

EDD FORMAT TYPE

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

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

Phase Separation Science, Inc

Sample Receipt Checklist

Work Order #	18020728	**Received By**	Thomas Wingate
Client Name	WSP USA - Herndon	**Date Received**	02/07/2018 02:18:00 PM
Project Name	Kop-Flex	**Delivered By**	Client
Project Number	31400390/09	**Tracking No**	Not Applicable
Disposal Date	03/14/2018	**Logged In By**	Thomas Wingate

Shipping Container(s)

No. of Coolers 1

		Ice	Present
Custody Seal(s) Intact?	Yes	Temp (deg C)	8
Seal(s) Signed / Dated?	Yes	Temp Blank Present	Yes

Documentation

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

Sample Container

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

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

Preservation

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

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

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

Samples Inspected/Checklist Completed By: Thomas Wingate Date: 02/07/2018

Thomas Wingate

PM Review and Approval: Amber J Confer Date: 02/08/2018

Amber Confer

Analytical Report for

WSP USA - Herndon

Certificate of Analysis No.: 18031908

Project Manager: Eric Johnson

Project Name : Kop-Flex

Project Location: Hanover, MD

Project ID : 31400390/09

April 2, 2018

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.

April 2, 2018

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

Reference: PSS Work Order(s) No: **18031908**
Project Name: Kop-Flex
Project Location: Hanover, MD
Project ID.: 31400390/09

Dear Eric Johnson :

This report includes the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Phase Separation Science (PSS) Work Order(s) numbered **18031908**.

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 23, 2018, with the exception of air canisters which are cleaned immediately following analysis. This includes any samples that were received with a request to be held but lacked a specific hold period. It is your responsibility to provide a written request defining a specific disposal date if additional storage is required. Upon receipt , the request will be acknowledged by PSS, thus extending the storage period.

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

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

Sincerely,

Dan Prucnal
Laboratory Manager

Sample Summary

Client Name: WSP USA - Herndon

Project Name: Kop-Flex

Work Order Number(s): 18031908

Project ID: 31400390/09

The following samples were received under chain of custody by Phase Separation Science (PSS) on 03/19/2018 at 12:50 pm

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
18031908-001	Effluent VSP-4	WATER	03/19/18 08:10

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: 18031908

WSP USA - Herndon, Herndon, VA

April 2, 2018

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

Sample ID: Effluent VSP-4 **Date/Time Sampled: 03/19/2018 08:10** **PSS Sample ID: 18031908-001**
Matrix: WATER **Date/Time Received: 03/19/2018 12:50**

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

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Copper	**4.1**	ug/L	1.0		1	03/20/18	03/22/18 18:27	1051
Lead	ND	ug/L	1.0		1	03/20/18	03/22/18 18:27	1051
Nickel	**12.3**	ug/L	1.00		1	03/20/18	03/22/18 18:27	1051
Zinc	**23.8**	ug/L	20.0		1	03/20/18	03/22/18 18:27	1051

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

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Calcium	**4,030**	ug/L	100		1	03/22/18	03/22/18 17:48	1064
Copper	**4.9**	ug/L	1.0		1	03/22/18	03/22/18 17:48	1064
Lead	ND	ug/L	1.0		1	03/22/18	03/22/18 17:48	1064
Magnesium	**1,620**	ug/L	100		1	03/22/18	03/22/18 17:48	1064
Nickel	**11.4**	ug/L	1.00		1	03/22/18	03/22/18 17:48	1064
Zinc	**26.9**	ug/L	20.0		1	03/22/18	03/22/18 17:48	1064
Hardness (Ca & Mg)	**17**	mg/L	0.66		1	03/22/18	03/22/18 17:48	1064

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: 18031908

WSP USA - Herndon, Herndon, VA

April 2, 2018

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

Sample ID: Effluent VSP-4 **Date/Time Sampled: 03/19/2018 08:10** **PSS Sample ID: 18031908-001**
Matrix: WATER **Date/Time Received: 03/19/2018 12:50**

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

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Dichlorodifluoromethane	ND	ug/L	5.0		1	03/19/18	03/19/18 19:41	1035
Chloromethane	ND	ug/L	5.0		1	03/19/18	03/19/18 19:41	1035
Vinyl Chloride	ND	ug/L	5.0		1	03/19/18	03/19/18 19:41	1035
Bromomethane	ND	ug/L	5.0		1	03/19/18	03/19/18 19:41	1035
Chloroethane	ND	ug/L	5.0		1	03/19/18	03/19/18 19:41	1035
Trichlorofluoromethane	ND	ug/L	5.0		1	03/19/18	03/19/18 19:41	1035
1,1-Dichloroethene	ND	ug/L	5.0		1	03/19/18	03/19/18 19:41	1035
Methylene Chloride	ND	ug/L	5.0		1	03/19/18	03/19/18 19:41	1035
trans-1,2-dichloroethene	ND	ug/L	5.0		1	03/19/18	03/19/18 19:41	1035
1,1-Dichloroethane	ND	ug/L	5.0		1	03/19/18	03/19/18 19:41	1035
Chloroform	ND	ug/L	5.0		1	03/19/18	03/19/18 19:41	1035
1,1,1-Trichloroethane	ND	ug/L	5.0		1	03/19/18	03/19/18 19:41	1035
Carbon Tetrachloride	ND	ug/L	5.0		1	03/19/18	03/19/18 19:41	1035
Benzene	ND	ug/L	5.0		1	03/19/18	03/19/18 19:41	1035
1,2-Dichloroethane	ND	ug/L	5.0		1	03/19/18	03/19/18 19:41	1035
Trichloroethene	ND	ug/L	5.0		1	03/19/18	03/19/18 19:41	1035
1,2-Dichloropropane	ND	ug/L	5.0		1	03/19/18	03/19/18 19:41	1035
Bromodichloromethane	ND	ug/L	5.0		1	03/19/18	03/19/18 19:41	1035
2-Chloroethyl Vinyl Ether	ND	ug/L	5.0		1	03/19/18	03/19/18 19:41	1035
cis-1,3-Dichloropropene	ND	ug/L	5.0		1	03/19/18	03/19/18 19:41	1035
Toluene	ND	ug/L	5.0		1	03/19/18	03/19/18 19:41	1035
trans-1,3-dichloropropene	ND	ug/L	5.0		1	03/19/18	03/19/18 19:41	1035
1,1,2-Trichloroethane	ND	ug/L	5.0		1	03/19/18	03/19/18 19:41	1035
Tetrachloroethylene	ND	ug/L	5.0		1	03/19/18	03/19/18 19:41	1035
Dibromochloromethane	ND	ug/L	5.0		1	03/19/18	03/19/18 19:41	1035
Chlorobenzene	ND	ug/L	5.0		1	03/19/18	03/19/18 19:41	1035
Ethylbenzene	ND	ug/L	5.0		1	03/19/18	03/19/18 19:41	1035
Bromoform	ND	ug/L	5.0		1	03/19/18	03/19/18 19:41	1035
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0		1	03/19/18	03/19/18 19:41	1035
1,3-Dichlorobenzene	ND	ug/L	5.0		1	03/19/18	03/19/18 19:41	1035

