ANNUAL GROUNDWATER MONITORING REPORT

OPEN BURNING GROUND
(HAZARDOUS WASTE MANAGEMENT UNIT 13)
CALENDAR YEAR 2014

RADFORD FACILITY ARMY AMMUNITION PLANT
RADFORD, VIRGINIA

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DAA PROJECT NO. B03204-12

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EXECUTIVE SUMMARY

This document serves as the Annual Groundwater Monitoring Report for calendar year 2014 for the Open Burning Ground (OBG; also known as Hazardous Waste Management Unit [HWMU] 13) located at the Radford Facility Army Ammunition Plant (RFAAP) in Radford, Virginia. The Annual Groundwater Monitoring Report was compiled in accordance with the requirements specified in the Permit for the Treatment of Hazardous Waste by Open Burning (Permit) dated October 28, 2005, as revised in the Virginia Department of Environmental Quality (VDEQ) approved permit modifications dated September 27, 2011 (Class 3 Permit Modification), February 22, 2012 (Class 1 Permit Modification), November 9, 2012 (Class 1 Permit Modification), June 18, 2013 (Class 2 Permit Modification), and June 12, 2014 (Class 1 Permit Modification). Semiannual groundwater monitoring activities for calendar year 2014 were conducted in accordance with the Corrective Action and Groundwater Monitoring Program presented in Module VII of the Permit.

The groundwater analytical data for the Second Quarter 2014 and Fourth Quarter 2014 semiannual monitoring events were evaluated in accordance with the procedures specified in the Corrective Action and Groundwater Monitoring Program presented in Module VII of the Permit, including comparison to the GPS. Carbon tetrachloride was detected in point of compliance well 13MW3 at concentrations greater than the GPS of 5 μg/l during the Second Quarter 2014 and Fourth Quarter 2014 semiannual monitoring events. Perchlorate was not detected at concentrations greater than the GPS of 15 μg/l in any of the wells comprising the CA groundwater monitoring network during the Second Quarter 2014 and Fourth Quarter 2014 semiannual monitoring events. Additionally, none of the daughter products for perchlorate or carbon tetrachloride were detected at concentrations greater than their respective GPSs during the Second Quarter 2014 and Fourth Quarter 2014 monitoring events. Therefore, it appears that progress is being made toward the remedial objectives. As a result, RFAAP will continue to monitoring groundwater at the OBG in accordance with the Corrective Action and Groundwater Monitoring Program.

1.0 INTRODUCTION

This document serves as the Annual Groundwater Monitoring Report for calendar year 2014 for the Open Burning Ground (OBG; also known as Hazardous Waste Management Unit [HWMU] 13) located at the Radford Facility Army Ammunition Plant (RFAAP) in Radford, Virginia. The OBG is the waste propellant burning ground. Material that cannot be burned in the Explosive Waste Incinerators is open burned at this Unit. The Annual Groundwater Monitoring Report was compiled in accordance with the requirements specified in the Permit for the Treatment of Hazardous Waste by Open Burning (Permit) dated October 28, 2005, as revised in the Virginia Department of Environmental Quality (VDEQ) approved permit modifications dated September 27, 2011 (Class 3 Permit Modification), February 22, 2012 (Class 1 Permit Modification), November 9, 2012 (Class 1 Permit Modification), June 18, 2013 (Class 2 Permit Modification), and June 12, 2014 (Class 1 Permit Modification). The Annual Groundwater Monitoring Report presents the following set of information: basic information and unit identification, a description of the groundwater monitoring plan, a discussion of groundwater movement, updated potentiometric maps, a table of groundwater elevations, and detailed statistical evaluations of the analytical data.

The Annual Groundwater Monitoring Report evaluates the analytical data from two semiannual sampling events performed during calendar year 2014 (Second Quarter 2014 and Fourth Quarter 2014). Groundwater monitoring activities for calendar year 2014 were conducted in accordance with the Corrective Action and Groundwater Monitoring Program presented in Module VII of the Permit.

Copies of field notes recorded during sample collection are included in **Appendix A**. The groundwater elevations measured during the Second Quarter 2014 and Fourth Quarter 2014 monitoring events and associated potentiometric surface maps are presented in **Appendix B**. The laboratory analytical results and data validation reports for the calendar year 2014 semiannual monitoring events are included (on CD-ROM) in **Appendix C**. Copies of correspondence relating to groundwater monitoring activities conducted at the OBG during calendar year 2014 are included (on CD-ROM) in **Appendix D**. Historical concentrations and trend graphs for perchlorate and carbon tetrachloride from 2003 through 2014 are included in **Appendix E**.

2.0 ANNUAL GROUNDWATER MONITORING REPORT

2.1 Waste Management Unit Information

Unit Name: Open Burning Ground (OBG)
(Hazardous Waste Management Unit 13 [HWMU-13])
Owner/Operator: United States Army/BAE Systems, Ordnance Systems Inc.

Unit Location: RFAAP Horseshoe Area, Radford, Virginia

Class: Hazardous Waste Management Unit
Type: Waste Propellant Burning Ground

2.2 Groundwater Monitoring Plan

Monitoring Network

Upgradient Well:	13MW2
Point of Compliance Wells:	13MW3, 13MW4, 13MW5, 13MW6, 13MW7
Plume Monitoring Well:	13MW8
Observation Well:	13MW1

Monitoring Status: Corrective Action Monitoring Program

CY 2014 Monitoring Events:

Second Quarter 2014:	April 29, 2014
Fourth Quarter 2014:	October 13, 2014

The Second Quarter 2014 and Fourth Quarter 2014 groundwater monitoring events served as the sixth and seventh semiannual Corrective Action (CA) groundwater monitoring events for the OBG, respectively, conducted in accordance with Permit Module VII – *Corrective Action and Groundwater Monitoring Program*, which was approved by the VDEQ in the Final Class 3 Hazardous Waste Permit Modification dated September 27, 2011, and revised by the VDEQ in Permit Modifications dated February 22, 2012 (Class 1 Permit Modification), November 9, 2012 (Class 1 Permit Modification), June 18, 2013 (Class 2 Permit Modification), and June 12, 2014 (Class 1 Permit Modification).

2.3 Groundwater Movement

The static water level measurements gathered at the OBG during the 2014 monitoring events are summarized in Appendix B. Annual groundwater fluctuations ranged from approximately 0.86 to 1.85 feet. As shown on the Potentiometric Surface Maps (Figures 1 and 2; Appendix B), groundwater movement beneath the site is generally to the south toward the New River.

For the purposes of this report, Darcian flow conditions were assumed for the alluvium and carbonate bedrock beneath the OBG. As a result, the groundwater velocities were calculated by multiplying the hydraulic conductivity (determined from previously conducted slug tests) by

the average hydraulic gradient across the site and dividing by an assumed effective porosity for the aquifer materials. The average hydraulic gradient was determined by superimposing three evenly spaced flow line vectors over the Fourth Quarter 2014 Potentiometric Surface Map, measuring their lengths, calculating the head differential over the distances measured, and dividing the head differential by the length of the flow line vectors. The three calculated gradients were then averaged to a single value. Using this method, the average groundwater hydraulic gradient across the site based on Fourth Quarter 2014 groundwater elevations was calculated to be 0.003 ft/ft. Historical slug test data for the site yielded an average hydraulic conductivity of 6.56×10^{-5} ft/second, which is consistent with literature values for carbonate rock and for clayey, silty sand, and gravel alluvium (Domenico and Schwartz, 1990). Aquifer test analysis conducted in 2013 for the recently installed 13MW8 indicated a similar hydraulic conductivity value of 1.25×10^{-5} ft/second.

The estimated groundwater velocity across the site was calculated to be approximately 4.25×10^{-2} ft/day or 15.5 ft/year, based on the following:

- An average hydraulic conductivity of 6.56×10^{-5} ft/second.
- An average hydraulic gradient of 0.003 ft/ft.
- An assumed effective porosity of 0.40, based on a representative range of porosities for carbonate rock and clayey, silty sand and gravel alluvium (Domenico and Schwartz, 1990).

The actual groundwater flow velocities in the carbonate bedrock may vary as much as one to two orders of magnitude from the average velocity presented above depending on water level conditions and the distribution of secondary porosity.

2.4 2014 Groundwater Monitoring Activities

Groundwater monitoring activities for calendar year 2014 were conducted in accordance with the Corrective Action and Groundwater Monitoring Program presented in Module VII of the Permit. Specifically, the Second Quarter 2014 and Fourth Quarter 2014 events served as the sixth and seventh semiannual monitoring events in which all of the wells in the CA groundwater monitoring network were sampled for the constituents listed in Permit Attachment VII.B (Semi-annually Monitored Natural Attenuation Parameters and Analytical Methods). The Fourth Quarter 2014 event also served as the annual monitoring event in which the point of compliance wells at the OBG (wells 13MW3 through 13MW7) were sampled for the constituents listed in Permit Attachment VII.C (Corrective Action Program – Annual Groundwater Monitoring List).

2.5 Groundwater Analytical Data Evaluation

The laboratory analytical results for the 2014 semiannual monitoring events are summarized in **Table 1** (Semiannually Monitored Natural Attenuation Parameters Analytical Results - 2014) and in **Table 2** (Annual Groundwater Monitoring List Analytical Results - 2014). The laboratory analytical results for the 2014 monitoring events are included on CD-ROM in **Appendix C**. The analytical data were validated in accordance with SW-846, *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review*, and *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*. Data

validation reports are included in **Appendix C**. Copies of field notes recorded during sample collection are included on CD-ROM in **Appendix A**.

The constituents detected during the Second Quarter 2014 and Fourth Quarter 2014 monitoring events and their corresponding concentrations, background values, and GPS are listed in **Table 1 and Table 2**. The laboratory analytical results for the MNA indicator parameters are also summarized in **Table 1.** Field indicator parameter results are summarized in **Table 1A.**

2.5.1 Semiannual Monitoring for Corrective Action Targeted Constituents

During the Second Quarter 2014 and Fourth Quarter 2014 monitoring events, groundwater samples collected from all of the wells in the CA groundwater monitoring network were analyzed for the CA Targeted Constituents listed in Permit Attachment VII.B (Semiannually Monitored Natural Attenuation Parameters and Analytical Methods), which include perchlorate plus daughter products (chlorate, chlorite, hypochlorite, and chloride) and carbon tetrachloride plus daughter products (chloroform, chloromethane, methylene chloride, and methane). Please note: a laboratory analytical method for hypochlorite is not commercially available; therefore, groundwater samples collected during Second Quarter 2014 and Fourth Quarter 2014 were not analyzed for hypochlorite; in correspondence dated February 22, 2012, the VDEQ modified Permit Attachment VII.B to reflect that an analytical method for hypochlorite is not commercially available. Additionally, groundwater samples collected during the Second Quarter 2014 and Fourth Quarter 2014 monitoring events were analyzed for the monitored natural attenuation (MNA) indicator parameters: dissolved iron, dissolved manganese, nitrate, sulfate, alkalinity, pH, dissolved oxygen (DO), oxidation reduction potential (ORP), specific conductance, temperature, turbidity, total organic carbon (TOC), and dissolved organic carbon. The CA target constituents detected during the Second Quarter 2014 and Fourth Quarter 2014 events and their corresponding concentrations, background values, and GPS are listed in **Table 1 and Table 2**. The laboratory analytical results for the MNA indicator parameters are also summarized in **Table 1**. Field indicator parameter results are summarized in **Table 1A.**

During Second Quarter 2014, carbon tetrachloride was detected in compliance well 13MW3 at a concentration of 8.2 μg/l, which is greater than the GPS of 5 μg/l (**Table 1**); however, carbon tetrachloride was not detected at concentrations greater than the GPS of 5 μg/l in the other wells comprising the CA groundwater monitoring network. Perchlorate was not detected at concentrations greater than the GPS of 15 μg/l in any of the wells comprising the CA groundwater monitoring network. Additionally, no other CA target constituents were detected at concentrations greater than their respective GPSs during the Second Quarter 2014 monitoring event.

During Fourth Quarter 2014, carbon tetrachloride was detected in compliance well 13MW3 at a concentration of 5.7 μg/l, which is greater than the GPS of 5 μg/l (**Table 1**); however, carbon tetrachloride was not detected at concentrations greater than the GPS of 5 μg/l in the other wells comprising the CA groundwater monitoring network. Perchlorate was not detected at concentrations greater than the GPS of 15 μg/l in any of the wells comprising the CA groundwater monitoring network. Additionally, no other CA target constituents were detected at

concentrations greater than their respective GPSs during the Fourth Quarter 2014 monitoring event.

2.5.2 Annual Monitoring for Permit Attachment VII.C Constituents

During the Fourth Quarter 2014 monitoring event, the groundwater samples collected from the point of compliance wells (13MW3 through 13MW7) were analyzed for the constituents listed in Permit Attachment VII.C (Corrective Action Program – Annual Groundwater Monitoring List). The Permit Attachment VII.C constituents detected during the Fourth Quarter 2014 event and their corresponding concentrations, background values, and GPS are listed in **Table 2**.

Total arsenic was detected in all point of compliance wells at concentrations less than the background concentration of 5 μg/l and the GPS of 10 μg/l (**Table 2**). These detections are generally consistent with previous data.

Total barium was detected in all point of compliance wells at concentrations less than the background concentration of 205.9 μg/l and the GPS of 2,000 μg/l (**Table 2**). These detections are generally consistent with previous data.

Total chromium was detected in all point of compliance wells at concentrations less than the background concentration and GPS of 112 μg/l (**Table 2**). These detections are generally consistent with previous data.

Total lead was detected in point of compliance wells 13MW4 and 13MW5 at concentrations less than the background concentration of 14 μg/l and the GPS of 15 μg/l (**Table 2**). These detections are generally consistent with previous data.

Total nickel was detected in point of compliance wells 13MW3, 13MW4, 13MW5, and 13MW6 at concentrations less than the background concentration of 5 μg/l and the GPS of 313 μg/l (**Table 2**). Total nickel was detected in point of compliance well 13MW7 at a concentration greater than the background concentration of 5 μg/l, but less than the GPS of 313 μg/l (**Table 2**). These detections are generally consistent with previous data.

Total selenium was detected in all point of compliance wells at concentrations less than the background concentration of 5 μg/l and the GPS of 50 μg/l (**Table 2**). These detections are generally consistent with previous data.

Total zinc was detected in point of compliance well 13MW7 at a concentration less than the background concentration of 10 μg/l and the GPS of 4,695 μg/l (**Table 2**). This detection is generally consistent with previous data.

Phenol was detected in point of compliance well 13MW7 at a concentration less than the background concentration of 5 μg/l and the GPS of 4,695 μg/l (**Table 2**). This detection is generally consistent with previous data.

Benzene was detected in point of compliance well 13MW3 at a concentration less than the background concentration and GPS of 5 μg/l (**Table 2**). This detection is generally consistent with previous data.

Toluene was detected in point of compliance well 13MW3 at a concentration less than the background concentration of 5 μg/l and the GPS of 1,000 μg/l (**Table 2**). This detection is generally consistent with previous data.

Trichloroethene was detected in point of compliance well 13MW7 at a concentration less than the background concentration of 1 μg/l and the GPS of 5 μg/l (**Table 2**). Trichloroethene was detected in point of compliance wells 13MW3 and 13MW4 at concentrations greater than the background concentration of 1 μg/l, but less than the GPS of 5 μg/l (**Table 2**). These detections are generally consistent with previous data.

Trichlorofluoromethane was detected in point of compliance well 13MW3 at a concentration less than the background concentration of 1 μg/l and the GPS of 1,113 μg/l (**Table 2**). This detection is generally consistent with previous data.

2.5.3 Evaluation of Corrective Action

During Second Quarter 2014 and Fourth Quarter 2014, perchlorate was not detected at concentrations greater than the GPS of 15 μg/l in any of the wells comprising the CA groundwater monitoring network. Carbon tetrachloride was detected in point of compliance well 13MW3 at concentrations greater than the GPS of 5 μg/l during Second Quarter 2014 and Fourth Quarter 2014; however, carbon tetrachloride was not detected at concentrations greater than the GPS in the other wells comprising the CA groundwater monitoring network for the OBG. Additionally, no other CA target constituents were detected at concentrations greater than their respective GPSs during the Second Quarter 2014 and Fourth Quarter 2014 monitoring events. Therefore, it appears that progress is being made toward the remedial objectives.

Historical concentrations and trend graphs for perchlorate and carbon tetrachloride from 2003 through 2014 are included in **Appendix E**. As shown in **Appendix E**, low concentrations of perchlorate (ranging from 0.17 μg/l to 3.35 μg/l) were detected in all of the wells comprising the CA groundwater monitoring network other than point of compliance well 13MW4 during the 2012, 2013, and 2014 monitoring events. Detection of these low level perchlorate concentrations correspond with the change in the Permit-specified laboratory analytical method for perchlorate from USEPA Method 314.0 (which had a quantitation limit (QL) of 4 μg/l) to SW 846 Methods 6850/6860 (QL of 0.2 μg/l) as specified in the VDEQ-approved Class 3 Permit Modification dated September 2011.

3.0 RECOMMENDATIONS

The groundwater analytical data for the Second Quarter 2014 and Fourth Quarter 2014 semiannual monitoring events were evaluated in accordance with the procedures specified in the Corrective Action and Groundwater Monitoring Program presented in Module VII of the Permit. Carbon tetrachloride was detected only in point of compliance well 13MW3 at concentrations greater than the GPS of 5 μg/l during the Second Quarter 2014 and Fourth Quarter 2014 semiannual monitoring events. Perchlorate was not detected at concentrations greater than the GPS of 15 μg/l in any of the wells comprising the CA groundwater monitoring network during the Second Quarter 2014 and Fourth Quarter 2014 semiannual monitoring events. Additionally, none of the daughter products for perchlorate or carbon tetrachloride were detected at concentrations greater than their respective GPSs during the Second Quarter 2014 and Fourth Quarter 2014 monitoring events. Therefore, it appears that progress is being made toward the remedial objectives. As a result, Radford AAP will continue to monitoring groundwater at the OBG in accordance with the Corrective Action and Groundwater Monitoring Program.

SIGNATURES/CERTIFICATIONS

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I certify that I have prepared or supervised preparation of the attached report, that it has been prepared in accordance with industry standards and practices, and that the information contained herein is truthful and accurate to the best of my knowledge.

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TABLES

Table 1: Semiannually Monitored Natural Attenuation Parameters Analytical Results - CY 2014
Radford Army Ammunition Plant - Open Burning Ground - Corrective Action Groundwater Monitoring
Upgradient wells = 13MW1 and 13MW2 (*no longer monitored as of 6/13)*

Analyte/Quarter	13MW1 Q	13MW2 Q	13MW3 Q	13MW4 Q	13MW5 Q	13MW6 Q	13MW7 Q	13MW8 Q	QL	Units	BKG	GPS	Method
Perchlorate					CAS # 14797-73-0								
Fourth Quarter 2014	-	0.59	1.86	13.6	1.17	0.672	1.21	4.48	0.2	ug/L	4	15	6850
Second Quarter 2014	-	2.14	1.1	12.1	2.48	1.15	1.18	1.89	0.2	ug/L	4	15	6850
Chlorate					CAS # 7790-93-4								
Fourth Quarter 2014	-	U	U	U	U	U	U	U	5	ug/L		-	300.1
Second Quarter 2014	-	U	U	U	U	U	U	U	5	ug/L		-	300.1
Chlorite					CAS #								
Fourth Quarter 2014	-	U J	U J	U J	U J	U J	U J	U J	5	ug/L		-	300.1
Second Quarter 2014	-	U	U	U	U	U	U	U	5	ug/L		-	300.1
Chloride					CAS # 16887-00-6								
Fourth Quarter 2014	-	U	U	U	U	7.3	U	U	5	mg/L		-	300.0
Second Quarter 2014	-	5.7	4.5 J	4.9 J	3.6 J	6.7	3.4 J	5.02	5	mg/L		-	300.0
Carbon tetrachloride					CAS # 56-23-5								
Fourth Quarter 2014	-	U	5.7	U	0.1 J	U	U	0.3 J	1	ug/l	5	5	8260C
Second Quarter 2014	-	0.1 J	8.2	0.3 J	U	U	U	0.5 J	1	ug/l	5	5	8260C
Chloroform					CAS # 67-66-3								
Fourth Quarter 2014	-	U	0.6	U	U	U	U	U	0.5	ug/l	1	80	8260C
Second Quarter 2014	-	U	0.6	U	U	U	U	U	0.5	ug/l	1	80	8260C
Methylene chloride					CAS # 75-09-2								
Fourth Quarter 2014	-	U	U	U	U	U	U	U	1	ug/l	5	5	8260C
Second Quarter 2014	-	U	U	U	U	U	U	U	1	ug/l	5	5	8260C
Chloromethane					CAS # 74-87-3								
Fourth Quarter 2014	-	U	U	U	U	U	U	U	0.5	ug/l	5	1.4342	8260C
Second Quarter 2014	-	U	U	U	U	U	U	U	0.5	ug/l	5	1.4342	8260C
Methane					CAS # 74-82-8								
Fourth Quarter 2014	-	U	U	U	U	U	U	U	5	ug/l		-	RSK175 M
Second Quarter 2014	-	U	U	U	U	U	U	U	5	ug/l		-	RSK175M
Total Organic Carbon (Rep 1)					CAS #								
Fourth Quarter 2014	-	-	13 J	4.94 J	2.18 J	4.2 J	3.04 J	2.03 J	1	mg/L		-	9060A
Second Quarter 2014	-	-	3.38 J	3.79 J	2.08 J	2.79 J	1.57 J	1.34 J	1	mg/L		-	9060A
Dissolved Organic Carbon					CAS #								
Fourth Quarter 2014	-	-	7.23 J	7.47 J	8.72 J	7.08 J	4.18 J	3.34 J	1	mg/L		-	9060A
Second Quarter 2014	-	-	2.65	2.45	1.51	1.78	1.72	6.41	1	mg/L		-	9060A
Iron, Dissolved					CAS # 7439-89-6								
Fourth Quarter 2014	-	-	U	U	U	U	U	U	200	ug/L		-	6010C
Second Quarter 2014	-	-	U	U	U	U	U	U	400	ug/l		-	6010C
Manganese, Dissolved					CAS # 7439-96-5								
Fourth Quarter 2014	-	-	0.184 J	0.173 J	0.12 J	0.0987	0.17 J	6.93 J	10	ug/L		-	6010C
Second Quarter 2014	-	-	U	U	U	U	U	54.4	10	ug/l		-	6010C
Nitrate (as N)					CAS # 14797-55-8								
Fourth Quarter 2014	-	-	1.6	0.66	0.59	0.74	0.93	0.19	0.05	mg/L	2.4	-	300.0
Second Quarter 2014	-	-	1.6	0.79	0.55	0.83	0.62	0.19	0.05	mg/L	2.4	-	300.0
Sulfate					CAS # 14808-79-8								
Fourth Quarter 2014	-	-	104	55.9	182	196	153	336	5	mg/L		-	300.0
Second Quarter 2014	-	-	112	50.7	75	174	91.5	292	5	mg/L		-	300.0

Table 1: Semiannually Monitored Natural Attenuation Parameters Analytical Results - CY 2014
Radford Army Ammunition Plant - Open Burning Ground - Corrective Action Groundwater Monitoring

Upgradient wells = 13MW1* and 13MW2 (*no longer monitored as of 6/13)

Analyte/Quarter	*13MW1 Q*	*13MW2 Q*	*13MW3 Q*	*13MW4 Q*	*13MW5 Q*	*13MW6 Q*	*13MW7 Q*	*13MW8 Q*	*QL*	*Units*	*BKG*	*GPS*	*Method*
Alkalinity					*CAS #*								
Fourth Quarter 2014	-	-	227	202	208	273	229	200	5	mg/L		-	2320B
Second Quarter 2014	-	-	218	166	253	277	206	172	5	mg/L		-	2320B

Definitions: QL Denotes quantitation limit. **U** Denotes analyte not detected at or above the detection limit or QL. **UA** Denotes analyte not detected at or above adjusted sample detection limit or QL. **J** Denotes analyte estimated due to quality control reasons. When used with "U" (i.e., "**UJ**"), denotes analyte not detected at or above detection limit or QL and the detection limit and QL are estimated due to quality control reasons. When used with "UA" (i.e., "**UAJ**"), denotes analyte not detected at or above adjusted detection limit or QL and adjusted detection limit and QL are estimated due to quality control reasons. **R** Denotes result rejected. **Q** Denotes data validation qualifier. **NS** denotes not sampled. **NA** denotes not analyzed. GPS Denotes Groundwater Protection Standard (June 2014). **BKG** Denotes Background

Note TOC (rep 1) denotes average of 4 replicate results presented.

Table 1A: Indicator Parameter Data for Monitoring Wells. (2014)
Radford Army Ammunition Plant. Open Burning Ground/Hazardous Waste Management Unit #13

	13MW1	13MW2	13MW3	13MW4	13MW5	13MW6	13MW7	13MW8
Second Quarter 2014								
Turbidity (NTU)	-	3.89	0.61	1.72	1.43	0.71	0.47	45.6
Temperature (deg C)	-	12.99	11.98	11.95	12.29	12.55	10.39	11.41
Specific Conductivity (umhos/cm)	-	832	728	527	701	892	640	1045
pH (s.u.)	-	6.89	6.93	6.65	6.86	6.84	6.99	7.02
Oxidation Reduction Potential (ORP) (mv)	-	195.5	175	183.2	186.8	180.1	181.3	102.2
Dissolved Oxygen (DO) (mg/L)	-	8.87	4.73	7.12	6.45	2.74	5.52	0.64
Fourth Quarter 2014								
Turbidity (NTU)	-	2	0.35	1.66	0.4	0.38	0.74	27.2
Temperature (deg C)	-	14.64	16.12	14.86	15.25	14.74	15.15	15.31
Specific Conductivity (umhos/cm)	-	741	681	626	796	921	753	1101
pH (s.u.)	-	6.94	6.77	7.07	7	6.92	6.85	6.78
Oxidation Reduction Potential (ORP) (mv)	-	42.6	97.1	66.2	69.2	69.3	9.5	82.3
Dissolved Oxygen (DO) (mg/L)	-	5.79	4.09	0.5	3.83	2.51	2.17	0.93

Table 2 - Annual Groundwater Monitoring List - 4Q 2014

Radford Army Ammunition Plant - Open Burning Ground - Corrective Action Program

*Upgradient wells = 13MW1 * and 13MW2 (*No longer monitored as of 6/13)*

Analyte/Quarter	13MW1 Q	13MW2 Q	13MW3 Q	13MW4 Q	13MW5 Q	13MW6 Q	13MW7 Q	13MW8 Q	QL	Units	BKG	GPS	Method
Antimony					CAS # 7440-36-0								
Fourth Quarter 2014	-	-	U	0.186 J	U	U	U	-	5	UG/L	6	6	6020A
Arsenic					CAS # 7440-38-2								
Fourth Quarter 2014	-	-	0.209 J	0.284 J	0.291 J	0.27 J	0.247 J	-	5	UG/L	5	10	6020A
Barium					CAS # 7440-39-3								
Fourth Quarter 2014	-	-	102	57.6	107	82.4	138	-	10	UG/L	206	2000	6020A
Cadmium					CAS # 7440-43-9								
Fourth Quarter 2014	-	-	U	U	U	U	U	-	1	UG/L	1	5	6020A
Chromium					CAS # 7440-47-3								
Fourth Quarter 2014	-	-	1.94 J	2.59 J	1.95 J	1.18 J	0.788 J	-	5	UG/L	112	112	6020A
Lead					CAS # 7439-92-1								
Fourth Quarter 2014	-	-	U	0.131 J	0.0767 J	U	U	-	5	UG/L	14	15	6020A
Mercury					CAS # 7439-97-6								
Fourth Quarter 2014	-	-	U	U	U	U	U	-	0.5	UG/L	2.52	2.52	7470A
Nickel					CAS # 7440-02-0								
Fourth Quarter 2014	-	-	0.786 J	2.77 J	1.78 J	1.06 J	12.7	-	5	UG/L	5	313	6020A
Selenium					CAS # 7782-49-2								
Fourth Quarter 2014	-	-	0.605 J	0.4 J	1.12 J	1.94 J	1.48 J	-	5	UG/L	5	50	6020A
Silver					CAS # 7440-22-4								
Fourth Quarter 2014	-	-	U	U	U	U	U	-	2	UG/L	2.4	78.25	6020A
Zinc					CAS # 7440-66-6								
Fourth Quarter 2014	-	-	U	U	U	U	4.56 J	-	5	UG/L	5	4695	6020A
Benzo[a]anthracene					CAS # 56-55-3								
Fourth Quarter 2014	-	-	U	U	U	U	U	-	5	ug/l	10	0.0917	8270D
Benzo[a]pyrene					CAS # 50-32-8								
Fourth Quarter 2014	-	-	U	U	U	U	U	-	0.5	ug/l	10	0.2	8270D
Benzo[b]fluoranthene					CAS # 205-99-2								
Fourth Quarter 2014	-	-	U	U	U	U	U	-	5	ug/l	10	0.0917	8270D
Benzo[k]fluoranthene					CAS # 207-08-9								
Fourth Quarter 2014	-	-	U	U	U	U	U	-	5	ug/l	10	0.917	8270D
Dibenz(a,h)anthracene					CAS # 53-70-3								
Fourth Quarter 2014	-	-	U	U	U	U	U	-	5	ug/l	10	0.00917	8270D
Fluoranthene					CAS # 206-44-0								
Fourth Quarter 2014	-	-	U	U	U	U	U	-	5	ug/l	10	626	8270D
Indeno[1,2,3-cd]pyrene					CAS # 193-39-5								
Fourth Quarter 2014	-	-	U	U	U	U	U	-	5	ug/l	10	0.0917	8270D
Pyrene					CAS # 129-00-0								
Fourth Quarter 2014	-	-	U	U	U	U	U	-	5	ug/l	10	67.07	8270D
sym-Trinitrobenzene					CAS # 99-35-4								
Fourth Quarter 2014	-	-	U	U	U	U	U	-	1	ug/L	2.5	469.5	8330B
m-Dinitrobenzene					CAS # 99-65-0								
Fourth Quarter 2014	-	-	U	U	U	U	U	-	1	ug/L	2.5	1.565	8330B
2,4-Dinitrotoluene					CAS # 121-14-2								
Fourth Quarter 2014	-	-	U	U	U	U	U	-	1	ug/L	10	31.3	8330B
2,6-Dinitrotoluene					CAS # 606-20-2								
Fourth Quarter 2014	-	-	U	U	U	U	U	-	1	ug/L	5	15.7	8330B
Nitroglycerin					CAS # 55-63-0								
Fourth Quarter 2014	-	-	U	U	U	U	U	-	1	UG/L	16	3.7	8330B
Acetophenone					CAS # 98-86-2								
Fourth Quarter 2014	-	-	U	U	U	U	U	-	5	ug/l	10	223.57	8270D
bis(2-Ethylhexyl)phthalate					CAS # 117-81-7								
Fourth Quarter 2014	-	-	U	U	U	U	U	-	5	ug/l	6	6	8270D

See Definitions on Last Page of This Report.

Annual Groundwater Monitoring List -
Radford Army Ammunition Plant - Open Burning Ground - Corrective Action Program

Upgradient wells = 13MW1 * and 13MW2 (*No longer monitored as of 6/13)

Analyte/Quarter	13MW1 Q	13MW2 Q	13MW3 Q	13MW4 Q	13MW5 Q	13MW6 Q	13MW7 Q	13MW8 Q	QL	Units	BKG	GPS	Method
Butyl benzyl phthalate					CAS # 85-68-7								
Fourth Quarter 2014	-	-	U	U	U	U	U	-	5	ug/l	10	35.2487	8270D
2-Chlorophenol					CAS # 95-57-8								
Fourth Quarter 2014	-	-	U	U	U	U	U	-	5	ug/l	10	11.2	8270D
Dibenzofuran					CAS # 132-64-9								
Fourth Quarter 2014	-	-	U	U	U	U	U	-	5	ug/l	10	37	8270D
Diethyl phthalate					CAS # 84-66-2								
Fourth Quarter 2014	-	-	U	U	U	U	U	-	5	ug/l	10	12520	8270D
3,3'-Dimethylbenzidine					CAS # 119-93-7								
Fourth Quarter 2014	-	-	U	U	U	U	U	-	75	ug/l	10	0.006	8270D
Dimethyl phthalate					CAS # 131-11-3								
Fourth Quarter 2014	-	-	U	U	U	U	U	-	5	ug/l	10	10	8270D
Di-n-butyl phthalate					CAS # 84-74-2								
Fourth Quarter 2014	-	-	U	U	U	U	U	-	5	ug/l	10	1565	8270D
Di-n-octyl phthalate					CAS # 117-84-0								
Fourth Quarter 2014	-	-	U	U	U	U	U	-	5	ug/l	10	313	8270D
2,4-Dichlorophenol					CAS # 120-83-2								
Fourth Quarter 2014	-	-	U	U	U	U	U	-	5	ug/l	10	46.95	8270D
Diphenylamine					CAS # 122-39-4								
Fourth Quarter 2014	-	-	U	U	U	U	U	-	5	ug/l	10	391.25	8270D
Hexachloroethane					CAS # 67-72-1								
Fourth Quarter 2014	-	-	U	U	U	U	U	-	5	ug/l	10	4.78	8270D
3 & 4-Methylphenol					CAS # 106-44-5								
Fourth Quarter 2014	-	-	U	U	U	U	U	-	5	ug/l	20	78.3	8270D
Nitrobenzene					CAS # 98-95-3								
Fourth Quarter 2014	-	-	U	U	U	U	U	-	5	ug/l	10	1.304	8270D
p-Nitrophenol					CAS # 100-02-7								
Fourth Quarter 2014	-	-	U	U	U	U	U	-	30	ug/l	20	20	8270D
Phenol					CAS # 108-95-2								
Fourth Quarter 2014	-	-	U	U	U	U	2 J	-	5	ug/l	10	4695	8270D
Benzene					CAS # 71-43-2								
Fourth Quarter 2014	-	-	0.1 J	U	U	U	U	-	0.5	ug/l	5	5	8260C
Benzyl chloride					CAS # 100-44-7								
Fourth Quarter 2014	-	-	U	U	U	U	U	-	0.5	ug/l	5	0.079	8260C
Chlorobenzene					CAS # 108-90-7								
Fourth Quarter 2014	-	-	U	U	U	U	U	-	0.5	ug/l	5	100	8260C
1,1-Dichloroethane					CAS # 75-34-3								
Fourth Quarter 2014	-	-	U	U	U	U	U	-	1	ug/l	1	2.42	8260C
1,2-Dichloroethane					CAS # 107-06-2								
Fourth Quarter 2014	-	-	U	U	U	U	U	-	0.5	ug/l	1	5	8260C
1,1-Dichloroethene					CAS # 75-35-4								
Fourth Quarter 2014	-	-	U	U	U	U	U	-	0.5	ug/l	1	7	8260C
Bromomethane					CAS # 74-83-9								
Fourth Quarter 2014	-	-	U	U	U	U	U	-	0.5	ug/l	1	3.18	8260C
Naphthalene					CAS # 91-20-3								
Fourth Quarter 2014	-	-	U	U	U	U	U	-	0.5	ug/l	1	0.0886	8260C
Tetrachloroethene					CAS # 127-18-4								
Fourth Quarter 2014	-	-	U	U	U	U	U	-	1	ug/l	1	5	8260C
Toluene					CAS # 108-88-3								
Fourth Quarter 2014	-	-	2.5	U	U	U	U	-	1	ug/l	5	1000	8260C
1,1,1-Trichloroethane					CAS # 71-55-6								
Fourth Quarter 2014	-	-	U	U	U	U	U	-	1	ug/l	1	200	8260C

Annual Groundwater Monitoring List -

Radford Army Ammunition Plant - Open Burning Ground - Corrective Action Program

*Upgradient wells = 13MW1 * and 13MW2 (*No longer monitored as of 6/13)*

Analyte/Quarter	13MW1 Q	13MW2 Q	13MW3 Q	13MW4 Q	13MW5 Q	13MW6 Q	13MW7 Q	13MW8 Q	QL	Units	BKG	GPS	Method
Trichloroethene					CAS # 79-01-6								
Fourth Quarter 2014	-	-	1.1	1.3	U	U	0.5 J	-	1	ug/l	1	5	8260C
Trichlorofluoromethane					CAS # 75-69-4								
Fourth Quarter 2014	-	-	0.2 J	U	U	U	U	-	1	ug/l	1	1113	8260C
Vinyl chloride					CAS # 75-01-4								
Fourth Quarter 2014	-	-	U	U	U	U	U	-	0.5	ug/l	1	2	8260C

Definitions: QL Denotes quantitation limit. **U** Denotes analyte not detected at or above the detection limit or QL. **UA** Denotes analyte not detected at or above adjusted sample detection limit or QL. **J** Denotes analyte estimated due to quality control reasons. When used with "U" (i.e., "**UJ**"), denotes analyte not detected at or above detection limit or QL and the detection limit and QL are estimated due to quality control reasons. When used with "UA" (i.e., "**UAJ**"), denotes analyte not detected at or above adjusted detection limit or QL and adjusted detection limit and QL are estimated due to quality control reasons. **R** Denotes result rejected. **Q** Denotes data validation qualifier. **NS** denotes not sampled. **NA** denotes not analyzed. GPS Denotes Groundwater Protection Standard (as of 2014).