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: 18031908

WSP USA - Herndon, Herndon, VA

April 2, 2018

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

Sample ID: Effluent VSP-4 **Date/Time Sampled: 03/19/2018 08:10** **PSS Sample ID: 18031908-001**
Matrix: WATER **Date/Time Received: 03/19/2018 12:50**

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

pH = 2

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
1,4-Dichlorobenzene	ND	ug/L	5.0		1	03/19/18	03/19/18 19:41	1035
1,2-Dichlorobenzene	ND	ug/L	5.0		1	03/19/18	03/19/18 19:41	1035

Total Suspended Solids Analytical Method: SM 2540D -2011

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Suspended Solids	ND	mg/L	1.0		1	03/19/18	03/19/18 13:42	1061

Biochemical Oxygen Demand Analytical Method: SM 5210B -2011

	Result	Units	RL	Flag	Prepared	Analyzed	Analyst
Biochemical Oxygen Demand, 5 day	ND	mg/L	5.0		03/20/18	03/20/18 18:00	4005

Case Narrative Summary

Client Name: WSP USA - Herndon

Project Name: Kop-Flex

Work Order Number(s): 18031908
Project ID: 31400390/09

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

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

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

Sample Receipt:

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

18031908: Analyses associated with analyst code 4005 were performed by Enviro-Chem Laboratories, Inc.

Analytical:

Volatile Organics Compounds (TVO)

Batch: 151487
Surrogate recoveries affected by sample matrix.

NELAP accreditation was held for all analyses performed unless noted below. See www.phaseonline.com for complete PSS scope of accreditation.
SM 5210B -2011

Analytical Data Package Information Summary

Work Order(s): 18031908
Report Prepared For: WSP USA - Herndon, Herndon, VA
Project Name: Kop-Flex
Project Manager: Eric Johnson

Method	Client Sample Id	Analysis Type	Lab Sample Id	Analyst	Mtx	Prep Batch	Analytical Batch	Sampled	Prepared	Analyzed
EPA 200.8	Effluent VSP-4	Initial	18031908-001	1064	W	70516	151594	03/19/2018	03/22/2018 12:07	03/22/2018 17:48
	70516-1-BKS	BKS	70516-1-BKS	1064	W	70516	151594	--------	03/22/2018 12:07	03/22/2018 17:44
	70516-1-BLK	BLK	70516-1-BLK	1064	W	70516	151594	--------	03/22/2018 12:07	03/22/2018 17:40
	Effluent VSP-4 S	MS	18031908-001 S	1064	W	70516	151594	03/19/2018	03/22/2018 12:07	03/22/2018 17:52
	Effluent VSP-4 SD	MSD	18031908-001 SD	1064	W	70516	151594	03/19/2018	03/22/2018 12:07	03/22/2018 17:56
EPA 200.8	Effluent VSP-4	Initial	18031908-001	1051	W	70498	151596	03/19/2018	03/20/2018 17:01	03/22/2018 18:27
	70498-1-BKS	BKS	70498-1-BKS	1051	W	70498	151596	--------	03/20/2018 17:01	03/22/2018 18:19
	70498-1-BLK	BLK	70498-1-BLK	1051	W	70498	151596	--------	03/20/2018 17:01	03/22/2018 18:12
	Effluent VSP-4 S	MS	18031908-001 S	1051	W	70498	151596	03/19/2018	03/20/2018 17:01	03/22/2018 18:30
	Effluent VSP-4 SD	MSD	18031908-001 SD	1051	W	70498	151596	03/19/2018	03/20/2018 17:01	03/22/2018 18:56
EPA 624	Effluent VSP-4	Initial	18031908-001	1035	W	70480	151487	03/19/2018	03/19/2018 15:29	03/19/2018 19:41
	70480-1-BKS	BKS	70480-1-BKS	1035	W	70480	151487	--------	03/19/2018 15:29	03/19/2018 21:40
	70480-1-BLK	BLK	70480-1-BLK	1035	W	70480	151487	--------	03/19/2018 15:29	03/19/2018 17:41
	SE Influent S	MS	18031905-001 S	1035	W	70480	151487	03/17/2018	03/19/2018 15:29	03/19/2018 20:21
	SE Influent SD	MSD	18031905-001 SD	1035	W	70480	151487	03/17/2018	03/19/2018 15:29	03/19/2018 21:01
SM 2540D -2011	Effluent VSP-4	Initial	18031908-001	1061	W	151460	151460	03/19/2018	03/19/2018 13:42	03/19/2018 13:42
	151460-1-BLK	BLK	151460-1-BLK	1061	W	151460	151460	--------	03/19/2018 13:42	03/19/2018 13:42
	Blow Down Pipe Leak D	MD	18031904-002 D	1061	W	151460	151460	03/16/2018	03/19/2018 13:42	03/19/2018 13:42
SM 5210B -2011	Effluent VSP-4	Initial	18031908-001	4005	W	151679	151679	03/19/2018	03/20/2018 18:00	03/20/2018 18:00

PHASE SEPARATION SCIENCE, INC.