APPENDIX A

FIELD NOTES

4/29/14

RFAAP
B03294-12
KFC/TOE

FB#11

General Notes

- Weather - Overcast, 40's & hard rain
- PPE: Eye protection, nitrile gloves, flame retardent suits, chemical resistant boots
- CALIBRATIONS - YSI 650 MDS
  pH - 4.00 = 4.00, 7.00 = 7.00, 10.00 = 9.97
  Conductivity reads 1413 µs in a 1413 µs stnd.
  DO% = 99.8 %
  HACH 2100Q Turbidimeter: 0.02-1000 ntu

* Dedicated tubing & well skirts used at each well
* All equipment deconned before/after each use
* all purge water disposed of at dedicated location onsite
* all samples collected, stored and transported on ice in coolers

Static Water Level Table

Well	DTW	Post Purge DTW	Notes
13MW1	20.41		DTW Only
13MW2	20.36	23.20	
13MW3	14.69	14.68	* Well Pad Submerged during Purge
13MW4	15.24	15.29	
13MW5	15.48	15.50	
13MW6	15.15	15.21	
13MW7	14.65	14.75	
13MW8	16.04	16.05	

13MW3

DTW: 14.69 Begin Purge (1002)

Post Purge DTW: 14.68 Initial Purge: Clear

Time	Temp(°C)	Cond(us)	DO mg/L	pH	ORP(mv)	Turb(NTU)	Purge k	Desc
(1005)	11.91	741	9.12	6.72	165.7	73.7	≈0.3 L/min	sl. cloudy
(1010)	12.05	742	4.85	6.88	172.0	6.10	"	clear
(1015)	12.00	737	4.78	6.91	173.8	4.41	"	clear
(1020)	11.99	732	4.74	6.92	174.5	1.05	"	clear
(1025)	11.99	730	4.72	6.93	174.6	0.74	"	clear
(1030)	11.98	728	4.73	6.93	175.0	0.61	"	clear
(1030) Readings Stable								
(1045)	11.93	722	4.73	6.93	174.7	0.70	Post Purge Reading	

Sample Time (1035)

Samples Collected: (2) IC300 (1) IC300/ANIONS300

(3) 8260C, (2) RSK175, (1) DM, (1) Perchlorate, (1) TOC

(1) DOC

13MW DUP2 - taken from 13MW3

Sample Time (1040)

Samples Collected: (3) 8260C

13MW8

DTW: 16.04 Begin Purge (1056)

Post Purge DTW: 16.05 Initial Purge: sl. cloudy

Time	Temp(°C)	Cond(us)	DO mg/L	pH	ORP(mv)	Turb(NTU)	Purge k	Desc
(1100)	11.53	1057	2.04	7.06	154.1	67.3	≈0.3 L/min	sl. cloudy
(1105)	11.36	1058	1.41	7.04	141.8	69.8	"	sl. cloudy
(1110)	11.27	1054	1.01	7.03	129.8	54.8	"	sl. cloudy
(1115)	11.25	1054	0.79	7.03	121.3	47.4	"	clear
(1120)	11.35	1054	0.69	7.03	111.9	40.7	"	clear

cont on page 125

13MW08 Cont

Time	Temp(C)	Cond(us)	DO mg/L	pH	ORP(mv)	Turb(NTU)	Purge hr	Desc
(1125)	11.35	1053	0.66	7.03	108.9	39.0	≥0.3L/min	clear
(1130)	11.41	1045	0.64	7.02	102.2	45.6	"	clear
(1130) Readings Stable								
(1143)	11.36	1009	1.10	6.96	114.8	55.9	Post Purge Reading	

Sample Time (1135)

Samples Collected: (2) IC300, (1) IC300/Alk/IC300

(3) 8260C, (2) RSK175, (1) DM, (1) Perchlorate, (1) TOC, (1) DOC

13MW04

DTW: 15.24 Begin Purge (1156)

Post Purge DTW: 15.29 Initial Purge: clear

Time	Temp(C)	Cond(us)	DO mg/L	pH	ORP(mv)	Turb(NTU)	Purge hr	Desc
(1200)	11.79	522	6.77	6.76	158.4	3.69	≥0.3L/min	clear
(1205)	11.88	558	7.23	6.74	161.0	2.05	"	clear
(1210)	11.95	542	7.10	6.71	165.5	1.44	"	clear
(1215)	11.91	531	7.08	6.69	175.1	1.35	"	clear
(1220)	11.91	529	7.08	6.67	177.0	1.74	"	clear
(1225)	11.92	527	7.10	6.67	181.1	1.85	"	clear
(1230)	11.95	527	7.12	6.65	183.2	1.72	"	clear
(1230) Readings Stable								

Sample Time (1235)

Samples Collected: (2) IC300, (1) IC300/Alk/IC300

(3) 8260C, (2) RSK175, (1) DM, (1) Perchlorate, (1) TOC, (1) DOC

(1251)	11.84	528	7.34	6.67	188.1	1.82	Post Purge Reading	

13MW DUP - Taken From 13MW04

Sample Time (1245)

Samples Collected: (2) IC300, (1) IC300/Alk/IC300

(2) RSK175, (1) DM, (1) Perchlorate, (1) TOC, (1) DOC

4/29/14 RAAP FB#11
B03204-12
TQE/KFL

13MW5

DTW: 15.48 Begin Purge (1259)
Post Purge DTW: 15.50 Initial Purge: Clear

Time	Temp(°C)	Cond(us)	DO mg/L	pH	ORP(mV)	Turb(NTU)	Purge Rt	Desc
(1300)	12.22	704	6.62	6.86	189.6	0.58	≥0.3/min	clear
(1305)	12.35	701	6.52	6.86	187.4	0.81	"	clear
(1310)	12.33	700	6.49	6.86	186.9	0.84	"	clear
(1315)	12.35	700	6.47	6.86	186.8	1.34	"	clear
(1320)	12.31	701	6.49	6.86	186.9	1.39	"	clear
(1325)	12.29	701	6.45	6.86	186.8	1.43	"	clear
(1325) Readings Stable								
(1342)	12.22	701	6.44	6.86	186.1	1.64	Post Purge Reading	

Sample Time (1330)

Samples Collected: (2) IC300, (3) IC300/Alk/IC300
(9) 8260C, (6) RSK175, (3) DM, (3) Perchlorate, (2) TOC, (3) DOC

13MW6

DTW: 15.15 Begin Purge (1349)
Post Purge DTW: 15.21 Initial Purge: Clear

Time	Temp(°C)	Cond(us)	DO mg/L	pH	ORP(mV)	Turb(NTU)	Purge Rt	Desc
(1350)	12.55	885	5.73	6.93	183.4	1.40	≥0.3/min	clear
(1355)	12.55	888	2.76	6.85	182.9	0.89	"	clear
(1400)	12.54	889	2.67	6.84	181.6	0.64	"	clear
(1405)	12.60	890	2.66	6.84	180.7	0.62	"	clear
(1410)	12.64	891	2.68	6.84	180.2	0.63	"	clear
(1415)	12.55	892	2.74	6.84	180.1	0.71	"	clear
(1415) Readings Stable								
(1427)	1250	892	2.64	6.86	179.2	0.92	Post Purge Reading	

Sample Time (1420)

Samples Collected: (2) IC300, (1) IC300/Alk/IC300
(3) 8260C, (2) RSK175, (1) DM, (1) Perchlorate, (1) TOC, (1) DOC

4/29/14 RAAP FB#11
B03204-12
TQR/KFC

13MW 7

DTW: 14.65 Begin Purge (1444)

Post Purge DTW: 14.75 Initial Purge: clear

Time	Temp(C)	Cond(us)	DO mg/L	pH	ORP(mV)	Turb(NTU)	Purge rate	Desc
(1445)	10.54	635	5.50	7.11	178.6	0.85	≥0.3L/min	clear
(1450)	10.49	638	5.50	7.00	180.8	0.38	"	clear
(1455)	10.39	641	5.43	6.99	181.1	0.41	"	clear
(1500)	10.39	641	5.48	6.99	181.4	0.39	"	clear
(1505)	10.38	641	5.51	6.98	181.5	0.40	"	clear
(1510)	10.39	640	5.52	6.99	181.3	0.47	"	clear
(1510) Readings Stable								
(1522)	10.47	641	5.61	7.00	179.0	0.34	Post Purge Reading	

Sample Time (1515)

Samples Collected: (2) IC300, (1) IC300/Alk, (1) IC300
(3) 8260C, (2) RSK175, (1) DM, (1) Perchlorate, (1) TOC, (1) DOC

13MW 2

DTW: 20.36 Begin Purge (1534)

Post Purge DTW: 23.20 Initial Purge: clear

Time	Temp(C)	Cond(us)	DO mg/L	pH	ORP(mV)	Turb(NTU)	Purge rate	Desc
(1535)	13.06	828	8.93	6.90	194.3	0.40	≥0.3L/min	clear
(1540)	13.02	831	8.91	6.89	194.5	0.31	"	clear
(1545)	13.03	831	8.91	6.89	194.9	0.42	"	clear
(1550)	13.01	832	8.92	6.89	195.2	0.65	"	clear
(1555)	13.00	832	8.90	6.89	195.4	1.92	"	clear
(1600)	12.99	832	8.87	6.89	195.5	3.89	"	clear
(1600) Readings Stable								
(1611)	12.96	831	8.88	6.91	195.7	5.89	Post Purge Reading	

Sample Time (1605)

Samples Collected: (2) IC300, (1) IC300, (3) 8260C
(2) RSK175, (1) Perchlorate

10/13/14

RAAP
OBG/UNIT-13
B03204-12
KFC/TGE

F.B. #11

General Notes -

- Weather - Overcast 60°F
- PPE - Eye protection, nitrile gloves, flame retardent coveralls, chemical resistant boots
- Calibrations: YSI 650 MDS

  pH: 4.00 = 4.00, 7.00 = 7.00, 10.00 = 9.98

  Conductivity reads 1413 µs in a 1413 µs standard

  DO% = 100

  HACH 2100 Turbimeter range: 0.02 - 1000 ntu
- Dedicated tubing & well skirts used at all wells.
- All equipment deconned before & after each use.
- All purge water collected & disposed of at dedicated location on-site.
- All samples collected, stored & transported on ice in coolers.

STATIC WATER LEVEL TABLE

Well	TD	DTW	Post purge DTW	Notes
13MW1		24.80		
13MW2		21.81		
13MW3		15.55		
13MW4		17.09		
13MW5		17.22		
13MW6		16.87		
13MW7		16.29		
13MW8		17.70		

10/13/14

RFAAP
OBR/UNIT-13
B03204-12
KPC/TGE

F.B.#11

13MW3

DTW: 15.55

Begin Purge (0929)

Post purge DTW: 15.55

Initial Purge: clear

TIME	Temp(°C)	Cond(µs)	DO mg/L	pH	ORP(mV)	TURB (NTU)	PURGE K	Desc.
(0930)	16.03	678	4.18	6.48	112.1	2.09	≥0.34/MIN	clear
(0935)	16.09	681	3.65	6.69	104.2	0.65	"	clear
(0940)	16.11	681	5.09	6.77	100.7	0.72	"	clear
(0945)	16.08	681	4.08	6.76	99.9	0.60	"	clear
(0950)	16.10	682	4.07	6.76	98.6	0.51	"	clear
(0955)	16.12	681	4.09	6.77	97.1	0.35	"	clear
(0955)	Readings	Stable						
(1000)	16.32	686	4.12	6.79	83.7	0.52	Post Purge Bar	

Sample Time (1000)
Samples Collected: (3) 8260C, (2) RSK175, (2) 8270D, (2) IC300, (1) IC300/ALK, (1) Perchlorate, (1) TOC, (1) DOC, (2) 8330B, (1) DM, (1) TM

13MWDUP2 - Taken from 13MW03

Sample Time (1015)
Samples Collected: (3) 8260C

13MWDUP - Taken from 13MW04

Sample Time (1200)
Samples Collected: (2) RSK175, (2) 8270D (2) IC300, (1) IC300/Alk., (1) Perchlorate, (1) TOC (1) DOC, (2) 8330, (1) TM, (1) DM

10/13/14

RFAAP
OBG/WMIT-B
R83204-12
KFC/TGC

F.B. #11

13MW08

DTW: 17.70

Begin Purge (1029)

Post Purge DTW: 17.59

Initial Purge: clear

Time	Temp(°C)	Cond(µS)	DO(mg/L)	pH	ORP(mv)	Turb(NTU)	Purge(L)	Desc
(1030)	15.09	1013	1.37	6.90	88.3	63.8	≤0.3L/min	slightly cloudy
(1035)	15.09	1082	0.50	6.85	85.6	52.2	"	slightly cloudy
(1040)	15.13	1100	0.52	6.85	84.0	32.2	"	sl. cloudy
(1045)	15.18	1101	0.69	6.82	83.4	29.5	"	clear
(1050)	15.23	1101	0.82	6.80	83.0	29.9	"	clear
(1055)	15.31	1101	0.93	6.78	82.3	27.2	"	clear
(1055)	Readings Stable							
(1105)	15.40	1014	2.00	6.73	82.6	25.7	Post Purge Reading	

Sample Time (1100)

Samples Collected: (3)8260C, (2)RSK175, (2)IC300, (1)IC300/Alk, (1)Perchlorate, (1)TOC (1)DOC, (1)DM

13MW09

Begin Purge (1120)

DTW: 17.65

Initial Purge clear

Post Purge DTW: ~~17.59~~ 16.93

Time	Temp(°C)	Cond(µS)	DO(mg/L)	pH	ORP(mv)	Turb(NTU)	Purge(L)	Desc
(1120)	14.90	553	3.09	6.96	77.4	2.29	≤0.3	clear
(1125)	14.91	618	0.53	7.04	70.8	2.19	"	clear
(1130)	14.93	626	0.47	7.07	68.8	2.18	"	clear
(1135)	14.89	627	0.44	7.08	67.6	1.60	"	clear
(1140)	14.84	627	0.48	7.07	66.5	1.68	"	clear
(1145)	14.86	626	0.50	7.07	66.2	1.66	"	clear
(1145)	Readings Stable		~~687~~ WMD 10/13/14			~~1.42~~		
(1220)	15.04	529	4.73	6.84	85.2	1.93		clear

Sample Time (1150)

Samples collected: (2) RSK175, (3)8260, (2)8270D, (2) IC300, (1)IC300/Alk, (1) Perchlorate, (1) TOC, (1) DOC, (2)8330, (1) TM, (1) DM

10/13/14

RFAAP
OSG/UNIT-13
R03204-12
INFC/TOC

FB#11

13MW ~~Bu~~ 85 (NE 10-13-14)

DTW: 15.55

Begin Purge (1229)

Post Purge DTW: 17.04

Initial Purge: clear

TIME	Temp(°C)	Cond(µs)	DO(mg/L)	pH	ORP(mv)	Turb(NTU)	Purge(L/min)	Desc
(1230)	15.26	738	4.72	6.93	73.7	1.81	≤0.3 L/min	clear
(1235)	15.15	799	3.87	7.00	71.2	0.59	"	clear
(1240)	15.16	800	3.85	7.01	70.5	0.42	"	clear
(1245)	15.19	798	3.84	7.01	69.7	0.69	"	clear
(1250)	15.23	797	3.84	7.01	69.5	0.52	"	clear
(1255)	15.25	796	3.83	7.00	69.2	0.40	"	clear
(1255)	Readings Stable							
(1335)	15.42	784	4.29	7.05	63.7	0.39	Post Purge Reading	

Sample Time (1300)

Samples Collected: (9) 8260, (6) RSK175, (6) 8270D, (1) IC300, (1) IC300/Alk, (3) Perchlorate, (3) TOC, (3) DOC, (6) 8330B, (3) TM, (3) DM

13MW-6

DTW: 16.87

Begin Purge (1334)

Post Purge DTW: 16.76

Initial Purge: clear

TIME	Temp(°C)	Cond(µs)	DO(mg/L)	pH	ORP(mv)	Turb(NTU)	Purge(L/min)	Desc
(1340)	14.92	903	3.05	6.95	68.5	1.65	≤0.3 L/min	clear
(1345)	14.76	919	2.62	6.93	68.8	1.32	"	clear
(1350)	14.74	922	2.54	6.93	68.8	0.74	"	clear
(1355)	14.75	921	2.54	6.93	69.2	0.92	"	clear
(1400)	14.74	921	2.51	6.92	69.3	0.38	"	clear
(1400)	Readings Stable							
(1415)	14.75	921	3.72	7.03	71.8	0.91	Post Purge Reading	

Sample Time (1405)

Samples Collected: (3) 8260, (2) RSK175, (2) 8270D, (2) IC300, (1) IC300/Alk, (1) Perchlorate, (1) TOC, (1) DOC (14H) (2) 8330B, (1) TM, (1) DM

10/13/14

RFAAP
OB9/UNIT-13
B03204-12
KFC/TRE

F.B. #11

13MW-7

DTW: 16.29

Begin Purge (1419)

Post Purge DTW: 16.36

Initial Purge: clear

TIME	Temp(°C)	Cond(µs)	DO(mg/L)	pH	ORP(mv)	Turb(NTU)	Purge(L/min)	Desc
(1420)	14.89	740	1.96	7.12	-124.0	1.89	≤0.3 L/min	clear
(1425)	15.01	742	1.73	6.93	-67.0	0.73	"	clear
(1430)	15.08	746	1.80	6.90	-35.5	1.18	"	clear
(1435)	15.12	752	1.96	6.88	-16.5	0.64	"	clear
(1440)	15.16	753	2.05	6.87	-5.4	0.92	"	clear
(1445)	15.19	754	2.12	6.85	3.5	0.60	"	clear
(1450)	15.15	753	2.17	6.85	9.5	0.74	"	clear
(1450) Readings Stable								
(1507)	15.38	757	2.62	6.86	25.0	0.68	Post Purge Reading	

WMO 10/13/14

Sample Time (1455)

Samples Collected: (3)8260, (2)RSK175, (2)82700, (2)IC300, (1)IC300/Alk, (1)Perchlorate, (1)TOC, (1)DOC, (2)83303, (1)TKN, (1)DKN

13MW-2

DTW: 21.81

Begin Purge (1519)

Post Purge DTW: 24.87

Initial Purge: clear

TIME	Temp(°C)	Cond(µs)	DO(mg/L)	pH	ORP(mv)	Turb(NTU)	Purge(L/min)	Desc
(1520)	14.97	762	6.88	6.99	35.8	1.39	≤0.3 L/min	clear
(1525)	14.46	745	6.04	6.93	38.9	0.44	"	clear
(1530)	14.67	742	5.89	6.94	39.0	0.57	"	clear
(1535)	14.65	740	5.94	6.94	42.0	0.88	"	
(1540)	14.64	741	5.79	6.94	42.6	2.00	"	clear
(1540) Readings Stable								
(1550)	15.05	744	5.65	6.97	44.4	3.25	Post Purge Reading	

Sample Time (1545)

Samples Collected: (3)8260, (2)RSK175, (2)IC300, (1)Perchlorate, (1)IC300/Alk

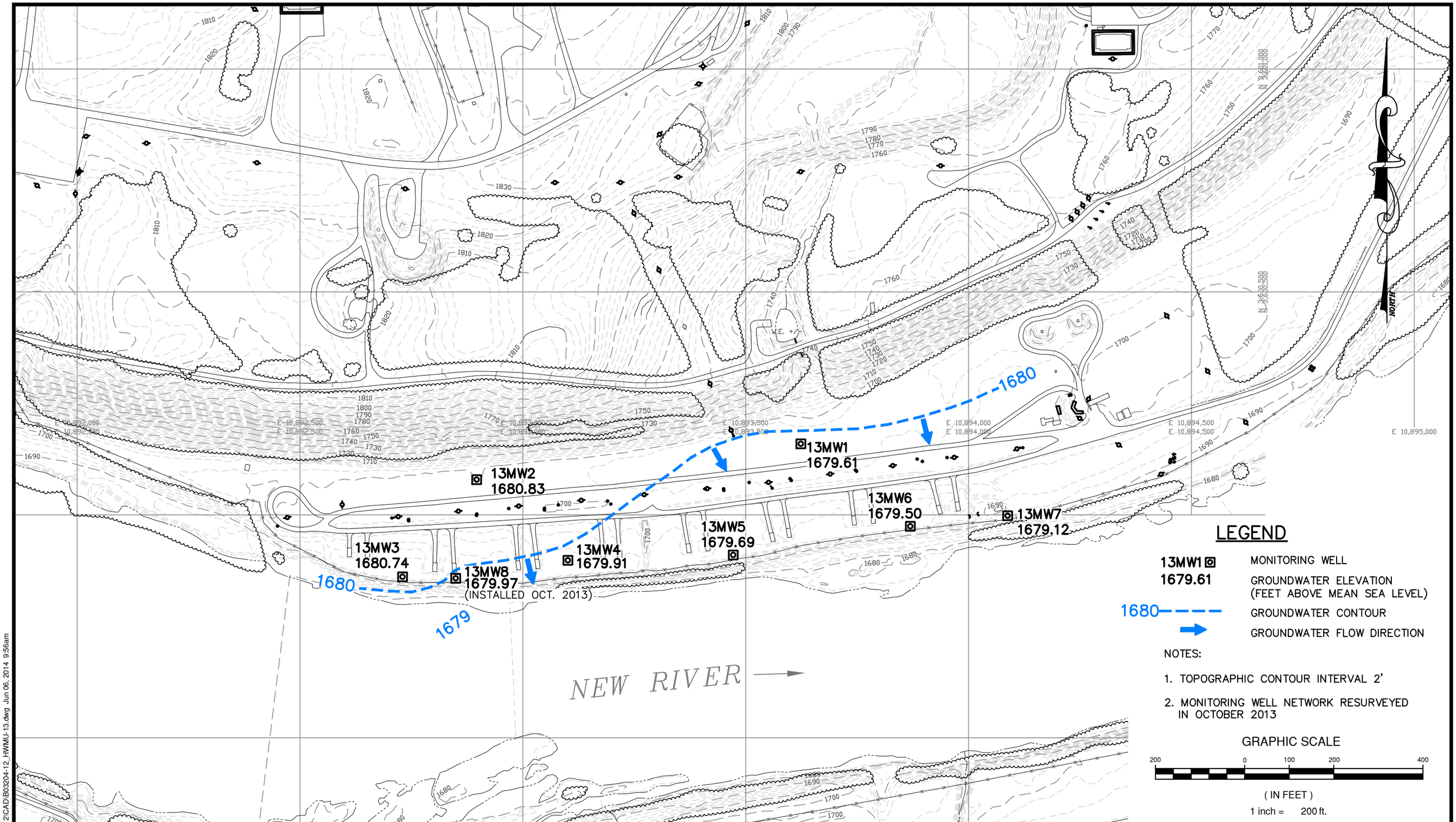
APPENDIX B

2014 GROUNDWATER ELEVATIONS AND POTENTIOMETRIC SURFACE MAPS

APPENDIX B
GROUNDWATER ELEVATIONS - 2014
OPEN BURNING GROUND (HWMU-13)
RADFORD ARMY AMMUNITION PLANT, RADFORD, VIRGINIA

MONITORING WELL ID	ELEVATION TOP OF WELL	APRIL 29, 2014		OCTOBER 13, 2014	
		DTW	GW ELEV	DTW	GW ELEV
13MW1	1700.02	20.41	1679.61	21.80	1678.22
13MW2	1701.19	20.36	1680.83	21.81	1679.38
13MW3	1695.43	14.69	1680.74	15.55	1679.88
13MW4	1695.15	15.24	1679.91	17.09	1678.06
13MW5	1695.17	15.48	1679.69	17.22	1677.95
13MW6	1694.65	15.15	1679.50	16.87	1677.78
13MW7	1693.77	14.65	1679.12	16.29	1677.48
13MW8	1696.01	16.04	1679.97	17.70	1678.31

NOTES:
DTW: Depth to water from top of casing.
GW ELEV: Groundwater elevation.
All elevations in feet above mean sea level.



Draper Aden Associates
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2206 South Main Street
Blacksburg, VA 24060
540-552-0444 Fax: 540-552-0291
Richmond, VA
Charlottesville, VA
Hampton Roads, VA

DESIGNED	KMW
DRAWN	DLD
CHECKED	MDL
DATE	06/06/2014

OPEN BURNING GROUND/HWMU-13 POTENTIOMETRIC SURFACE MAP - APRIL 29, 2014

RADFORD ARMY AMMUNITION PLANT

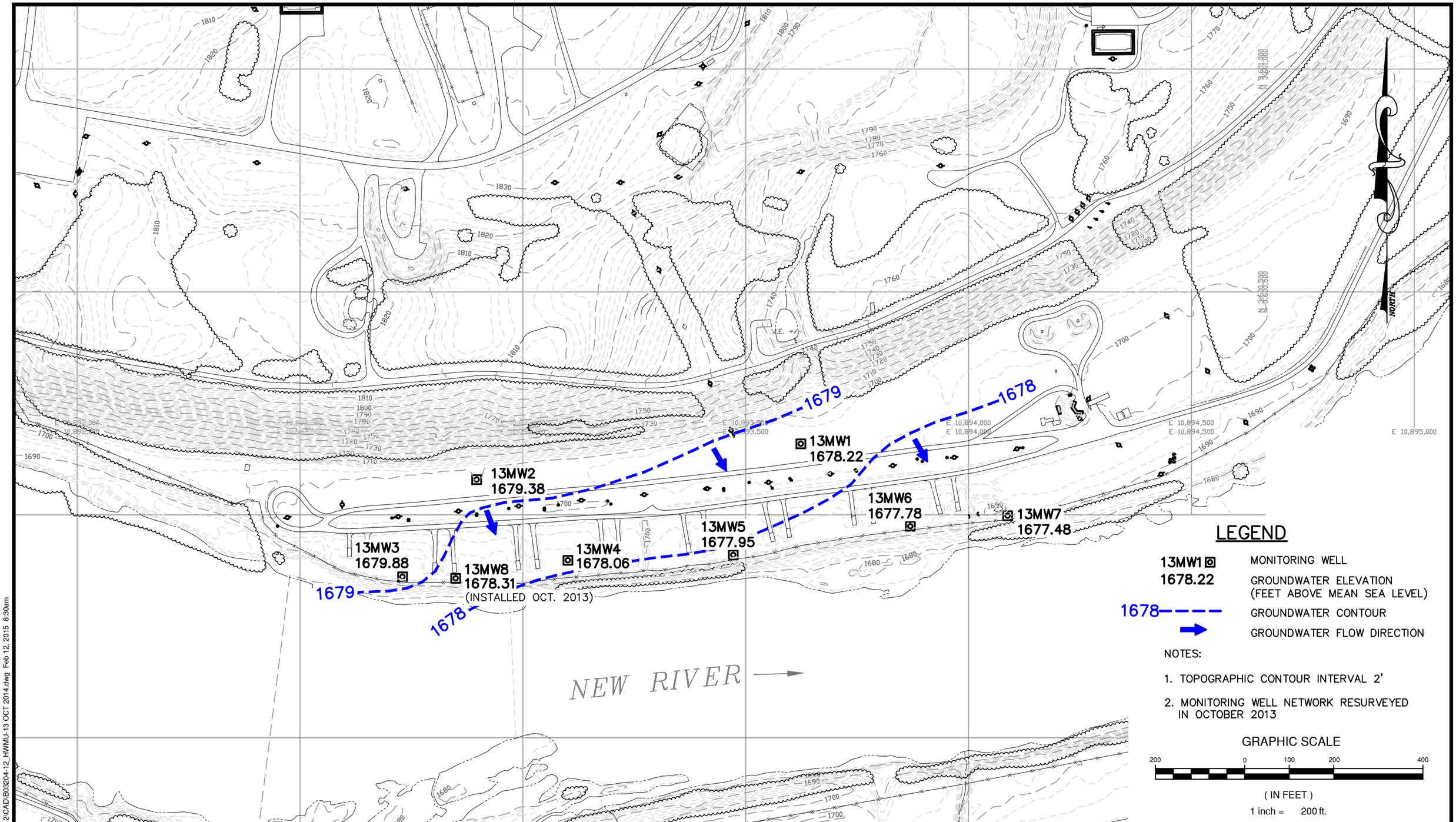
RADFORD, VIRGINIA

SCALE: 1"=200'

PLAN NO. B03204-12

FIGURE 1

P:\B03200\B03204\B03204-12\CAD\B03204-12_HWMU-13.dwg Jun 06, 2014 9:56am



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Richmond, VA
Charlottesville, VA
Hampton Roads, VA
Coats, NC

DESIGNED	KMW
DRAWN	DLD
CHECKED	MDL
DATE	02/11/15

OPEN BURNING GROUND/HWMU-13 POTENTIOMETRIC SURFACE MAP - OCTOBER 13, 2014

RADFORD ARMY AMMUNITION PLANT

RADFORD, VIRGINIA

SCALE: 1"=200'

PLAN NO. B03204-12

FIGURE 2

P:\B03\200\B03204\B03204-12\CAD\B03204-12_HWMU-13 OCT 2014.dwg Feb 12, 2015 8:30am

APPENDIX C

2014 LABORATORY ANALYTICAL RESULTS (*) AND DATA VALIDATION REPORTS (CD-ROM)

(*) BOTH ABRIDGED AND ORIGINAL ANALYTICAL RESULTS

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Type I Data Package

Abridged data package.
Full deliverable available

Prepared for:

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

Project: RAAP - Radford, VA - HWMU13/Open Burning Ground
Groundwater and Water Samples
Collected on 04/29/14

SDG# RAE19

GROUP	SAMPLE NUMBERS
1471177	7448998-7449009

PA Cert. # 36-00037
NY Cert. # 10670
NJ Cert. # PA011
NC Cert. # 521
TX Cert. # T104704194-13-10
AZ Cert. # AZ0780

Through our technical processes and second person review of data, we have established that our data/deliverables are in compliance with the methods and project requirements unless otherwise noted or previously resolved with the client.

Authorized by: Dana M Kauffman **Date: 05/15/2014**

Dana M. Kauffman
Manager

Any questions or concerns you might have regarding this data package should be directed to your client representative, Barbara Weyandt at (717) 556-7264.

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Sample Reference List for SDG Number RAE19
with a Data Package Type of I

11200 - Draper Aden Associates, Inc.

Project: RAAP - Radford, VA - HWMU13/Open Burning Ground

Lab Sample Number	Lab Sample Code	Client Sample Description
7448998	13MW2	13MW2 Grab Groundwater April 2014 Semiannual GW Monitoring Event
7448999	13MW3	13MW3 Grab Groundwater April 2014 Semiannual GW Monitoring Event
7449000	13FD2	13MWDUP2 Grab Groundwater April 2014 Semiannual GW Monitoring Event
7449001	13MW4	13MW4 Grab Groundwater April 2014 Semiannual GW Monitoring Event
7449002	13MFD	13MWDUP Grab Groundwater April 2014 Semiannual GW Monitoring Event
7449003	13MW5	13MW5 Grab Groundwater April 2014 Semiannual GW Monitoring Event
7449004	13MW5	13MW5 MS Grab Groundwater April 2014 Semiannual GW Monitoring Event
7449005	13MW5	13MW5 MSD Grab Groundwater April 2014 Semiannual GW Monitoring Event
7449006	13MW6	13MW6 Grab Groundwater April 2014 Semiannual GW Monitoring Event
7449007	13MW7	13MW7 Grab Groundwater April 2014 Semiannual GW Monitoring Event
7449008	13MW8	13MW8 Grab Groundwater April 2014 Semiannual GW Monitoring Event
7449009	13MTB	Trip_Blank_1 Water April 2014 Semiannual GW Monitoring Event

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Sample pH Log

SDG: RAE19

LLI Sample Number	Bottle Code	Actual pH	Exp. pH	pH Check Code	Adj. pH	Adjusted Date	Adjusted Time	Preservative Added	Preservative Lot #	LLI Supplied Bottle?	Sulfide Present?	Corrective Substance	CS Lot #	Res. Cl. Present?	Corrective Substance	CS Lot #
7448998	038A	<2	<2	NA	NA	NA	NA	NA	NA	Y	NA	NA	NA	NA	NA	NA
7448998	057A	<2	<2	PK	NA	NA	NA	NA	NA	Y	NA	NA	NA	NA	NA	NA
7448999	038A	<2	<2	NA	NA	NA	NA	NA	NA	Y	NA	NA	NA	NA	NA	NA
7448999	057A	<2	<2	PK	NA	NA	NA	NA	NA	Y	NA	NA	NA	NA	NA	NA
7449000	038A	<2	<2	NA	NA	NA	NA	NA	NA	Y	NA	NA	NA	NA	NA	NA
7449001	038A	<2	<2	NA	NA	NA	NA	NA	NA	Y	NA	NA	NA	NA	NA	NA
7449001	057A	<2	<2	PK	NA	NA	NA	NA	NA	Y	NA	NA	NA	NA	NA	NA
7449002	057A	<2	<2	PK	NA	NA	NA	NA	NA	Y	NA	NA	NA	NA	NA	NA
7449003	038A	<2	<2	NA	NA	NA	NA	NA	NA	Y	NA	NA	NA	NA	NA	NA
7449003	057A	<2	<2	PK	NA	NA	NA	NA	NA	Y	NA	NA	NA	NA	NA	NA
7449004	038A	<2	<2	NA	NA	NA	NA	NA	NA	Y	NA	NA	NA	NA	NA	NA
7449004	057A	<2	<2	PK	NA	NA	NA	NA	NA	Y	NA	NA	NA	NA	NA	NA
7449004	057B	<2	<2	PK	NA	NA	NA	NA	NA	Y	NA	NA	NA	NA	NA	NA
7449005	038A	<2	<2	NA	NA	NA	NA	NA	NA	Y	NA	NA	NA	NA	NA	NA
7449005	057B	<2	<2	PK	NA	NA	NA	NA	NA	Y	NA	NA	NA	NA	NA	NA
7449006	038A	<2	<2	NA	NA	NA	NA	NA	NA	Y	NA	NA	NA	NA	NA	NA
7449006	057A	<2	<2	PK	NA	NA	NA	NA	NA	Y	NA	NA	NA	NA	NA	NA
7449007	038A	<2	<2	NA	NA	NA	NA	NA	NA	Y	NA	NA	NA	NA	NA	NA
7449007	057A	<2	<2	PK	NA	NA	NA	NA	NA	Y	NA	NA	NA	NA	NA	NA
7449008	038A	<2	<2	NA	NA	NA	NA	NA	NA	Y	NA	NA	NA	NA	NA	NA
7449008	057A	<2	<2	PK	NA	NA	NA	NA	NA	Y	NA	NA	NA	NA	NA	NA
7449009	038A	<2	<2	NA	NA	NA	NA	NA	NA	Y	NA	NA	NA	NA	NA	NA
7449009	057A	<2	<2	PK	NA	NA	NA	NA	NA	Y	NA	NA	NA	NA	NA	NA

Check Code Key

PK = Original container checked - pH is within the correct range. (No preservative was added)
PA = Original container checked - pH adjusted to correct range. (Preservative was added)
PV = Volatile container checked
PC = pH checked (unpreserved container)
SPK = Subsampled from an original container. Original container checked - pH is within correct range
SPA = Subsampled from an original container. Subsample container checked - pH adjusted to correct range.
SPC = Subsampled from an original container. pH checked (unpreserved container).
SUP = Subsampled from original container. Unable to be preserved due to the matrix of the sample.
UP = Unable to preserve due to matrix of the sample.
NA = Not applicable

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01163 GC/MS VOA Water Prep

An undiluted aliquot of the water sample or a dilution of the sample is purged with an inert gas and the volatiles are collected on an adsorbent trap that is subsequently desorbed onto a gas chromatographic column.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 5030C, May 2003.

11996 8260C Water(25ml) Master

The water sample is purged and the volatile compounds are collected on a sorbent trap that is subsequently desorbed onto the GC/MS system for chromatographic and mass spectral analysis.

Reference: Volatile Organic Compounds by Gas Chromatography/ Mass Spectrometry (GC/MS), SW-846 Method 8260C, August 2006.

07105 Volatile Headspace Hydrocarbon

An aliquot of sample is place in a headspace vial and warmed to 35C. A portion of the headspace is analyzed on a gas chromatograph with megabore column and flame ionization detection.

Reference: Sample Preparation and Calculations for Dissolved Gas Analysis in Water Samples Using a GC Headspace Equilibration Technique, RSKSOP-175, Rev. 5, Oct. 2010, modified

Analysis Reports / Field Chain of Custody

ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

May 12, 2014

Project: RAAP - Radford, VA - HWMU13/Open Burning Ground

Submittal Date: 05/01/2014
Group Number: 1471177
SDG: RAE19
State of Sample Origin: VA

Client Sample Description	Lancaster Labs (LL) #
13MW2 Grab Groundwater	7448998
13MW3 Grab Groundwater	7448999
13MWDUP2 Grab Groundwater	7449000
13MW4 Grab Groundwater	7449001
13MWDUP Grab Groundwater	7449002
13MW5 Grab Groundwater	7449003
13MW5 MS Grab Groundwater	7449004
13MW5 MSD Grab Groundwater	7449005
13MW6 Grab Groundwater	7449006
13MW7 Grab Groundwater	7449007
13MW8 Grab Groundwater	7449008
Trip_Blank_1 Water	7449009

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

ELECTRONIC COPY TO Draper Aden Associates, Inc. Attn: Janet Frazier

Respectfully Submitted,

Barbara Weyandt

Barbara A. Weyandt
Specialist

(717) 556-7264

Project Name: RAAP - Radford, VA - HWMU13/Open Burning Ground
LLI Group #: 1471177

General Comments:

See the Laboratory Sample Analysis Record section of the Analysis Report for the method references.

All QC met criteria unless otherwise noted in an Analysis Specific Comment below. Refer to the QC Summary for specific values and acceptance criteria.

Project specific QC samples are included in this data set

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Surrogate recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in an Analysis Specific Comment below.

The samples were received at the appropriate temperature and in accordance with the chain of custody unless otherwise noted.

Analysis Specific Comments:

No additional comments are necessary.

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Analysis Report

Sample Description: 13MW2 Grab Groundwater
April 2014 Semiannual GW Monitoring Event
RAAP - Radford, VA - HWMU13/Open Burning Ground

LL Sample # WW 7448998
LL Group # 1471177
Account # 11200

Project Name: RAAP - Radford, VA - HWMU13/Open Burning Ground

Collected: 04/29/2014 16:05 by KC

Submitted: 05/01/2014 09:45
Reported: 05/12/2014 13:15

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

13MW2 SDG#: RAE19-01

CAT No.	Analysis Name	CAS Number	As Received Result		As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		ug/l		ug/l	ug/l	
11996	Carbon Tetrachloride	56-23-5	0.1	J	0.1	1.0	1
11996	Chloroform	67-66-3	N.D.		0.1	0.5	1
11996	Chloromethane	74-87-3	N.D.		0.2	0.5	1
11996	Methylene Chloride	75-09-2	N.D.		0.2	1.0	1
GC Miscellaneous	**RSKSOP-175 modified**		ug/l		ug/l	ug/l	
07105	Methane	74-82-8	N.D.		3.0	5.0	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	RAAP HWMU-13 - 4 compounds	SW-846 8260C	1	H141221AA	05/02/2014 13:47	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030C	1	H141221AA	05/02/2014 13:47	Kerri E Legerlotz	1
07105	Volatile Headspace Hydrocarbon	RSKSOP-175 modified	1	141280022A	05/08/2014 18:30	Elizabeth J Marin	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: 13MW3 Grab Groundwater
April 2014 Semiannual GW Monitoring Event
RAAP - Radford, VA - HWMU13/Open Burning Ground

LL Sample # WW 7448999
LL Group # 1471177
Account # 11200

Project Name: RAAP - Radford, VA - HWMU13/Open Burning Ground

Collected: 04/29/2014 10:35 by KC

Submitted: 05/01/2014 09:45
Reported: 05/12/2014 13:15

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

13MW3 SDG#: RAE19-02

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**	**ug/l**	**ug/l**	
11996	Carbon Tetrachloride	56-23-5	8.2	0.1	1.0	1
11996	Chloroform	67-66-3	0.6	0.1	0.5	1
11996	Chloromethane	74-87-3	N.D.	0.2	0.5	1
11996	Methylene Chloride	75-09-2	N.D.	0.2	1.0	1
GC Miscellaneous	**RSKSOP-175 modified**		**ug/l**	**ug/l**	**ug/l**	
07105	Methane	74-82-8	N.D.	3.0	5.0	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	RAAP HWMU-13 - 4 compounds	SW-846 8260C	1	H141221AA	05/02/2014 14:09	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030C	1	H141221AA	05/02/2014 14:09	Kerri E Legerlotz	1
07105	Volatile Headspace Hydrocarbon	RSKSOP-175 modified	1	141280022A	05/08/2014 18:47	Elizabeth J Marin	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: 13MWDUP2 Grab Groundwater
April 2014 Semiannual GW Monitoring Event
RAAP - Radford, VA - HWMU13/Open Burning Ground

LL Sample # WW 7449000
LL Group # 1471177
Account # 11200

Project Name: RAAP - Radford, VA - HWMU13/Open Burning Ground

Collected: 04/29/2014 10:40 by KC

Submitted: 05/01/2014 09:45
Reported: 05/12/2014 13:15

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

13FD2 SDG#: RAE19-03FD

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**	**ug/l**	**ug/l**	
11996	Carbon Tetrachloride	56-23-5	8.0	0.1	1.0	1
11996	Chloroform	67-66-3	0.6	0.1	0.5	1
11996	Chloromethane	74-87-3	N.D.	0.2	0.5	1
11996	Methylene Chloride	75-09-2	N.D.	0.2	1.0	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	RAAP HWMU-13 - 4 compounds	SW-846 8260C	1	H141221AA	05/02/2014 14:31	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030C	1	H141221AA	05/02/2014 14:31	Kerri E Legerlotz	1

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Analysis Report

Sample Description: 13MW4 Grab Groundwater
April 2014 Semiannual GW Monitoring Event
RAAP - Radford, VA - HWMU13/Open Burning Ground

LL Sample # WW 7449001
LL Group # 1471177
Account # 11200

Project Name: RAAP - Radford, VA - HWMU13/Open Burning Ground

Collected: 04/29/2014 12:35 by KC

Submitted: 05/01/2014 09:45
Reported: 05/12/2014 13:15

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

13MW4 SDG#: RAE19-04

CAT No.	Analysis Name	CAS Number	As Received Result		As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		ug/l		ug/l	ug/l	
11996	Carbon Tetrachloride	56-23-5	0.3	J	0.1	1.0	1
11996	Chloroform	67-66-3	N.D.		0.1	0.5	1
11996	Chloromethane	74-87-3	N.D.		0.2	0.5	1
11996	Methylene Chloride	75-09-2	N.D.		0.2	1.0	1
GC Miscellaneous	**RSKSOP-175 modified**		ug/l		ug/l	ug/l	
07105	Methane	74-82-8	N.D.		3.0	5.0	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	RAAP HWMU-13 - 4 compounds	SW-846 8260C	1	H141221AA	05/02/2014 14:53	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030C	1	H141221AA	05/02/2014 14:53	Kerri E Legerlotz	1
07105	Volatile Headspace Hydrocarbon	RSKSOP-175 modified	1	141280022A	05/08/2014 19:03	Elizabeth J Marin	1

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Analysis Report

Sample Description: 13MWDUP Grab Groundwater
April 2014 Semiannual GW Monitoring Event
RAAP - Radford, VA - HWMU13/Open Burning Ground

LL Sample # WW 7449002
LL Group # 1471177
Account # 11200

Project Name: RAAP - Radford, VA - HWMU13/Open Burning Ground

Collected: 04/29/2014 12:45 by KC

Submitted: 05/01/2014 09:45
Reported: 05/12/2014 13:15

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

13MFD SDG#: RAE19-05FD

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
GC Miscellaneous	**RSKSOP-175 modified**		**ug/l**	**ug/l**	**ug/l**	
07105	Methane	74-82-8	N.D.	3.0	5.0	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	Volatile Headspace Hydrocarbon	RSKSOP-175 modified	1	141280022A	05/08/2014 19:20	Elizabeth J Marin	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: 13MW5 Grab Groundwater
April 2014 Semiannual GW Monitoring Event
RAAP - Radford, VA - HWMU13/Open Burning Ground

LL Sample # WW 7449003
LL Group # 1471177
Account # 11200

Project Name: RAAP - Radford, VA - HWMU13/Open Burning Ground

Collected: 04/29/2014 13:30 by KC

Submitted: 05/01/2014 09:45
Reported: 05/12/2014 13:15

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

13MW5 SDG#: RAE19-06BKG

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**	**ug/l**	**ug/l**	
11996	Carbon Tetrachloride	56-23-5	N.D.	0.1	1.0	1
11996	Chloroform	67-66-3	N.D.	0.1	0.5	1
11996	Chloromethane	74-87-3	N.D.	0.2	0.5	1
11996	Methylene Chloride	75-09-2	N.D.	0.2	1.0	1
GC Miscellaneous	**RSKSOP-175 modified**		**ug/l**	**ug/l**	**ug/l**	
07105	Methane	74-82-8	N.D.	3.0	5.0	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	RAAP HWMU-13 - 4 compounds	SW-846 8260C	1	H141221AA	05/02/2014 12:42	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030C	1	H141221AA	05/02/2014 12:42	Kerri E Legerlotz	1
07105	Volatile Headspace Hydrocarbon	RSKSOP-175 modified	1	141280022A	05/08/2014 19:37	Elizabeth J Marin	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: 13MW5 MS Grab Groundwater
April 2014 Semiannual GW Monitoring Event
RAAP - Radford, VA - HWMU13/Open Burning Ground

LL Sample # WW 7449004
LL Group # 1471177
Account # 11200

Project Name: RAAP - Radford, VA - HWMU13/Open Burning Ground

Collected: 04/29/2014 13:30 by KC

Submitted: 05/01/2014 09:45
Reported: 05/12/2014 13:15

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

13MW5 SDG#: RAE19-06MS

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**	**ug/l**	**ug/l**	
11996	Carbon Tetrachloride	56-23-5	6.0	0.1	1.0	1
11996	Chloroform	67-66-3	5.5	0.1	0.5	1
11996	Chloromethane	74-87-3	5.4	0.2	0.5	1
11996	Methylene Chloride	75-09-2	5.3	0.2	1.0	1
GC Miscellaneous	**RSKSOP-175 modified**		**ug/l**	**ug/l**	**ug/l**	
07105	Methane	74-82-8	58	3.0	5.0	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	RAAP HWMU-13 - 4 compounds	SW-846 8260C	1	H141221AA	05/02/2014 13:04	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030C	1	H141221AA	05/02/2014 13:04	Kerri E Legerlotz	1
07105	Volatile Headspace Hydrocarbon	RSKSOP-175 modified	1	141280022A	05/09/2014 16:32	Elizabeth J Marin	1

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Analysis Report

Sample Description: 13MW5 MSD Grab Groundwater
April 2014 Semiannual GW Monitoring Event
RAAP - Radford, VA - HWMU13/Open Burning Ground

LL Sample # WW 7449005
LL Group # 1471177
Account # 11200

Project Name: RAAP - Radford, VA - HWMU13/Open Burning Ground

Collected: 04/29/2014 13:30 by KC

Submitted: 05/01/2014 09:45
Reported: 05/12/2014 13:15

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

13MW5 SDG#: RAE19-06MSD

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**	**ug/l**	**ug/l**	
11996	Carbon Tetrachloride	56-23-5	5.9	0.1	1.0	1
11996	Chloroform	67-66-3	5.4	0.1	0.5	1
11996	Chloromethane	74-87-3	5.2	0.2	0.5	1
11996	Methylene Chloride	75-09-2	5.1	0.2	1.0	1
GC Miscellaneous	**RSKSOP-175 modified**		**ug/l**	**ug/l**	**ug/l**	
07105	Methane	74-82-8	60	3.0	5.0	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	RAAP HWMU-13 - 4 compounds	SW-846 8260C	1	H141221AA	05/02/2014 13:26	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030C	1	H141221AA	05/02/2014 13:26	Kerri E Legerlotz	1
07105	Volatile Headspace Hydrocarbon	RSKSOP-175 modified	1	141280022A	05/09/2014 16:48	Elizabeth J Marin	1

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Analysis Report

Sample Description: 13MW6 Grab Groundwater
April 2014 Semiannual GW Monitoring Event
RAAP - Radford, VA - HWMU13/Open Burning Ground

LL Sample # WW 7449006
LL Group # 1471177
Account # 11200

Project Name: RAAP - Radford, VA - HWMU13/Open Burning Ground

Collected: 04/29/2014 14:20 by KC

Submitted: 05/01/2014 09:45
Reported: 05/12/2014 13:15

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

13MW6 SDG#: RAE19-07

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**	**ug/l**	**ug/l**	
11996	Carbon Tetrachloride	56-23-5	N.D.	0.1	1.0	1
11996	Chloroform	67-66-3	N.D.	0.1	0.5	1
11996	Chloromethane	74-87-3	N.D.	0.2	0.5	1
11996	Methylene Chloride	75-09-2	N.D.	0.2	1.0	1
GC Miscellaneous	**RSKSOP-175 modified**		**ug/l**	**ug/l**	**ug/l**	
07105	Methane	74-82-8	N.D.	3.0	5.0	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	RAAP HWMU-13 - 4 compounds	SW-846 8260C	1	H141221AA	05/02/2014 15:15	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030C	1	H141221AA	05/02/2014 15:15	Kerri E Legerlotz	1
07105	Volatile Headspace Hydrocarbon	RSKSOP-175 modified	1	141280022A	05/08/2014 20:27	Elizabeth J Marin	1

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Analysis Report

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Sample Description: 13MW7 Grab Groundwater
April 2014 Semiannual GW Monitoring Event
RAAP - Radford, VA - HWMU13/Open Burning Ground

LL Sample # WW 7449007
LL Group # 1471177
Account # 11200

Project Name: RAAP - Radford, VA - HWMU13/Open Burning Ground

Collected: 04/29/2014 15:15 by KC

Submitted: 05/01/2014 09:45
Reported: 05/12/2014 13:15

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

13MW7 SDG#: RAE19-08

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**	**ug/l**	**ug/l**	
11996	Carbon Tetrachloride	56-23-5	N.D.	0.1	1.0	1
11996	Chloroform	67-66-3	N.D.	0.1	0.5	1
11996	Chloromethane	74-87-3	N.D.	0.2	0.5	1
11996	Methylene Chloride	75-09-2	N.D.	0.2	1.0	1
GC Miscellaneous	**RSKSOP-175 modified**		**ug/l**	**ug/l**	**ug/l**	
07105	Methane	74-82-8	N.D.	3.0	5.0	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	RAAP HWMU-13 - 4 compounds	SW-846 8260C	1	H141221AA	05/02/2014 15:37	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030C	1	H141221AA	05/02/2014 15:37	Kerri E Legerlotz	1
07105	Volatile Headspace Hydrocarbon	RSKSOP-175 modified	1	141280022A	05/08/2014 20:44	Elizabeth J Marin	1

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Analysis Report

Sample Description: 13MW8 Grab Groundwater
April 2014 Semiannual GW Monitoring Event
RAAP - Radford, VA - HWMU13/Open Burning Ground

LL Sample # WW 7449008
LL Group # 1471177
Account # 11200

Project Name: RAAP - Radford, VA - HWMU13/Open Burning Ground

Collected: 04/29/2014 11:35 by KC

Submitted: 05/01/2014 09:45
Reported: 05/12/2014 13:15

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

13MW8 SDG#: RAE19-09

CAT No.	Analysis Name	CAS Number	As Received Result		As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	**ug/l**	
11996	Carbon Tetrachloride	56-23-5	0.5	J	0.1	1.0	1
11996	Chloroform	67-66-3	N.D.		0.1	0.5	1
11996	Chloromethane	74-87-3	N.D.		0.2	0.5	1
11996	Methylene Chloride	75-09-2	N.D.		0.2	1.0	1
GC Miscellaneous	**RSKSOP-175 modified**		**ug/l**		**ug/l**	**ug/l**	
07105	Methane	74-82-8	N.D.		3.0	5.0	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	RAAP HWMU-13 - 4 compounds	SW-846 8260C	1	H141221AA	05/02/2014 16:00	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030C	1	H141221AA	05/02/2014 16:00	Kerri E Legerlotz	1
07105	Volatile Headspace Hydrocarbon	RSKSOP-175 modified	1	141280022A	05/08/2014 21:01	Elizabeth J Marin	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: Trip_Blank_1 Water
April 2014 Semiannual GW Monitoring Event
RAAP - Radford, VA - HWMU13/Open Burning Ground

LL Sample # WW 7449009
LL Group # 1471177
Account # 11200

Project Name: RAAP - Radford, VA - HWMU13/Open Burning Ground

Collected: 04/29/2014

Submitted: 05/01/2014 09:45
Reported: 05/12/2014 13:15

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

13MTB SDG#: RAE19-10TB*

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**	**ug/l**	**ug/l**	
11996	Carbon Tetrachloride	56-23-5	N.D.	0.1	1.0	1
11996	Chloroform	67-66-3	N.D.	0.1	0.5	1
11996	Chloromethane	74-87-3	N.D.	0.2	0.5	1
11996	Methylene Chloride	75-09-2	N.D.	0.2	1.0	1
GC Miscellaneous	**RSKSOP-175 modified**		**ug/l**	**ug/l**	**ug/l**	
07105	Methane	74-82-8	N.D.	3.0	5.0	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	RAAP HWMU-13 - 4 compounds	SW-846 8260C	1	H141221AA	05/02/2014 12:21	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030C	1	H141221AA	05/02/2014 12:21	Kerri E Legerlotz	1
07105	Volatile Headspace Hydrocarbon	RSKSOP-175 modified	1	141280022A	05/08/2014 16:15	Elizabeth J Marin	1

*=This limit was used in the evaluation of the final result

Quality Control Summary

Client Name: Draper Aden Associates, Inc. Group Number: 1471177
Reported: 05/12/14 at 01:15 PM

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL**	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: H141221AA	Sample number(s): 7448998-7449001,7449003-7449009								
Carbon Tetrachloride	N.D.	0.1	1.0	ug/l	104		80-135		
Chloroform	N.D.	0.1	0.5	ug/l	100		80-120		
Chloromethane	N.D.	0.2	0.5	ug/l	93		55-120		
Methylene Chloride	N.D.	0.2	1.0	ug/l	99		80-120		
Batch number: 141280022A	Sample number(s): 7448998-7448999,7449001-7449009								
Methane	N.D.	3.0	5.0	ug/l	112		80-120		

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: H141221AA	Sample number(s): 7448998-7449001,7449003-7449009 UNSPK: 7449003								
Carbon Tetrachloride	120	119	81-148	1	30				
Chloroform	110	108	86-136	1	30				
Chloromethane	108	103	49-135	4	30				
Methylene Chloride	106	102	77-135	3	30				
Batch number: 141280022A	Sample number(s): 7448998-7448999,7449001-7449009 UNSPK: 7449003								
Methane	99	102	35-157	3	20				

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: 8260C (25 ml)
Batch number: H141221AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
7448998	105	103	98	98
7448999	105	107	97	98
7449000	107	106	97	98
7449001	107	105	99	99

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Draper Aden Associates, Inc. Group Number: 1471177
Reported: 05/12/14 at 01:15 PM

Surrogate Quality Control

7449003	106	101	98	100
7449004	105	104	98	101
7449005	104	104	98	101
7449006	106	105	97	99
7449007	105	107	97	99
7449008	107	109	96	98
7449009	105	106	98	99
Blank	104	107	97	99
LCS	104	103	97	100
MS	105	104	98	101
MSD	104	104	98	101
Limits:	77-114	74-113	77-110	78-110

Analysis Name: Volatile Headspace Hydrocarbon
Batch number: 141280022A

	Propene
7448998	69
7448999	84
7449001	81
7449002	82
7449003	76
7449004	82
7449005	84
7449006	78
7449007	79
7449008	84
7449009	94
Blank	101
LCS	105
MS	82
MSD	84
Limits:	42-131

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

acct# 11200 Gp# 1471177 sample# 7448998-9009

CHAIN OF CUSTODY RECORD

Laboratory: Eurofin Lancaster Laboratories Environmental LLC, 2425 New Holland Pike, Lancaster, PA, 17605-2425/ Barb Weyandt, Manager/ (717) 656-2300 x 1576

Client:	Draper Aden Associates	**Consultant:**	Draper Aden Associates	**Sample Site:**	RAAP, Radford, Virginia
Attn:	0	**Attn:**	Janet C. Frazier	**Location:**	Open Burning Ground (OBG)/HWMU13
Address:	0	**Address:**	2206 South Main Street	**Event:**	April 2014 Semiannual GW Monitoring Event
	0		Blacksburg, Virginia 24060	**DAA JN:**	B03204-12
Phone:	0	**Phone:**	(540) 552-0444	**Lab JN:**	
Fax:	0	**Fax:**	(540) 552-0291		
Fax:	0				

Project Specific (PS) or Batch (B) QC:
Sample Collection for Project Complete? *YES*
Carrier: UPS: 1Z-75Y-02X-YO-4027-9144
Tracking Number:

Box 1: Matrix
SW Surface Water; GW Groundwater; L Leachate; S Soil; T Trip Blank; E Equipment Blank; P Product; O Other

Box 2: Preservative
A HCl; B HNO_3; C H_2SO_4; D $Na_2S_2O_3$; E NaOH; F ZnAc; G Other (Specify); H None

Box 3: Filtered/Unfiltered
F Filtered; U Unfiltered

Box 4: Sample Type
G Grab; C Composite

Box 5: Sample Container Type
P Plastic; V VOA; AG Amber Glass; CG Clear Glass

Invoice
Copy to Consultant: *YES*
Bill: *CLIENT* *OTHER*
Preserved and shipped on Ice: *YES*

Box 4 - Sample Type					G	G	G							
Box 3 - Filtered/Unfiltered					U	U	F							
Required pH of Sample					<2	<2	<2							
Box 2 - Preservative					A	A	B							
Box 5 - Sample Container Type					3-40 ml V	2-40mLV	1-500 ML p							
Sample ID	**Date: 2014**	**Time**	**Box 1: Matrix**	**Number of Bottles**	**8260C - 25 ml Purge (See general notes comment 3)**	**RSK 175/8015M - Methane**	**ICP 6010C/(Metals-Dissolved) For Iron & Manganese ONLY**							
13MW2	4/29	1605	GW	5	X	X								
13MW3	4/29	1035	GW	6	X	X	X							
13MWDUP2		1040	GW	3	X									
13MW4		1235	GW	6	X	X	X							
13MWDUP		1245	GW	3		X	X							
13MW5		1330	GW	18	X	X	X							USE FOR QC
13MW6		1420	GW	6	X	X	X							
13MW7		1515	GW	6	X	X	X							
13MW8		1135	GW	3	X	X	X							
Trip Blank 1	4/29		TB	5	X	X								
~~**Trip Blank 2**~~			~~TB~~	~~5~~	~~X~~	~~X~~								1 - trip blank per day. Delete if not required.

GENERAL NOTES:
1. **Level 1 deliverable with EDD and pdf.**
2. **REPORT DL/QL and estimated results.**
3. **8260C target analytes: carbon tetrachloride, chloroform, methylene chloride, chloromethane**

Clients Special Instructions: Level 1 with edd.

Received by lab in Good Condition ✓ Yes ____ No Custody Seal Intact ✓ Yes ____ No Temperature upon arrival 0.5 Received on Ice ✓ Yes ____ No
Describe problems, if any:

Sampler Name (Print): KEN CODDINGTON	Date: 4/29/14	#1 Relinquished by (Signature):	Date: 4/30/14	#2 Relinquished by (Signature):	Date:	Sample Storage Time Requested:
Sampler Signature:	Time: 0700	Company Name: DAA	Time: 1700	Company Name:	Time:	
Sampler Name (Print): Tyler Emery	Date: 4/29/14	#1 Received by (Signature):	Date:	#2 Received by (Signature):	Date: 5.1.14	30 DYS ORG/6 MTHS INORG
Sampler Signature:	Time: 0700	Company Name:	Time:	Company Name: ELLE	Time: 945	

1/1 4/18/2014

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Sample Administration Receipt Documentation Log

Doc Log ID: 13335

Group Number(s): 147177

Client: Draper Aden Associates

Delivery and Receipt Information

Delivery Method:	UPS	Arrival Timestamp:	05/01/2014 9:45
Number of Packages:	1	Number of Projects:	1
State/Province of Origin:	VA		

Arrival Condition Summary

Shipping Container Sealed:	Yes	Total Trip Blank Qty:	4
Custody Seal Present:	Yes	Trip Blank Type:	HCL
Custody Seal Intact:	Yes	Air Quality Samples Present:	No
Samples Chilled:	Yes	Air Quality Flow Controllers Present:	N/A
Paperwork Enclosed:	Yes	Flow Controller Quantity:	0
Samples Intact:	Yes	Air Quality Returns:	N/A
Missing Samples:	No		
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		
Sample IDs on COC match Containers:	No		
Sample Date/Times match COC:	Yes		
VOA Vial Headspace ≥ 6mm:	No		
VOA IDs (≥ 6mm):	N/A		

Unpacked by Brandy Barclay (2299) at 11:37 on 05/01/2014

Samples Chilled Details

Thermometer Types: DT = Digital (Temp. Bottle) IR = Infrared (Surface Temp) All Temperatures in °C.

Cooler #	Thermometer ID	Corrected Temp	Therm. Type	Ice Type	Ice Present?	Ice Container	Samples Collected Same Day as Receipt?	Elevated Temp?
1	DT146	0.5	DT	Wet	Y	Bagged	N	N

Sample ID Discrepancy Details

Sample ID on COC	Sample ID on Label	Comments
13MW8	13MW7	Metals bottle (11:35)

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Lancaster, PA 17601-5994
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F | 717-656-2681
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Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	**BMQL**	Below Minimum Quantitation Level
N.D.	none detected	**MPN**	Most Probable Number
TNTC	Too Numerous To Count	**CP Units**	cobalt-chloroplatinate units
IU	International Units	**NTU**	nephelometric turbidity units
umhos/cm	micromhos/cm	**ng**	nanogram(s)
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
µg	microgram(s)	**mg**	milligram(s)
mL	milliliter(s)	**L**	liter(s)
m3	cubic meter(s)	**µL**	microliter(s)
		pg/L	picogram/liter

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Data Qualifiers:

C – result confirmed by reanalysis.

J - estimated value – The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers		Inorganic Qualifiers	
A	TIC is a possible aldol-condensation product	**B**	Value is <CRDL, but ≥IDL
B	Analyte was also detected in the blank	**E**	Estimated due to interference
C	Pesticide result confirmed by GC/MS	**M**	Duplicate injection precision not met
D	Compound quantitated on a diluted sample	**N**	Spike sample not within control limits
E	Concentration exceeds the calibration range of the instrument	**S**	Method of standard additions (MSA) used for calculation
N	Presumptive evidence of a compound (TICs only)	**U**	Compound was not detected
P	Concentration difference between primary and confirmation columns >25%	**W**	Post digestion spike out of control limits
U	Compound was not detected	*****	Duplicate analysis not within control limits
X,Y,Z	Defined in case narrative	**+**	Correlation coefficient for MSA <0.995

Analytical test results meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR part 136 Table II as “analyze immediately” are not performed within 15 minutes.

WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL AND (B) WHETHER EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.

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Type I Data Package

Abridged data package.
Full deliverable available

Prepared for:

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

Project: RAAP - Radford, VA - HWMU13/Open Burning Ground
Groundwater Samples
Collected on 04/29/14

SDG# RAE20

GROUP	SAMPLE NUMBERS
1471179	7449024-7449033

PA Cert. # 36-00037
NY Cert. # 10670
NJ Cert. # PA011
NC Cert. # 521
TX Cert. # T104704194-13-10
AZ Cert. # AZ0780

Through our technical processes and second person review of data, we have established that our data/deliverables are in compliance with the methods and project requirements unless otherwise noted or previously resolved with the client.

Authorized by: Dana M Kauffman **Date: 05/13/2014**

Dana M. Kauffman
Manager

Any questions or concerns you might have regarding this data package should be directed to your client representative, Barbara Weyandt at (717) 556-7264.

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Sample Reference List for SDG Number RAE20
with a Data Package Type of I

11200 - Draper Aden Associates, Inc.

Project: RAAP - Radford, VA - HWMU13/Open Burning Ground

Lab Sample Number	Lab Sample Code	Client Sample Description
7449024	13MF3	13MW3 Grab Groundwater April 2014 Semiannual GW Monitoring Event
7449025	13MF4	13MW4 Grab Groundwater April 2014 Semiannual GW Monitoring Event
7449026	13FFD	13MWDUP Grab Groundwater April 2014 Semiannual GW Monitoring Event
7449027	13MF5	13MW5 Grab Groundwater April 2014 Semiannual GW Monitoring Event
7449028	13MF5	13MW5 MS Grab Groundwater April 2014 Semiannual GW Monitoring Event
7449029	13MF5	13MW5 MSD Grab Groundwater April 2014 Semiannual GW Monitoring Event
7449030	13MF5	13MW5 DUP Grab Groundwater April 2014 Semiannual GW Monitoring Event
7449031	13MF6	13MW6 Grab Groundwater April 2014 Semiannual GW Monitoring Event
7449032	13MF7	13MW7 Grab Groundwater April 2014 Semiannual GW Monitoring Event
7449033	13MF8	13MW8 Grab Groundwater April 2014 Semiannual GW Monitoring Event

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Sample pH Log

SDG: RAE20

LLI Sample Number	Bottle Code	Actual pH	Exp. pH	pH Check Code	Adj. pH	Adjusted Date	Adjusted Time	Preservative Added	Preservative Lot #	LLI Supplied Bottle?	Sulfide Present?	Corrective Substance	CS Lot #	Res. Cl. Present?	Corrective Substance	CS Lot #
7449024	008A	<2	<2	PK	NA	NA	NA	NA	NA	Y	NA	NA	NA	NA	NA	NA
7449025	008A	<2	<2	PK	NA	NA	NA	NA	NA	Y	NA	NA	NA	NA	NA	NA
7449026	008A	<2	<2	PK	NA	NA	NA	NA	NA	Y	NA	NA	NA	NA	NA	NA
7449027	008A	<2	<2	PK	NA	NA	NA	NA	NA	Y	NA	NA	NA	NA	NA	NA
7449028	008A	<2	<2	PK	NA	NA	NA	NA	NA	Y	NA	NA	NA	NA	NA	NA
7449029	008A	<2	<2	PK	NA	NA	NA	NA	NA	Y	NA	NA	NA	NA	NA	NA
7449031	008A	<2	<2	PK	NA	NA	NA	NA	NA	Y	NA	NA	NA	NA	NA	NA
7449032	008A	<2	<2	PK	NA	NA	NA	NA	NA	Y	NA	NA	NA	NA	NA	NA
7449033	008A	<2	<2	PK	NA	NA	NA	NA	NA	Y	NA	NA	NA	NA	NA	NA

Check Code Key
PK = Original container checked - pH is within the correct range. (No preservative was added)
PA = Original container checked - pH adjusted to correct range. (Preservative was added)
PV = Volatile container checked
PC = pH checked (unpreserved container)
SPK = Subsampled from an original container. Original container checked - pH is within correct range
SPA = Subsampled from an original container. Subsample container checked - pH adjusted to correct range.
SPC = Subsampled from an original container. pH checked (unpreserved container).
SUP = Subsampled from original container. Unable to be preserved due to the matrix of the sample.
UP = Unable to preserve due to matrix of the sample.
NA = Not applicable

Method Summary/Reference for SDG# RAE20_I

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10635 WW SW846(IV) ICP Dig (tot rec)

The sample is digested with nitric acid and hydrochloric acid.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 3005A, July 1992

01754 Iron
07058 Manganese

The solution resulting from the metals digestion is analyzed by Trace ICP.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 6010C, February 2007.

Analysis Reports / Field Chain of Custody

ANALYTICAL RESULTS

Prepared by:	Prepared for:
Eurofins Lancaster Laboratories Environmental 2425 New Holland Pike Lancaster, PA 17601	Draper Aden Associates, Inc. 2206 South Main Street Blacksburg VA 24060

May 12, 2014

Project: RAAP - Radford, VA - HWMU13/Open Burning Ground

Submittal Date: 05/01/2014
Group Number: 1471179
SDG: RAE20
State of Sample Origin: VA

Client Sample Description	Lancaster Labs (LL) #
13MW3 Grab Groundwater	7449024
13MW4 Grab Groundwater	7449025
13MWDUP Grab Groundwater	7449026
13MW5 Grab Groundwater	7449027
13MW5 MS Grab Groundwater	7449028
13MW5 MSD Grab Groundwater	7449029
13MW5 DUP Grab Groundwater	7449030
13MW6 Grab Groundwater	7449031
13MW7 Grab Groundwater	7449032
13MW8 Grab Groundwater	7449033

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

ELECTRONIC COPY TO Draper Aden Associates, Inc. Attn: Janet Frazier

Respectfully Submitted,

Barbara Weyandt

Barbara A. Weyandt
Specialist

(717) 556-7264

Project Name: RAAP - Radford, VA - HWMU13/Open Burning Ground
LLI Group #: 1471179

General Comments:

See the Laboratory Sample Analysis Record section of the Analysis Report for the method references.

All QC met criteria unless otherwise noted in an Analysis Specific Comment below. Refer to the QC Summary for specific values and acceptance criteria.

Project specific QC samples are included in this data set

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Surrogate recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in an Analysis Specific Comment below.

The samples were received at the appropriate temperature and in accordance with the chain of custody unless otherwise noted.

Analysis Specific Comments:

No additional comments are necessary.

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Analysis Report

Sample Description: 13MW3 Grab Groundwater
April 2014 Semiannual GW Monitoring Event
RAAP - Radford, VA - HWMU13/Open Burning Ground

LL Sample # WW 7449024
LL Group # 1471179
Account # 11200

Project Name: RAAP - Radford, VA - HWMU13/Open Burning Ground

Collected: 04/29/2014 10:35 by KC

Submitted: 05/01/2014 09:45
Reported: 05/12/2014 12:16

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

13MF3 SDG#: RAE20-01

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		**ug/l**	**ug/l**	**ug/l**	
01754	Iron	7439-89-6	N.D.	43.0	400	1
07058	Manganese	7439-96-5	N.D.	0.83	10.0	1

General Sample Comments

This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	141280635002	05/09/2014 14:56	Katlin N Cataldi	1
07058	Manganese	SW-846 6010C	1	141280635002	05/09/2014 14:56	Katlin N Cataldi	1
10635	WW SW846(IV) ICP Dig (tot rec)	SW-846 3005A	1	141280635002	05/08/2014 23:45	Annamaria Kuhns	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: 13MW4 Grab Groundwater
April 2014 Semiannual GW Monitoring Event
RAAP - Radford, VA - HWMU13/Open Burning Ground

LL Sample # WW 7449025
LL Group # 1471179
Account # 11200

Project Name: RAAP - Radford, VA - HWMU13/Open Burning Ground

Collected: 04/29/2014 12:35 by KC

Submitted: 05/01/2014 09:45
Reported: 05/12/2014 12:16

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

13MF4 SDG#: RAE20-02

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		ug/l	ug/l	ug/l	
01754	Iron	7439-89-6	N.D.	43.0	400	1
07058	Manganese	7439-96-5	N.D.	0.83	10.0	1

General Sample Comments

This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	141280635002	05/09/2014 15:00	Katlin N Cataldi	1
07058	Manganese	SW-846 6010C	1	141280635002	05/09/2014 15:00	Katlin N Cataldi	1
10635	WW SW846(IV) ICP Dig (tot rec)	SW-846 3005A	1	141280635002	05/08/2014 23:45	Annamaria Kuhns	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: 13MWDUP Grab Groundwater
April 2014 Semiannual GW Monitoring Event
RAAP - Radford, VA - HWMU13/Open Burning Ground

LL Sample # WW 7449026
LL Group # 1471179
Account # 11200

Project Name: RAAP - Radford, VA - HWMU13/Open Burning Ground

Collected: 04/29/2014 12:45 by KC

Submitted: 05/01/2014 09:45
Reported: 05/12/2014 12:16

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

13FFD SDG#: RAE20-03FD

CAT No.	Analysis Name	CAS Number	As Received Result		As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		ug/l		ug/l	ug/l	
01754	Iron	7439-89-6	N.D.		43.0	400	1
07058	Manganese	7439-96-5	0.92	J	0.83	10.0	1

General Sample Comments

This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	141280635002	05/09/2014 15:11	Katlin N Cataldi	1
07058	Manganese	SW-846 6010C	1	141280635002	05/09/2014 15:11	Katlin N Cataldi	1
10635	WW SW846(IV) ICP Dig (tot rec)	SW-846 3005A	1	141280635002	05/08/2014 23:45	Annamaria Kuhns	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: 13MW5 Grab Groundwater
April 2014 Semiannual GW Monitoring Event
RAAP - Radford, VA - HWMU13/Open Burning Ground

LL Sample # WW 7449027
LL Group # 1471179
Account # 11200

Project Name: RAAP - Radford, VA - HWMU13/Open Burning Ground

Collected: 04/29/2014 13:30 by KC

Submitted: 05/01/2014 09:45
Reported: 05/12/2014 12:16

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

13MF5 SDG#: RAE20-04BKG

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		**ug/l**	**ug/l**	**ug/l**	
01754	Iron	7439-89-6	N.D.	43.0	400	1
07058	Manganese	7439-96-5	N.D.	0.83	10.0	1

General Sample Comments

This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	141280635002	05/09/2014 14:32	Katlin N Cataldi	1
07058	Manganese	SW-846 6010C	1	141280635002	05/09/2014 14:32	Katlin N Cataldi	1
10635	WW SW846(IV) ICP Dig (tot rec)	SW-846 3005A	1	141280635002	05/08/2014 23:45	Annamaria Kuhns	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: 13MW5 MS Grab Groundwater
April 2014 Semiannual GW Monitoring Event
RAAP - Radford, VA - HWMU13/Open Burning Ground

LL Sample # WW 7449028
LL Group # 1471179
Account # 11200

Project Name: RAAP - Radford, VA - HWMU13/Open Burning Ground

Collected: 04/29/2014 13:30 by KC

Submitted: 05/01/2014 09:45
Reported: 05/12/2014 12:16

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

13MF5 SDG#: RAE20-04MS

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		**ug/l**	**ug/l**	**ug/l**	
01754	Iron	7439-89-6	1,040	43.0	400	1
07058	Manganese	7439-96-5	548	0.83	10.0	1

General Sample Comments

This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	141280635002	05/09/2014 14:44	Katlin N Cataldi	1
07058	Manganese	SW-846 6010C	1	141280635002	05/09/2014 14:44	Katlin N Cataldi	1
10635	WW SW846(IV) ICP Dig (tot rec)	SW-846 3005A	1	141280635002	05/08/2014 23:45	Annamaria Kuhns	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: 13MW5 MSD Grab Groundwater
April 2014 Semiannual GW Monitoring Event
RAAP - Radford, VA - HWMU13/Open Burning Ground

LL Sample # WW 7449029
LL Group # 1471179
Account # 11200

Project Name: RAAP - Radford, VA - HWMU13/Open Burning Ground

Collected: 04/29/2014 13:30 by KC

Submitted: 05/01/2014 09:45
Reported: 05/12/2014 12:16

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

13MF5 SDG#: RAE20-04MSD

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		**ug/l**	**ug/l**	**ug/l**	
01754	Iron	7439-89-6	1,030	43.0	400	1
07058	Manganese	7439-96-5	521	0.83	10.0	1

General Sample Comments

This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	141280635002	05/09/2014 14:48	Katlin N Cataldi	1
07058	Manganese	SW-846 6010C	1	141280635002	05/09/2014 14:48	Katlin N Cataldi	1
10635	WW SW846(IV) ICP Dig (tot rec)	SW-846 3005A	1	141280635002	05/08/2014 23:45	Annamaria Kuhns	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: 13MW5 DUP Grab Groundwater
April 2014 Semiannual GW Monitoring Event
RAAP - Radford, VA - HWMU13/Open Burning Ground