QC Summary 18031908

WSP USA - Herndon
Kop-Flex

Analytical Method: EPA 624 Prep Method: E624PREP
Seq Number: 151487 Matrix: Water Date Prep: 03/19/2018
PSS Sample ID: 18031908-001

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
Dibromofluoromethane	98		87-114	%	03/19/18 19:41
4-Bromofluorobenzene	116	*	90-114	%	03/19/18 19:41
Toluene-D8	102		93-108	%	03/19/18 19:41

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 18031908

WSP USA - Herndon
Kop-Flex

Analytical Method: SM 2540D -2011
Seq Number: 151460 Matrix: Water
MB Sample Id: 151460-1-BLK

Parameter	MB Result	LOD	RL	Units	Analysis Date	Flag
Suspended Solids	ND	0.5000	1.000	mg/L	03/19/18 13:42	

Analytical Method: EPA 200.8 Prep Method: E200.8_PREP
Seq Number: 151596 Matrix: Water Date Prep: 03/20/18
MB Sample Id: 70498-1-BLK LCS Sample Id: 70498-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Copper	<1.000	40.00	42.41	106	85-115	ug/L	03/22/18 18:19	
Lead	<1.000	40.00	41.32	103	85-115	ug/L	03/22/18 18:19	
Nickel	<1.000	40.00	42.23	106	85-115	ug/L	03/22/18 18:19	
Zinc	<20.00	200	210.8	105	85-115	ug/L	03/22/18 18:19	

Analytical Method: EPA 200.8 Prep Method: E200.8_PREP
Seq Number: 151594 Matrix: Water Date Prep: 03/22/18
MB Sample Id: 70516-1-BLK LCS Sample Id: 70516-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Calcium	<100	400	434.6	109	85-115	ug/L	03/22/18 17:44	
Copper	<1.000	40.00	42.93	107	85-115	ug/L	03/22/18 17:44	
Lead	<1.000	40.00	42.68	107	85-115	ug/L	03/22/18 17:44	
Magnesium	<100	400	426.1	107	85-115	ug/L	03/22/18 17:44	
Nickel	<1.000	40.00	42.23	106	85-115	ug/L	03/22/18 17:44	
Zinc	<20.00	200	207.4	104	85-115	ug/L	03/22/18 17:44	

Analytical Method: EPA 200.8 Prep Method: E200.8_PREP
Seq Number: 151596 Matrix: Water Date Prep: 03/20/18
Parent Sample Id: 18031908-001 MS Sample Id: 18031908-001 S MSD Sample Id: 18031908-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Copper	4.053	40.00	49.73	114	47.59	109	70-130	4	25	ug/L	03/22/18 18:30	
Lead	<1.000	40.00	40.36	101	42.76	107	70-130	6	25	ug/L	03/22/18 18:30	
Nickel	12.30	40.00	56.85	111	54.63	106	70-130	4	25	ug/L	03/22/18 18:30	
Zinc	23.81	200	254.7	115	241.3	109	70-130	5	25	ug/L	03/22/18 18:30	

PHASE SEPARATION SCIENCE, INC.

QC Summary 18031908

WSP USA - Herndon
Kop-Flex

Analytical Method: EPA 200.8 Prep Method: E200.8_PREP

Seq Number: 151594 Matrix: Water Date Prep: 03/22/18

Parent Sample Id: 18031908-001 MS Sample Id: 18031908-001 S MSD Sample Id: 18031908-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Calcium	4033	400	4391	90	4458	106	70-130	2	25	ug/L	03/22/18 17:52	
Copper	4.886	40.00	45.73	102	45.37	101	70-130	1	25	ug/L	03/22/18 17:52	
Lead	<1.000	40.00	41.39	103	41.97	105	70-130	1	25	ug/L	03/22/18 17:52	
Magnesium	1618	400	2049	108	2020	101	70-130	1	25	ug/L	03/22/18 17:52	
Nickel	11.37	40.00	52.49	103	52.92	104	70-130	1	25	ug/L	03/22/18 17:52	
Zinc	26.92	200	230.1	102	232.6	103	70-130	1	25	ug/L	03/22/18 17:52	

PHASE SEPARATION SCIENCE, INC.

QC Summary 18031908

WSP USA - Herndon
Kop-Flex

Analytical Method: EPA 624 Prep Method: E624PREP

Seq Number: 151487 Matrix: Water Date Prep: 03/19/18

MB Sample Id: 70480-1-BLK LCS Sample Id: 70480-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Dichlorodifluoromethane	<5.000	60.00	56.69	94	51-139	ug/L	03/19/18 21:40	
Chloromethane	<5.000	60.00	56.69	94	56-144	ug/L	03/19/18 21:40	
Vinyl Chloride	<5.000	60.00	57.77	96	46-157	ug/L	03/19/18 21:40	
Bromomethane	<5.000	60.00	58.87	98	63-134	ug/L	03/19/18 21:40	
Chloroethane	<5.000	60.00	60.28	100	56-143	ug/L	03/19/18 21:40	
Trichlorofluoromethane	<5.000	60.00	58.23	97	56-138	ug/L	03/19/18 21:40	
1,1-Dichloroethene	<5.000	60.00	54.13	90	63-134	ug/L	03/19/18 21:40	
Methylene Chloride	<5.000	60.00	57.62	96	65-126	ug/L	03/19/18 21:40	
trans-1,2-dichloroethene	<5.000	60.00	58.13	97	67-129	ug/L	03/19/18 21:40	
1,1-Dichloroethane	<5.000	60.00	59.86	100	66-131	ug/L	03/19/18 21:40	
Chloroform	<5.000	60.00	60.60	101	69-130	ug/L	03/19/18 21:40	
1,1,1-Trichloroethane	<5.000	60.00	57.19	95	66-129	ug/L	03/19/18 21:40	
Carbon Tetrachloride	<5.000	60.00	57.92	97	70-133	ug/L	03/19/18 21:40	
Benzene	<5.000	60.00	62.39	104	69-127	ug/L	03/19/18 21:40	
1,2-Dichloroethane	<5.000	60.00	58.59	98	62-133	ug/L	03/19/18 21:40	
Trichloroethene	<5.000	60.00	59.37	99	71-127	ug/L	03/19/18 21:40	
1,2-Dichloropropane	<5.000	60.00	62.76	105	67-133	ug/L	03/19/18 21:40	
Bromodichloromethane	<5.000	60.00	61.55	103	63-132	ug/L	03/19/18 21:40	
2-Chloroethyl Vinyl Ether	<5.000	60.00	41.16	69	21-140	ug/L	03/19/18 21:40	
cis-1,3-Dichloropropene	<5.000	60.00	59.77	100	65-128	ug/L	03/19/18 21:40	
Toluene	<5.000	60.00	61.04	102	67-130	ug/L	03/19/18 21:40	
trans-1,3-dichloropropene	<5.000	60.00	60.21	100	63-127	ug/L	03/19/18 21:40	
1,1,2-Trichloroethane	<5.000	60.00	62.71	105	62-136	ug/L	03/19/18 21:40	
Tetrachloroethylene	<5.000	60.00	60.30	101	64-135	ug/L	03/19/18 21:40	
Dibromochloromethane	<5.000	60.00	60.62	101	65-126	ug/L	03/19/18 21:40	
Chlorobenzene	<5.000	60.00	60.76	101	70-127	ug/L	03/19/18 21:40	
Ethylbenzene	<5.000	60.00	61.65	103	71-131	ug/L	03/19/18 21:40	
Bromoform	<5.000	60.00	58.58	98	58-128	ug/L	03/19/18 21:40	
1,1,2,2-Tetrachloroethane	<5.000	60.00	57.83	96	63-134	ug/L	03/19/18 21:40	
1,3-Dichlorobenzene	<5.000	60.00	57.55	96	67-128	ug/L	03/19/18 21:40	
1,4-Dichlorobenzene	<5.000	60.00	57.00	95	67-127	ug/L	03/19/18 21:40	
1,2-Dichlorobenzene	<5.000	60.00	57.14	95	67-126	ug/L	03/19/18 21:40	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	Limits	Units	Analysis Date
Dibromofluoromethane	94		97		87-114	%	03/19/18 21:40
4-Bromofluorobenzene	111		91		90-114	%	03/19/18 21:40
Toluene-D8	101		100		93-108	%	03/19/18 21:40