LL Sample # WW 7449030
LL Group # 1471179
Account # 11200

Project Name: RAAP - Radford, VA - HWMU13/Open Burning Ground

Collected: 04/29/2014 13:30 by KC

Submitted: 05/01/2014 09:45
Reported: 05/12/2014 12:16

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

13MF5 SDG#: RAE20-04DUP

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		**ug/l**	**ug/l**	**ug/l**	
01754	Iron	7439-89-6	N.D.	43.0	400	1
07058	Manganese	7439-96-5	N.D.	0.83	10.0	1

General Sample Comments

This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	141280635002	05/09/2014 14:40	Katlin N Cataldi	1
07058	Manganese	SW-846 6010C	1	141280635002	05/09/2014 14:40	Katlin N Cataldi	1
10635	WW SW846(IV) ICP Dig (tot rec)	SW-846 3005A	1	141280635002	05/08/2014 23:45	Annamaria Kuhns	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: 13MW6 Grab Groundwater
April 2014 Semiannual GW Monitoring Event
RAAP - Radford, VA - HWMU13/Open Burning Ground

LL Sample # WW 7449031
LL Group # 1471179
Account # 11200

Project Name: RAAP - Radford, VA - HWMU13/Open Burning Ground

Collected: 04/29/2014 14:20 by KC

Submitted: 05/01/2014 09:45
Reported: 05/12/2014 12:16

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

13MF6 SDG#: RAE20-05

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		**ug/l**	**ug/l**	**ug/l**	
01754	Iron	7439-89-6	N.D.	43.0	400	1
07058	Manganese	7439-96-5	N.D.	0.83	10.0	1

General Sample Comments

This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	141280635002	05/09/2014 15:15	Katlin N Cataldi	1
07058	Manganese	SW-846 6010C	1	141280635002	05/09/2014 15:15	Katlin N Cataldi	1
10635	WW SW846(IV) ICP Dig (tot rec)	SW-846 3005A	1	141280635002	05/08/2014 23:45	Annamaria Kuhns	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: 13MW7 Grab Groundwater
April 2014 Semiannual GW Monitoring Event
RAAP - Radford, VA - HWMU13/Open Burning Ground

LL Sample # WW 7449032
LL Group # 1471179
Account # 11200

Project Name: RAAP - Radford, VA - HWMU13/Open Burning Ground

Collected: 04/29/2014 15:15 by KC

Submitted: 05/01/2014 09:45
Reported: 05/12/2014 12:16

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

13MF7 SDG#: RAE20-06

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		**ug/l**	**ug/l**	**ug/l**	
01754	Iron	7439-89-6	N.D.	43.0	400	1
07058	Manganese	7439-96-5	N.D.	0.83	10.0	1

General Sample Comments

This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	141280635002	05/09/2014 15:19	Katlin N Cataldi	1
07058	Manganese	SW-846 6010C	1	141280635002	05/09/2014 15:19	Katlin N Cataldi	1
10635	WW SW846(IV) ICP Dig (tot rec)	SW-846 3005A	1	141280635002	05/08/2014 23:45	Annamaria Kuhns	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: 13MW8 Grab Groundwater
April 2014 Semiannual GW Monitoring Event
RAAP - Radford, VA - HWMU13/Open Burning Ground

LL Sample # WW 7449033
LL Group # 1471179
Account # 11200

Project Name: RAAP - Radford, VA - HWMU13/Open Burning Ground

Collected: 04/29/2014 11:35 by KC

Submitted: 05/01/2014 09:45
Reported: 05/12/2014 12:16

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

13MF8 SDG#: RAE20-07*

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		**ug/l**	**ug/l**	**ug/l**	
01754	Iron	7439-89-6	N.D.	43.0	400	1
07058	Manganese	7439-96-5	54.4	0.83	10.0	1

General Sample Comments

This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	141280635002	05/09/2014 15:23	Katlin N Cataldi	1
07058	Manganese	SW-846 6010C	1	141280635002	05/09/2014 15:23	Katlin N Cataldi	1
10635	WW SW846(IV) ICP Dig (tot rec)	SW-846 3005A	1	141280635002	05/08/2014 23:45	Annamaria Kuhns	1

*=This limit was used in the evaluation of the final result

Quality Control Summary

Client Name: Draper Aden Associates, Inc. Group Number: 1471179
Reported: 05/12/14 at 12:16 PM

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL**	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 141280635002	Sample number(s): 7449024-7449033								
Iron	N.D.	43.0	400	ug/l	103		90-112		
Manganese	N.D.	0.83	10.0	ug/l	107		90-110		

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 141280635002	Sample number(s): 7449024-7449033 UNSPK: 7449027 BKG: 7449027								
Iron	104	103	75-125	1	20	N.D.	N.D.	0 (1)	20
Manganese	110	104	75-125	5	20	N.D.	N.D.	0 (1)	20

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

acct#11200 Gp#1471179 Sample#7449024-33

CHAIN OF CUSTODY RECORD

Laboratory: Eurofin Lancaster Laboratories Environmental LLC, 2425 New Holland Pike, Lancaster, PA, 17605-2425/ Barb Weyandt, Manager/ (717) 656-2300 x 1576

Client:	Draper Aden Associates	Consultant:	Draper Aden Associates	Sample Site:	RAAP, Radford, Virginia
Attn:	0	Attn:	Janet C. Frazier	Location:	Open Burning Ground (OBG)/HWMU13
Address:	0 0	Address:	2206 South Main Street Blacksburg, Virginia 24060	Event:	April 2014 Semiannual GW Monitoring Event
Phone:	0	Phone:	(540) 552-0444	DAA JN:	B03204-12
Fax:	0	Fax:	(540) 552-0291	Lab JN:	
Fax:	0				

Project Specific (PS) or Batch (B) QC: Sample Collection for Project Complete? YES

Carrier: UPS: 12-75Y-03X-70-4027-9144

Tracking Number:

Box 1: Matrix
SW Surface Water; GW Groundwater; L Leachate; S Soil; T Trip Blank; E Equipment Blank; P Product; O Other

Box 2: Preservative
A HCl; B HNO_3; C H_2SO_4; D $Na_2S_2O_3$; E NaOH; F ZnAc; G Other (Specify); H None

Box 3: Filtered/Unfiltered
F Filtered; U Unfiltered

Box 4: Sample Type
G Grab; C Composite

Box 5: Sample Container Type
P Plastic; AG Amber Glass; V VOA; CG Clear Glass

Invoice
Copy to Consultant: YES
Bill: CLIENT OTHER
Preserved and shipped on Ice: YES

Box 4 - Sample Type					G	G	G							
Box 3 - Filtered/Unfiltered					U	U	F							
Required pH of Sample					<2	<2	<2							
Box 2 - Preservative					A	A	B							
Box 5 - Sample Container Type					3-40 ml V	2-40mLV	1-500 ML p							
Sample ID	Date: 2014	Time	Box 1: Matrix	Number of Bottles	8260C - 25 ml Purge (See general notes comment 3)	RSK 175/8015M - Methane	ICP 6010C/(Metals-Dissolved) For Iron & Manganese ONLY							
13MW2	4/29	1605	GW	5	X	X								
13MW3	4/29	1035	GW	6	X	X	X							
13MWDUP2		1040	GW	3	X									
13MW4		1235	GW	6	X	X	X							
13MWDUP		1245	GW	3		X	X							
13MW5		1330	GW	18	X	X	X							USE FOR QC
13MW6		1420	GW	6	X	X	X							
13MW7		1515	GW	6	X	X	X							
13MW8		1135	GW	3	X	X	X							
Trip Blank 1	4/29		TB	5	X	X								
~~Trip Blank 2~~			~~TB~~	~~5~~	~~X~~	~~X~~								1 - trip blank per day. Delete if not required.

GENERAL NOTES:
1. Level 1 deliverable with EDD and pdf.
2. REPORT DL/QL and estimated results.
3. 8260C target analytes: carbon tetrachloride, chloroform, methylene chloride, chloromethane

Clients Special Instructions: Level 1 with edd.

Received by lab in Good Condition ✓ Yes ____ No Custody Seal Intact ✓ Yes ____ No Temperature upon arrival 0.5 Received on Ice ✓ Yes ____ No
Describe problems, if any:

Sampler Name (Print): KEN CODDINGTON	Date: 4/29/14	#1 Relinquished by (Signature):	Date: 4/30/14	#2 Relinquished by (Signature):	Date:	Sample Storage Time Requested:
Sampler Signature:	Time: 0700	Company Name: DAA	Time: 1700	Company Name:	Time:	
Sampler Name (Print): Tyler Emery	Date: 4/29/14	#1 Received by (Signature):	Date:	#2 Received by (Signature):	Date: 5.1.14	30 DYS ORG/6 MTHS INORG
Sampler Signature:	Time: 0700	Company Name:	Time:	Company Name: ELLE	Time: 945	

1/1 4/18/2014

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Sample Administration Receipt Documentation Log

Doc Log ID: 13335

Group Number(s): 1471179

Client: Draper Aden Associates

Delivery and Receipt Information

Delivery Method:	UPS	Arrival Timestamp:	05/01/2014 9:45
Number of Packages:	1	Number of Projects:	1
State/Province of Origin:	VA		

Arrival Condition Summary

Shipping Container Sealed:	Yes	Total Trip Blank Qty:	4
Custody Seal Present:	Yes	Trip Blank Type:	HCL
Custody Seal Intact:	Yes	Air Quality Samples Present:	No
Samples Chilled:	Yes	Air Quality Flow Controllers Present:	N/A
Paperwork Enclosed:	Yes	Flow Controller Quantity:	0
Samples Intact:	Yes	Air Quality Returns:	N/A
Missing Samples:	No		
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		
Sample IDs on COC match Containers:	No		
Sample Date/Times match COC:	Yes		
VOA Vial Headspace ≥ 6mm:	No		
VOA IDs (≥ 6mm):	N/A		

Unpacked by Brandy Barclay (2299) at 11:37 on 05/01/2014

Samples Chilled Details

Thermometer Types: DT = Digital (Temp. Bottle) IR = Infrared (Surface Temp) All Temperatures in °C.

Cooler #	Thermometer ID	Corrected Temp	Therm. Type	Ice Type	Ice Present?	Ice Container	Samples Collected Same Day as Receipt?	Elevated Temp?
1	DT146	0.5	DT	Wet	Y	Bagged	N	N

Sample ID Discrepancy Details

Sample ID on COC	Sample ID on Label	Comments
13MW8	13MW7	Metals bottle (11:35)

2425 New Holland Pike
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Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	**BMQL**	Below Minimum Quantitation Level
N.D.	none detected	**MPN**	Most Probable Number
TNTC	Too Numerous To Count	**CP Units**	cobalt-chloroplatinate units
IU	International Units	**NTU**	nephelometric turbidity units
umhos/cm	micromhos/cm	**ng**	nanogram(s)
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
µg	microgram(s)	**mg**	milligram(s)
mL	milliliter(s)	**L**	liter(s)
m3	cubic meter(s)	**µL**	microliter(s)
		pg/L	picogram/liter

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Data Qualifiers:

C – result confirmed by reanalysis.

J - estimated value – The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers		Inorganic Qualifiers	
A	TIC is a possible aldol-condensation product	**B**	Value is <CRDL, but ≥IDL
B	Analyte was also detected in the blank	**E**	Estimated due to interference
C	Pesticide result confirmed by GC/MS	**M**	Duplicate injection precision not met
D	Compound quantitated on a diluted sample	**N**	Spike sample not within control limits
E	Concentration exceeds the calibration range of the instrument	**S**	Method of standard additions (MSA) used for calculation
N	Presumptive evidence of a compound (TICs only)	**U**	Compound was not detected
P	Concentration difference between primary and confirmation columns >25%	**W**	Post digestion spike out of control limits
U	Compound was not detected	*****	Duplicate analysis not within control limits
X,Y,Z	Defined in case narrative	**+**	Correlation coefficient for MSA <0.995

Analytical test results meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR part 136 Table II as “analyze immediately” are not performed within 15 minutes.

WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL AND (B) WHETHER EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.

Microbac

Laboratory Report Number: L14050062

Abridged data package.
Full deliverable available

Janet Frazier
Draper Aden Associates
2206 South Main Street
Blacksburg, VA 24060

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories. Review and compilation of your report was completed by Microbac's Ohio Valley Division (OVD). If you have any questions, comments, or require further assistance regarding this report, please contact your service representative listed below.

Laboratory Contact:
Michelle Taylor – Client Services Specialist
(740) 373-4071
Michelle.Taylor@microbac.com

I certify that all test results meet all of the requirements of the accrediting authority listed below. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories. The reported results are related only to the samples analyzed as received.

This report was certified on May 13 2014

David E. Vandenberg

David Vandenberg – Managing Director

State of Origin: VA
Accrediting Authority: N/A ID:N/A
QAPP: Microbac OVD

Microbac

Lab Report #: L14050062
Lab Project #: 3070.001
Project Name: Draper Aden Associates
Lab Contact: Michelle Taylor

Record of Sample Receipt and Inspection

Comments/Discrepancies

This is the record of the shipment conditions and the inspection records for the samples received and reported as a sample delivery group (SDG). All of the samples were inspected and observed to conform to our receipt policies, except as noted below.

There were no discrepancies.

Discrepancy	Resolution

Coolers

Cooler #	Temperature Gun	Temperature	COC #	Airbill #	Temp Required?
0019157	I	0.0		1Z2373010195697256	X

Inspection Checklist

#	Question	Result
1	Were shipping coolers sealed?	Yes
2	Were custody seals intact?	Yes
3	Were cooler temperatures in range of 0-6?	Yes
4	Was ice present?	Yes
5	Were COC's received/information complete/signed and dated?	Yes
6	Were sample containers intact and match COC?	Yes
7	Were sample labels intact and match COC?	Yes
8	Were the correct containers and volumes received?	Yes
9	Were samples received within EPA hold times?	Yes
10	Were correct preservatives used? (water only)	Yes
11	Were pH ranges acceptable? (voa's excluded)	Yes
12	Were VOA samples free of headspace (less than 6mm)?	NA

Microbac Laboratories ● Ohio Valley Division
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www.microbac.com

Microbac

Lab Report #: L14050062
Lab Project #: 3070.001
Project Name: Draper Aden Associates
Lab Contact: Michelle Taylor

Samples Received

Client ID	Laboratory ID	Date Collected	Date Received
13MW2	L14050062-01	04/29/2014 16:05	05/01/2014 10:13
13MW3	L14050062-02	04/29/2014 10:35	05/01/2014 10:13
13MW3	L14050062-03	04/29/2014 10:35	05/01/2014 10:13
13MW4	L14050062-04	04/29/2014 12:35	05/01/2014 10:13
13MW4	L14050062-05	04/29/2014 12:35	05/01/2014 10:13
13MWDUP	L14050062-06	04/29/2014 12:45	05/01/2014 10:13
13MWDUP	L14050062-07	04/29/2014 12:45	05/01/2014 10:13
13MW5	L14050062-08	04/29/2014 13:30	05/01/2014 10:13
13MW5	L14050062-09	04/29/2014 13:30	05/01/2014 10:13
13MW5	L14050062-10	04/29/2014 13:30	05/01/2014 10:13
13MW5	L14050062-11	04/29/2014 13:30	05/01/2014 10:13
13MW5	L14050062-12	04/29/2014 13:30	05/01/2014 10:13
13MW5	L14050062-13	04/29/2014 13:30	05/01/2014 10:13
13MW6	L14050062-14	04/29/2014 14:20	05/01/2014 10:13
13MW6	L14050062-15	04/29/2014 14:20	05/01/2014 10:13
13MW7	L14050062-16	04/29/2014 15:15	05/01/2014 10:13
13MW7	L14050062-17	04/29/2014 15:15	05/01/2014 10:13
13MW8	L14050062-18	04/29/2014 11:35	05/01/2014 10:13
13MW8	L14050062-19	04/29/2014 11:35	05/01/2014 10:13

Microbac REPORT L14050062
PREPARED FOR Draper Aden Associates
WORK ID:

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1.0 Summary Data

1.1 Narratives

Login Number: L14050062
Department: General Chromatography
Analyst: John W. Richards Jr.

METHOD

Analysis SW-846 6850

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: For all compounds that yielded a %RSD greater than 15%, linear or higher order equations were applied. All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Continuing Calibration and Tune: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes: The parent sample to the MSD has an analyte concentration greater than that of the spiking solution.

Sample #	Analyte	Date	Result	Lower	Upper	Type
L14050062-12	Perchlorate	2014-05-06 16:47:14	60.0	80	120	Recovery

SAMPLES

Samples: Samples 04 and 06 were analyzed at dilutions based on historical results.

Internal Standards: All acceptance criteria were met.

Manual Integration Reason Codes

Reason #1: Data System Fails to Select Correct Peak In some cases the chromatography system selects and integrates the 'wrong peak'. In this case the analyst must correct the selection and force the system to integrate the proper peak. Other times the system may miss the peak completely.

Reason #2: Data System Splits the Peak Incorrectly or Integrates a False Peak as a Rider Peak This phenomena is common at low concentrations where the signal:noise ratio is low. A single compound (peak) is incorrectly split into multiple peaks or integrated as a main peak with one or more rider peaks resulting in low area counts for the target compound.

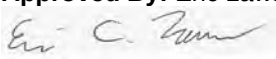
Reason #3: Improperly Integrated Isomers and/or coeluting compounds. This system often fails to distinguish coeluting compounds and or isomers. The integration areas and concentrations are wrong, and they must be corrected by manual integration. Prime examples are benzo(k)fluoranthene and benzo(b)fluoranthene which are often unresolved and integrated improperly when both are present at low concentrations in standards or samples.

Reason #4: System Establishes Incorrect Baseline There are numerous situations in chromatography where the system establishes the baseline incorrectly. Some baseline errors will be obvious to the analyst and should be corrected via manual procedures.

Reason #5: Miscellaneous Other situations involving integration errors may require in-depth review and technical judgment. These cases should be brought to the attention of the laboratory management. If the form of manual integration is not clearly covered by these four cases, then review and approval by the Laboratory Director or the QA/QC Supervisor will be required.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Narrative ID: 82470
Approved By: Eric Lawson



Login Number: L14050062
Department: Conventionals
Analyst: David Merckle

METHOD

Analysis Water: EPA 415.1/SM5310C/SW846 9060 (Total Organic Carbon)
Soil: Lloyd-Khan Methodology

HOLDING TIMES

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Duplicates: All acceptance criteria were met.

Matrix Spikes: Recoveries out of range were observed for the following analytes: Total Organic Carbon. Please see the applicable QC report for a detailed presentation of the failures.

Sample #	Analyte	Date	Result	Lower	Upper	Type
L14050062-10	Total Organic Carbon	2014-05-08 05:20:33	82.9	85	115	Recovery
L14050062-12	Total Organic Carbon	2014-05-08 06:02:09	134	85	115	Recovery

SAMPLES

Samples: All acceptance criteria were met.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Narrative ID: 82733
Approved By: Deanna Hesson

1.2 Certificate of Analysis

Certificate of Analysis

Sample #:	L14050062-01	**PrePrep Method:**	N/A	**Instrument:**	LCMS1
Client ID:	13MW2	**Prep Method:**	6850	**Prep Date:**	05/06/2014 13:30
Matrix:	Water	**Analytical Method:**	6850	**Cal Date:**	05/01/2014 20:27
Workgroup #:	WG474482	**Analyst:**	JWR	**Run Date:**	05/06/2014 14:53
Collect Date:	04/29/2014 16:05	**Dilution:**	1	**File ID:**	1LM.LM24719
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	RL	MDL
Perchlorate	14797-73-0	2.14		0.200	0.100

Sample #:	L14050062-02	**PrePrep Method:**	N/A	**Instrument:**	LCMS1
Client ID:	13MW3	**Prep Method:**	6850	**Prep Date:**	05/06/2014 13:30
Matrix:	Water	**Analytical Method:**	6850	**Cal Date:**	05/01/2014 20:27
Workgroup #:	WG474482	**Analyst:**	JWR	**Run Date:**	05/06/2014 15:12
Collect Date:	04/29/2014 10:35	**Dilution:**	1	**File ID:**	1LM.LM24720
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	RL	MDL
Perchlorate	14797-73-0	1.10		0.200	0.100

Sample #:	L14050062-02	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	13MW3	**Prep Method:**	9060A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	07/09/2013 14:51
Workgroup #:	WG474713	**Analyst:**	DCM	**Run Date:**	05/08/2014 00:28
Collect Date:	04/29/2014 10:35	**Dilution:**	1	**File ID:**	TC0507201A.040
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	RL	MDL
Total Organic Carbon	TOC	3.38		1.00	0.500
Total Organic Carbon Rep1		2.80		1.00	0.500
Total Organic Carbon Rep2		3.31		1.00	0.500
Total Organic Carbon Rep3		3.70		1.00	0.500
Total Organic Carbon Rep4		3.71		1.00	0.500

Sample #:	L14050062-03	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	13MW3	**Prep Method:**	9060A	**Prep Date:**	05/08/2014 01:11
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	07/09/2013 14:51
Workgroup #:	WG474713	**Analyst:**	DCM	**Run Date:**	05/08/2014 01:11
Collect Date:	04/29/2014 10:35	**Dilution:**	1	**File ID:**	TC0507201A.041
Sample Tag:	01	**Units:**	mg/L		

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Organic Carbon, Dissolved	TOC	2.65		1.00	0.500
Organic Carbon, Dissolved Rep1		2.37		1.00	0.500
Organic Carbon, Dissolved Rep2		2.31		1.00	0.500
Organic Carbon, Dissolved Rep3		2.70		1.00	0.500
Organic Carbon, Dissolved Rep4		3.21		1.00	0.500

Sample #:	L14050062-04	**PrePrep Method:**	N/A	**Instrument:**	LCMS1
Client ID:	13MW4	**Prep Method:**	6850	**Prep Date:**	05/06/2014 13:30
Matrix:	Water	**Analytical Method:**	6850	**Cal Date:**	05/01/2014 20:27
Workgroup #:	WG474482	**Analyst:**	JWR	**Run Date:**	05/06/2014 15:31
Collect Date:	04/29/2014 12:35	**Dilution:**	10	**File ID:**	1LM.LM24721
Sample Tag:	DL01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	RL	MDL
Perchlorate	14797-73-0	12.1		2.00	1.00

Sample #:	L14050062-04	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	13MW4	**Prep Method:**	9060A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	07/09/2013 14:51
Workgroup #:	WG474713	**Analyst:**	DCM	**Run Date:**	05/08/2014 01:53
Collect Date:	04/29/2014 12:35	**Dilution:**	1	**File ID:**	TC0507201A.042
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	RL	MDL
Total Organic Carbon	TOC	3.79		1.00	0.500
Total Organic Carbon Rep1		3.05		1.00	0.500
Total Organic Carbon Rep2		3.97		1.00	0.500
Total Organic Carbon Rep3		4.07		1.00	0.500
Total Organic Carbon Rep4		4.07		1.00	0.500

Sample #:	L14050062-05	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	13MW4	**Prep Method:**	9060A	**Prep Date:**	05/08/2014 02:35
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	07/09/2013 14:51
Workgroup #:	WG474713	**Analyst:**	DCM	**Run Date:**	05/08/2014 02:35
Collect Date:	04/29/2014 12:35	**Dilution:**	1	**File ID:**	TC0507201A.043
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	RL	MDL
Organic Carbon, Dissolved	TOC	2.45		1.00	0.500
Organic Carbon, Dissolved Rep1		2.35		1.00	0.500

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Organic Carbon, Dissolved Rep2		2.26		1.00	0.500
Organic Carbon, Dissolved Rep3		2.47		1.00	0.500
Organic Carbon, Dissolved Rep4		2.71		1.00	0.500

Sample #:	L14050062-06	**PrePrep Method:**	N/A	**Instrument:**	LCMS1
Client ID:	13MWDUP	**Prep Method:**	6850	**Prep Date:**	05/06/2014 13:30
Matrix:	Water	**Analytical Method:**	6850	**Cal Date:**	05/01/2014 20:27
Workgroup #:	WG474482	**Analyst:**	JWR	**Run Date:**	05/06/2014 15:50
Collect Date:	04/29/2014 12:45	**Dilution:**	10	**File ID:**	1LM.LM24722
Sample Tag:	DL01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	RL	MDL
Perchlorate	14797-73-0	12.5		2.00	1.00

Sample #:	L14050062-06	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	13MWDUP	**Prep Method:**	9060A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	07/09/2013 14:51
Workgroup #:	WG474713	**Analyst:**	DCM	**Run Date:**	05/08/2014 03:16
Collect Date:	04/29/2014 12:45	**Dilution:**	1	**File ID:**	TC0507201A.044
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	RL	MDL
Total Organic Carbon	TOC	2.02		1.00	0.500
Total Organic Carbon Rep1		1.73		1.00	0.500
Total Organic Carbon Rep2		1.96		1.00	0.500
Total Organic Carbon Rep3		2.18		1.00	0.500
Total Organic Carbon Rep4		2.22		1.00	0.500

Sample #:	L14050062-07	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	13MWDUP	**Prep Method:**	9060A	**Prep Date:**	05/08/2014 03:57
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	07/09/2013 14:51
Workgroup #:	WG474713	**Analyst:**	DCM	**Run Date:**	05/08/2014 03:57
Collect Date:	04/29/2014 12:45	**Dilution:**	1	**File ID:**	TC0507201A.045
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	RL	MDL
Organic Carbon, Dissolved	TOC	4.34		1.00	0.500
Organic Carbon, Dissolved Rep1		3.63		1.00	0.500
Organic Carbon, Dissolved Rep2		4.38		1.00	0.500
Organic Carbon, Dissolved Rep3		4.70		1.00	0.500

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Organic Carbon, Dissolved Rep4		4.67		1.00	0.500

Sample #:	L14050062-08	**PrePrep Method:**	N/A	**Instrument:**	LCMS1
Client ID:	13MW5	**Prep Method:**	6850	**Prep Date:**	05/06/2014 13:30
Matrix:	Water	**Analytical Method:**	6850	**Cal Date:**	05/01/2014 20:27
Workgroup #:	WG474482	**Analyst:**	JWR	**Run Date:**	05/06/2014 16:09
Collect Date:	04/29/2014 13:30	**Dilution:**	1	**File ID:**	1LM.LM24723
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	RL	MDL
Perchlorate	14797-73-0	2.48		0.200	0.100

Sample #:	L14050062-08	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	13MW5	**Prep Method:**	9060A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	07/09/2013 14:51
Workgroup #:	WG474713	**Analyst:**	DCM	**Run Date:**	05/08/2014 04:39
Collect Date:	04/29/2014 13:30	**Dilution:**	1	**File ID:**	TC0507201A.046
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	RL	MDL
Total Organic Carbon	TOC	2.08		1.00	0.500
Total Organic Carbon Rep1		2.06		1.00	0.500
Total Organic Carbon Rep2		1.75		1.00	0.500
Total Organic Carbon Rep3		2.23		1.00	0.500
Total Organic Carbon Rep4		2.28		1.00	0.500

Sample #:	L14050062-09	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	13MW5	**Prep Method:**	9060A	**Prep Date:**	05/08/2014 06:45
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	07/09/2013 14:51
Workgroup #:	WG474713	**Analyst:**	DCM	**Run Date:**	05/08/2014 06:45
Collect Date:	04/29/2014 13:30	**Dilution:**	1	**File ID:**	TC0507201A.049
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	RL	MDL
Organic Carbon, Dissolved	TOC	1.51		1.00	0.500
Organic Carbon, Dissolved Rep1		1.57		1.00	0.500
Organic Carbon, Dissolved Rep2		1.30		1.00	0.500
Organic Carbon, Dissolved Rep3		1.46		1.00	0.500
Organic Carbon, Dissolved Rep4		1.72		1.00	0.500

Certificate of Analysis

Sample #:	L14050062-10	**PrePrep Method:**	N/A	**Instrument:**	LCMS1
Client ID:	13MW5	**Prep Method:**	6850	**Prep Date:**	05/06/2014 13:30
Matrix:	Water	**Analytical Method:**	6850	**Cal Date:**	05/01/2014 20:27
Workgroup #:	WG474482	**Analyst:**	JWR	**Run Date:**	05/06/2014 16:28
Collect Date:	04/29/2014 13:30	**Dilution:**	1	**File ID:**	1LM.LM24724
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	RL	MDL
Perchlorate	14797-73-0	2.67		0.200	0.100

Sample #:	L14050062-10	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	13MW5	**Prep Method:**	9060A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	07/09/2013 14:51
Workgroup #:	WG474713	**Analyst:**	DCM	**Run Date:**	05/08/2014 05:20
Collect Date:	04/29/2014 13:30	**Dilution:**	1	**File ID:**	TC0507201A.047
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	RL	MDL
Total Organic Carbon	TOC	10.4		1.00	0.500
Total Organic Carbon Rep1		9.95		1.00	0.500
Total Organic Carbon Rep2		10.4		1.00	0.500
Total Organic Carbon Rep3		10.6		1.00	0.500
Total Organic Carbon Rep4		10.6		1.00	0.500

Sample #:	L14050062-11	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	13MW5	**Prep Method:**	9060A	**Prep Date:**	05/08/2014 07:52
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	07/09/2013 14:51
Workgroup #:	WG474713	**Analyst:**	DCM	**Run Date:**	05/08/2014 07:52
Collect Date:	04/29/2014 13:30	**Dilution:**	1	**File ID:**	TC0507201A.052
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	RL	MDL
Organic Carbon, Dissolved	TOC	11.8		1.00	0.500
Organic Carbon, Dissolved Rep1		11.8		1.00	0.500
Organic Carbon, Dissolved Rep2		11.9		1.00	0.500
Organic Carbon, Dissolved Rep3		11.7		1.00	0.500
Organic Carbon, Dissolved Rep4		11.8		1.00	0.500

Certificate of Analysis

Sample #:	L14050062-12	**PrePrep Method:**	N/A	**Instrument:**	LCMS1
Client ID:	13MW5	**Prep Method:**	6850	**Prep Date:**	05/06/2014 13:30
Matrix:	Water	**Analytical Method:**	6850	**Cal Date:**	05/01/2014 20:27
Workgroup #:	WG474482	**Analyst:**	JWR	**Run Date:**	05/06/2014 16:47
Collect Date:	04/29/2014 13:30	**Dilution:**	1	**File ID:**	1LM.LM24725
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	RL	MDL
Perchlorate	14797-73-0	2.60		0.200	0.100

Sample #:	L14050062-12	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	13MW5	**Prep Method:**	9060A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	07/09/2013 14:51
Workgroup #:	WG474713	**Analyst:**	DCM	**Run Date:**	05/08/2014 06:02
Collect Date:	04/29/2014 13:30	**Dilution:**	1	**File ID:**	TC0507201A.048
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	RL	MDL
Total Organic Carbon	TOC	15.5		1.00	0.500
Total Organic Carbon Rep1		15.5		1.00	0.500
Total Organic Carbon Rep2		15.6		1.00	0.500
Total Organic Carbon Rep3		15.4		1.00	0.500
Total Organic Carbon Rep4		15.6		1.00	0.500

Sample #:	L14050062-13	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	13MW5	**Prep Method:**	9060A	**Prep Date:**	05/08/2014 08:35
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	07/09/2013 14:51
Workgroup #:	WG474713	**Analyst:**	DCM	**Run Date:**	05/08/2014 08:35
Collect Date:	04/29/2014 13:30	**Dilution:**	1	**File ID:**	TC0507201A.053
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	RL	MDL
Organic Carbon, Dissolved	TOC	13.5		1.00	0.500
Organic Carbon, Dissolved Rep1		13.2		1.00	0.500
Organic Carbon, Dissolved Rep2		13.4		1.00	0.500
Organic Carbon, Dissolved Rep3		13.9		1.00	0.500
Organic Carbon, Dissolved Rep4		13.6		1.00	0.500

Certificate of Analysis

Sample #:	L14050062-14	**PrePrep Method:**	N/A	**Instrument:**	LCMS1
Client ID:	13MW6	**Prep Method:**	6850	**Prep Date:**	05/06/2014 13:30
Matrix:	Water	**Analytical Method:**	6850	**Cal Date:**	05/01/2014 20:27
Workgroup #:	WG474482	**Analyst:**	JWR	**Run Date:**	05/06/2014 18:02
Collect Date:	04/29/2014 14:20	**Dilution:**	1	**File ID:**	1LM.LM24729
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	RL	MDL
Perchlorate	14797-73-0	1.15		0.200	0.100

Sample #:	L14050062-14	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	13MW6	**Prep Method:**	9060A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	07/09/2013 14:51
Workgroup #:	WG474713	**Analyst:**	DCM	**Run Date:**	05/08/2014 09:16
Collect Date:	04/29/2014 14:20	**Dilution:**	1	**File ID:**	TC0507201A.054
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	RL	MDL
Total Organic Carbon	TOC	2.79		1.00	0.500
Total Organic Carbon Rep1		2.49		1.00	0.500
Total Organic Carbon Rep2		2.62		1.00	0.500
Total Organic Carbon Rep3		3.04		1.00	0.500
Total Organic Carbon Rep4		3.00		1.00	0.500

Sample #:	L14050062-15	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	13MW6	**Prep Method:**	9060A	**Prep Date:**	05/08/2014 09:58
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	07/09/2013 14:51
Workgroup #:	WG474713	**Analyst:**	DCM	**Run Date:**	05/08/2014 09:58
Collect Date:	04/29/2014 14:20	**Dilution:**	1	**File ID:**	TC0507201A.055
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	RL	MDL
Organic Carbon, Dissolved	TOC	1.78		1.00	0.500
Organic Carbon, Dissolved Rep1		1.49		1.00	0.500
Organic Carbon, Dissolved Rep2		1.85		1.00	0.500
Organic Carbon, Dissolved Rep3		1.85		1.00	0.500
Organic Carbon, Dissolved Rep4		1.95		1.00	0.500

Certificate of Analysis

Sample #:	L14050062-16	**PrePrep Method:**	N/A	**Instrument:**	LCMS1
Client ID:	13MW7	**Prep Method:**	6850	**Prep Date:**	05/06/2014 13:30
Matrix:	Water	**Analytical Method:**	6850	**Cal Date:**	05/01/2014 20:27
Workgroup #:	WG474482	**Analyst:**	JWR	**Run Date:**	05/06/2014 18:21
Collect Date:	04/29/2014 15:15	**Dilution:**	1	**File ID:**	1LM.LM24730
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	RL	MDL
Perchlorate	14797-73-0	1.18		0.200	0.100

Sample #:	L14050062-16	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	13MW7	**Prep Method:**	9060A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	07/09/2013 14:51
Workgroup #:	WG474713	**Analyst:**	DCM	**Run Date:**	05/08/2014 10:37
Collect Date:	04/29/2014 15:15	**Dilution:**	1	**File ID:**	TC0507201A.056
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	RL	MDL
Total Organic Carbon	TOC	1.57		1.00	0.500
Total Organic Carbon Rep1		1.45		1.00	0.500
Total Organic Carbon Rep2		1.54		1.00	0.500
Total Organic Carbon Rep3		1.66		1.00	0.500
Total Organic Carbon Rep4		1.64		1.00	0.500

Sample #:	L14050062-17	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	13MW7	**Prep Method:**	9060A	**Prep Date:**	05/08/2014 11:18
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	07/09/2013 14:51
Workgroup #:	WG474713	**Analyst:**	DCM	**Run Date:**	05/08/2014 11:18
Collect Date:	04/29/2014 15:15	**Dilution:**	1	**File ID:**	TC0507201A.057
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	RL	MDL
Organic Carbon, Dissolved	TOC	1.72		1.00	0.500
Organic Carbon, Dissolved Rep1		1.83		1.00	0.500
Organic Carbon, Dissolved Rep2		1.67		1.00	0.500
Organic Carbon, Dissolved Rep3		1.66		1.00	0.500
Organic Carbon, Dissolved Rep4		1.72		1.00	0.500

Certificate of Analysis

Sample #:	L14050062-18	**PrePrep Method:**	N/A	**Instrument:**	LCMS1
Client ID:	13MW8	**Prep Method:**	6850	**Prep Date:**	05/06/2014 13:30
Matrix:	Water	**Analytical Method:**	6850	**Cal Date:**	05/01/2014 20:27
Workgroup #:	WG474482	**Analyst:**	JWR	**Run Date:**	05/06/2014 18:40
Collect Date:	04/29/2014 11:35	**Dilution:**	1	**File ID:**	1LM.LM24731
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	RL	MDL
Perchlorate	14797-73-0	1.89		0.200	0.100

Sample #:	L14050062-18	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	13MW8	**Prep Method:**	9060A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	07/09/2013 14:51
Workgroup #:	WG474713	**Analyst:**	DCM	**Run Date:**	05/08/2014 11:58
Collect Date:	04/29/2014 11:35	**Dilution:**	1	**File ID:**	TC0507201A.058
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	RL	MDL
Total Organic Carbon	TOC	1.34		1.00	0.500
Total Organic Carbon Rep1		1.47		1.00	0.500
Total Organic Carbon Rep2		1.33		1.00	0.500
Total Organic Carbon Rep3		1.39		1.00	0.500
Total Organic Carbon Rep4		1.17		1.00	0.500

Sample #:	L14050062-19	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	13MW8	**Prep Method:**	9060A	**Prep Date:**	05/08/2014 12:39
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	07/09/2013 14:51
Workgroup #:	WG474713	**Analyst:**	DCM	**Run Date:**	05/08/2014 12:39
Collect Date:	04/29/2014 11:35	**Dilution:**	1	**File ID:**	TC0507201A.059
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	RL	MDL
Organic Carbon, Dissolved	TOC	6.41		1.00	0.500
Organic Carbon, Dissolved Rep1		6.50		1.00	0.500
Organic Carbon, Dissolved Rep2		6.42		1.00	0.500
Organic Carbon, Dissolved Rep3		6.48		1.00	0.500
Organic Carbon, Dissolved Rep4		6.24		1.00	0.500

2.0 Full Sample Data Package

2.1 General Chromatography Data

2.1.1 6850 LC/MS Data

2.1.1.1 Summary Data

Login Number: L14050062
Department: General Chromatography
Analyst: John W. Richards Jr.