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

SAMPLE CHAIN OF CUSTODY/AGREEMENT FORM

PHASE SEPARATION SCIENCE, INC.

NPDES monthly

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

1

*CLIENT: WSP *OFFICE LOC. Herndon VA

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

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

*PROJECT NAME: Keptlex PROJECT NO.: 31400390/09

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

SAMPLER(S): MSK DW CERT NO.:

PSS Work Order #: 1803908 PAGE 1 OF 1

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

2

LAB NO.	*SAMPLE IDENTIFICATION	*DATE (SAMPLED)	*TIME (SAMPLED)	MATRIX (See Codes)	No. CONTAINERS	SAMPLE TYPE C=COMP G=GRAB	Preservatives Used	Analysis/ Method Required (3) * VOCs (624)	BOD5	TSS	Diss. Cu, Pb, Zn, Total metals Zn, Cu, Pb, Ni	Hardness	REMARKS
1	Effluent USP-4	3/19/18	0810	Aq	3	G		X					
1	Effluent USP-4	3/19/18	0810	Aq	1	G			X				
1	Effluent USP-4	3/19/18	0810	Aq	1	G				X			
1	Effluent USP-4	3/19/18	0810	Aq	1	G					X		lab to filter
1	Effluent USP-4	3/19/18	0810	Aq	1	G					X	X	

3/19/18

5

Relinquished By: (1)	Date	Time	Received By:
	3/19/18	12:50	Bad Web
Relinquished By: (2)	Date	Time	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date	Time	Received By:

4

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

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

# of Coolers: 1 Temp Blank 6°C

Custody Seal: Cooler intact

Ice Present: Yes Temp: 5-8°C

Shipping Carrier: client

Special Instructions:
standard 10 day TAT

DW COMPLIANCE? YES ☐

EDD FORMAT TYPE

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

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

Phase Separation Science, Inc

Sample Receipt Checklist

Work Order #	18031908	**Received By**	Barb Weber
Client Name	WSP USA - Herndon	**Date Received**	03/19/2018 12:50:00 PM
Project Name	Kop-Flex	**Delivered By**	Client
Project Number	31400390/09	**Tracking No**	Not Applicable
Disposal Date	04/23/2018	**Logged In By**	Thomas Wingate

Shipping Container(s)

No. of Coolers 1

		Ice	Present
Custody Seal(s) Intact?	Yes	Temp (deg C)	6
Seal(s) Signed / Dated?	Yes	Temp Blank Present	Yes

Documentation

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

Sample Container

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

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

Preservation

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

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

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

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

Samples Inspected/Checklist Completed By: Thomas Wingate Date: 03/19/2018

Thomas Wingate

PM Review and Approval: Amber Confer Date: 03/19/2018

Amber Confer

Analytical Report for

WSP USA - Herndon

Certificate of Analysis No.: 18031909

Project Manager: Eric Johnson

Project Name : Kop-Flex

Project Location: Hanover, MD

Project ID : 31400390/09

April 2, 2018

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.

April 2, 2018

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

Reference: PSS Work Order(s) No: **18031909**
Project Name: Kop-Flex
Project Location: Hanover, MD
Project ID.: 31400390/09

Dear Eric Johnson :

This report includes the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Phase Separation Science (PSS) Work Order(s) numbered **18031909**.

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 23, 2018, with the exception of air canisters which are cleaned immediately following analysis. This includes any samples that were received with a request to be held but lacked a specific hold period. It is your responsibility to provide a written request defining a specific disposal date if additional storage is required. Upon receipt , the request will be acknowledged by PSS, thus extending the storage period.

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

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

Sincerely,

Dan Prucnal
Laboratory Manager

Sample Summary

Client Name: WSP USA - Herndon

Project Name: Kop-Flex

Work Order Number(s): 18031909

Project ID: 31400390/09

The following samples were received under chain of custody by Phase Separation Science (PSS) on 03/19/2018 at 12:50 pm

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
18031909-001	Effluent VSP-4	WATER	03/19/18 08:10
18031909-002	Influent VSP-1	WATER	03/19/18 08:25
18031909-003	Trip Blank	WATER	03/19/18 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: 18031909

WSP USA - Herndon, Herndon, VA

April 2, 2018

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

Sample ID: Effluent VSP-4 **Date/Time Sampled: 03/19/2018 08:10** **PSS Sample ID: 18031909-001**
Matrix: WATER **Date/Time Received: 03/19/2018 12:50**

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

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
1,4-Dioxane (P-Dioxane)	**2.4**	ug/L	1.0		1	03/28/18	03/28/18 18:28	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: 18031909