METHOD

Analysis SW-846 6850

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: For all compounds that yielded a %RSD greater than 15%, linear or higher order equations were applied. All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Continuing Calibration and Tune: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes: The parent sample to the MSD has an analyte concentration greater than that of the spiking solution.

Sample #	Analyte	Date	Result	Lower	Upper	Type
L14050062-12	Perchlorate	2014-05-06 16:47:14	60.0	80	120	Recovery

SAMPLES

Samples: Samples 04 and 06 were analyzed at dilutions based on historical results.

Internal Standards: All acceptance criteria were met.

Manual Integration Reason Codes

Reason #1: Data System Fails to Select Correct Peak In some cases the chromatography system selects and integrates the 'wrong peak'. In this case the analyst must correct the selection and force the system to integrate the proper peak. Other times the system may miss the peak completely.

Reason #2: Data System Splits the Peak Incorrectly or Integrates a False Peak as a Rider Peak This phenomena is common at low concentrations where the signal:noise ratio is low. A single compound (peak) is incorrectly split into multiple peaks or integrated as a main peak with one or more rider peaks resulting in low area counts for the target compound.

Reason #3: Improperly Integrated Isomers and/or coeluting compounds. This system often fails to distinguish coeluting compounds and or isomers. The integration areas and concentrations are wrong, and they must be corrected by manual integration. Prime examples are benzo(k)fluoranthene and benzo(b)fluoranthene which are often unresolved and integrated improperly when both are present at low concentrations in standards or samples.

Reason #4: System Establishes Incorrect Baseline There are numerous situations in chromatography where the system establishes the baseline incorrectly. Some baseline errors will be obvious to the analyst and should be corrected via manual procedures.

Reason #5: Miscellaneous Other situations involving integration errors may require in-depth review and technical judgment. These cases should be brought to the attention of the laboratory management. If the form of manual integration is not clearly covered by these four cases, then review and approval by the Laboratory Director or the QA/QC Supervisor will be required.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Narrative ID: 82470
Approved By: Eric Lawson

Certificate of Analysis

Sample #:	L14050062-01	**PrePrep Method:**	N/A	**Instrument:**	LCMS1
Client ID:	13MW2	**Prep Method:**	6850	**Prep Date:**	05/06/2014 13:30
Matrix:	Water	**Analytical Method:**	6850	**Cal Date:**	05/01/2014 20:27
Workgroup #:	WG474482	**Analyst:**	JWR	**Run Date:**	05/06/2014 14:53
Collect Date:	04/29/2014 16:05	**Dilution:**	1	**File ID:**	1LM.LM24719
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	RL	MDL
Perchlorate	14797-73-0	2.14		0.200	0.100

Sample #:	L14050062-02	**PrePrep Method:**	N/A	**Instrument:**	LCMS1
Client ID:	13MW3	**Prep Method:**	6850	**Prep Date:**	05/06/2014 13:30
Matrix:	Water	**Analytical Method:**	6850	**Cal Date:**	05/01/2014 20:27
Workgroup #:	WG474482	**Analyst:**	JWR	**Run Date:**	05/06/2014 15:12
Collect Date:	04/29/2014 10:35	**Dilution:**	1	**File ID:**	1LM.LM24720
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	RL	MDL
Perchlorate	14797-73-0	1.10		0.200	0.100

Sample #:	L14050062-04	**PrePrep Method:**	N/A	**Instrument:**	LCMS1
Client ID:	13MW4	**Prep Method:**	6850	**Prep Date:**	05/06/2014 13:30
Matrix:	Water	**Analytical Method:**	6850	**Cal Date:**	05/01/2014 20:27
Workgroup #:	WG474482	**Analyst:**	JWR	**Run Date:**	05/06/2014 15:31
Collect Date:	04/29/2014 12:35	**Dilution:**	10	**File ID:**	1LM.LM24721
Sample Tag:	DL01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	RL	MDL
Perchlorate	14797-73-0	12.1		2.00	1.00

Sample #:	L14050062-06	**PrePrep Method:**	N/A	**Instrument:**	LCMS1
Client ID:	13MWDUP	**Prep Method:**	6850	**Prep Date:**	05/06/2014 13:30
Matrix:	Water	**Analytical Method:**	6850	**Cal Date:**	05/01/2014 20:27
Workgroup #:	WG474482	**Analyst:**	JWR	**Run Date:**	05/06/2014 15:50
Collect Date:	04/29/2014 12:45	**Dilution:**	10	**File ID:**	1LM.LM24722
Sample Tag:	DL01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	RL	MDL
Perchlorate	14797-73-0	12.5		2.00	1.00

Certificate of Analysis

Sample #:	L14050062-08	**PrePrep Method:**	N/A	**Instrument:**	LCMS1
Client ID:	13MW5	**Prep Method:**	6850	**Prep Date:**	05/06/2014 13:30
Matrix:	Water	**Analytical Method:**	6850	**Cal Date:**	05/01/2014 20:27
Workgroup #:	WG474482	**Analyst:**	JWR	**Run Date:**	05/06/2014 16:09
Collect Date:	04/29/2014 13:30	**Dilution:**	1	**File ID:**	1LM.LM24723
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	RL	MDL
Perchlorate	14797-73-0	2.48		0.200	0.100

Sample #:	L14050062-10	**PrePrep Method:**	N/A	**Instrument:**	LCMS1
Client ID:	13MW5	**Prep Method:**	6850	**Prep Date:**	05/06/2014 13:30
Matrix:	Water	**Analytical Method:**	6850	**Cal Date:**	05/01/2014 20:27
Workgroup #:	WG474482	**Analyst:**	JWR	**Run Date:**	05/06/2014 16:28
Collect Date:	04/29/2014 13:30	**Dilution:**	1	**File ID:**	1LM.LM24724
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	RL	MDL
Perchlorate	14797-73-0	2.67		0.200	0.100

Sample #:	L14050062-12	**PrePrep Method:**	N/A	**Instrument:**	LCMS1
Client ID:	13MW5	**Prep Method:**	6850	**Prep Date:**	05/06/2014 13:30
Matrix:	Water	**Analytical Method:**	6850	**Cal Date:**	05/01/2014 20:27
Workgroup #:	WG474482	**Analyst:**	JWR	**Run Date:**	05/06/2014 16:47
Collect Date:	04/29/2014 13:30	**Dilution:**	1	**File ID:**	1LM.LM24725
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	RL	MDL
Perchlorate	14797-73-0	2.60		0.200	0.100

Sample #:	L14050062-14	**PrePrep Method:**	N/A	**Instrument:**	LCMS1
Client ID:	13MW6	**Prep Method:**	6850	**Prep Date:**	05/06/2014 13:30
Matrix:	Water	**Analytical Method:**	6850	**Cal Date:**	05/01/2014 20:27
Workgroup #:	WG474482	**Analyst:**	JWR	**Run Date:**	05/06/2014 18:02
Collect Date:	04/29/2014 14:20	**Dilution:**	1	**File ID:**	1LM.LM24729
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	RL	MDL
Perchlorate	14797-73-0	1.15		0.200	0.100

Certificate of Analysis

Sample #:	L14050062-16	**PrePrep Method:**	N/A	**Instrument:**	LCMS1
Client ID:	13MW7	**Prep Method:**	6850	**Prep Date:**	05/06/2014 13:30
Matrix:	Water	**Analytical Method:**	6850	**Cal Date:**	05/01/2014 20:27
Workgroup #:	WG474482	**Analyst:**	JWR	**Run Date:**	05/06/2014 18:21
Collect Date:	04/29/2014 15:15	**Dilution:**	1	**File ID:**	1LM.LM24730
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	RL	MDL
Perchlorate	14797-73-0	1.18		0.200	0.100

Sample #:	L14050062-18	**PrePrep Method:**	N/A	**Instrument:**	LCMS1
Client ID:	13MW8	**Prep Method:**	6850	**Prep Date:**	05/06/2014 13:30
Matrix:	Water	**Analytical Method:**	6850	**Cal Date:**	05/01/2014 20:27
Workgroup #:	WG474482	**Analyst:**	JWR	**Run Date:**	05/06/2014 18:40
Collect Date:	04/29/2014 11:35	**Dilution:**	1	**File ID:**	1LM.LM24731
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	RL	MDL
Perchlorate	14797-73-0	1.89		0.200	0.100

2.1.1.2 QC Summary Data

Example Calculation 6850 - Perchlorate

Concentration from Linear Regression

Step 1: Retrieve Curve Data From Plot, y = mx + b

y = response ratio = response of analyte / response of internal standard (IS) = Rx/Ristd

x = amount ratio = concentration analyte/concentration internal standard (IS) = Cx / Cistd

m = slope from curve (1.45)

b = intercept from curve (-0.00242)

y = 1.45x + -0.00242

Step 2: Substitute the value for y

where y = 12600/226000 = 0.055752

Step 3: Solve for x

x = (y - b)/m = 0.0040119

Step 4: Solve for analyte concentration Cx

Cx = (Cis)(x) = (5 ug/L)(0.040119) = 0.200594 ug/L

Example Calculation - Water:

Slope from curve, m:	1.45
Intercept from curve, b:	-0.00242
Response of analyte, Rx:	12600
Response of Internal Standard , Ristd:	226000
Concentration of IS, Cistd (ug/L):	5.00
Response Ratio:	0.05575
Amount Ratio:	0.04012
Analyte Concentration, Cx (ug/L) :	0.200594

Example Calculation - Soil:

Analyte Concentration, Cx (ug/L):	0.20059
Amount of soil extracted (g):	5.00
Final volume of extract (mL):	50.00
Percent solids (Pct wt.)	100
Concentration in soil (ug/kg):	2.005938

Perchlorate Conductivity Check
(perchlorate1)

Conductivity Probe
Calibration Check: 1404 /1410 µs/cm

Working MCT Level: 10,000 µs/cm

Sample	Conductivity (µs/cm)	Pretreatment or Dilution Needed
WG474482-01 MCT	9,760	
-02 Blank	0.0	
-03 LCS	0.0	
L14050062-01	769	
-02	647	
-04	430	
-06	430	
-08 RS	626	
-10 MS	628	
-12 MSD	631	
-14	837	
-16	562	
-18	793	
L14050315-01	274	
-02	1,267	
L14050333-01	3,350	
L14050334-01	3,400	

Analyst: John Richards

Date/Time: 05/07/14 12:00

DCN#102432

Microbac Laboratories Inc.

Instrument Run Log

Instrument: LCMS1 Dataset: 050114_JWR.TXT
Analyst1: JWR Analyst2: NA
Method: 6850 SOP: HPLC06 Rev: 6

Maintenance Log ID: Syringe Filter Lot#: 130402254
Eluent ID#:

Column 1 ID: KP-RPPX250 Column 2 ID: NA

Workgroups: Analytical WG473910 (waters)

Internal STD: COA17210 Surrogate STD: NA Calibration STD STD63472 (05/01/2014)

CCV STD: STD63472 LCS STD: STD63472 MS/MSD STD: STD63472

Comments: ICAL WG473961 : Alternate Source STD63474
Samples L14041126-04 and L14041211(01-04) were analyzed at dilutions based on their historical results.
Sample L14041138-02 had no historical results. This sample was analyzed at a dilution based on its pre-run screen results.

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	1LM.LM24616	WG473961-01 CCB	1	1		05/01/14 18:15
2	1LM.LM24617	WG473961-02 STD (0.10ug/L)	1	1	STD63472	05/01/14 18:33
3	1LM.LM24618	WG473961-03 STD (0.20ug/L)	1	1	STD63472	05/01/14 18:52
4	1LM.LM24619	WG473961-04 STD (0.50ug/L)	1	1	STD63472	05/01/14 19:11
5	1LM.LM24620	WG473961-05 STD (1.00ug/L)	1	1	STD63472	05/01/14 19:30
6	1LM.LM24621	WG473961-06 STD (2.00ug/L)	1	1	STD63472	05/01/14 19:49
7	1LM.LM24622	WG473961-07 STD (5.00ug/L)	1	1	STD63472	05/01/14 20:08
8	1LM.LM24623	WG473961-08 STD (10.0ug/L)	1	1	STD63472	05/01/14 20:27
9	1LM.LM24624	WG473961-09 SSCV (1.00ug/L)	1	1	STD63474	05/01/14 20:46
10	1LM.LM24625	WG473913-01 CCB	1	1		05/01/14 21:05
11	1LM.LM24626	WG473913-02 CCV (1.0ug/L)	1	1	STD63472	05/01/14 21:24
12	1LM.LM24627	WG473910-07 MRL (0.2ug/L)	1	1	STD63472	05/01/14 21:43
13	1LM.LM24628	WG473910-01 MCT (0.2ug/L)	1	1	STD63472	05/01/14 22:02
14	1LM.LM24629	WG473910-02 BLANK	1	1		05/01/14 22:21
15	1LM.LM24630	WG473910-03 LCS (0.2ug/L)	1	1	STD63472	05/01/14 22:40
16	1LM.LM24631	L14041126-01 RS	1	1		05/01/14 22:59
17	1LM.LM24632	L14041126-02 MS	1	1	STD63472	05/01/14 23:18
18	1LM.LM24633	L14041126-03 MSD	1	1	STD63472	05/01/14 23:36
19	1LM.LM24634	L14041126-04 (5,000x)	1	5000		05/01/14 23:55
20	1LM.LM24635	L14041211-01 (10,000x)	1	10000		05/02/14 00:14
21	1LM.LM24636	L14041211-02 (10,000x)	1	10000		05/02/14 00:33
22	1LM.LM24637	L14041211-03 (10,000x)	1	10000		05/02/14 00:52
23	1LM.LM24638	WG473913-03 CCV (1.0ug/L)	1	1	STD63472	05/02/14 01:11
24	1LM.LM24639	WG473910-08 MRL (0.2ug/L)	1	1	STD63472	05/02/14 01:30
25	1LM.LM24640	WG473913-04 CCB	1	1		05/02/14 01:49
26	1LM.LM24641	L14041211-04 (10,000x)	1	10000		05/02/14 02:08
27	1LM.LM24642	L14041138-02 (10x)	1	10		05/02/14 02:27
28	1LM.LM24643	L14041138-04 (NR)	1	1		05/02/14 02:46
29	1LM.LM24644	L14041563-01	1	1		05/02/14 03:05
30	1LM.LM24645	L14041563-02	1	1		05/02/14 03:24
31	1LM.LM24646	L14041563-03	1	1		05/02/14 03:43
32	1LM.LM24647	L14041563-04	1	1		05/02/14 04:02

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Microbac Laboratories Inc.

Instrument Run Log

Instrument: LCMS1 Dataset: 050114_JWR.TXT
Analyst1: JWR Analyst2: NA
Method: 6850 SOP: HPLC06 Rev: 6

Maintenance Log ID: Syringe Filter Lot#: 130402254
Eluent ID#:

Column 1 ID: KP-RPPX250 Column 2 ID: NA

Workgroups: Analytical WG473910 (waters)

Internal STD: COA17210 Surrogate STD: NA STD63472 (05/01/2014)

CCV STD: STD63472 LCS STD: STD63472 STD63472

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
33	1LM.LM24648	L14041563-05	1	1		05/02/14 04:21
34	1LM.LM24649	L14041563-06	1	1		05/02/14 04:39
35	1LM.LM24650	L14041563-07	1	1		05/02/14 04:58
36	1LM.LM24651	WG473913-05 CCV (1.0ug/L)	1	1	STD63472	05/02/14 05:17
37	1LM.LM24652	WG473910-09 MRL (0.2ug/L)	1	1	STD63472	05/02/14 05:36
38	1LM.LM24653	WG473913-06 CCB	1	1		05/02/14 05:55
39	1LM.LM24654	L14041466-01	1	1		05/02/14 06:14
40	1LM.LM24655	Blank Rinse	1	1		05/02/14 06:33
41	1LM.LM24656	L14041900-01	1	1		05/02/14 06:52
42	1LM.LM24657	Blank Rinse	1	1		05/02/14 07:11
43	1LM.LM24658	WG473913-07 CCV (1.0ug/L)	1	1	STD63472	05/02/14 07:30
44	1LM.LM24659	WG473910-10 MRL (0.2ug/L)	1	1	STD63472	05/02/14 07:49
45	1LM.LM24660	WG473913-08 CCB	1	1		05/02/14 08:08
46	1LM.LM24661	WG473913-09 CCV (1.0ug/L)	1	1	STD63472	05/02/14 15:00
47	1LM.LM24662	WG473910-11 MRL (0.2ug/L)	1	1	STD63472	05/02/14 15:19
48	1LM.LM24663	WG473913-10 CCB	1	1		05/02/14 15:38
49	1LM.LM24664	L14041138-04 Rerun 5x	1	5		05/02/14 15:57
50	1LM.LM24665	WG473913-11 CCV (1.0ug/L)	1	1	STD63472	05/02/14 16:16
51	1LM.LM24666	WG473910-12 MRL (0.2ug/L)	1	1	STD63472	05/02/14 16:35
52	1LM.LM24667	WG473913-12 CCB	1	1		05/02/14 16:54

Comments

Seq.	Rerun	Dil.	Reason	Analytes
17				
	L14041126-02 MS : The MS %Rec. is below the advisory limit. The parent sample to the MS has a perchlorate concentration equal to 11 times that of the spiked amount.			
18				
	L14041126-03 MSD : The MSD %Rec. is below the advisory limit. The parent sample to the MSD has a perchlorate concentration equal to 11 times that of the spiked amount.			
28	X	5	Over Calibration Range	
	L14041138-04 (NR) : This sample was reanalyzed at a 5x dilution on the end of this run.			

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Microbac Laboratories Inc.

Instrument Run Log

Instrument: LCMS1 Dataset: 050614_JWR.TXT
Analyst1: JWR Analyst2: NA
Method: 6850 SOP: HPLC06 Rev: 6

Maintenance Log ID: Syringe Filter Lot#: 130402254
Eluent ID#:

Workgroups: Column 1 ID: KP-RPPX250 Column 2 ID: NA
Analytical WG474482 (waters)
Internal STD: COA17210 Surrogate STD: NA Calibration STD STD63472 (05/01/2014)
CCV STD: STD63472 LCS STD: STD63472 MS/MSD STD: STD63472

Comments: Samples L14050062(-04,-06) and L14050333-01 were analyzed at dilutions based on their historical results.

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	1LM.LM24713	WG474490-01 CCB	1	1		05/06/14 12:59
2	1LM.LM24714	WG474490-02 CCV (1.0ug/L)	1	1	STD63472	05/06/14 13:18
3	1LM.LM24715	WG474482-07 MRL (0.2ug/L)	1	1	STD63472	05/06/14 13:37
4	1LM.LM24716	WG474482-01 MCT (0.2ug/L)	1	1	STD63472	05/06/14 13:56
5	1LM.LM24717	WG474482-02 BLANK	1	1		05/06/14 14:15
6	1LM.LM24718	WG474482-03 LCS (0.2ug/L)	1	1	STD63472	05/06/14 14:34
7	1LM.LM24719	L14050062-01	1	1		05/06/14 14:53
8	1LM.LM24720	L14050062-02	1	1		05/06/14 15:12
9	1LM.LM24721	L14050062-04 (10x)	1	10		05/06/14 15:31
10	1LM.LM24722	L14050062-06 (10x)	1	10		05/06/14 15:50
11	1LM.LM24723	L14050062-08 RS	1	1		05/06/14 16:09
12	1LM.LM24724	L14050062-10 MS	1	1	STD63472	05/06/14 16:28
13	1LM.LM24725	L14050062-12 MSD	1	1	STD63472	05/06/14 16:47
14	1LM.LM24726	WG474490-03 CCV (1.0ug/L)	1	1	STD63472	05/06/14 17:06
15	1LM.LM24727	WG474482-08 MRL (0.2ug/L)	1	1	STD63472	05/06/14 17:25
16	1LM.LM24728	WG474490-04 CCB	1	1		05/06/14 17:44
17	1LM.LM24729	L14050062-14	1	1		05/06/14 18:02
18	1LM.LM24730	L14050062-16	1	1		05/06/14 18:21
19	1LM.LM24731	L14050062-18	1	1		05/06/14 18:40
20	1LM.LM24732	L14050315-01	1	1		05/06/14 18:59
21	1LM.LM24733	L14050315-02	1	1		05/06/14 19:18
22	1LM.LM24734	L14050333-01 (10,000x)	1	10000		05/06/14 19:37
23	1LM.LM24735	L14050334-01	1	1		05/06/14 19:56
24	1LM.LM24736	WG474490-05 CCV (1.0ug/L)	1	1	STD63472	05/06/14 20:15
25	1LM.LM24737	WG474482-09 MRL (0.2ug/L)	1	1	STD63472	05/06/14 20:34
26	1LM.LM24738	WG474490-06 CCB	1	1		05/06/14 20:53

Comments

Seq.	Rerun	Dil.	Reason	Analytes
13				
	L14050062-12 MSD : The MSD % recovery is below the advisory limit due to the presence of perchlorate in the reference sample.			

Page: 1 Approved: 07-MAY-14

Microbac Laboratories Inc.

Data Checklist

Date: 01-MAY-2014
Analyst: JWR
Analyst: NA
Method: 6850
Instrument: LCMS1
Curve Workgroup: WG473961
Runlog ID: 60622
Analytical Workgroups: L14041126, 1138, 1211, 1466, 1563, 1900

ANALYTICAL	
System Performance Check	NA
DFTPP (GCMS)	NA
Endrin/DDT breakdown (8081/GCMS)	NA
Pentachlorophenol/benzidine tailing (GCMS)	NA
Eluent check (IC)/system pressure (HPLC)	NA
Window standard (FID)	NA
Initial Calibration	X
Average RF	NA
Linear regression or higher order curve	X
Alternate source standard (ICV) % Difference	X
Continuing Calibration (CCV)	X
% D/% Drift	X
Minimum response factors (GCMS)	X
Continuing calibration blank (CCB) (IC/LCMS)	X
Limit of quantitation verification (LOQV) (LCMS)	X
Special standards	NA
Blanks	X
TCL hits	ND
Surrogate recoveries	NA
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	NA
MS/MSD/Sample duplicates	X
Recoveries	X
%RPD	X
Interference check sample (ICS) (LCMS)	MCT
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA
Surrogate recoveries	NA
Internal standard areas (MS)	X
Library searches (GCMS)	NA
Calculations & correct factors	X
Compounds above calibration range	X
Reruns	X
Manual integrations	X
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	
Check for completeness	X
Primary Reviewer	JWR
SUPERVISORY/SECONDARY REVIEW	
Check for compliance with method and project specific requirements	X
Check the completeness/accuracy of reported information	X
Data qualifiers	X
Secondary Reviewer	MDC

Primary Reviewer:
02-MAY-2014

Secondary Reviewer:
05-MAY-2014

CHECKLIST1 - Modified 03/05/2008
Generated: MAY-05-2014 08:39:06

Microbac Laboratories Inc.

Data Checklist

Date: 06-MAY-2014
Analyst: JWR
Analyst: NA
Method: 6850
Instrument: LCMS1
Curve Workgroup: NA
Runlog ID: 60720
Analytical Workgroups: L14050062, 0315, 0333, 0334

ANALYTICAL	
System Performance Check	NA
DFTPP (GCMS)	NA
Endrin/DDT breakdown (8081/GCMS)	NA
Pentachlorophenol/benzidine tailing (GCMS)	NA
Eluent check (IC)/system pressure (HPLC)	NA
Window standard (FID)	NA
Initial Calibration	NA
Average RF	NA
Linear regression or higher order curve	NA
Alternate source standard (ICV) % Difference	NA
Continuing Calibration (CCV)	X
% D/% Drift	X
Minimum response factors (GCMS)	X
Continuing calibration blank (CCB) (IC/LCMS)	X
Limit of quantitation verification (LOQV) (LCMS)	X
Special standards	NA
Blanks	X
TCL hits	ND
Surrogate recoveries	NA
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	NA
MS/MSD/Sample duplicates	X
Recoveries	X
%RPD	X
Interference check sample (ICS) (LCMS)	MCT
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA
Surrogate recoveries	NA
Internal standard areas (MS)	X
Library searches (GCMS)	NA
Calculations & correct factors	X
Compounds above calibration range	NA
Reruns	NA
Manual integrations	NA
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	
Check for completeness	X
Primary Reviewer	JWR
SUPERVISORY/SECONDARY REVIEW	X
Check for compliance with method and project specific requirements	X
Check the completeness/accuracy of reported information	X
Data qualifiers	X
Secondary Reviewer	ECL

Primary Reviewer:
07-MAY-2014

Secondary Reviewer:
07-MAY-2014

CHECKLIST1 - Modified 03/05/2008
Generated: MAY-07-2014 14:08:28

Microbac Laboratories Inc.

HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 6850 AAB#: WG474482

Login Number: L14050062

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
13MW2	01	04/29/14					05/06/2014	6.9	28		05/06/14	.1	28	
13MW3	02	04/29/14					05/06/2014	7.1	28		05/06/14	.1	28	
13MW4	04	04/29/14					05/06/2014	7	28		05/06/14	.1	28	
13MWDUP	06	04/29/14					05/06/2014	7	28		05/06/14	.1	28	
13MW5	08	04/29/14					05/06/2014	7	28		05/06/14	.1	28	
13MW5	10	04/29/14					05/06/2014	7	28		05/06/14	.1	28	
13MW5	12	04/29/14					05/06/2014	7	28		05/06/14	.1	28	
13MW6	14	04/29/14					05/06/2014	7	28		05/06/14	.2	28	
13MW7	16	04/29/14					05/06/2014	6.9	28		05/06/14	.2	28	
13MW8	18	04/29/14					05/06/2014	7.1	28		05/06/14	.2	28	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 3526089
Report generated 05/07/2014 14:04

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L14050062
Blank File ID: 1LM.LM24717
Prep Date: 05/06/14 13:30
Analyzed Date: 05/06/14 14:15
Analyst: JWR

Work Group: WG474482
Blank Sample ID: WG474482-02
Instrument ID: LCMS1
Method: 6850

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
QCMRL	WG474482-07	1LM.LM24715	05/06/14 13:37	01
MCT	WG474482-01	1LM.LM24716	05/06/14 13:56	01
LCS	WG474482-03	1LM.LM24718	05/06/14 14:34	01
13MW2	L14050062-01	1LM.LM24719	05/06/14 14:53	01
13MW3	L14050062-02	1LM.LM24720	05/06/14 15:12	01
13MW4	L14050062-04	1LM.LM24721	05/06/14 15:31	DL01
13MWDUP	L14050062-06	1LM.LM24722	05/06/14 15:50	DL01
13MW5	L14050062-08	1LM.LM24723	05/06/14 16:09	01
13MW5	L14050062-10	1LM.LM24724	05/06/14 16:28	01
13MW5	L14050062-12	1LM.LM24725	05/06/14 16:47	01
QCMRL	WG474482-08	1LM.LM24727	05/06/14 17:25	01
13MW6	L14050062-14	1LM.LM24729	05/06/14 18:02	01
13MW7	L14050062-16	1LM.LM24730	05/06/14 18:21	01
13MW8	L14050062-18	1LM.LM24731	05/06/14 18:40	01
QCMRL	WG474482-09	1LM.LM24737	05/06/14 20:34	01

Report Name: BLANK_SUMMARY
PDF File ID: 3526090
Report generated 05/07/2014 14:04

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L14050062 Prep Date: 05/06/14 13:30 Sample ID: WG474482-02
Instrument ID: LCMS1 Run Date: 05/06/14 14:15 Prep Method: 6850
File ID: 1LM.LM24717 Analyst: JWR Method: 6850
Workgroup (AAB#): WG474482 Matrix: Water Units: ug/L
Contract #: Cal ID: LCMS1-01-MAY-14

Analytes	MDL	RL	Concentration	Dilution	Qualifier
Perchlorate	0.100	0.200	0.100	1	U

MDL Method Detection Limit
RL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > RL

Report Name: BLANK
PDF ID: 3526091
07-MAY-2014 14:04

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L14050062 Run Date: 05/06/2014 Sample ID: WG474482-03
Instrument ID: LCMS1 Run Time: 14:34 Prep Method: 6850
File ID: 1LM.LM24718 Analyst: JWR Method: 6850
Workgroup (AAB#): WG474482 Matrix: Water Units: ug/L
QC Key: STD Lot#: STD63472 Cal ID: LCMS1-01-MAY-14

Analytes	Expected	Found	% Rec	LCS Limits	Q
Perchlorate	0.200	0.195	97.5	80 - 120	

LCS - Modified 03/06/2008
PDF File ID: 3526092
Report generated: 05/07/2014 14:04

Microbac Laboratories Inc.

MS/MSD REPORT

Loginnum: L14050062 Cal ID: LCMS1- 01-MAY-14 Worknum: WG474482

Instrument ID: LCMS1 Contract #: Prep Method: 6850

Parent ID: L14050062-08 File ID: 1LM.LM24723 Dil: 1 Method: 6850

Sample ID: L14050062-10 MS File ID: 1LM.LM24724 Dil: 1 Matrix: Water

Sample ID: L14050062-12 MSD File ID: 1LM.LM24725 Dil: 1 Units: ug/L

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Perchlorate	2.48	0.200	2.67	95	0.200	2.60	60	2.66	80 - 120	15	*

* FAILS %REC LIMIT

\# FAILS RPD LIMIT

MS_MSD - Modified 03/06/2008
PDF File ID: 3526093
Report generated 05/07/2014 14:04

Microbac Laboratories Inc.

INITIAL CALIBRATION SUMMARY

Login Number: L14050062
Analytical Method: 6850
ICAL Workgroup: WG473961

Instrument ID: LCMS1
Initial Calibration Date: 01-MAY-14 20:27
Column ID: F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD (R^2)
Perchlorate		0.9987	7.66	1.00000	

R = Correlation coefficient; 0.995 minimum
R^2 = Coefficient of determination; 0.99 minimum

INT_CAL - Modified 03/06/2008
PDF File ID: 3526381
Report generated 05/07/2014 14:04

Microbac Laboratories Inc.

INITIAL CALIBRATION DATA

Login Number: L14050062

Analytical Method: 6850

Instrument ID: LCMS1

Initial Calibration Date: 01-MAY-14 20:27

Column ID: F

Analyte	WG473961-02			WG473961-03			WG473961-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Perchlorate	0.100	4170.00000	1.140	0.200	7470.00000	1.049	0.500	18000.0000	0.9950

INT_CAL - Modified 03/06/2008
PDF File ID: 3526381
Report generated 05/07/2014 14:04

Microbac Laboratories Inc.

INITIAL CALIBRATION DATA

Login Number: L14050062

Analytical Method: 6850

Instrument ID: LCMS1

Initial Calibration Date: 01-MAY-14 20:27

Column ID: F

Analyte	WG473961-05			WG473961-06			WG473961-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Perchlorate	1.00	34800.0000	0.9590	2.00	69700.0000	0.9640	5.00	172000.000	0.9450

INT_CAL - Modified 03/06/2008
PDF File ID: 3526381
Report generated 05/07/2014 14:04

Microbac Laboratories Inc.

INITIAL CALIBRATION DATA

Login Number: L14050062

Analytical Method: 6850

Instrument ID: LCMS1

Initial Calibration Date: 01-MAY-14 20:27

Column ID: F

Analyte	WG473961-08		
	CONC	RESP	RF
Perchlorate	10.0	335000.000	0.9390

INT_CAL - Modified 03/06/2008
PDF File ID: 3526381
Report generated 05/07/2014 14:04

Microbac Laboratories Inc.
ALTERNATE SOURCE CALIBRATION REPORT

Login Number: L14050062 Run Date: 05/01/2014 Sample ID: WG473961-09
Instrument ID: LCMS1 Run Time: 20:46 Method: 6850
File ID: 1LM.LM24624 Analyst: JWR QC Key: STD
ICal Workgroup: WG473961 Cal ID: LCMS1 - 01-MAY-14

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Perchlorate		1.00	0.993	ug/L	0.955	0.700	15	

* Exceeds %D Limit

ALT - Modified 09/06/2007
Version 1.5 PDF File ID: 3526382
Report generated 05/07/2014 14:04

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L14050062 Run Date: 05/06/2014 Sample ID: WG474490-01
Instrument ID: LCMS1 Run Time: 12:59 Method: 6850
File ID: 1LM.LM24713 Analyst: JWR Units: ug/L
Workgroup (AAB#): WG474482 Cal ID: LCMS1 - 01-MAY-14
Matrix: WATER QAPP: STD

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.200	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 3526096
Report generated 05/07/2014 14:04

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L14050062 Run Date: 05/06/2014 Sample ID: WG474490-04

Instrument ID: LCMS1 Run Time: 17:44 Method: 6850

File ID: 1LM.LM24728 Analyst: JWR Units: ug/L

Workgroup (AAB#): WG474482 Cal ID: LCMS1 - 01-MAY-14

Matrix: WATER QAPP: STD

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.200	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 3526096
Report generated 05/07/2014 14:04

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L14050062 Run Date: 05/06/2014 Sample ID: WG474490-06

Instrument ID: LCMS1 Run Time: 20:53 Method: 6850

File ID: 1LM.LM24738 Analyst: JWR Units: ug/L

Workgroup (AAB#): WG474482 Cal ID: LCMS1 - 01-MAY-14

Matrix: WATER QAPP: STD

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.200	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 3526096
Report generated 05/07/2014 14:04

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L14050062
Run Date: 05/06/2014
Sample ID: WG474490-02
Instrument ID: LCMS1
Run Time: 13:18
Method: 6850
File ID: 1LM.LM24714
Analyst: JWR
QC Key: STD
Workgroup (AAB#): WG474482
Cal ID: LCMS1 - 01-MAY-14
Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate		1.00	1.07	ug/L	1.03	7.00	15	

* Exceeds %D Criteria

CCV - Modified 03/05/2008
PDF File ID: 3526095
Report generated 05/07/2014 14:04

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L14050062
Run Date: 05/06/2014
Sample ID: WG474490-03
Instrument ID: LCMS1
Run Time: 17:06
Method: 6850
File ID: 1LM.LM24726
Analyst: JWR
QC Key: STD
Workgroup (AAB#): WG474482
Cal ID: LCMS1 - 01-MAY-14
Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate		1.00	1.02	ug/L	0.976	2.00	15	

* Exceeds %D Criteria

CCV - Modified 03/05/2008
PDF File ID: 3526095
Report generated 05/07/2014 14:04

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L14050062
Instrument ID: LCMS1
File ID: 1LM.LM24736
Workgroup (AAB#): WG474482
Matrix: WATER

Run Date: 05/06/2014
Run Time: 20:15
Analyst: JWR
Cal ID: LCMS1 - 01-MAY-14

Sample ID: WG474490-05
Method: 6850
QC Key: STD

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate		1.00	1.04	ug/L	1.00	4.00	15	

* Exceeds %D Criteria

CCV - Modified 03/05/2008
PDF File ID: 3526095
Report generated 05/07/2014 14:04

Microbac Laboratories Inc.

QCMRL SAMPLE

Login Number: L14050062 Run Date: 05/06/2014 Sample ID: WG474482-07

Instrument ID: LCMS1 Run Time: 13:37 Prep Method: 6850

File ID: 1LM.LM24715 Analyst: JWR Method: 6850

Workgroup (AAB#): WG474482 Matrix: Water Units: ug/L

Contract #: Cal ID: LCMS1-01-MAY-14

Analytes	Expected	Found	% Rec	Limits	Q
Perchlorate	0.200	0.189	94.5	70 - 130	

QCMRL - Modified 03/06/2007
PDF File ID: 3526094
Report generated 05/07/2014 14:04

Microbac Laboratories Inc.

QCMRL SAMPLE

Login Number: L14050062 Run Date: 05/06/2014 Sample ID: WG474482-08

Instrument ID: LCMS1 Run Time: 17:25 Prep Method: 6850

File ID: 1LM.LM24727 Analyst: JWR Method: 6850

Workgroup (AAB#): WG474482 Matrix: Water Units: ug/L

Contract #: Cal ID: LCMS1-01-MAY-14

Analytes	Expected	Found	% Rec	Limits	Q
Perchlorate	0.200	0.213	107	70 - 130	

QCMRL - Modified 03/06/2007
PDF File ID: 3526094
Report generated 05/07/2014 14:04

Microbac Laboratories Inc.

QCMRL SAMPLE

Login Number: L14050062 Run Date: 05/06/2014 Sample ID: WG474482-09

Instrument ID: LCMS1 Run Time: 20:34 Prep Method: 6850

File ID: 1LM.LM24737 Analyst: JWR Method: 6850

Workgroup (AAB#): WG474482 Matrix: Water Units: ug/L

Contract #: Cal ID: LCMS1-01-MAY-14

Analytes	Expected	Found	% Rec	Limits	Q
Perchlorate	0.200	0.220	110	70 - 130	

QCMRL - Modified 03/06/2007
PDF File ID: 3526094
Report generated 05/07/2014 14:04

Microbac Laboratories Inc.

INTERNAL STANDARD AREA SUMMARY
(COMPARED TO AVERAGE OF ICAL)

Login Number: L14050062
Instrument ID: LCMS1
Workgroup (AAB#): WG474482

ICAL CCV Number: WG473961-05
CAL ID: LCMS1-01-MAY-14
Matrix: WATER

Sample Number	Dilution	Tag	IS-1
WG473961	NA	NA	181000
Upper Limit	NA	NA	271500
Lower Limit	NA	NA	90500
L14050062-01	1.00	01	180000
L14050062-02	1.00	01	164000
L14050062-04	10.0	DL01	184000
L14050062-06	10.0	DL01	191000
L14050062-08	1.00	01	164000
L14050062-10	1.00	01	166000
L14050062-12	1.00	01	165000
L14050062-14	1.00	01	165000
L14050062-16	1.00	01	171000
L14050062-18	1.00	01	164000
WG474482-02	1.00	01	189000
WG474482-03	1.00	01	191000

IS-1 - O18LP

Underline = Response outside limits

INTERNAL_STD_AVG_ICAL - Modified 03/10/2010
PDF File ID: 3526097
Report generated 05/07/2014 14:05

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14050062	**Prep Method:**	6850	**Samplenum:**	L14050062-01
Instrument:	LCMS1	**Prep Date:**	05/06/2014 13:30	**File ID:**	1LM.LM24719
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG474482	**Analysis Date:**	05/06/2014 14:53	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	73100	24500	2.98	2.3	3.8	

Perchlorate Ion Ratios
Microbac Laboratories Inc.

Login #:	L14050062	**Prep Method:**	6850	**Samplenum:**	L14050062-02
Instrument:	LCMS1	**Prep Date:**	05/06/2014 13:30	**File ID:**	1LM.LM24720
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG474482	**Analysis Date:**	05/06/2014 15:12	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	34600	12800	2.70	2.3	3.8	

Perchlorate Ion Ratios
Microbac Laboratories Inc.

Login #:	L14050062	**Prep Method:**	6850	**Samplenum:**	L14050062-04
Instrument:	LCMS1	**Prep Date:**	05/06/2014 13:30	**File ID:**	1LM.LM24721
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG474482	**Analysis Date:**	05/06/2014 15:31	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	42700	15800	2.70	2.3	3.8	

Perchlorate Ion Ratios
Microbac Laboratories Inc.

Login #:	L14050062	**Prep Method:**	6850	**Samplenum:**	L14050062-06
Instrument:	LCMS1	**Prep Date:**	05/06/2014 13:30	**File ID:**	1LM.LM24722
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG474482	**Analysis Date:**	05/06/2014 15:50	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	45800	17200	2.66	2.3	3.8	

Perchlorate Ion Ratios
Microbac Laboratories Inc.

Login #:	L14050062	**Prep Method:**	6850	**Samplenum:**	L14050062-08
Instrument:	LCMS1	**Prep Date:**	05/06/2014 13:30	**File ID:**	1LM.LM24723
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG474482	**Analysis Date:**	05/06/2014 16:09	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	77400	28800	2.69	2.3	3.8	

Perchlorate Ion Ratios
Microbac Laboratories Inc.

Login #:	L14050062	**Prep Method:**	6850	**Samplenum:**	L14050062-10
Instrument:	LCMS1	**Prep Date:**	05/06/2014 13:30	**File ID:**	1LM.LM24724
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG474482	**Analysis Date:**	05/06/2014 16:28	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	84400	30700	2.75	2.3	3.8	

Perchlorate Ion Ratios
Microbac Laboratories Inc.

Login #:	L14050062	**Prep Method:**	6850	**Samplenum:**	L14050062-12
Instrument:	LCMS1	**Prep Date:**	05/06/2014 13:30	**File ID:**	1LM.LM24725
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG474482	**Analysis Date:**	05/06/2014 16:47	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	81200	30100	2.70	2.3	3.8	

Perchlorate Ion Ratios
Microbac Laboratories Inc.

Login #:	L14050062	**Prep Method:**	6850	**Samplenum:**	L14050062-14
Instrument:	LCMS1	**Prep Date:**	05/06/2014 13:30	**File ID:**	1LM.LM24729
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG474482	**Analysis Date:**	05/06/2014 18:02	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	36600	13300	2.75	2.3	3.8	

Perchlorate Ion Ratios
Microbac Laboratories Inc.

Login #:	L14050062	**Prep Method:**	6850	**Samplenum:**	L14050062-16
Instrument:	LCMS1	**Prep Date:**	05/06/2014 13:30	**File ID:**	1LM.LM24730
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG474482	**Analysis Date:**	05/06/2014 18:21	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	38700	14000	2.76	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14050062	**Prep Method:**	6850	**Samplenum:**	L14050062-18
Instrument:	LCMS1	**Prep Date:**	05/06/2014 13:30	**File ID:**	1LM.LM24731
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG474482	**Analysis Date:**	05/06/2014 18:40	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	58800	20900	2.81	2.3	3.8	

Perchlorate Ion Ratios
Microbac Laboratories Inc.

Login #:	L14050062	**Prep Method:**		**Samplenum:**	WG473961-02
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM24617
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG474482	**Analysis Date:**	05/01/2014 18:33	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	4170	1570	2.66	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14050062	**Prep Method:**		**Samplenum:**	WG473961-03
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM24618
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG474482	**Analysis Date:**	05/01/2014 18:52	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	7470	2960	2.52	2.3	3.8	

Perchlorate Ion Ratios
Microbac Laboratories Inc.

Login #:	L14050062	**Prep Method:**		**Samplenum:**	WG473961-04
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM24619
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG474482	**Analysis Date:**	05/01/2014 19:11	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	18000	6910	2.60	2.3	3.8	

Perchlorate Ion Ratios
Microbac Laboratories Inc.

Login #:	L14050062	**Prep Method:**		**Samplenum:**	WG473961-05
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM24620
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG474482	**Analysis Date:**	05/01/2014 19:30	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	34800	13200	2.64	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14050062	**Prep Method:**		**Samplenum:**	WG473961-06
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM24621
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG474482	**Analysis Date:**	05/01/2014 19:49	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	69700	26300	2.65	2.3	3.8	

Perchlorate Ion Ratios
Microbac Laboratories Inc.

Login #:	L14050062	**Prep Method:**		**Samplenum:**	WG473961-07
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM24622
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG474482	**Analysis Date:**	05/01/2014 20:08	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	172000	65400	2.63	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14050062	**Prep Method:**		**Samplenum:**	WG473961-08
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM24623
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG474482	**Analysis Date:**	05/01/2014 20:27	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	335000	126000	2.66	2.3	3.8	

Perchlorate Ion Ratios
Microbac Laboratories Inc.

Login #:	L14050062	**Prep Method:**		**Samplenum:**	WG473961-09
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM24624
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG474482	**Analysis Date:**	05/01/2014 20:46	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	35600	13400	2.66	2.3	3.8	

Perchlorate Ion Ratios
Microbac Laboratories Inc.

Login #:	L14050062	**Prep Method:**	6850	**Samplenum:**	WG474482-01
Instrument:	LCMS1	**Prep Date:**	05/06/2014 13:30	**File ID:**	1LM.LM24716
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG474482	**Analysis Date:**	05/06/2014 13:56	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	9630	3750	2.57	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14050062	**Prep Method:**	6850	**Samplenum:**	WG474482-02
Instrument:	LCMS1	**Prep Date:**	05/06/2014 13:30	**File ID:**	1LM.LM24717
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG474482	**Analysis Date:**	05/06/2014 14:15	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	0.000	0.000	0.000	2.3	3.8	*

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14050062	**Prep Method:**	6850	**Samplenum:**	WG474482-03
Instrument:	LCMS1	**Prep Date:**	05/06/2014 13:30	**File ID:**	1LM.LM24718
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG474482	**Analysis Date:**	05/06/2014 14:34	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	7850	2790	2.81	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14050062	**Prep Method:**	6850	**Samplenum:**	WG474482-07
Instrument:	LCMS1	**Prep Date:**	05/06/2014 13:30	**File ID:**	1LM.LM24715
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG474482	**Analysis Date:**	05/06/2014 13:37	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	7460	2710	2.75	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14050062	**Prep Method:**	6850	**Samplenum:**	WG474482-08
Instrument:	LCMS1	**Prep Date:**	05/06/2014 13:30	**File ID:**	1LM.LM24727
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG474482	**Analysis Date:**	05/06/2014 17:25	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	8600	3330	2.58	2.3	3.8	

Perchlorate Ion Ratios
Microbac Laboratories Inc.

Login #:	L14050062	**Prep Method:**	6850	**Samplenum:**	WG474482-09
Instrument:	LCMS1	**Prep Date:**	05/06/2014 13:30	**File ID:**	1LM.LM24737
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG474482	**Analysis Date:**	05/06/2014 20:34	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	8860	3460	2.56	2.3	3.8	

Perchlorate Ion Ratios
Microbac Laboratories Inc.

Login #:	L14050062	**Prep Method:**		**Samplenum:**	WG474490-01
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM24713
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG474482	**Analysis Date:**	05/06/2014 12:59	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	0.000	142	0.000	2.3	3.8	*

Perchlorate Ion Ratios
Microbac Laboratories Inc.

Login #:	L14050062	**Prep Method:**		**Samplenum:**	WG474490-02
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM24714
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG474482	**Analysis Date:**	05/06/2014 13:18	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	38200	13800	2.77	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14050062	**Prep Method:**		**Samplenum:**	WG474490-03
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM24726
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG474482	**Analysis Date:**	05/06/2014 17:06	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	34900	13000	2.68	2.3	3.8	

Perchlorate Ion Ratios
Microbac Laboratories Inc.

Login #:	L14050062	**Prep Method:**		**Samplenum:**	WG474490-04
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM24728
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG474482	**Analysis Date:**	05/06/2014 17:44	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	2300	532	4.32	2.3	3.8	*

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14050062	**Prep Method:**		**Samplenum:**	WG474490-05
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM24736
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG474482	**Analysis Date:**	05/06/2014 20:15	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	36900	14600	2.53	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14050062	**Prep Method:**		**Samplenum:**	WG474490-06
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM24738
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG474482	**Analysis Date:**	05/06/2014 20:53	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	3330	881	3.78	2.3	3.8	

2.2 General Chemistry Data

2.2.1 Total Organic Carbon Data

2.2.1.1 Summary Data

Login Number: L14050062
Department: Conventionals
Analyst: David Merckle

METHOD

Analysis Water: EPA 415.1/SM5310C/SW846 9060 (Total Organic Carbon)
Soil: Lloyd-Khan Methodology

HOLDING TIMES

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Duplicates: All acceptance criteria were met.

Matrix Spikes: Recoveries out of range were observed for the following analytes: Total Organic Carbon. Please see the applicable QC report for a detailed presentation of the failures.

Sample #	Analyte	Date	Result	Lower	Upper	Type
L14050062-10	Total Organic Carbon	2014-05-08 05:20:33	82.9	85	115	Recovery
L14050062-12	Total Organic Carbon	2014-05-08 06:02:09	134	85	115	Recovery

SAMPLES

Samples: All acceptance criteria were met.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Narrative ID: 82733
Approved By: Deanna Hesson

Certificate of Analysis

Sample #:	L14050062-02	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	13MW3	**Prep Method:**	9060A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	07/09/2013 14:51
Workgroup #:	WG474713	**Analyst:**	DCM	**Run Date:**	05/08/2014 00:28
Collect Date:	04/29/2014 10:35	**Dilution:**	1	**File ID:**	TC0507201A.040
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	RL	MDL
Total Organic Carbon	TOC	3.38		1.00	0.500
Total Organic Carbon Rep1		2.80		1.00	0.500
Total Organic Carbon Rep2		3.31		1.00	0.500
Total Organic Carbon Rep3		3.70		1.00	0.500
Total Organic Carbon Rep4		3.71		1.00	0.500

Sample #:	L14050062-03	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	13MW3	**Prep Method:**	9060A	**Prep Date:**	05/08/2014 01:11
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	07/09/2013 14:51
Workgroup #:	WG474713	**Analyst:**	DCM	**Run Date:**	05/08/2014 01:11
Collect Date:	04/29/2014 10:35	**Dilution:**	1	**File ID:**	TC0507201A.041
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	RL	MDL
Organic Carbon, Dissolved	TOC	2.65		1.00	0.500
Organic Carbon, Dissolved Rep1		2.37		1.00	0.500
Organic Carbon, Dissolved Rep2		2.31		1.00	0.500
Organic Carbon, Dissolved Rep3		2.70		1.00	0.500
Organic Carbon, Dissolved Rep4		3.21		1.00	0.500

Sample #:	L14050062-04	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	13MW4	**Prep Method:**	9060A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	07/09/2013 14:51
Workgroup #:	WG474713	**Analyst:**	DCM	**Run Date:**	05/08/2014 01:53
Collect Date:	04/29/2014 12:35	**Dilution:**	1	**File ID:**	TC0507201A.042
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	RL	MDL
Total Organic Carbon	TOC	3.79		1.00	0.500
Total Organic Carbon Rep1		3.05		1.00	0.500
Total Organic Carbon Rep2		3.97		1.00	0.500
Total Organic Carbon Rep3		4.07		1.00	0.500
Total Organic Carbon Rep4		4.07		1.00	0.500

Certificate of Analysis

Sample #:	L14050062-05	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	13MW4	**Prep Method:**	9060A	**Prep Date:**	05/08/2014 02:35
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	07/09/2013 14:51
Workgroup #:	WG474713	**Analyst:**	DCM	**Run Date:**	05/08/2014 02:35
Collect Date:	04/29/2014 12:35	**Dilution:**	1	**File ID:**	TC0507201A.043
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	RL	MDL
Organic Carbon, Dissolved	TOC	2.45		1.00	0.500
Organic Carbon, Dissolved Rep1		2.35		1.00	0.500
Organic Carbon, Dissolved Rep2		2.26		1.00	0.500
Organic Carbon, Dissolved Rep3		2.47		1.00	0.500
Organic Carbon, Dissolved Rep4		2.71		1.00	0.500

Sample #:	L14050062-06	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	13MWDUP	**Prep Method:**	9060A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	07/09/2013 14:51
Workgroup #:	WG474713	**Analyst:**	DCM	**Run Date:**	05/08/2014 03:16
Collect Date:	04/29/2014 12:45	**Dilution:**	1	**File ID:**	TC0507201A.044
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	RL	MDL
Total Organic Carbon	TOC	2.02		1.00	0.500
Total Organic Carbon Rep1		1.73		1.00	0.500
Total Organic Carbon Rep2		1.96		1.00	0.500
Total Organic Carbon Rep3		2.18		1.00	0.500
Total Organic Carbon Rep4		2.22		1.00	0.500

Sample #:	L14050062-07	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	13MWDUP	**Prep Method:**	9060A	**Prep Date:**	05/08/2014 03:57
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	07/09/2013 14:51
Workgroup #:	WG474713	**Analyst:**	DCM	**Run Date:**	05/08/2014 03:57
Collect Date:	04/29/2014 12:45	**Dilution:**	1	**File ID:**	TC0507201A.045
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	RL	MDL
Organic Carbon, Dissolved	TOC	4.34		1.00	0.500
Organic Carbon, Dissolved Rep1		3.63		1.00	0.500
Organic Carbon, Dissolved Rep2		4.38		1.00	0.500
Organic Carbon, Dissolved Rep3		4.70		1.00	0.500

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Organic Carbon, Dissolved Rep4		4.67		1.00	0.500

Sample #:	L14050062-08	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	13MW5	**Prep Method:**	9060A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	07/09/2013 14:51
Workgroup #:	WG474713	**Analyst:**	DCM	**Run Date:**	05/08/2014 04:39
Collect Date:	04/29/2014 13:30	**Dilution:**	1	**File ID:**	TC0507201A.046
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	RL	MDL
Total Organic Carbon	TOC	2.08		1.00	0.500
Total Organic Carbon Rep1		2.06		1.00	0.500
Total Organic Carbon Rep2		1.75		1.00	0.500
Total Organic Carbon Rep3		2.23		1.00	0.500
Total Organic Carbon Rep4		2.28		1.00	0.500

Sample #:	L14050062-09	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	13MW5	**Prep Method:**	9060A	**Prep Date:**	05/08/2014 06:45
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	07/09/2013 14:51
Workgroup #:	WG474713	**Analyst:**	DCM	**Run Date:**	05/08/2014 06:45
Collect Date:	04/29/2014 13:30	**Dilution:**	1	**File ID:**	TC0507201A.049
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	RL	MDL
Organic Carbon, Dissolved	TOC	1.51		1.00	0.500
Organic Carbon, Dissolved Rep1		1.57		1.00	0.500
Organic Carbon, Dissolved Rep2		1.30		1.00	0.500
Organic Carbon, Dissolved Rep3		1.46		1.00	0.500
Organic Carbon, Dissolved Rep4		1.72		1.00	0.500

Sample #:	L14050062-10	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	13MW5	**Prep Method:**	9060A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	07/09/2013 14:51
Workgroup #:	WG474713	**Analyst:**	DCM	**Run Date:**	05/08/2014 05:20
Collect Date:	04/29/2014 13:30	**Dilution:**	1	**File ID:**	TC0507201A.047
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	RL	MDL
Total Organic Carbon	TOC	10.4		1.00	0.500
Total Organic Carbon Rep1		9.95		1.00	0.500

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Total Organic Carbon Rep2		10.4		1.00	0.500
Total Organic Carbon Rep3		10.6		1.00	0.500
Total Organic Carbon Rep4		10.6		1.00	0.500

Sample #:	L14050062-11	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	13MW5	**Prep Method:**	9060A	**Prep Date:**	05/08/2014 07:52
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	07/09/2013 14:51
Workgroup #:	WG474713	**Analyst:**	DCM	**Run Date:**	05/08/2014 07:52
Collect Date:	04/29/2014 13:30	**Dilution:**	1	**File ID:**	TC0507201A.052
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	RL	MDL
Organic Carbon, Dissolved	TOC	11.8		1.00	0.500
Organic Carbon, Dissolved Rep1		11.8		1.00	0.500
Organic Carbon, Dissolved Rep2		11.9		1.00	0.500
Organic Carbon, Dissolved Rep3		11.7		1.00	0.500
Organic Carbon, Dissolved Rep4		11.8		1.00	0.500

Sample #:	L14050062-12	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	13MW5	**Prep Method:**	9060A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	07/09/2013 14:51
Workgroup #:	WG474713	**Analyst:**	DCM	**Run Date:**	05/08/2014 06:02
Collect Date:	04/29/2014 13:30	**Dilution:**	1	**File ID:**	TC0507201A.048
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	RL	MDL
Total Organic Carbon	TOC	15.5		1.00	0.500
Total Organic Carbon Rep1		15.5		1.00	0.500
Total Organic Carbon Rep2		15.6		1.00	0.500
Total Organic Carbon Rep3		15.4		1.00	0.500
Total Organic Carbon Rep4		15.6		1.00	0.500

Sample #:	L14050062-13	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	13MW5	**Prep Method:**	9060A	**Prep Date:**	05/08/2014 08:35
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	07/09/2013 14:51
Workgroup #:	WG474713	**Analyst:**	DCM	**Run Date:**	05/08/2014 08:35
Collect Date:	04/29/2014 13:30	**Dilution:**	1	**File ID:**	TC0507201A.053
Sample Tag:	01	**Units:**	mg/L		

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Organic Carbon, Dissolved	TOC	13.5		1.00	0.500
Organic Carbon, Dissolved Rep1		13.2		1.00	0.500
Organic Carbon, Dissolved Rep2		13.4		1.00	0.500
Organic Carbon, Dissolved Rep3		13.9		1.00	0.500
Organic Carbon, Dissolved Rep4		13.6		1.00	0.500

Sample #:	L14050062-14	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	13MW6	**Prep Method:**	9060A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	07/09/2013 14:51
Workgroup #:	WG474713	**Analyst:**	DCM	**Run Date:**	05/08/2014 09:16
Collect Date:	04/29/2014 14:20	**Dilution:**	1	**File ID:**	TC0507201A.054
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	RL	MDL
Total Organic Carbon	TOC	2.79		1.00	0.500
Total Organic Carbon Rep1		2.49		1.00	0.500
Total Organic Carbon Rep2		2.62		1.00	0.500
Total Organic Carbon Rep3		3.04		1.00	0.500
Total Organic Carbon Rep4		3.00		1.00	0.500

Sample #:	L14050062-15	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	13MW6	**Prep Method:**	9060A	**Prep Date:**	05/08/2014 09:58
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	07/09/2013 14:51
Workgroup #:	WG474713	**Analyst:**	DCM	**Run Date:**	05/08/2014 09:58
Collect Date:	04/29/2014 14:20	**Dilution:**	1	**File ID:**	TC0507201A.055
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	RL	MDL
Organic Carbon, Dissolved	TOC	1.78		1.00	0.500
Organic Carbon, Dissolved Rep1		1.49		1.00	0.500
Organic Carbon, Dissolved Rep2		1.85		1.00	0.500
Organic Carbon, Dissolved Rep3		1.85		1.00	0.500
Organic Carbon, Dissolved Rep4		1.95		1.00	0.500

Certificate of Analysis

Sample #:	L14050062-16	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	13MW7	**Prep Method:**	9060A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	07/09/2013 14:51
Workgroup #:	WG474713	**Analyst:**	DCM	**Run Date:**	05/08/2014 10:37
Collect Date:	04/29/2014 15:15	**Dilution:**	1	**File ID:**	TC0507201A.056
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	RL	MDL
Total Organic Carbon	TOC	1.57		1.00	0.500
Total Organic Carbon Rep1		1.45		1.00	0.500
Total Organic Carbon Rep2		1.54		1.00	0.500
Total Organic Carbon Rep3		1.66		1.00	0.500
Total Organic Carbon Rep4		1.64		1.00	0.500

Sample #:	L14050062-17	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	13MW7	**Prep Method:**	9060A	**Prep Date:**	05/08/2014 11:18
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	07/09/2013 14:51
Workgroup #:	WG474713	**Analyst:**	DCM	**Run Date:**	05/08/2014 11:18
Collect Date:	04/29/2014 15:15	**Dilution:**	1	**File ID:**	TC0507201A.057
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	RL	MDL
Organic Carbon, Dissolved	TOC	1.72		1.00	0.500
Organic Carbon, Dissolved Rep1		1.83		1.00	0.500
Organic Carbon, Dissolved Rep2		1.67		1.00	0.500
Organic Carbon, Dissolved Rep3		1.66		1.00	0.500
Organic Carbon, Dissolved Rep4		1.72		1.00	0.500

Sample #:	L14050062-18	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	13MW8	**Prep Method:**	9060A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	07/09/2013 14:51
Workgroup #:	WG474713	**Analyst:**	DCM	**Run Date:**	05/08/2014 11:58
Collect Date:	04/29/2014 11:35	**Dilution:**	1	**File ID:**	TC0507201A.058
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	RL	MDL
Total Organic Carbon	TOC	1.34		1.00	0.500
Total Organic Carbon Rep1		1.47		1.00	0.500
Total Organic Carbon Rep2		1.33		1.00	0.500
Total Organic Carbon Rep3		1.39		1.00	0.500
Total Organic Carbon Rep4		1.17		1.00	0.500

Certificate of Analysis

Sample #:	L14050062-19	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	13MW8	**Prep Method:**	9060A	**Prep Date:**	05/08/2014 12:39
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	07/09/2013 14:51
Workgroup #:	WG474713	**Analyst:**	DCM	**Run Date:**	05/08/2014 12:39
Collect Date:	04/29/2014 11:35	**Dilution:**	1	**File ID:**	TC0507201A.059
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	RL	MDL
Organic Carbon, Dissolved	TOC	6.41		1.00	0.500
Organic Carbon, Dissolved Rep1		6.50		1.00	0.500
Organic Carbon, Dissolved Rep2		6.42		1.00	0.500
Organic Carbon, Dissolved Rep3		6.48		1.00	0.500
Organic Carbon, Dissolved Rep4		6.24		1.00	0.500

2.2.1.2 QC Summary Data

Total Organic Carbon Example Calculations
(Direct Readout Parameter)

(Readout)/(dilution) = mg/L

where:

Readout = direct readout from the instrument
dilution = dilution in decimal form (ex. 1/5 dilution = 0.2)

Microbac Laboratories Inc.

Data Checklist

Date: 07-MAY-2014
Analyst: DCM
Analyst: NA
Method: TOC
Instrument: TOC-VWP
Curve Workgroup: NA
Runlog ID:
Analytical Workgroups: WG474703 WG474713

Calibration/Linearity	07-09-2013
Second Source Check	X
ICV/CCV (std)	X
ICB/CCB	X
Blank	X
LCS/LCS Dup	X
MS/MSD	X
Duplicate	X
Upload Results	X
Client Forms	X
QC Violation Sheet	X
Case Narratives	X
Signed Raw Data	X
STD/LCS on benchsheet	X
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	DCM
Secondary Reviewer	DIH
Comments	

Primary Reviewer:
08-MAY-2014

Secondary Reviewer:
12-MAY-2014

CHECKLIST1 - Modified 03/05/2008
Generated: MAY-12-2014 13:56:08

Microbac Laboratories Inc.

HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 9060A AAB#: WG474713

Login Number: L14050062

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
13MW3	02	04/29/14					05/08/2014	8.6	28		05/08/14	8.6	28	
13MW4	04	04/29/14					05/08/2014	8.6	28		05/08/14	8.6	28	
13MWDUP	06	04/29/14					05/08/2014	8.6	28		05/08/14	8.6	28	
13MW5	08	04/29/14					05/08/2014	8.6	28		05/08/14	8.6	28	
13MW5	10	04/29/14					05/08/2014	8.7	28		05/08/14	8.7	28	
13MW5	12	04/29/14					05/08/2014	8.7	28		05/08/14	8.7	28	
13MW6	14	04/29/14					05/08/2014	8.8	28		05/08/14	8.8	28	
13MW7	16	04/29/14					05/08/2014	8.8	28		05/08/14	8.8	28	
13MW8	18	04/29/14					05/08/2014	9	28		05/08/14	9	28	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 3530555
Report generated 05/08/2014 17:10

Microbac Laboratories Inc.

HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 9060A AAB#: WG474713

Login Number: L14050062

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
13MW3	03	04/29/14					05/08/2014	8.6	28		05/08/14	8.6	28	
13MW4	05	04/29/14					05/08/2014	8.6	28		05/08/14	8.6	28	
13MWDUP	07	04/29/14					05/08/2014	8.6	28		05/08/14	8.6	28	
13MW5	09	04/29/14					05/08/2014	8.7	28		05/08/14	8.7	28	
13MW5	11	04/29/14					05/08/2014	8.8	28		05/08/14	8.8	28	
13MW5	13	04/29/14					05/08/2014	8.8	28		05/08/14	8.8	28	
13MW6	15	04/29/14					05/08/2014	8.8	28		05/08/14	8.8	28	
13MW7	17	04/29/14					05/08/2014	8.8	28		05/08/14	8.8	28	
13MW8	19	04/29/14					05/08/2014	9	28		05/08/14	9	28	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 3530560
Report generated 05/08/2014 17:11

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L14050062
Blank File ID: TC0507201A.035
Prep Date: 05/07/14 22:14
Analyzed Date: 05/07/14 22:14
Analyst: DCM

Work Group: WG474713
Blank Sample ID: WG474713-01
Instrument ID: TOC-VWP
Method: 9060A

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG474713-02	TC0507201A.036	05/07/14 22:49	01
LCS2	WG474713-03	TC0507201A.037	05/07/14 23:28	01
13MW3	L14050062-02	TC0507201A.040	05/08/14 00:28	01
13MW3	L14050062-03	TC0507201A.041	05/08/14 01:11	01
13MW4	L14050062-04	TC0507201A.042	05/08/14 01:53	01
13MW4	L14050062-05	TC0507201A.043	05/08/14 02:35	01
13MWDUP	L14050062-06	TC0507201A.044	05/08/14 03:16	01
13MWDUP	L14050062-07	TC0507201A.045	05/08/14 03:57	01
13MW5	L14050062-08	TC0507201A.046	05/08/14 04:39	01
13MW5	L14050062-10	TC0507201A.047	05/08/14 05:20	01
13MW5	L14050062-12	TC0507201A.048	05/08/14 06:02	01
13MW5	L14050062-09	TC0507201A.049	05/08/14 06:45	01
13MW5	L14050062-11	TC0507201A.052	05/08/14 07:52	01
13MW5	L14050062-13	TC0507201A.053	05/08/14 08:35	01
13MW6	L14050062-14	TC0507201A.054	05/08/14 09:16	01
13MW6	L14050062-15	TC0507201A.055	05/08/14 09:58	01
13MW7	L14050062-16	TC0507201A.056	05/08/14 10:37	01
13MW7	L14050062-17	TC0507201A.057	05/08/14 11:18	01
13MW8	L14050062-18	TC0507201A.058	05/08/14 11:58	01
13MW8	L14050062-19	TC0507201A.059	05/08/14 12:39	01
DUP	WG474713-11	TC0507201A.060	05/08/14 13:24	01

Report Name: BLANK_SUMMARY
PDF File ID: 3530556
Report generated 05/08/2014 17:10

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L14050062
Blank File ID: TC0507201A.035
Prep Date: 05/07/14 22:14
Analyzed Date: 05/07/14 22:14
Analyst: DCM

Work Group: WG474713
Blank Sample ID: WG474713-01
Instrument ID: TOC-VWP
Method: 9060A

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG474713-02	TC0507201A.036	05/07/14 22:49	01
LCS2	WG474713-03	TC0507201A.037	05/07/14 23:28	01
13MW3	L14050062-02	TC0507201A.040	05/08/14 00:28	01
13MW3	L14050062-03	TC0507201A.041	05/08/14 01:11	01
13MW4	L14050062-04	TC0507201A.042	05/08/14 01:53	01
13MW4	L14050062-05	TC0507201A.043	05/08/14 02:35	01
13MWDUP	L14050062-06	TC0507201A.044	05/08/14 03:16	01
13MWDUP	L14050062-07	TC0507201A.045	05/08/14 03:57	01
13MW5	L14050062-08	TC0507201A.046	05/08/14 04:39	01
13MW5	L14050062-10	TC0507201A.047	05/08/14 05:20	01
13MW5	L14050062-12	TC0507201A.048	05/08/14 06:02	01
13MW5	L14050062-09	TC0507201A.049	05/08/14 06:45	01
13MW5	L14050062-11	TC0507201A.052	05/08/14 07:52	01
13MW5	L14050062-13	TC0507201A.053	05/08/14 08:35	01
13MW6	L14050062-14	TC0507201A.054	05/08/14 09:16	01
13MW6	L14050062-15	TC0507201A.055	05/08/14 09:58	01
13MW7	L14050062-16	TC0507201A.056	05/08/14 10:37	01
13MW7	L14050062-17	TC0507201A.057	05/08/14 11:18	01
13MW8	L14050062-18	TC0507201A.058	05/08/14 11:58	01
13MW8	L14050062-19	TC0507201A.059	05/08/14 12:39	01
DUP	WG474713-11	TC0507201A.060	05/08/14 13:24	01

Report Name: BLANK_SUMMARY
PDF File ID: 3530562
Report generated 05/08/2014 17:11

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L14050062 Prep Date: 05/07/14 22:14 Sample ID: WG474713-01
Instrument ID: TOC-VWP Run Date: 05/07/14 22:14 Prep Method: 9060A
File ID: TC0507201A.035 Analyst: DCM Method: 9060A
Workgroup (AAB#): WG474713 Matrix: Water Units: mg/L
Contract #: Cal ID: TOC-VW-09-JUL-13

Analytes	MDL	RL	Concentration	Dilution	Qualifier
Total Organic Carbon	0.500	1.00	0.500	1	U
Total Organic Carbon Rep1	0.500	1.00	0.500	1	U
Total Organic Carbon Rep2	0.500	1.00	0.500	1	U
Total Organic Carbon Rep3	0.500	1.00	0.500	1	U
Total Organic Carbon Rep4	0.500	1.00	0.500	1	U

MDL Method Detection Limit
RL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > RL

Report Name:BLANK
PDF ID: 3530557
08-MAY-2014 17:10

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L14050062 Prep Date: 05/07/14 22:14 Sample ID: WG474713-01
Instrument ID: TOC-VWP Run Date: 05/07/14 22:14 Prep Method: 9060A
File ID: TC0507201A.035 Analyst: DCM Method: 9060A
Workgroup (AAB#): WG474713 Matrix: Water Units: mg/L
Contract #: Cal ID: TOC-VW-09-JUL-13

Analytes	MDL	RL	Concentration	Dilution	Qualifier
Organic Carbon, Dissolved	0.500	1.00	0.500	1	U

MDL Method Detection Limit
RL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > RL

Report Name: BLANK
PDF ID: 3530563
08-MAY-2014 17:11

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L14050062 Analyst: DCM Prep Method: 9060A
Instrument ID: TOC-VWP Matrix: Water Method: 9060A
Workgroup (AAB#): WG474713 Units: mg/L
QC Key: STD Lot #: STD63965

Sample ID: WG474713-02 LCS File ID: TC0507201A.036 Run Date: 05/07/2014 22:49
Sample ID: WG474713-03 LCS2 File ID: TC0507201A.037 Run Date: 05/07/2014 23:28

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Total Organic Carbon	25.0	24.8	99.2	25.0	24.7	98.6	0.606	85 - 115	15	
Total Organic Carbon Rep1		25.2			24.8		1.44	85 - 115	15	*
Total Organic Carbon Rep2		24.6			24.7		0.521	85 - 115	15	*
Total Organic Carbon Rep3		24.8			24.6		0.845	85 - 115	15	*
Total Organic Carbon Rep4		24.6			24.5		0.506	85 - 115	15	*

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 3530558
Report generated: 05/08/2014 17:10

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L14050062 Analyst: DCM Prep Method: 9060A
Instrument ID: TOC-VWP Matrix: Water Method: 9060A
Workgroup (AAB#): WG474713 Units: mg/L
QC Key: STD Lot #: STD63965

Sample ID: WG474713-02 LCS File ID: TC0507201A.036 Run Date: 05/07/2014 22:49
Sample ID: WG474713-03 LCS2 File ID: TC0507201A.037 Run Date: 05/07/2014 23:28

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Organic Carbon, Dissolved	25.0	24.8	99.2	25.0	24.7	98.6	0.606	85 - 115	15	

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 3530564
Report generated: 05/08/2014 17:11

Microbac Laboratories Inc.

MS/MSD REPORT

Loginnum: L14050062 Cal ID: TOC-VWP- 09-JUL-13 Worknum: WG474713

Instrument ID: TOC-VWP Contract #: Prep Method: 9060A

Parent ID: L14050062-08 File ID: TC0507201A.046 Dil: 1 Method: 9060A

Sample ID: L14050062-10 MS File ID: TC0507201A.047 Dil: 1 Matrix: Water

Sample ID: L14050062-12 MSD File ID: TC0507201A.048 Dil: 1 Units: mg/L

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Total Organic Carbon	2.08	10.0	10.4	82.9	10.0	15.5	134	39.7	85 - 115	15	*#

* FAILS %REC LIMIT

\# FAILS RPD LIMIT

MS_MSD - Modified 03/06/2008
PDF File ID: 3530559
Report generated 05/08/2014 17:10

Microbac Laboratories Inc.