WSP USA - Herndon, Herndon, VA

April 2, 2018

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

Sample ID: Influent VSP-1 **Date/Time Sampled: 03/19/2018 08:25** **PSS Sample ID: 18031909-002**
Matrix: WATER **Date/Time Received: 03/19/2018 12:50**

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

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	03/20/18	03/20/18 17:34	1011
Benzene	ND	ug/L	1.0		1	03/20/18	03/20/18 17:34	1011
Bromochloromethane	ND	ug/L	1.0		1	03/20/18	03/20/18 17:34	1011
Bromodichloromethane	ND	ug/L	1.0		1	03/20/18	03/20/18 17:34	1011
Bromoform	ND	ug/L	5.0		1	03/20/18	03/20/18 17:34	1011
Bromomethane	ND	ug/L	1.0		1	03/20/18	03/20/18 17:34	1011
2-Butanone (MEK)	ND	ug/L	10		1	03/20/18	03/20/18 17:34	1011
Carbon Disulfide	ND	ug/L	10		1	03/20/18	03/20/18 17:34	1011
Carbon tetrachloride	ND	ug/L	1.0		1	03/20/18	03/20/18 17:34	1011
Chlorobenzene	ND	ug/L	1.0		1	03/20/18	03/20/18 17:34	1011
Chloroethane	**4.6**	ug/L	1.0		1	03/20/18	03/20/18 17:34	1011
Chloroform	ND	ug/L	1.0		1	03/20/18	03/20/18 17:34	1011
Chloromethane	ND	ug/L	1.0		1	03/20/18	03/20/18 17:34	1011
Cyclohexane	ND	ug/L	10		1	03/20/18	03/20/18 17:34	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	03/20/18	03/20/18 17:34	1011
Dibromochloromethane	ND	ug/L	1.0		1	03/20/18	03/20/18 17:34	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	03/20/18	03/20/18 17:34	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	03/20/18	03/20/18 17:34	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	03/20/18	03/20/18 17:34	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	03/20/18	03/20/18 17:34	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	03/20/18	03/20/18 17:34	1011
1,1-Dichloroethane	**61**	ug/L	1.0		1	03/20/18	03/20/18 17:34	1011
1,2-Dichloroethane	**2.3**	ug/L	1.0		1	03/20/18	03/20/18 17:34	1011
1,1-Dichloroethene	**290**	ug/L	10		10	03/20/18	03/20/18 17:56	1011
cis-1,2-Dichloroethene	**2.2**	ug/L	1.0		1	03/20/18	03/20/18 17:34	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	03/20/18	03/20/18 17:34	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	03/20/18	03/20/18 17:34	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	03/20/18	03/20/18 17:34	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	03/20/18	03/20/18 17:34	1011
Ethylbenzene	ND	ug/L	1.0		1	03/20/18	03/20/18 17:34	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: 18031909

WSP USA - Herndon, Herndon, VA

April 2, 2018

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

Sample ID: Influent VSP-1 **Date/Time Sampled: 03/19/2018 08:25** **PSS Sample ID: 18031909-002**
Matrix: WATER **Date/Time Received: 03/19/2018 12:50**

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

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	03/20/18	03/20/18 17:34	1011
Isopropylbenzene	ND	ug/L	1.0		1	03/20/18	03/20/18 17:34	1011
Methyl Acetate	ND	ug/L	10		1	03/20/18	03/20/18 17:34	1011
Methylcyclohexane	ND	ug/L	10		1	03/20/18	03/20/18 17:34	1011
Methylene chloride	ND	ug/L	1.0		1	03/20/18	03/20/18 17:34	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	03/20/18	03/20/18 17:34	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	03/20/18	03/20/18 17:34	1011
Naphthalene	ND	ug/L	1.0		1	03/20/18	03/20/18 17:34	1011
Styrene	ND	ug/L	1.0		1	03/20/18	03/20/18 17:34	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	03/20/18	03/20/18 17:34	1011
Tetrachloroethene	ND	ug/L	1.0		1	03/20/18	03/20/18 17:34	1011
Toluene	ND	ug/L	1.0		1	03/20/18	03/20/18 17:34	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	03/20/18	03/20/18 17:34	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	03/20/18	03/20/18 17:34	1011
1,1,1-Trichloroethane	**23**	ug/L	1.0		1	03/20/18	03/20/18 17:34	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	03/20/18	03/20/18 17:34	1011
Trichloroethene	**1.7**	ug/L	1.0		1	03/20/18	03/20/18 17:34	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	03/20/18	03/20/18 17:34	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	03/20/18	03/20/18 17:34	1011
Vinyl chloride	ND	ug/L	1.0		1	03/20/18	03/20/18 17:34	1011
m&p-Xylene	ND	ug/L	2.0		1	03/20/18	03/20/18 17:34	1011
o-Xylene	ND	ug/L	1.0		1	03/20/18	03/20/18 17:34	1011

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

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
1,4-Dioxane (P-Dioxane)	**150**	ug/L	10		10	03/28/18	03/28/18 18:51	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: 18031909

WSP USA - Herndon, Herndon, VA

April 2, 2018

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

Sample ID: Trip Blank **Date/Time Sampled: 03/19/2018 12:50** **PSS Sample ID: 18031909-003**
Matrix: WATER **Date/Time Received: 03/19/2018 12:50**