MS/MSD REPORT

Loginnum: L14050062 Cal ID: TOC-VWP- 09-JUL-13 Worknum: WG474713

Instrument ID: TOC-VWP Contract #: Prep Method: 9060A

Parent ID: L14050062-09 File ID: TC0507201A.049 Dil: 1 Method: 9060

Sample ID: L14050062-11 MS File ID: TC0507201A.052 Dil: 1 Matrix: Water

Sample ID: L14050062-13 MSD File ID: TC0507201A.053 Dil: 1 Units: mg/L

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Organic Carbon, Dissolved	1.51	10.0	11.8	103	10.0	13.5	120	13.7	85 - 115	15	*

* FAILS %REC LIMIT

\# FAILS RPD LIMIT

MS_MSD - Modified 03/06/2008
PDF File ID: 3530565
Report generated 05/08/2014 17:11

3.0 Attachments

CHAIN OF CUSTODY RECORD

Laboratory: Microbac - Ohio Valley Division- 158 Starlite Drive, Marrietta, OH 45750 - Michelle Taylor, Project Manager- 1-800-373-4071

Client:	Draper Aden Associates	**Consultant:**	Draper Aden Associates	**Sample Site:**	RAAP, Radford, Virginia
Attn:	0	**Attn:**	Janet C. Frazier	**Location:**	Open Burning Ground (OBG)/HWMU13
Address:	0	**Address:**	2206 South Main Street		
	0		Blacksburg, Virginia 24060	**Event:**	April 2014 Semiannual GW Monitoring Event
Phone:	0	**Phone:**	(540) 552-0444	**DAA JN:**	B03204-12
Fax:	0	**Fax:**	(540) 552-0291	**Lab JN:**	
Fax:	0				

Project Specific (PS) or Batch (B) QC:
Sample Collection for Project Complete? *YES*
UPS: 1Z 237 301 01 9569 7256
Carrier:
Tracking Number:

Box 1: Matrix
SW Surface Water — T Trip Blank
GW Groundwater — E Equipment Blank
L Leachate — P Product
S Soil — O Other

Box 2: Preservative
A HCL — E NaOH
B HNO_3 — F ZnAc
C H_2SO_4 — G Other (Specify)
D $Na_2S_2O_3$ — H None

Box 3: Filtered/Unfiltered
F Filtered
U Unfiltered

Box 4: Sample Type
G Grab
C Composite

Box 5: Sample Container Type
P Plastic — V VOA
AG Amber Glass — CG Clear Glass

Invoice
Copy to Consultant: *YES*
Bill: *CLIENT* *OTHER* _____
Preserved and shipped on ice: *YES*

GENERAL NOTES:
1. Level 4 (comprehensive) deliverable with pdf.
2. REPORT DL/QL and estimated results.
3. Perchlorate field filtered with 0. 2 micron filter. DOC field filtered with 0.45 micron filter

DOC/TOC = SW-846 9060A
JLK 4/15/2014

Sample ID	Date: 2014	Time	Box 1: Matrix	Number of Bottles	Perchlorate by SW-846 Method 6850	Total Organic Carbon (TOC) - 9060A - 4 reps	Dissolved Organic Carbon (DOC) - 9060A- 4 reps						
Box 4 - Sample Type					G	G	G						
Box 3 - Filtered/Unfiltered					F	U	F						
Required pH of Sample					-	<2	<2						
Box 2 - Preservative					H	C	C						
Box 5 - Sample Container Type					1-250ml P	1-250 mL P	1-250 mL P						
13MW2	4/29	1605	GW	1	X								
13MW3		1035	GW	3	X	X	X						
13MW4		1235	GW	3	X	X	X						
13MWDUP		1245	GW	3	X	X	X						
13MW5		1330	GW	6	X	X	X						USE FOR QC ✓
13MW6		1420	GW	3	X	X	X						
13MW7		1515	GW	3	X	X	X						
13MW8	4/29	1135	GW	3	X	X	X						

Clients Special Instructions:

Received by lab in Good Condition _____ Yes _____ No Custody Seal Intact _____ Yes _____ No Temperature upon arrival _____ Received on Ice _____ Yes _____ No
Describe problems, if any:

Sampler Name (Print): KEN CODDINGTON	Date: 4/29/14	#1 Relinquished by (Signature):	Date: 4/30/14	#2 Relinquished by (Signature):	Date:	Sample Storage
Sampler Signature:	Time: 0700	Company Name: DAA	Time: 1700	Company Name:	Time:	Time Requested:
Sampler Name (Print): Tyler Emery	Date: 4/29/14	#1 Received by (Signature):		#2 Received	Date:	30 DYS ORG/6 MTHS INORG
Sampler Signature:	Time: 0700	Company Name:			Time:	

Microbac OVD
Received: 05/01/2014 10:13
By: BRENDA GREENWALT 221000053584
Brenda Greenwalt

Y1 JLK 4/16/2014

Abridged data package.
Full deliverable available

Draper Aden

Client Ref.: RAAP OBG April 2014 Semi

Pace Workorder Number: 92199320

Pace Analytical Services, Inc.
9800 Kincey Ave
Suite 100
Huntersville, NC 28078

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

May 17, 2014

Ms. Janet Frazier
Draper Aden Associates
2206 South Main Street
Blacksburg, VA 24060

RE: Project: RAAP OBG April 2014 Semi
Pace Project No.: 92199320

Dear Ms. Frazier:
Enclosed are the analytical results for sample(s) received by the laboratory on April 30, 2014. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Analyses were performed at the Pace Analytical Services location indicated on the sample analyte page for analysis unless otherwise footnoted.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Kevin Godwin
kevin.godwin@pacelabs.com
Project Manager

Enclosures

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CERTIFICATIONS

Project: RAAP OBG April 2014 Semi
Pace Project No.: 92199320

Ormond Beach Certification IDs
8 East Tower Circle, Ormond Beach, FL 32174
Alabama Certification #: 41320
Arizona Certification #: AZ0735
Colorado Certification: FL NELAC Reciprocity
Connecticut Certification #: PH-0216
Delaware Certification: FL NELAC Reciprocity
Florida Certification #: E83079
Georgia Certification #: 955
Guam Certification: FL NELAC Reciprocity
Hawaii Certification: FL NELAC Reciprocity
Illinois Certification #: 200068
Indiana Certification: FL NELAC Reciprocity
Kansas Certification #: E-10383
Kentucky Certification #: 90050
Louisiana Certification #: FL NELAC Reciprocity
Louisiana Environmental Certificate #: 05007
Maine Certification #: FL01264
Maryland Certification: #346
Massachusetts Certification #: M-FL1264
Michigan Certification #: 9911
Mississippi Certification: FL NELAC Reciprocity
Montana Certification #: Cert 0074
Nebraska Certification: NE-OS-28-14
Nevada Certification: FL NELAC Reciprocity
New Hampshire Certification #: 2958
New Jersey Certification #: FL765
New York Certification #: 11608
North Carolina Environmental Certificate #: 667
North Carolina Certification #: 12710
Pennsylvania Certification #: 68-00547
Puerto Rico Certification #: FL01264
South Carolina Certification: #96042001
Tennessee Certification #: TN02974
Texas Certification: FL NELAC Reciprocity
US Virgin Islands Certification: FL NELAC Reciprocity
Virginia Environmental Certification #: 460165
Washington Certification #: C955
West Virginia Certification #: 9962C
Wisconsin Certification #: 399079670
Wyoming (EPA Region 8): FL NELAC Reciprocity

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SAMPLE SUMMARY

Project: RAAP OBG April 2014 Semi
Pace Project No.: 92199320

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92199320001	**13MW2**	Water	04/29/14 16:05	04/30/14 10:30
92199320002	**13MW3**	Water	04/29/14 10:35	04/30/14 10:30
92199320003	**13MW4**	Water	04/29/14 12:35	04/30/14 10:30
92199320004	**13MWDUP**	Water	04/29/14 12:45	04/30/14 10:30
92199320005	**13MW5**	Water	04/29/14 13:30	04/30/14 10:30
92199320006	**13MW6**	Water	04/29/14 14:20	04/30/14 10:30
92199320007	**13MW7**	Water	04/29/14 15:15	04/30/14 10:30
92199320008	**13MW8**	Water	04/29/14 11:35	04/30/14 10:30

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SAMPLE ANALYTE COUNT

Project: RAAP OBG April 2014 Semi
Pace Project No.: 92199320

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92199320001	**13MW2**	EPA 300.0	AIS	1	PASI-O
		EPA 300.1	JNZ	2	PASI-O
		EPA 300.1	JNZ	2	PASI-O
92199320002	**13MW3**	SM 2320B	LJJ	1	PASI-O
		EPA 300.0	JNZ	1	PASI-O
		EPA 300.0	JNZ	2	PASI-O
		EPA 300.1	JNZ	2	PASI-O
		EPA 300.1	JNZ	2	PASI-O
92199320003	**13MW4**	SM 2320B	LJJ	1	PASI-O
		EPA 300.0	JNZ	1	PASI-O
		EPA 300.0	JNZ	2	PASI-O
		EPA 300.1	JNZ	2	PASI-O
		EPA 300.1	JNZ	2	PASI-O
92199320004	**13MWDUP**	SM 2320B	LJJ	1	PASI-O
		EPA 300.0	JNZ	1	PASI-O
		EPA 300.0	JNZ	2	PASI-O
		EPA 300.1	JNZ	2	PASI-O
		EPA 300.1	JNZ	2	PASI-O
92199320005	**13MW5**	SM 2320B	LJJ	1	PASI-O
		EPA 300.0	JNZ	1	PASI-O
		EPA 300.0	JNZ	2	PASI-O
		EPA 300.1	JNZ	2	PASI-O
		EPA 300.1	JNZ	2	PASI-O
92199320006	**13MW6**	SM 2320B	LJJ	1	PASI-O
		EPA 300.0	JNZ	1	PASI-O
		EPA 300.0	JNZ	2	PASI-O
		EPA 300.1	JNZ	2	PASI-O
		EPA 300.1	JNZ	2	PASI-O
92199320007	**13MW7**	SM 2320B	LJJ	1	PASI-O
		EPA 300.0	JNZ	1	PASI-O
		EPA 300.0	JNZ	2	PASI-O
		EPA 300.1	JNZ	2	PASI-O
		EPA 300.1	JNZ	2	PASI-O
92199320008	**13MW8**	SM 2320B	LJJ	1	PASI-O
		EPA 300.0	JNZ	1	PASI-O
		EPA 300.0	JNZ	2	PASI-O
		EPA 300.1	JNZ	2	PASI-O

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SAMPLE ANALYTE COUNT

Project: RAAP OBG April 2014 Semi
Pace Project No.: 92199320

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 300.1	JNZ	2	PASI-O

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SUMMARY OF DETECTION

Project: RAAP OBG April 2014 Semi
Pace Project No.: 92199320

Lab Sample ID / Method	Client Sample ID / Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
92199320001	**13MW2**					
EPA 300.0	Chloride	5.7	mg/L	5.0	05/15/14 07:22	
92199320002	**13MW3**					
SM 2320B	Alkalinity, Total as CaCO3	218	mg/L	5.0	05/07/14 15:16	
EPA 300.0	Nitrate as N	1.6	mg/L	0.050	04/30/14 21:24	
EPA 300.0	Chloride	4.5J	mg/L	5.0	04/30/14 21:24	
EPA 300.0	Sulfate	112	mg/L	5.0	04/30/14 21:24	
92199320003	**13MW4**					
SM 2320B	Alkalinity, Total as CaCO3	166	mg/L	5.0	05/07/14 15:32	
EPA 300.0	Nitrate as N	0.79	mg/L	0.050	04/30/14 22:10	
EPA 300.0	Chloride	4.9J	mg/L	5.0	04/30/14 22:10	
EPA 300.0	Sulfate	50.7	mg/L	5.0	04/30/14 22:10	
92199320004	**13MWDUP**					
SM 2320B	Alkalinity, Total as CaCO3	168	mg/L	5.0	05/07/14 15:37	
EPA 300.0	Nitrate as N	0.78	mg/L	0.050	04/30/14 22:25	
EPA 300.0	Chloride	4.8J	mg/L	5.0	04/30/14 22:25	
EPA 300.0	Sulfate	50.2	mg/L	5.0	04/30/14 22:25	
92199320005	**13MW5**					
SM 2320B	Alkalinity, Total as CaCO3	253	mg/L	5.0	05/07/14 13:26	
EPA 300.0	Nitrate as N	0.55	mg/L	0.050	04/30/14 22:40	
EPA 300.0	Chloride	3.6J	mg/L	5.0	04/30/14 22:40	
EPA 300.0	Sulfate	75.0	mg/L	5.0	04/30/14 22:40	
92199320006	**13MW6**					
SM 2320B	Alkalinity, Total as CaCO3	277	mg/L	5.0	05/07/14 15:50	
EPA 300.0	Nitrate as N	0.83	mg/L	0.050	04/30/14 22:55	
EPA 300.0	Chloride	6.7	mg/L	5.0	04/30/14 22:55	
EPA 300.0	Sulfate	174	mg/L	5.0	04/30/14 22:55	
92199320007	**13MW7**					
SM 2320B	Alkalinity, Total as CaCO3	206	mg/L	5.0	05/07/14 15:56	
EPA 300.0	Nitrate as N	0.62	mg/L	0.050	04/30/14 23:10	
EPA 300.0	Chloride	3.4J	mg/L	5.0	04/30/14 23:10	
EPA 300.0	Sulfate	91.5	mg/L	5.0	04/30/14 23:10	
92199320008	**13MW8**					
SM 2320B	Alkalinity, Total as CaCO3	172	mg/L	5.0	05/07/14 16:01	
EPA 300.0	Nitrate as N	0.19	mg/L	0.050	04/30/14 23:26	
EPA 300.0	Sulfate	292	mg/L	50.0	05/03/14 12:44	

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PROJECT NARRATIVE

Project: RAAP OBG April 2014 Semi
Pace Project No.: 92199320

Method: **SM 2320B**
Description: 2320B Alkalinity
Client: Draper Aden Associates
Date: May 17, 2014

General Information:
7 samples were analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: RAAP OBG April 2014 Semi
Pace Project No.: 92199320

Method: **EPA 300.0**
Description: 300.0 IC Anions
Client: Draper Aden Associates
Date: May 17, 2014

General Information:
7 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: RAAP OBG April 2014 Semi
Pace Project No.: 92199320

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: Draper Aden Associates
Date: May 17, 2014

General Information:
8 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: RAAP OBG April 2014 Semi
Pace Project No.: 92199320

Method: **EPA 300.1**
Description: 300.1 Oxihalide IC Anions 14d
Client: Draper Aden Associates
Date: May 17, 2014

General Information:
8 samples were analyzed for EPA 300.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: RAAP OBG April 2014 Semi
Pace Project No.: 92199320

Method: **EPA 300.1**
Description: 300.1 Oxihalide IC Anions 28d
Client: Draper Aden Associates
Date: May 17, 2014

General Information:
8 samples were analyzed for EPA 300.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: RAAP OBG April 2014 Semi
Pace Project No.: 92199320

Sample: 13MW2 **Lab ID: 92199320001** Collected: 04/29/14 16:05 Received: 04/30/14 10:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**5.7**	mg/L	5.0	1		05/15/14 07:22	16887-00-6	
300.1 Oxihalide IC Anions 14d	Analytical Method: EPA 300.1							
Chlorite	**5.02**	ug/L	5.0	1		05/08/14 00:45		
Surrogates								
Dichloroacetate (S)	96	%	90-115	1		05/08/14 00:45	79-43-6	
300.1 Oxihalide IC Anions 28d	Analytical Method: EPA 300.1							
Chlorate	**5.02**	ug/L	5.0	1		05/08/14 00:45	7790-93-4	
Surrogates								
Dichloroacetate (S)	96	%	90-115	1		05/08/14 00:45	79-43-6	

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ANALYTICAL RESULTS

Project: RAAP OBG April 2014 Semi
Pace Project No.: 92199320

Sample: 13MW3 **Lab ID: 92199320002** Collected: 04/29/14 10:35 Received: 04/30/14 10:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	**218**	mg/L	5.0	1		05/07/14 15:16		
300.0 IC Anions	Analytical Method: EPA 300.0							
Nitrate as N	**1.6**	mg/L	0.050	1		04/30/14 21:24	14797-55-8	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**4.5J**	mg/L	5.0	1		04/30/14 21:24	16887-00-6	
Sulfate	**112**	mg/L	5.0	1		04/30/14 21:24	14808-79-8	
300.1 Oxihalide IC Anions 14d	Analytical Method: EPA 300.1							
Chlorite	**5.02**	ug/L	5.0	1		05/08/14 01:28		
Surrogates								
Dichloroacetate (S)	100	%	90-115	1		05/08/14 01:28	79-43-6	
300.1 Oxihalide IC Anions 28d	Analytical Method: EPA 300.1							
Chlorate	**5.02**	ug/L	5.0	1		05/08/14 01:28	7790-93-4	
Surrogates								
Dichloroacetate (S)	100	%	90-115	1		05/08/14 01:28	79-43-6	

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ANALYTICAL RESULTS

Project: RAAP OBG April 2014 Semi
Pace Project No.: 92199320

Sample: 13MW4 **Lab ID: 92199320003** Collected: 04/29/14 12:35 Received: 04/30/14 10:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	**166**	mg/L	5.0	1		05/07/14 15:32		
300.0 IC Anions	Analytical Method: EPA 300.0							
Nitrate as N	**0.79**	mg/L	0.050	1		04/30/14 22:10	14797-55-8	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**4.9J**	mg/L	5.0	1		04/30/14 22:10	16887-00-6	
Sulfate	**50.7**	mg/L	5.0	1		04/30/14 22:10	14808-79-8	
300.1 Oxihalide IC Anions 14d	Analytical Method: EPA 300.1							
Chlorite	**5.02**	ug/L	5.0	1		05/08/14 02:11		
Surrogates								
Dichloroacetate (S)	97	%	90-115	1		05/08/14 02:11	79-43-6	
300.1 Oxihalide IC Anions 28d	Analytical Method: EPA 300.1							
Chlorate	**5.02**	ug/L	5.0	1		05/08/14 02:11	7790-93-4	
Surrogates								
Dichloroacetate (S)	97	%	90-115	1		05/08/14 02:11	79-43-6	

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ANALYTICAL RESULTS

Project: RAAP OBG April 2014 Semi
Pace Project No.: 92199320

Sample: 13MWDUP **Lab ID: 92199320004** Collected: 04/29/14 12:45 Received: 04/30/14 10:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	**168**	mg/L	5.0	1		05/07/14 15:37		
300.0 IC Anions	Analytical Method: EPA 300.0							
Nitrate as N	**0.78**	mg/L	0.050	1		04/30/14 22:25	14797-55-8	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**4.8J**	mg/L	5.0	1		04/30/14 22:25	16887-00-6	
Sulfate	**50.2**	mg/L	5.0	1		04/30/14 22:25	14808-79-8	
300.1 Oxihalide IC Anions 14d	Analytical Method: EPA 300.1							
Chlorite	**5.02**	ug/L	5.0	1		05/08/14 02:54		
Surrogates								
Dichloroacetate (S)	99	%	90-115	1		05/08/14 02:54	79-43-6	
300.1 Oxihalide IC Anions 28d	Analytical Method: EPA 300.1							
Chlorate	**5.02**	ug/L	5.0	1		05/08/14 02:54	7790-93-4	
Surrogates								
Dichloroacetate (S)	99	%	90-115	1		05/08/14 02:54	79-43-6	

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ANALYTICAL RESULTS

Project: RAAP OBG April 2014 Semi
Pace Project No.: 92199320

Sample: 13MW5 **Lab ID: 92199320005** Collected: 04/29/14 13:30 Received: 04/30/14 10:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	**253**	mg/L	5.0	1		05/07/14 13:26		
300.0 IC Anions	Analytical Method: EPA 300.0							
Nitrate as N	**0.55**	mg/L	0.050	1		04/30/14 22:40	14797-55-8	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**3.6J**	mg/L	5.0	1		04/30/14 22:40	16887-00-6	
Sulfate	**75.0**	mg/L	5.0	1		04/30/14 22:40	14808-79-8	
300.1 Oxihalide IC Anions 14d	Analytical Method: EPA 300.1							
Chlorite	**5.02**	ug/L	5.0	1		05/08/14 03:37		
Surrogates								
Dichloroacetate (S)	98	%	90-115	1		05/08/14 03:37	79-43-6	
300.1 Oxihalide IC Anions 28d	Analytical Method: EPA 300.1							
Chlorate	**5.02**	ug/L	5.0	1		05/08/14 03:37	7790-93-4	
Surrogates								
Dichloroacetate (S)	98	%	90-115	1		05/08/14 03:37	79-43-6	

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(704)875-9092

ANALYTICAL RESULTS

Project: RAAP OBG April 2014 Semi
Pace Project No.: 92199320

Sample: 13MW6 **Lab ID: 92199320006** Collected: 04/29/14 14:20 Received: 04/30/14 10:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	**277**	mg/L	5.0	1		05/07/14 15:50		
300.0 IC Anions	Analytical Method: EPA 300.0							
Nitrate as N	**0.83**	mg/L	0.050	1		04/30/14 22:55	14797-55-8	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**6.7**	mg/L	5.0	1		04/30/14 22:55	16887-00-6	
Sulfate	**174**	mg/L	5.0	1		04/30/14 22:55	14808-79-8	
300.1 Oxihalide IC Anions 14d	Analytical Method: EPA 300.1							
Chlorite	**5.02**	ug/L	5.0	1		05/08/14 05:46		
Surrogates								
Dichloroacetate (S)	98	%	90-115	1		05/08/14 05:46	79-43-6	
300.1 Oxihalide IC Anions 28d	Analytical Method: EPA 300.1							
Chlorate	**5.02**	ug/L	5.0	1		05/08/14 05:46	7790-93-4	
Surrogates								
Dichloroacetate (S)	98	%	90-115	1		05/08/14 05:46	79-43-6	

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ANALYTICAL RESULTS

Project: RAAP OBG April 2014 Semi
Pace Project No.: 92199320

Sample: 13MW7 **Lab ID: 92199320007** Collected: 04/29/14 15:15 Received: 04/30/14 10:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	**206**	mg/L	5.0	1		05/07/14 15:56		
300.0 IC Anions	Analytical Method: EPA 300.0							
Nitrate as N	**0.62**	mg/L	0.050	1		04/30/14 23:10	14797-55-8	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**3.4J**	mg/L	5.0	1		04/30/14 23:10	16887-00-6	
Sulfate	**91.5**	mg/L	5.0	1		04/30/14 23:10	14808-79-8	
300.1 Oxihalide IC Anions 14d	Analytical Method: EPA 300.1							
Chlorite	**5.02**	ug/L	5.0	1		05/08/14 06:29		
Surrogates								
Dichloroacetate (S)	97	%	90-115	1		05/08/14 06:29	79-43-6	
300.1 Oxihalide IC Anions 28d	Analytical Method: EPA 300.1							
Chlorate	**5.02**	ug/L	5.0	1		05/08/14 06:29	7790-93-4	
Surrogates								
Dichloroacetate (S)	97	%	90-115	1		05/08/14 06:29	79-43-6	

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ANALYTICAL RESULTS

Project: RAAP OBG April 2014 Semi
Pace Project No.: 92199320

Sample: 13MW8 **Lab ID: 92199320008** Collected: 04/29/14 11:35 Received: 04/30/14 10:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	**172**	mg/L	5.0	1		05/07/14 16:01		
300.0 IC Anions	Analytical Method: EPA 300.0							
Nitrate as N	**0.19**	mg/L	0.050	1		04/30/14 23:26	14797-55-8	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**5.02**	mg/L	5.0	1		04/30/14 23:26	16887-00-6	
Sulfate	**292**	mg/L	50.0	10		05/03/14 12:44	14808-79-8	
300.1 Oxihalide IC Anions 14d	Analytical Method: EPA 300.1							
Chlorite	**5.02**	ug/L	5.0	1		05/08/14 07:12		
Surrogates								
Dichloroacetate (S)	95	%	90-115	1		05/08/14 07:12	79-43-6	
300.1 Oxihalide IC Anions 28d	Analytical Method: EPA 300.1							
Chlorate	**5.02**	ug/L	5.0	1		05/08/14 07:12	7790-93-4	
Surrogates								
Dichloroacetate (S)	95	%	90-115	1		05/08/14 07:12	79-43-6	

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QUALITY CONTROL DATA

Project: RAAP OBG April 2014 Semi
Pace Project No.: 92199320

QC Batch: WET/24830 Analysis Method: SM 2320B
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
Associated Lab Samples: 92199320002, 92199320003, 92199320004, 92199320005, 92199320006, 92199320007, 92199320008

METHOD BLANK: 895961 Matrix: Water
Associated Lab Samples:

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	5.02	5.0	05/07/14 13:12	

LABORATORY CONTROL SAMPLE: 895962

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	250	254	102	90-110	

SAMPLE DUPLICATE: 895963

Parameter	Units	92199320004 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	168	165	2	20	

SAMPLE DUPLICATE: 895964

Parameter	Units	92199320005 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	253	253	.3	20	

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QUALITY CONTROL DATA

Project: RAAP OBG April 2014 Semi
Pace Project No.: 92199320

QC Batch: WETA/35439 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 92199320002, 92199320003, 92199320004, 92199320005, 92199320006, 92199320007, 92199320008

METHOD BLANK: 891021 Matrix: Water
Associated Lab Samples:

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrate as N	mg/L	0.0502	0.050	04/30/14 20:38	

LABORATORY CONTROL SAMPLE: 891022

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrate as N	mg/L	5	4.8	97	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 891023 891024

Parameter	Units	92199320005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrate as N	mg/L	0.55	5	5	5.4	5.7	98	102	90-110	4	20	

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QUALITY CONTROL DATA

Project: RAAP OBG April 2014 Semi
Pace Project No.: 92199320

QC Batch: WETA/35440 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 92199320002, 92199320003, 92199320004, 92199320005, 92199320006, 92199320007, 92199320008

METHOD BLANK: 891027 Matrix: Water
Associated Lab Samples:

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	5.02	5.0	04/30/14 20:38	
Sulfate	mg/L	5.02	5.0	04/30/14 20:38	

LABORATORY CONTROL SAMPLE: 891028

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	50	48.8	98	90-110	
Sulfate	mg/L	50	48.9	98	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 891029 891030

Parameter	Units	92199320005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	3.6J	50	50	53.4	55.5	100	104	90-110	4	20	
Sulfate	mg/L	75.0	50	50	124	129	98	107	90-110	3	20	

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QUALITY CONTROL DATA

Project: RAAP OBG April 2014 Semi
Pace Project No.: 92199320

QC Batch: WETA/35853
QC Batch Method: EPA 300.0
Analysis Method: EPA 300.0
Analysis Description: 300.0 IC Anions
Associated Lab Samples: 92199320001

METHOD BLANK: 902711
Matrix: Water
Associated Lab Samples:

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	5.02	5.0	05/15/14 04:50	

LABORATORY CONTROL SAMPLE: 902712

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	50	51.5	103	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 902713 902714

Parameter	Units	35136519001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	19.1	50	50	70.3	70.0	102	102	90-110	.5	20	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: RAAP OBG April 2014 Semi
Pace Project No.: 92199320

QC Batch: WETA/35707 | Analysis Method: EPA 300.1
QC Batch Method: EPA 300.1 | Analysis Description: 300.1 Oxihalides IC Anions
Associated Lab Samples: 92199320001, 92199320002, 92199320003, 92199320004, 92199320005, 92199320006, 92199320007, 92199320008

METHOD BLANK: 898841 | Matrix: Water
Associated Lab Samples:

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chlorite	ug/L	5.02	5.0	05/07/14 20:26	
Dichloroacetate (S)	%	98	90-115	05/07/14 20:26	

LABORATORY CONTROL SAMPLE: 898842

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chlorite	ug/L	40	39.9	100	85-115	
Dichloroacetate (S)	%			100	90-115	

MATRIX SPIKE SAMPLE: 898949

Parameter	Units	92199716003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chlorite	ug/L	ND	60	58.1	97	75-125	
Dichloroacetate (S)	%				98	90-115	

MATRIX SPIKE SAMPLE: 898991

Parameter	Units	35135567001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chlorite	ug/L	8.3	40	38.9	77	75-125	
Dichloroacetate (S)	%				92	90-115	

SAMPLE DUPLICATE: 898948

Parameter	Units	92199716003 Result	Dup Result	RPD	Max RPD	Qualifiers
Chlorite	ug/L	ND	5.02		20	
Dichloroacetate (S)	%	95	94	2		

SAMPLE DUPLICATE: 898990

Parameter	Units	35135567001 Result	Dup Result	RPD	Max RPD	Qualifiers
Chlorite	ug/L	8.3	8.1	2	20	
Dichloroacetate (S)	%	98	96	3		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: RAAP OBG April 2014 Semi
Pace Project No.: 92199320

QC Batch: WETA/35629 | Analysis Method: EPA 300.1
QC Batch Method: EPA 300.1 | Analysis Description: 300.1 Oxihalides IC Anions
Associated Lab Samples: 92199320001, 92199320002, 92199320003, 92199320004, 92199320005, 92199320006, 92199320007, 92199320008

METHOD BLANK: 896362 | Matrix: Water
Associated Lab Samples:

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chlorate	ug/L	5.02	5.0	05/07/14 20:26	
Dichloroacetate (S)	%	98	90-115	05/07/14 20:26	

LABORATORY CONTROL SAMPLE: 896363

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chlorate	ug/L	40	40.3	101	85-115	
Dichloroacetate (S)	%			100	90-115	

MATRIX SPIKE SAMPLE: 896365

Parameter	Units	35135567001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chlorate	ug/L	1.2U	40	37.9	95	75-125	
Dichloroacetate (S)	%				92	90-115	

MATRIX SPIKE SAMPLE: 896367

Parameter	Units	92199716003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chlorate	ug/L			56.5			
Dichloroacetate (S)	%				98	90-115	

SAMPLE DUPLICATE: 896364

Parameter	Units	35135567001 Result	Dup Result	RPD	Max RPD	Qualifiers
Chlorate	ug/L	1.2U	5.02		20	
Dichloroacetate (S)	%	98	96	3		

SAMPLE DUPLICATE: 896366

Parameter	Units	92199716003 Result	Dup Result	RPD	Max RPD	Qualifiers
Chlorate	ug/L		5.02			
Dichloroacetate (S)	%	95	94	2		

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: RAAP OBG April 2014 Semi
Pace Project No.: 92199320

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Acid preservation may not be appropriate for 2-Chloroethylvinyl ether, Styrene, and Vinyl chloride.

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

TNI - The NELAC Institute.

LABORATORIES

PASI-O Pace Analytical Services - Ormond Beach

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: RAAP OBG April 2014 Semi
Pace Project No.: 92199320

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92199320002	**13MW3**	SM 2320B	WET/24830		
92199320003	**13MW4**	SM 2320B	WET/24830		
92199320004	**13MWDUP**	SM 2320B	WET/24830		
92199320005	**13MW5**	SM 2320B	WET/24830		
92199320006	**13MW6**	SM 2320B	WET/24830		
92199320007	**13MW7**	SM 2320B	WET/24830		
92199320008	**13MW8**	SM 2320B	WET/24830		
92199320002	**13MW3**	EPA 300.0	WETA/35439		
92199320003	**13MW4**	EPA 300.0	WETA/35439		
92199320004	**13MWDUP**	EPA 300.0	WETA/35439		
92199320005	**13MW5**	EPA 300.0	WETA/35439		
92199320006	**13MW6**	EPA 300.0	WETA/35439		
92199320007	**13MW7**	EPA 300.0	WETA/35439		
92199320008	**13MW8**	EPA 300.0	WETA/35439		
92199320001	**13MW2**	EPA 300.0	WETA/35853		
92199320002	**13MW3**	EPA 300.0	WETA/35440		
92199320003	**13MW4**	EPA 300.0	WETA/35440		
92199320004	**13MWDUP**	EPA 300.0	WETA/35440		
92199320005	**13MW5**	EPA 300.0	WETA/35440		
92199320006	**13MW6**	EPA 300.0	WETA/35440		
92199320007	**13MW7**	EPA 300.0	WETA/35440		
92199320008	**13MW8**	EPA 300.0	WETA/35440		
92199320001	**13MW2**	EPA 300.1	WETA/35707		
92199320002	**13MW3**	EPA 300.1	WETA/35707		
92199320003	**13MW4**	EPA 300.1	WETA/35707		
92199320004	**13MWDUP**	EPA 300.1	WETA/35707		
92199320005	**13MW5**	EPA 300.1	WETA/35707		
92199320006	**13MW6**	EPA 300.1	WETA/35707		
92199320007	**13MW7**	EPA 300.1	WETA/35707		
92199320008	**13MW8**	EPA 300.1	WETA/35707		
92199320001	**13MW2**	EPA 300.1	WETA/35629		
92199320002	**13MW3**	EPA 300.1	WETA/35629		
92199320003	**13MW4**	EPA 300.1	WETA/35629		
92199320004	**13MWDUP**	EPA 300.1	WETA/35629		
92199320005	**13MW5**	EPA 300.1	WETA/35629		
92199320006	**13MW6**	EPA 300.1	WETA/35629		
92199320007	**13MW7**	EPA 300.1	WETA/35629		
92199320008	**13MW8**	EPA 300.1	WETA/35629		

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Pace Analytical	Document Name: Sample Condition Upon Receipt Form Document No.: F-FL-C-007 rev. 05	Document Revised: October 9, 2013 Issuing Authorities: Pace Florida Quality Office

Sample Condition Upon Receipt Form (SCUR)

Table Number: _____

Client Name: Draper Aden Associates Project # _____

Courier: ☐ Fed Ex ☒ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other _____

Tracking # 1Z237 301 01 9772 3848

Custody Seal on Cooler/Box Present: ☒ yes ☐ no Seals Intact: ☐ yes ☐ no

Date and initials of person examining contents: 4-30-14 WK

Packing Material: ☒ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other _____

Thermometer Used T-165 Type of Ice: Wet Blue None

Cooler Temperature °C 6.7 (Visual) -0.1 (Correction Factor) 6.6 (Actual)

(Temp should be above freezing to 6°C). If below 0°C, then was sample frozen? ☐ Yes ☐ No

Receipt of samples satisfactory: ☐ Yes ☐ No Rush TAT requested on COC:

If yes, then all conditions below were met:	If no, then mark box & describe issue (use comments area if necessary):
Chain of Custody Present	☐
Chain of Custody Filled Out	☐
Relinquished Signature & Sampler Name COC	☐
Samples Arrived within Hold Time	☐
Sufficient Volume	☐
Correct Containers Used	☐
Containers Intact	☐
Sample Labels match COC (sample IDs & date/time of collection)	☐ No Labels: ☐ No Time/Date on Labels: ☐
All containers needing preservation are found to be in compliance with EPA recommendation.	☐
No Headspace in VOA Vials (>6mm):	☐

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____

Comments/ Resolution (use back for additional comments): _____

Project Manager Review: JJ 4/30/14 / JDB 4/30/14 Date: _____

Finished Product Information Only

F.P. Sample ID: _____

Production Code: _____

Date/Time Opened: _____

Number of Unopened Bottles Remaining: _____

Extra Sample in Shed: Yes No

Size & Qty of Bottles Received

_____ x 5 Gal
_____ x 2.5 Gal
_____ x 1 Gal
_____ x 1 Liter
_____ x 500 mL
_____ x 250 mL
_____ x Other: _____

92199320

CHAIN OF CUSTODY RECORD

ok JLR 4-14-2014

Laboratory: Pace Analytical Services, Inc. / 8 East Tower Circle / Ormond Beach, FL 32174 / (386) 676-4813 Attn: Jeff Baylor(Project Mngr.)

Client: Draper Aden Associates Attn: 0 Address: 0 0 Phone: 0 Fax: 0 Fax: 0	Consultant: Draper Aden Associates Attn: Janet C. Frazier Address: 2206 South Main Street Blacksburg, Virginia 24060 Phone: (540) 552-0444 Fax: (540) 552-0291	Sample Site: RAAP, Radford, Virginia Location: Open Burning Ground (OBG)/HWMU13 Event: April 2014 Semiannual GW Monitoring Event DAA JN: B03204-12 Lab JN:	Project Specific (PS) or Batch (B) QC: Sample Collection for Project Complete? YES Carrier: UPS Tracking Number: 1Z2373010197725849

Box 1: Matrix
SW Surface Water; GW Groundwater; L Leachate; S Soil; T Trip Blank; E Equipment Blank; P Product; O Other

Box 2: Preservative
A HCL; B HNO_3; C H_2SO_4; D $Na_2S_2O_3$; E NaOH; F ZnAc; G Other (Specify); H None

Box 3: Filtered/Unfiltered
F Filtered; U Unfiltered

Box 4: Sample Type
G Grab; C Composite

Box 5: Sample Container Type
P Plastic; V VOA; AG Amber Glass; CG Clear Glass

Invoice
Copy to Consultant: YES
Bill: CLIENT OTHER
Preserved and shipped on Ice: YES

Box 4 - Sample Type					G	G							
Box 3 - Filtered/Unfiltered					U	U							
Required pH of Sample					N/A	N/A							
Box 2 - Preservative					G	H							
Box 5 - Sample Container Type					2-40 mL AG	1 L-250ml P							
Sample ID	2014	Time	Box 1: Matrix	Number of Bottles	IC300.1 - (Chlorate & Chlorite ONLY) preserved with Ethylene Diamine (EDA)	IC300.1 - (Chloride ONLY)	Alkalinity - 2320B	IC300.1- (Nitrate, Sulfate ONLY)					
13MW2	4/29	1605	GW	3	X	X							
13MW3		1035	GW	3	X	X	X	X					
13MW4		1235	GW	3	X	X	X	X					
13MWDUP		1245	GW	3	X	X	X	X					
13MW5		1330	GW	~~3~~ 2	X	X	X	X					
13MW6		1420	GW	3	X	X	X	X					
13MW7		1515	GW	3	X	X	X	X					
13MW8	4/29	1135	GW	3	X	X	X	X					

GENERAL NOTES:
1. Level 4 deliverable with EDD and pdf.
2. VELAP accreditation required.
3. REPORT DL/QL and estimated results.

13MW5 submitted only (2) 40mL AG

92199320

001
002
003
004
005 ONLY (2) 40mL AG IC300.1 USE FOR QC provided -JLR 4/29/14
006
007
008

Clients Special Instructions: level 4 with edd.

Received by lab in Good Condition ✓ Yes ___ No Custody Seal Intact ✓ Yes ___ No Temperature upon arrival 1.6 T-1605 Received on Ice ✓ Yes ___ No
Describe problems, if any:

Sampler Name (Print): KEN CODDINGTON	Date: 4/29/14	#1 Relinquished by (Signature): Tyler Emery	Date: 4/29/14	#2 Relinquished by (Signature):	Date:	Sample Storage
Sampler Signature: Ken Coddington	Time: 0700	Company Name: DAA	Time: 1700	Company Name:	Time:	Time Requested:
Sampler Name (Print): Tyler Emery	Date: 4/29/14	#1 Received by (Signature): WMK	Date: 4-30-14	#2 Received by (Signature):	Date:	30 DYS ORG/6 MTHS INORG
Sampler Signature: Tyler Emery	Time: 0700	Company Name: PACE FL	Time: 1030 am	Company Name:	Time:	

VI JLR 4/30/14

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Data Validation Summary
Second Quarter 2014 Semiannual Groundwater Monitoring Event

Open Burning Ground (OBG) - HWMU 13
Radford Facility Army Ammunition Plant, Radford, Virginia
EPA ID# VA1210020730

Draper Aden Associates performed data validation of the analytical results for the Second Quarter 2014 semiannual groundwater monitoring event at the Open Burning Ground (OBG) located at the Radford Army Ammunition Plant (Radford AAP) in Radford, Virginia. The Second Quarter 2014 groundwater monitoring activities were conducted in accordance with the Corrective Action Program, approved by Virginia Department of Environmental Quality (VDEQ) September 27, 2011 (as revised in the VDEQ-approved Class 2 Permit Modification dated June 18, 2013) and incorporated into the Permit. Samples were analyzed for the constituents listed in permit attachment VII.B.

The following information and attached table summarize the data validation results for the Second Quarter 2014 semiannual groundwater monitoring event.

Sample Collection/Analytical Services

Draper Aden Associates, of Blacksburg, Virginia, collected the semiannual groundwater samples monitoring samples on April 29, 2014.

Samples were submitted for laboratory analysis via courier to Eurofins Lancaster Laboratories Environmental, LLC, (ELLE), Lancaster, Pennsylvania; Pace Analytical Services, Inc., (Pace), of Ormond Beach, Florida; Microbac Laboratories (Microbac), Inc., Marietta Ohio. The chain of custody and permit required target analytes submitted to each laboratory is provided in the laboratory certificate of analysis.

Receipt of Monitoring Event Data

On behalf of BAE Systems, Ordnance Systems, Inc., each laboratory submitted results to Draper Aden Associates in a final certificate of analysis which included analytical results as well as relevant documentation to verify and validate the results. The final certificate of analysis for the event was received on May 19, 2014. Each laboratory is a VELAP accredited laboratory for the analytes, methods, and matrix as listed on each certificate of analysis, except as noted.

Verification Events

No verification sampling was required.