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

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	03/20/18	03/20/18 17:03	1011
Benzene	ND	ug/L	1.0		1	03/20/18	03/20/18 17:03	1011
Bromochloromethane	ND	ug/L	1.0		1	03/20/18	03/20/18 17:03	1011
Bromodichloromethane	ND	ug/L	1.0		1	03/20/18	03/20/18 17:03	1011
Bromoform	ND	ug/L	5.0		1	03/20/18	03/20/18 17:03	1011
Bromomethane	ND	ug/L	1.0		1	03/20/18	03/20/18 17:03	1011
2-Butanone (MEK)	ND	ug/L	10		1	03/20/18	03/20/18 17:03	1011
Carbon Disulfide	ND	ug/L	10		1	03/20/18	03/20/18 17:03	1011
Carbon tetrachloride	ND	ug/L	1.0		1	03/20/18	03/20/18 17:03	1011
Chlorobenzene	ND	ug/L	1.0		1	03/20/18	03/20/18 17:03	1011
Chloroethane	ND	ug/L	1.0		1	03/20/18	03/20/18 17:03	1011
Chloroform	ND	ug/L	1.0		1	03/20/18	03/20/18 17:03	1011
Chloromethane	ND	ug/L	1.0		1	03/20/18	03/20/18 17:03	1011
Cyclohexane	ND	ug/L	10		1	03/20/18	03/20/18 17:03	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	03/20/18	03/20/18 17:03	1011
Dibromochloromethane	ND	ug/L	1.0		1	03/20/18	03/20/18 17:03	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	03/20/18	03/20/18 17:03	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	03/20/18	03/20/18 17:03	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	03/20/18	03/20/18 17:03	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	03/20/18	03/20/18 17:03	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	03/20/18	03/20/18 17:03	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	03/20/18	03/20/18 17:03	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	03/20/18	03/20/18 17:03	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	03/20/18	03/20/18 17:03	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	03/20/18	03/20/18 17:03	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	03/20/18	03/20/18 17:03	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	03/20/18	03/20/18 17:03	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	03/20/18	03/20/18 17:03	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	03/20/18	03/20/18 17:03	1011
Ethylbenzene	ND	ug/L	1.0		1	03/20/18	03/20/18 17:03	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: 18031909

WSP USA - Herndon, Herndon, VA

April 2, 2018

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

Sample ID: Trip Blank **Date/Time Sampled: 03/19/2018 12:50** **PSS Sample ID: 18031909-003**
Matrix: WATER **Date/Time Received: 03/19/2018 12:50**

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

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	03/20/18	03/20/18 17:03	1011
Isopropylbenzene	ND	ug/L	1.0		1	03/20/18	03/20/18 17:03	1011
Methyl Acetate	ND	ug/L	10		1	03/20/18	03/20/18 17:03	1011
Methylcyclohexane	ND	ug/L	10		1	03/20/18	03/20/18 17:03	1011
Methylene chloride	ND	ug/L	1.0		1	03/20/18	03/20/18 17:03	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	03/20/18	03/20/18 17:03	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	03/20/18	03/20/18 17:03	1011
Naphthalene	ND	ug/L	1.0		1	03/20/18	03/20/18 17:03	1011
Styrene	ND	ug/L	1.0		1	03/20/18	03/20/18 17:03	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	03/20/18	03/20/18 17:03	1011
Tetrachloroethene	ND	ug/L	1.0		1	03/20/18	03/20/18 17:03	1011
Toluene	ND	ug/L	1.0		1	03/20/18	03/20/18 17:03	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	03/20/18	03/20/18 17:03	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	03/20/18	03/20/18 17:03	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	03/20/18	03/20/18 17:03	1011
Trichloroethene	ND	ug/L	1.0		1	03/20/18	03/20/18 17:03	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	03/20/18	03/20/18 17:03	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	03/20/18	03/20/18 17:03	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	03/20/18	03/20/18 17:03	1011
Vinyl chloride	ND	ug/L	1.0		1	03/20/18	03/20/18 17:03	1011
m&p-Xylene	ND	ug/L	2.0		1	03/20/18	03/20/18 17:03	1011
o-Xylene	ND	ug/L	1.0		1	03/20/18	03/20/18 17:03	1011

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

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
1,4-Dioxane (P-Dioxane)	ND	ug/L	1.0		1	03/28/18	03/28/18 18:06	1011

Case Narrative Summary

Client Name: WSP USA - Herndon

Project Name: Kop-Flex

Work Order Number(s): 18031909

Project ID: 31400390/09

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

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

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

Sample Receipt:

All sample receipt conditions were acceptable.

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

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

Analytical Data Package Information Summary

Work Order(s): 18031909
Report Prepared For: WSP USA - Herndon, Herndon, VA
Project Name: Kop-Flex
Project Manager: Eric Johnson

Method	Client Sample Id	Analysis Type	Lab Sample Id	Analyst	Mtx	Prep Batch	Analytical Batch	Sampled	Prepared	Analyzed
SW-846 8260 B	Influent VSP-1	Initial	18031909-002	1011	W	70509	151553	03/19/2018	03/20/2018 08:55	03/20/2018 17:34
	Trip Blank	Initial	18031909-003	1011	W	70509	151553	03/19/2018	03/20/2018 08:55	03/20/2018 17:03
	70509-1-BKS	BKS	70509-1-BKS	1011	W	70509	151553	--------	03/20/2018 08:55	03/20/2018 10:00
	70509-1-BLK	BLK	70509-1-BLK	1011	W	70509	151553	--------	03/20/2018 08:55	03/20/2018 11:37
	12815-MW101-3/18 S	MS	18031619-001 S	1011	W	70509	151553	03/15/2018	03/20/2018 08:55	03/20/2018 13:31
	12815-MW101-3/18 SD	MSD	18031619-001 SD	1011	W	70509	151553	03/15/2018	03/20/2018 08:55	03/20/2018 13:56
	Influent VSP-1	Reanalysis	18031909-002	1011	W	70509	151553	03/19/2018	03/20/2018 08:55	03/20/2018 17:56
SW-846 8260 B-Modified	Effluent VSP-4	Initial	18031909-001	1011	W	70639	151798	03/19/2018	03/28/2018 08:06	03/28/2018 18:28
	Trip Blank	Initial	18031909-003	1011	W	70639	151798	03/19/2018	03/28/2018 08:06	03/28/2018 18:06
	70639-1-BKS	BKS	70639-1-BKS	1011	W	70639	151798	--------	03/28/2018 08:06	03/28/2018 16:12
	70639-1-BLK	BLK	70639-1-BLK	1011	W	70639	151798	--------	03/28/2018 08:06	03/28/2018 17:45
	70639-1-BSD	BSD	70639-1-BSD	1011	W	70639	151798	--------	03/28/2018 08:06	03/28/2018 16:36
	Influent VSP-1	Reanalysis	18031909-002	1011	W	70639	151798	03/19/2018	03/28/2018 08:06	03/28/2018 18:51

PHASE SEPARATION SCIENCE, INC.

QC Summary 18031909

WSP USA - Herndon
Kop-Flex

Analytical Method: SW-846 8260 B-Modified Prep Method: SW5030B
Seq Number: 151798 Matrix: Water Date Prep: 03/28/2018
PSS Sample ID: 18031909-001

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
Toluene-D8	103		80-120	%	03/28/18 18:28

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 151553 Matrix: Water Date Prep: 03/20/2018
PSS Sample ID: 18031909-002

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	101		86-111	%	03/20/18 17:34
Dibromofluoromethane	100		91-119	%	03/20/18 17:34
Toluene-D8	96		90-117	%	03/20/18 17:34

Analytical Method: SW-846 8260 B-Modified Prep Method: SW5030B
Seq Number: 151798 Matrix: Water Date Prep: 03/28/2018
PSS Sample ID: 18031909-002

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
Toluene-D8	105		80-120	%	03/28/18 19:12

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 151553 Matrix: Water Date Prep: 03/20/2018
PSS Sample ID: 18031909-003

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	104		86-111	%	03/20/18 17:03
Dibromofluoromethane	101		91-119	%	03/20/18 17:03
Toluene-D8	101		90-117	%	03/20/18 17:03

Analytical Method: SW-846 8260 B-Modified Prep Method: SW5030B
Seq Number: 151798 Matrix: Water Date Prep: 03/28/2018
PSS Sample ID: 18031909-003

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
Toluene-D8	98		80-120	%	03/28/18 18:06

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 18031909

WSP USA - Herndon

Kop-Flex

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

Seq Number: 151553 Matrix: Water Date Prep: 03/20/18

MB Sample Id: 70509-1-BLK LCS Sample Id: 70509-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Acetone	<10.00	50.00	49.57	99	29-149	ug/L	03/20/18 10:00	
Benzene	<1.000	50.00	48.74	97	85-123	ug/L	03/20/18 10:00	
Bromochloromethane	<1.000	50.00	51.74	103	82-136	ug/L	03/20/18 10:00	
Bromodichloromethane	<1.000	50.00	53.11	106	88-133	ug/L	03/20/18 10:00	
Bromoform	<5.000	50.00	54.28	109	80-126	ug/L	03/20/18 10:00	
Bromomethane	<1.000	50.00	47.38	95	64-139	ug/L	03/20/18 10:00	
2-Butanone (MEK)	<10.00	50.00	44.51	89	39-135	ug/L	03/20/18 10:00	
Carbon Disulfide	<10.00	50.00	52.60	105	85-124	ug/L	03/20/18 10:00	
Carbon tetrachloride	<1.000	50.00	47.94	96	81-138	ug/L	03/20/18 10:00	
Chlorobenzene	<1.000	50.00	50.58	101	85-120	ug/L	03/20/18 10:00	
Chloroethane	<1.000	50.00	49.00	98	75-129	ug/L	03/20/18 10:00	
Chloroform	<1.000	50.00	48.16	96	85-128	ug/L	03/20/18 10:00	
Chloromethane	<1.000	50.00	46.17	92	60-139	ug/L	03/20/18 10:00	
Cyclohexane	<10.00	50.00	50.47	101	55-131	ug/L	03/20/18 10:00	
1,2-Dibromo-3-chloropropane	<5.000	50.00	48.94	98	69-127	ug/L	03/20/18 10:00	
Dibromochloromethane	<1.000	50.00	56.16	112	82-127	ug/L	03/20/18 10:00	
1,2-Dibromoethane	<1.000	50.00	52.69	105	82-121	ug/L	03/20/18 10:00	
1,2-Dichlorobenzene	<1.000	50.00	52.59	105	82-123	ug/L	03/20/18 10:00	
1,3-Dichlorobenzene	<1.000	50.00	52.57	105	81-123	ug/L	03/20/18 10:00	
1,4-Dichlorobenzene	<1.000	50.00	51.65	103	81-121	ug/L	03/20/18 10:00	
Dichlorodifluoromethane	<1.000	50.00	50.18	100	69-147	ug/L	03/20/18 10:00	
1,1-Dichloroethane	<1.000	50.00	49.13	98	83-123	ug/L	03/20/18 10:00	
1,2-Dichloroethane	<1.000	50.00	49.22	98	86-138	ug/L	03/20/18 10:00	
1,1-Dichloroethene	<1.000	50.00	48.94	98	85-127	ug/L	03/20/18 10:00	
cis-1,2-Dichloroethene	<1.000	50.00	48.72	97	87-127	ug/L	03/20/18 10:00	
1,2-Dichloropropane	<1.000	50.00	49.84	100	79-125	ug/L	03/20/18 10:00	
cis-1,3-Dichloropropene	<1.000	50.00	53.77	108	79-131	ug/L	03/20/18 10:00	
trans-1,3-Dichloropropene	<1.000	50.00	47.54	95	82-133	ug/L	03/20/18 10:00	
trans-1,2-Dichloroethene	<1.000	50.00	49.64	99	85-125	ug/L	03/20/18 10:00	
Ethylbenzene	<1.000	50.00	51.65	103	83-123	ug/L	03/20/18 10:00	
2-Hexanone (MBK)	<5.000	50.00	45.86	92	37-137	ug/L	03/20/18 10:00	
Isopropylbenzene	<1.000	50.00	50.99	102	70-131	ug/L	03/20/18 10:00	
Methyl Acetate	<10.00	50.00	43.90	88	69-127	ug/L	03/20/18 10:00	
Methylcyclohexane	<10.00	50.00	51.48	103	75-129	ug/L	03/20/18 10:00	
Methylene chloride	<1.000	50.00	49.04	98	86-124	ug/L	03/20/18 10:00	
4-Methyl-2-Pentanone (MIBK)	<5.000	50.00	46.79	94	39-143	ug/L	03/20/18 10:00	
Methyl-t-Butyl Ether	<1.000	50.00	50.08	100	75-134	ug/L	03/20/18 10:00	
Naphthalene	<1.000	50.00	48.31	97	61-118	ug/L	03/20/18 10:00	
Styrene	<1.000	50.00	51.97	104	80-120	ug/L	03/20/18 10:00	
1,1,2,2-Tetrachloroethane	<1.000	50.00	52.41	105	64-125	ug/L	03/20/18 10:00	
Tetrachloroethene	<1.000	50.00	51.99	104	83-138	ug/L	03/20/18 10:00	
Toluene	<1.000	50.00	50.82	102	88-126	ug/L	03/20/18 10:00	
1,2,3-Trichlorobenzene	<1.000	50.00	48.10	96	75-124	ug/L	03/20/18 10:00	
1,2,4-Trichlorobenzene	<1.000	50.00	46.69	93	77-131	ug/L	03/20/18 10:00	
1,1,1-Trichloroethane	<1.000	50.00	50.40	101	68-146	ug/L	03/20/18 10:00	
1,1,2-Trichloroethane	<1.000	50.00	51.14	102	85-124	ug/L	03/20/18 10:00	
Trichloroethene	<1.000	50.00	50.36	101	87-127	ug/L	03/20/18 10:00	
Trichlorofluoromethane	<5.000	50.00	51.79	104	77-147	ug/L	03/20/18 10:00	
1,1,2-Trichlorotrifluoroethane	<1.000	50.00	46.66	93	68-135	ug/L	03/20/18 10:00	
Vinyl chloride	<1.000	50.00	50.84	102	74-138	ug/L	03/20/18 10:00	
m&p-Xylene	<2.000	100	104.6	105	84-124	ug/L	03/20/18 10:00	

PHASE SEPARATION SCIENCE, INC.

QC Summary 18031909

WSP USA - Herndon
Kop-Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 151553 Matrix: Water Date Prep: 03/20/18
MB Sample Id: 70509-1-BLK LCS Sample Id: 70509-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
o-Xylene	<1.000	50.00	51.34	103	79-126	ug/L	03/20/18 10:00	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	101		101		86-111	%	03/20/18 10:00
Dibromofluoromethane	100		103		91-119	%	03/20/18 10:00
Toluene-D8	99		100		90-117	%	03/20/18 10:00

Analytical Method: SW-846 8260 B-Modified Prep Method: SW5030B
Seq Number: 151798 Matrix: Water Date Prep: 03/28/18
MB Sample Id: 70639-1-BLK LCS Sample Id: 70639-1-BKS LCSD Sample Id: 70639-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
1,4-Dioxane (P-Dioxane)	<1.000	30.00	32.16	107	31.23	104	50-150	3	20	ug/L	03/28/18 16:12	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	LCSD Result	LCSD Flag	Limits	Units	Analysis Date
Toluene-D8	100		102		98		80-120	%	03/28/18 16:12

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

SAMPLE CHAIN OF CUSTODY/AGREEMENT FORM

PHASE SEPARATION SCIENCE, INC.

Internal monthly sample

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

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

*PROJECT MGR: Eric Johnson *PHONE NO.: (703) 709-6900

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

*PROJECT NAME: Kapflex PROJECT NO.: 31400390/09

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

SAMPLER(S): MJK DW CERT NO.:

PSS Work Order #: 1803190 9 PAGE 1 OF 1

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

(2)

LAB NO.	*SAMPLE IDENTIFICATION	*DATE (SAMPLED)	*TIME (SAMPLED)	MATRIX (See Codes)	No. CONTAINERS	SAMPLE TYPE C=COMP G=GRAB	Preservatives Used	Analysis/ Method Required (3) * 1,4 Dioxane (8260 SIM) HCl	VOCs (8260) HCl	REMARKS
1	Effluent VSP-4	3/19/18	0810	Aq	3	G		X		
2	Influent VSP-1	3/19/18	0825	Aq	6	G		X	X	
3	TB-031918	—	—	Aq	4	—		X	X	

3/19/18

(5)

Relinquished By: (1)	Date	Time	Received By:
	3/19/18	12:50	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 Temp Blank 6C

Custody Seal: Cooler intact

Ice Present: Pres Temp: 4-5C

Shipping Carrier: client

Special Instructions:
Standard 10 day TAT

DW COMPLIANCE? YES ☐

EDD FORMAT TYPE _____

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

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

Phase Separation Science, Inc

Sample Receipt Checklist

Work Order #	18031909	**Received By**	Barb Weber
Client Name	WSP USA - Herndon	**Date Received**	03/19/2018 12:50:00 PM
Project Name	Kop-Flex	**Delivered By**	Client
Project Number	31400390/09	**Tracking No**	Not Applicable
Disposal Date	04/23/2018	**Logged In By**	Thomas Wingate

Shipping Container(s)

No. of Coolers 1

		Ice	Present
Custody Seal(s) Intact?	Yes	Temp (deg C)	5
Seal(s) Signed / Dated?	Yes	Temp Blank Present	Yes

Documentation

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

Sample Container

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

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

Preservation

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

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

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

Samples Inspected/Checklist Completed By: Thomas Wingate Date: 03/19/2018

Thomas Wingate

PM Review and Approval: Amber L Confer Date: 03/19/2018

Amber Confer

ENCLOSURE B – MDE APPROVAL OF NITROGEN PARAMETER MONITORING WAIVER (MARCH 30, 2018)

Maryland
Department of
the Environment

Larry Hogan, Governor
Boyd K. Rutherford, Lt. Governor

Ben Grumbles, Secretary
Horacio Tablada, Deputy Secretary

March 30, 2018

Robert Johnson
Senior Technical Manager
WSP USA
13530 Dulles Technology Drive, Suite 300
Herndon, VA 20171

Re: Request to eliminate monitoring for nitrogen at the groundwater remediation facility located at 7565 Harmans Road in Hanover, Maryland (15-DP-3442)

Dear Mr. Johnson:

The Department has received your request (as described in your letter dated February 26, 2018 written on behalf of EMERSUB 16 LLC) for authorization to eliminate the monitoring requirement for nitrogen at Monitoring Point 101 of Permit 15-DP-3442 in accordance with footnote 6 of Special Condition A.1. Based on the information presented in your letter and a review of the monitoring data, the Department is granting your request. You will no longer be responsible for monitoring and/or reporting for total nitrogen, nitrate-nitrite, ammonia or organic nitrogen at Monitoring Point 101/Outfall 001.

If you have any further questions regarding this issue or your permit in general, please feel free to contact me at 410-537-3323 or marjorie.mewbourn@maryland.gov.

Sincerely,

Marjorie Mewbourn
Project Manager
Industrial and General Permits Division

cc: Division Chief, WSA, Compliance Program (Anne Arundel)
Chief, Enforcement Division (Anne Arundel)
Bill Lee (electronically)
File (Left side)