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Charlottesville ◆ Hampton Roads ◆ Richmond

Data Presentation

Sample results were reported by the laboratory and validated to at or above the method detection limit (MDL) (a.k.a., Detection Limit (DL). A reported value for a target analyte detected between the MDL and the quantitation limit (QL) should be considered an estimated concentration. Validated results are presented on the attached data validation summary table.

No results were rejected based on the data validation criteria.

A summary of the data validation is provided below.

Data Validation Summary

The samples were analyzed by *SW-846 Method requirements (Test Methods for Evaluating Solid Wastes - Physical and Chemical Methods, USEPA SW-846, 3rd edition - Final Update I, II/IIA and III)* and *USEPA Methods for the "Determination of Organic and Inorganic Compounds in Drinking Water, Volume 1, EPA 815-R-00-014.* All data, except where noted below, were evaluated in general accordance with:

- *USEPA Region III Modifications to the Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses, April 1993.*
- *USEPA Region III Modifications to National Functional Guidelines for Organic Data Review, September 1994.*
- *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, June 2008.*
- *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, October 2004.*
- *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review, January 2010.*
- *USEPA Region III Innovative Approaches for Validation of Organic and Inorganic Data Standard Operating Procedures M-1, June 1995, modified, and the analytical method.*

The evaluation of the data was based on the following:

- Data package completeness
- Chain of custody
- Holding time/preservation
- Initial and continuing calibrations
- Blanks
- Interference check sample (inorganics)
- Surrogates
- Matrix spike/matrix spike duplicate (MS/MSD) samples
- Laboratory control samples (LCS)
- Internal standards
- Field duplicate
- Serial dilution (inorganics)

- Target analyte identification and quantitation
- Other criteria as noted below

Data validation results are summarized on the attached reports and table. A summary of the required methods of analysis and the laboratory that performed the analysis is provided below.

Summary of Required Analytical Methods and Laboratory

Analytical Method	Laboratory/ SDG	Monitoring Well							
		13MW2	13MW3	13MW4	13MWDUP (13MW4)	13MW5	13MW6	13MW7	13MW8
8260C Volatiles	ELLE SDG RAE19	X	X	X	X (13MWDUP2)	X	X	X	X
RSK175-M Methane	ELLE SDG RAE19	X	X	X	X	X	X	X	X
6010C Dissolved Iron and Manganese	ELLE SDG RAE20		X	X	X	X	X	X	X
9060A TOC/DOC	Microbac L14050062		X	X	X	X	X	X	X
6850 Perchlorate	Microbac L14050062	X	X	X	X	X	X	X	X
2320B Alkalinity	Pace 92199320		X	X	X	X	X	X	X
300.1 Chlorate, Chlorite	Pace 92199320	X	X	X	X	X	X	X	X
300.0 Chloride	Pace 92199320	X	X	X	X	X	X	X	X
300.0 Nitrate and Sulfate	Pace 92199320		X	X	X	X	X	X	X

Note: 13MW2 is the upgradient background monitoring well. 13MW8 is the downgradient plume monitoring well. Remaining monitoring locations are compliance wells.

Each final certificate of analysis was complete in its presentation and the data were of acceptable quality.

The chain of custody documentation was complete. The chain of custody was appropriately signed and dated by field and laboratory personnel.

Each laboratory received the samples on ice and in good condition, with custody seals intact. Applicable holding time and preservation criteria were met for all samples and methods, except where noted below. The data set demonstrated the laboratory's ability to achieve the reported permit QL, except where discussed below.

A field duplicate of sample 13MW4 was submitted blind to the laboratory (13MWDUP) for all analyses, except for volatile organic compounds. A field duplicate of sample 13MW3 was submitted blind to the laboratory (13MWDUP2) for the 8260C due to historical volatile detections in 13MW3.

The MS/MSD and/or duplicate analyses were performed on project sample 13MW5, unless otherwise noted. The laboratory submitted to Draper Aden Associates, for each method of

analysis, results from an acceptable single blind performance evaluation sample that was analyzed within the past 12 months and evaluated from an independent source.

SW-846 Method 8260C/5030C - 25 ml purge volume - Volatile Organic Compounds

- The instrument performance check, instrument calibration, blank, surrogate, MS/MSD, LCS, internal standards, sample/field sample duplicate results, and target analyte identification and quantitation criteria were met, unless noted below. The laboratory analyzed a passing method detection limit check sample. Sample results were reviewed for transcription errors from the instrument data to the laboratory report and no errors were noted.

- Trip blank submitted for the sampling event.

- Sample 13MW3 was selected as the field duplicate and was submitted blind to the laboratory (13MWDUP2) and RPD<20, where applicable.

- No deviations from specific QA/QC criteria were identified during the data review process.

RSK-175-Modified – Methane

- Instrument calibration and calibration verification requirements were met. Blank, surrogate, MS/MSD, LCS, and sample/field sample duplicate results were within control limits, where applicable. Methane was not detected at or above the detection limit or QL in any sample.

- Trip blank submitted for the sampling event.

- Sample 13MW4 was selected as the field duplicate and was submitted blind to the laboratory (13MWDUP).

SW-846 Method 6010C/3005A – Inorganics-dissolved

- Calibration, QL check standard, blank, interference check sample, MS/MSD, LCS, serial dilution, sample/field sample duplicate precision requirements were met, except where noted below. The MS/MSD/serial dilution was analyzed on project sample 13MW5, as noted on the chain of custody. Manganese dissolved was reported above the QL in 13 MW8. Iron, dissolved and manganese, dissolved were not detected at or above the detection limit or QL in any other sample. No deviations from specific QA/QC criteria were identified during the data review process.

- Sample 13MW4 was selected as the field duplicate and was submitted blind to the laboratory (13MWDUP).

SW-846 Method 9060A – TOC/DOC

- DOC sample aliquot was field filtered using a 0.45 micron filter prior to sample preservation. Instrument calibration and calibration verification requirements were met.

Blank, MS/MSD and LCS results were within control limits, where applicable. The laboratory reported, as the final result, the mean of quadruplicate analyses. Field sample/duplicate results exhibited acceptable precision. Deviations from specific QA/QC criteria that were identified during the data review process are summarized below.

- Sample 13MW4 was selected as the field duplicate and was submitted blind to the laboratory (13MWDUP) and RPD criteria were met.

- Project specific MSD (13MW4) recovered high and RPD >20 (39.7) for TOC and all TOC results were qualified as estimated.

- Actual sample pH upon receipt at laboratory was not documented but noted by laboratory as acceptable pH upon receipt. Sample did not note instrument calibrated according to manufacturer's instructions, however, ICAL >0.995. No data qualification was made.

SW846 Method 6850 – Perchlorate

- Perchlorate sample aliquot was field filtered using a 0.2 micron filter. Sample was collected with headspace.

- Instrument calibration and calibration verification requirements were met. Blank, DL standard, MS/MSD, LCS, internal standard, and sample/field sample duplicate precision requirements were met, except where noted below. Deviations from specific QA/QC criteria that were identified during the data review process are summarized below.

- The MSD recovered low; however, the sample result was greater than four times the spike added concentration amount for the MS/MSD and no data qualifications were needed.

- The laboratory provided the method detection limit study and analyst initial demonstration of capability data as a revision.

USEPA Method 300.0/300.1 (IC) (Misc.)

- Calibration, blank, LCS, MS/MSD, and sample/field sample duplicate precision requirements were met.

- More than ten samples were analyzed between calibration verification (CV) samples (applies to all analytes). All CCVs exhibited acceptable recovery and no data qualification was required.

Method 2320B (Alkalinity)

- Calibration, blank, LCS, analytical duplicate, and sample/field sample duplicate precision requirements were met except where noted below. No deviations from specific control limits and QA/QC criteria were identified during the data review process. The laboratory was asked to provide the method detection limit study and analyst initial demonstration of capability data as a revision.

LIMITATIONS:

Draper Aden Associates prepared this document (which may include drawings, specifications, reports, studies and attachments) in accordance with the agreement between Draper Aden Associates and the client. The standard of care for all professional engineering, environmental and surveying and related services performed or furnished by Draper Aden Associates under this Agreement are the care and skill ordinarily used by members of these professions practicing under similar circumstances at the same time and in the same locality. Draper Aden Associates makes no warranties, express or implied, under this Agreement in connection with Draper Aden Associates' services. Conclusions presented are based upon a review of available information, the results of our field studies, and/or professional judgment. To the best of our knowledge, information provided by others is true and accurate, unless otherwise noted. Draper Aden Associates' liability, hereunder, shall be limited to amounts due Draper Aden Associates for services actually rendered, or reimbursable expenses actually incurred. Any reuse or modification of any of the aforementioned documents (whether hard copies or electronic transmittals) prepared by Draper Aden Associates without written verification or adaptation by Draper Aden Associates will be at the sole risk of the individual or entity utilizing said documents and such use is without the authorization of Draper Aden Associates. Draper Aden Associates shall have no legal liability resulting from any and all claims, damages, losses, and expenses, including attorney's fees arising out of the unauthorized reuse or modification of these documents. Client shall indemnify Draper Aden Associates from any claims arising out of unauthorized use or modification of the documents whether hard copy or electronic.

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Draper Aden Associates
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Date: 1.12.2015

This Report has been subjected to technical and quality review by:

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Date: 1.12.2015

SW-846 METHOD 8260C (GC/MS) VOLATILE ORGANIC DATA VALIDATION

Sample ID: 13MW2, 13MW3, 13MW4, 13MW5, 13MW6, 13MW7, 13MW8
QC Samples: Blanks, LCS, 13MW5 MS/MSD, blind field duplicate (13MWDUP2/13MW3)
Laboratory: Eurofins Lancaster Laboratories Environmental, Lancaster, PA; SDG: RAE19

"☑" denotes items reviewed. See Data Validation Report for additional comments.

A. QC DELIVERABLES PACKAGE:

- ☑ Case narrative and Chain of custody present and signed by a laboratory representative
- ☑ Sample results included for all sample locations
- ☑ All project specific target analytes reported at or above required permit DL and QL
- ☑ MDL study performed for all target analytes and supports required DL and QL
- ☑ Analyst initial demonstration of proficiency performed for all target analytes
- ☑ Passed single blind performance evaluation sample within 12 months (5 ml purge volume)
- ☑ Electronic data file reviewed

B. TECHNICAL HOLDING TIME AND PRESERVATION REVIEW CRITERIA:

- ☑ 14-day sample holding time, zero head space, pH <2
- ☑ Samples received at ≤6°C
- ☑ Preparation Method 5030C (25 ml purge volume)

C. GC/MS INSTRUMENT PERFORMANCE CHECK REVIEW CRITERIA:

- ☑ Instrument performance check solution was analyzed at the beginning of each 12-hour period of standard and/or sample analysis

D. INITIAL GC/MS CALIBRATION REVIEW CRITERIA:

- ☑ Target analytes included in the ICAL
- ☑ ICAL consisted of 5 calibration standards (or more, as needed)
- ☑ Lowest concentration calibration standard at or below the associated MCL, regulatory compliance, action limit, or required QL
- ☑ MDL check standard analyzed with ICAL for target analytes
- ☑ No calibration standards were removed from curve that would negatively impact the data integrity
- ☑ Each target analyte %RSD ≤ 20% or
- ☑ Correlation coefficient or coefficient of determination >0.99 for target analytes with ≥20 % RSD
- ☑ ICAL verification standard after ICAL, target analytes, 70-130%

E. CALIBRATION VERIFICATION REVIEW CRITERIA:

- ☑ Calibration verification standard analyzed at the beginning of each 12-hour period following the instrument performance check analysis and prior to the method blank and sample analysis
- ☑ % Difference/Drift of target analytes within ± 20.0%

F. BLANK REVIEW CRITERIA:

- ☑ Method/extraction blank analyzed on each GC/MS system used for sample analysis
- ☑ Trip Blank-one per day of collection.

G. SURROGATE REVIEW CRITERIA:

- ☑ The following surrogates (or others as allowed) were used and within the specified range
  - dibromofluoromethane (80-120%), 4-bromofluorobenzene (80-120%)
  - toluene-d_8 (80-120%), 1,2-dichloroethane-d_4 (80-120%)

H. MATRIX SPIKE / MATRIX SPIKE DUPLICATE (MS/MSD) / LABORATORY CONTROL SAMPLE (LCS) REVIEW CRITERIA:

- ☑ MS/MSD and LCS analyzed; MS/MSD and LCS within range
- ☑ Project specific analytes -%R 75-130%; Independent source

☑ All target analytes

I. INTERNAL STANDARDS REVIEW CRITERIA:

☑ The following internal standards (or others as allowed) were used
-fluorobenzene or 1,4-difluorobenzene, chlorobenzene-d_5, 1,4-dichlorobenzene-d_4

☑ Internal standard areas within - 50% to +100% of last calibration verification

☑ Internal standard retention times within ± 30 seconds of last calibration verification

J. TARGET ANALYTE IDENTIFICATION REVIEW CRITERIA:

☑ Results were consistent with historical data. New detections evaluated as follows:

☑ RRTs of the reported analytes within ± 0.06 RRT units of the standard RRT

☑ Sample spectra versus laboratory standard spectra criteria were evaluated:

* Characteristic ions maximized in the same scan or within one scan of each other
* Characteristic ions present in the standard spectra were present in the sample spectra for analytes detected above the QL
* Relative intensities of the ions between the standard and sample spectra were within ±30%.

K. TARGET ANALYTE QUANTITATION REVIEW CRITERIA:

☑ Results are consistent with historical data. New detections evaluated as follows:

* If analyte %RSD was 15% or less, use average relative response factor for quantitation.
* If analyte %RSD was greater than 15%, use first or higher order regression fit of five calibration points (6 calibration points for 2nd order).

☑ Results that exceed the initial calibration range were reanalyzed at a higher dilution.

☑ Analyte concentrations recorded on the sample quantitation reports were accurately transferred to the sample summary sheets (laboratory report).

L. REPORTING:

☑ Detected analytes or results requiring validation are presented on the attached data validation report

☑ Validated results reported to at or above required QL

☑ Sample/field duplicate RPD<20, where applicable

LIMITATIONS AND REFERENCES:

Draper Aden Associates conducted data validation of the above noted data set using summary tables and raw data provided by the analyzing laboratory. Data validation was conducted in general accordance with SW-846 Method requirements (Test Methods for Evaluating Solid Wastes - Physical and Chemical Methods, USEPA SW-846, 3rd edition - Final Update I, II/IIA, III and subsequent updates) and CLP data validation guidelines (USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, October 1999 and USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, June 2008, where applicable). Validation of this data set is limited to the items detailed in this report.

Validated by:

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Date: 1/8-2015

RSK-175 – Modified VOLATILE HEADSPACE ORGANICS GC DATA VALIDATION

Sample ID: 13MW2, 13MW3, 13MW4, 13MW5, 13MW6, 13MW7, 13MW8
QC Samples: Blanks, LCS, 13MW5 MS/MSD, field duplicate (13MWDUP/13MW4)
Laboratory: Eurofins Lancaster Laboratories Environmental, Lancaster, PA; SDG RAE19

"☑" denotes items reviewed. See Data Validation Report for additional comments.

A. QC DELIVERABLES PACKAGE:

- ☑ Case narrative present and signed by a laboratory representative
- ☑ Chain of Custody present and signed by a laboratory representative
- ☑ Sample results included for all sample locations
- ☑ Results provided for project specific analytes
- ☑ Quantitation limits (QLs) at permit or project required QL
- ☑ Analyst initial demonstration of capability provided for all analytes

B. TECHNICAL HOLDING TIME AND PRESERVATION CRITERIA:

- ☑ 14-day sample collection to extraction/analysis holding time
- ☑ Samples received at $\leq 6^{o}C$, preserved with HCl pH<2

C. INITIAL CALIBRATION CRITERIA:

- ☑ Analytes included in the ICAL
- ☑ ICAL consist of a minimum of 5 calibration levels
- ☑ A calibration standard at or below the associated MCL, regulatory compliance, or action limit
- ☑ Calibration levels removed from the curve should not negatively impact the data integrity
- ☑ Each analyte %RSD $\leq$ 15%
- ☑ If not, correlation coefficient/coefficient of determination >0.99 for analytes with $\geq$15% RSD

D. CALIBRATION VERIFICATION (CV) CRITERIA:

- ☑ CV analyzed at the beginning of each 12-hour period and prior to analysis of the method blank and samples
- ☑ CV analyzed after each 10 samples
- ☑ Analytes have % Difference/Drift within ± 15%.

E. BLANK CRITERIA:

- ☑ Method blank analyzed
- ☑ Trip blank per each day of sample collection
- ☑ Sample results evaluated for blank influence, where applicable.
- ☑ Blank analyzed after result exceeding calibration range, if required

F. SURROGATE CRITERIA:

- ☑ Propene (42-131%R);Surrogate added to all samples

G. MATRIX SPIKE/ MATRIX SPIKE DUPLICATE (MS/MSD) / LABORATORY CONTROL SAMPLE (LCS) CRITERIA:

- ☑ MS/MSD and LCS analyzed-all target analytes, where applicable
- ☑ MS/MSD (35-157%, RPD<20) and LCS (80-120%) within range

H. REPORTING:

- ☑ Detected analytes or results requiring validation are presented on the attached table(s).
- ☑ Laboratory reported results to at or above MDL

☑ Results validated to the MDL.
☑ Secondary/confirmation column provides adequate separation from primary column.

I. COMMENTS REGARDING ANALYTE DETECTIONS:

No methane detections were reported in any sample for this event.

LIMITATIONS AND REFERENCES:

Draper Aden Associates conducted data validation of the above noted data set using summary tables and raw data provided by the analyzing laboratory. Data validation was conducted in general accordance with SW-846 Method requirements (Test Methods for Evaluating Solid Wastes - Physical and Chemical Methods, USEPA SW-846, 3rd edition - Final Update I, II/IIA, III and subsequent updates) and CLP data validation guidelines (USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, October 1999 and USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, June 2008, where applicable). Validation of this data set is limited to the items detailed in this report.

Validated by: *Date:*

Draper Aden Associates
Engineering ◆ Surveying ◆ Environmental Services

1-8-2015

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SW-846 METHOD 6010C DATA EVALUATION FOR INORGANICS BY ICP

Sample ID: 13MW3, 13MW4, 13MW5, 13MW6, 13MW7, 13MW8
QC Samples: Blanks, LCS, 13MW5 MS/MSD, field duplicate (13MWDUP/13MW4)
Laboratory: Eurofins Lancaster Laboratories Environmental, Lancaster, PA; SDG: RAE20

Does Laboratory analyte list correspond to project analyte list? _X_yes ___no
Corresponds to: iron and manganese, dissolved; Preparation Method: 3005A
"☑" denotes items reviewed. See Data Validation Report for additional comments.

A. QC DOCUMENTATION CRITERIA:
- ☑ Specific detection limits/quantitation limit (QLs) for target analytes
- ☑ Passed single blind performance evaluation study within 12 months
- ☑ Standard analyzed at the QL (LLQC), digested, 70-130% recovery, analyzed after MDL determination and as needed
- ☑ Passing MDL check sample
- ☑ IDOC for analyst. Cataldi submitted previously

B. METHOD INFORMATION DOCUMENTATION:
- ☑ Target analytes analyzed by requested method

C. TECHNICAL HOLDING TIME / PRESERVATION REQUIREMENTS:
- ☑ 6 month holding time
- ☑ Field filtered prior to preservation. Adjust pH <2 w/ HNO_3

D. INSTRUMENT CALIBRATION CRITERIA:
- ☑ 1 calibration blank and at least 1 standard
  1 calibration blank and at least 3 standards (alternate calibration procedure)
- ☑ Linear curve fit with correlation coefficient $r \geq 0.998$

E. INITIAL / CONTINUING CALIBRATION VERIFICATION CRITERIA:
- ☑ ICV, analyzed prior to analysis (90-110% R)
- ☑ LLICV concentration at QL, prior to analysis (70-130% R)
- ☑ CCV prior to analysis, after every 10 samples, end of analysis, (90-110% R)
- ☑ LLCCV concentration at QL, prior to analysis, after every 10 samples (suggested), end of analysis (70-130% R)

F. BLANK SAMPLE CRITERIA:
- NA Trip Blank (check only if analyzed)
- NA Equipment Blank (check only if analyzed)
- ☑ Method/Other Lab Blanks (check only if analyzed)
- ☑ Interference free
- ☑ CCB 10 sample frequency

G. INTERFERENCE CHECK SAMPLE (ICS) CRITERIA:
- ☑ ICS analyzed at beginning of analytical run (80-120% R for ICSAB)

H. MATRIX SPIKE DUPLICATE (MSD) CRITERIA:
- ☑ All analytes, one MSD or sample duplicate per batch of 20 samples
- ☑ RPD $\leq$ 20 between MS and MSD or sample and duplicate results
- ☑ Recovery 75-125% for MSD

I. MATRIX SPIKE (MS) CRITERIA:

- ☑ Recovery of MS analytes within 75-125%
- ☑ All analytes, spiked prior to digestion, one MS per batch of 20 samples
- ☑ Post digestion spike if MS/MSD recoveries fail
- ☑ Recovery of post digestion spike analytes within 80-120%

J. LABORATORY CONTROL SAMPLE (LCS) CRITERIA:

- ☑ LCS for all analytes
- ☑ Recovery 80-120% all analytes
- ☑ Independent source for LCS standard

K. SERIAL DILUTION CRITERIA:

- ☑ Similar matrix
- ☑ <10% Difference (applicable when concentration >50X IDL)

L. SAMPLE RESULTS CRITERIA:

- ☑ Results reported within ICP linear calibration range
- ☑ Results reported to laboratory detection limit

M. FIELD DUPLICATE CRITERIA:

- ☑ All analytes, RPD <20
- ☑ If sample result is < 5X QL, control limit is +/- QL concentration

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Draper Aden Associates conducted a limited data validation of the above noted data set using the data package provided by the analyzing laboratory. Data evaluation was conducted in general accordance with SW-846 (Test Methods for Evaluating Solid Waste-Physical/Chemical Methods, USEPA, SW-846, 3rd Edition-Final Update I, II/IIA, III and subsequent updates) method requirements and CLP data validation guidelines (USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, October 2004 and USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, January 2010). Validation of this data set is limited to review of items detailed in this data review report.

Validated by:

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Date: 1-8-2015

SW-846 METHOD 9060A DATA EVALUATION FOR TOC/DOC

Sample ID: 13MW3, 13MW4, 13MW5, 13MW6, 13MW7, 13MW8
QC Samples: Blanks, LCS, 13MW5 MS/MSD, field dup (13MWDUP/13MW4)
Laboratory: Microbac Laboratories, Marietta, OH; SDG: L14050062

Does Laboratory analyte list correspond to project analyte list? _X_ yes ___ no
Corresponds to: Total Organic Carbon (TOC) and Dissolved Organic Carbon (DOC)

"☑" denotes items reviewed. See Data Validation Report for additional comments.

A. QC DELIVERABLES PACKAGE REVIEW:
- ☑ Case narrative present and signed by a laboratory representative
- ☑ Chain of Custody present and signed by a laboratory representative
- ☑ Sample results included for all sample locations
- ☑ Analyte QL at project required QL

B. TECHNICAL HOLDING TIME AND PRESERVATION REVIEW CRITERIA:
- ☑ 28-day sample holding time met
- ☑ Samples received at $\leq 6°C$ and preserved to pH<2 with HCl or H_2SO_4
- ☑ Sample aliquot for DOC analysis filtered prior to field preservation

C. INSTRUMENT CALIBRATION REVIEWCRITERIA:
- ☑ Calibrate per manufacturers' instructions
- ☑ Calibration ≥ 0.995

D. INITIAL / CONTINUING CALIBRATION VERIFICATION REVIEWCRITERIA:
- ☑ 10 sample frequency
- ☑ Use of calibration blank and check standard
- ☑ Recovery 90-110%

E. BLANK ANALYSIS REVIEWCRITERIA:
- ☑ Method/Other Lab Blanks
- ☑ Interference free
- ☑ 10 sample frequency

F. LABORATORY CONTROL SAMPLE (LCS) ANALYSIS REVIEW CRITERIA:
- ☑ One LCS per batch of samples
- ☑ 75-125% recovery

G. MATRIX SPIKE DUPLICATE (MSD) ANALYSIS REVIEW CRITERIA:
- ☑ One MSD/sample duplicate per batch of samples
- ☑ 75-125% recovery
- ☑ RPD ≤ 20 between MS and MSD results

H. MATRIX SPIKE SAMPLE (MS) ANALYSIS REVIEW CRITERIA:
- ☑ One MS per batch of samples
- ☑ 75-125% recovery

I. SAMPLE RESULTS REPORTED:

- ☑ Sample results reported within calibration range
- ☑ Report average of quadruplicate analyses

J. REPORTING:

- ☑ Sample results reported by laboratory to the method detection limit, Average of quadruplicate analysis

K. FIELD DUPLICATE CRITERIA:

- ☑ All analytes, RPD <20
- ☑ If sample result is < 5X QL, control limit is +/- QL concentration

Draper Aden Associates conducted a limited data validation of the above noted data set using the data package provided by the analyzing laboratory. Data evaluation was conducted in general accordance with SW-846 (Test Methods for Evaluating Solid Waste-Physical/Chemical Methods, USEPA, SW-846, 3rd Edition-Final Update I, II/IIA, III and subsequent updates) method requirements and CLP data validation guidelines (USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, October 2004 and USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, January 2010). Validation of this data set is limited to review of items detailed in this data review report.

Validated by: Date:

Draper Aden Associates
Engineering ♦ Surveying ♦ Environmental Services

1-12-2015

Kathy Olsen
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SW-846 METHOD 6850 (HPLC/MS) PERCHLORATE DATA VALIDATION

Sample ID: 13MW2, 13MW3, 13MW4, 13MW5, 13MW6, 13MW7, 13MW8
QC Samples: Blanks, LCS, 13MW5 MS/MSD, field dup (13MWDUP/13MW4)
Laboratory: Mircrobac Laboratories, Inc., Marietta, OH; SDG: L14050062

Comments: *Method 6850 - uses high performance liquid chromatography (HPLC) coupled with electrospray ionization (ESI) tandem mass spectrometry (MS) for the determination of perchlorate in aqueous and solid matrices.*

A. QC DELIVERABLES PACKAGE:

- ☑ Case narrative and Chain of custody present and signed by a laboratory representative
- ☑ Sample results included for the sample locations
- ☑ Project specific target analytes reported at or above the method detection limit (DL)
- ☑ MDL study performed for target analytes and supports QL
- ☑ Initial demonstration of proficiency performed (on file at laboratory)
- ☑ Electronic data file reviewed

B. TECHNICAL HOLDING TIME AND PRESERVATION REVIEW CRITERIA:

- ☑ Holding time: analyze water samples and extracts of solid samples within 28 days of collection or preparation, respectively
- ☑ Aqueous and soil samples stored with headspace
- ☑ Aqueous samples filtered with 0.2 µm filter in the field
  Soils samples collected in glass amber jars, water samples collected in plastic

C. INSTUMENT TUNING:

- ☑ Laboratory stated instrument tuned as per manufacturer's instructions

D. INITIAL CALIBRATION REVIEW CRITERIA:

- ☑ Target analytes included in the ICAL
- ☑ ICAL consisted of a minimum of 5 calibration standards (or more, as needed)
- ☑ Lowest concentration calibration standard at or below the associated MCL, regulatory compliance, action limit, or permit QL

E. INITIAL/ CONTINUING CALIBRATION VERIFICATION REVIEW CRITERIA:

- ☑ Initial calibration prepared from different source from daily standards
- ☑ Continuing calibration verification standard analyzed at the prior to sample analysis; every 10 samples and at the end of the analytical run
- ☑ Midpoint calibration standard
- ☑ Initial and continuing verification % recoveries within 85-115%
- ☑ Area counts of internal standards (IS) in CCV must be between 50-150% of the average IS area counts in the standards from the associated ICAL.
- ☑ Low-level calibration verification (LLOQ) standard at or near the QL analyzed daily with recoveries 50-150%

F. BLANK REVIEW CRITERIA:

- ☑ Method blank analyzed on each extraction
- ☑ Method blank analyzed after calibration and before analytical samples

G. LABORATORY CONTROL SAMPLE (LCS) REVIEW CRITERIA:

- ☑ LCS analyzed with target analytes – matrix matched per batch of 20 samples
- ☑ Concentration near midpoint
- ☑ LCS recovered within limits (80-120%)

H. MATRIX SPIKE/MATRIX SPIKE DUPLICATE/DUPLICATE:

- ☑ MS/MSD recovered within limits, %R within range (80-120%-aqueous /70-130%-solids)
- ☑ One MS/MSD and/or duplicate per batch of 20 samples
- ☑ MS/MSD/DUP 15% RPD control limit

I. INTERNAL STANDARDS REVIEW CRITERIA:

- ☑ Internal standard added to each extract
- ☑ Area count 50-150% of area count of CCV

J. TARGET ANALYTE IDENTIFICATION REVIEW CRITERIA:

- ☑ The calculated 83/85 area counts ratios within ±30% for area counts of mid-range standard or average daily CCVs if samples analyzed separate day from ICAL (Section 12.1.2)
- ☑ RT of 83 and IS in each sample and QC should not vary by more than 0.2 min.(Sec 12.1.1)

K. TARGET ANALYTE QUANTITATION REVIEW CRITERIA:

- ☑ Quantitation based on internal standard calibration

L. REPORTING:

- ☑ Detected results requiring validation are presented on the attached data validation report Soils/sediments reported on dry-weight basis
- ☑ Results reported within calibration range
- ☑ Results reported to detection limit
- ☑ Calculation verifications were performed on a minimum ten percent of the data set

LIMITATIONS AND REFERENCES:

Draper Aden Associates conducted a limited data validation of the above noted data set using the data package provided by the analyzing laboratory. Data evaluation was conducted in general accordance with SW-846 (Test Methods for Evaluating Solid Waste-Physical/Chemical Methods, USEPA, SW-846, 3rd Edition-Final Update I, II/IIA, III and subsequent updates) method requirements and CLP data validation guidelines (USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, October 2004 and USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review, January 2010), where applicable. Validation of this data set is limited to review of items detailed in this data review report.

Validated by:

Draper Aden Associates
Engineering ◆ Surveying ◆ Environmental Services

Date: 1-9.2015

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STANDARD METHODS 2320B ALKALINITY DATA VALIDATION

Sample ID: 13MW3, 13MW4, 13MW5, 13MW6, 13MW7, 13MW8
QC Samples: Blanks, LCS, 13MW5 Duplicate, field dup (13MWDUP/13MW4)
Laboratory: Pace Analytical Services (Pace), Ormond Beach, Florida; SDG: 92199320

Does Laboratory analyte list correspond to analyte list requested? X yes ___no
Corresponds to Alkalinity - SM 18th Method 2320B
"☑" denotes items reviewed. See Data Validation Summary for additional comments.

A. QC DOCUMENTATION CRITERIA:
- ☑ Detection limit and QL reported

B. TECHNICAL HOLDING TIME/ PRESERVATION REQUIREMENTS:
- ☑ Cool ≤6 degrees C, analyzed within 14 days

C. INSTRUMENT CALIBRATION CRITERIA:
- ☑ Titration curve with three pH concentration standards

D. LCS CRITERIA:
- ☑ One LCS per batch or 20 samples
- ☑ Recovery within 90-110% range

E. BLANK SAMPLE CRITERIA:
- ☑ Interference free
- ☑ Method Blank

F. SAMPLE DUPLICATE CRITERIA:
- ☑ One sample duplicate for every sample batch
- ☑ RPD <20 for sample/lab duplicate and sample/field duplicate precision

G. SAMPLE RESULTS CRITERIA:
- ☑ Sample results reported to the method detection limit

REFERENCES:

Draper Aden Associates conducted a limited data validation of the above noted data set using the data package provided by the analyzing laboratory. Data evaluation was conducted using *Standard Methods for the Examination of Water and Wastewater, 18th Edition* method requirements. Validation of this data set is limited to review of items detailed in this data review report.

Validated by: Date:

Draper Aden Associates
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1-12-2015

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USEPA METHOD 300.1 ION CHROMATOGRAPHY DATA VALIDATION

Sample ID: 13MW2, 13MW3, 13MW4, 13MW5, 13MW6, 13MW7, 13MW8
QC Samples: Blanks, LCS, 13MW5 MS/DUP, field dup (13MWDUP/13MW4)
Laboratory: Pace Analytical Services (Pace), Ormond Beach, Florida; SDG: 92199320

Does Laboratory analyte list correspond to analyte list requested? _X_ yes __no
Corresponds to Chlorite and Chlorate
"☑" denotes items reviewed. See Data Validation Report for additional comments.

A. DETECTION LIMIT AND QUANTITATION LIMIT CRITERIA:
Data Quality Objective: Analytical Sensitivity
- ☑ Specific detection limit reported
- ☑ Specific quantitation limit reported
- Instrument detection limit (IDL) less than QL
- Performance evaluation sample analyzed within 12 months

B. INITIAL DEMONSTRATION OF CAPABILITY (IDOC) CRITERIA:
Data Quality Objective: Laboratory Method Sensitivity
- ☑ IDOC requested

C. TECHNICAL HOLDING TIME / PRESERVATION REQUIREMENTS:
Data Quality Objective: Representativeness
- ☑ 28 day hold time for Chlorite and Chlorate; cool to ≤ 6 °C

D. INITIAL CALIBRATION CRITERIA:
Data Quality Objective: Laboratory Accuracy
- ☑ 1 calibration blank and at least 3 standards.
- ☑ Linear curve fit with correlation coefficient r>0.995 or average response

E. CONTINUING CALIBRATION VERIFICATION (CCV) CRITERIA:
Data Quality Objective: Laboratory Analytical Accuracy
- ☑ 10 sample frequency, Recovery within 90-110%
- ☑ Independent/second source used for standard
- ☑ CCV concentration at mid-level of calibration curve

F. BLANK SAMPLE CRITERIA:
Data Quality Objective: Sensitivity/Instrument Drift/Contamination Evaluation
- ☑ Method/Other Lab Blanks (check only if analyzed), one per batch
- ☑ Interference free

G. SAMPLE AND QC RESULTS:
- ☑ Anion results were reported within calibration range
- ☑ Results reported to the detection limit
- ☑ Laboratory control standard recovered within criteria: 85-115%
- ☑ MS/sample duplicate per sample batch. Recovery: 75-125% Precision: RPD < 20
- ☑ QL standard recovered within criteria: 70-130%
- ☑ Sample/Field Duplicate precision criteria: RPD <20
- ☑ Surrogate (dichloroacetate) recovered within 90-115%

H. LABORATORY CONTROL SAMPLE (LCS) CRITERIA:

Data Quality Objective: Laboratory Method Accuracy and Precision, Laboratory Performance

- ☑ 1 LCS per 20 samples/sample batch
- ☑ 85-115% recovery

Draper Aden Associates conducted a limited data validation of the above noted data set using the data package provided by the analyzing laboratory. Data evaluation was conducted using USEPA Method 300.0 Revision 1.0, 1997 method requirements. Validation of this data set is limited to review of items detailed in this data review report.

Validated by:

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Date: 1-15-2015

USEPA METHOD 300.0 ION CHROMATOGRAPHY DATA VALIDATION

Sample ID: 13MW2, 13MW3, 13MW4, 13MW5, 13MW6, 13MW7, 13MW8
QC Samples: Blanks, LCS, 13MW5 MS/MSD, field dup (13MWDUP/13MW4)
Laboratory: Pace Analytical Services (Pace), Ormond Beach, Florida; SDG: 92199320

Does Laboratory analyte list correspond to analyte list requested? _X_ yes __no
Corresponds to Chloride (all samples) and Nitrate, Sulfate (not 13MW2)
"☑" denotes items reviewed. See Data Validation Summary for additional comments.

A. DETECTION LIMIT AND QUANTITATION LIMIT CRITERIA:
Data Quality Objective: Analytical Sensitivity
- ☑ Specific detection limit reported
- ☑ Specific quantitation limit reported
- Instrument detection limit (IDL) less than QL
- Performance evaluation sample analyzed within 12 months

B. INITIAL DEMONSTRATION OF CAPABILITY (IDOC) CRITERIA:
Data Quality Objective: Laboratory Method Sensitivity
- ☑ IDOC requested for analysts.

C. TECHNICAL HOLDING TIME / PRESERVATION REQUIREMENTS:
Data Quality Objective: Representativeness
- ☑ 48 hour hold time for Nitrate; cool to ≤ 6 °C
- ☑ 28 day hold time for Chloride and Sulfate; cool to ≤ 6 °C

D. INITIAL CALIBRATION CRITERIA:
Data Quality Objective: Laboratory Accuracy
- ☑ 1 calibration blank and at least 3 standards.
- ☑ Linear curve fit with correlation coefficient r>0.995 or average response

E. CONTINUING CALIBRATION VERIFICATION (CCV) CRITERIA:
Data Quality Objective: Laboratory Analytical Accuracy
- ☑ 10 sample frequency, Recovery within 90-110%
- ☑ Independent/second source used for standard
- ☑ CCV concentration at mid-level of calibration curve

F. BLANK SAMPLE CRITERIA:
Data Quality Objective: Sensitivity/Instrument Drift/Contamination Evaluation
- ☑ Method/Other Lab Blanks (check only if analyzed), one per batch
- ☑ Interference free

G. SAMPLE AND QC RESULTS:
- ☑ Anion results were reported within calibration range
- ☑ Results reported to the detection limit
- ☑ Laboratory control standard recovered within criteria: 80-120%
- ☑ MS/MSD (or batch QC) per sample batch. Recovery: 80-120% Precision: RPD < 20
  QL standard recovered within criteria: 70-130%
- ☑ Sample/Field Duplicate precision criteria: RPD <20

H. LABORATORY CONTROL SAMPLE (LCS) CRITERIA:

Data Quality Objective: Laboratory Method Accuracy and Precision, Laboratory Performance

- ☑ 1 LCS per 20 samples/sample batch
- ☑ 90-110% recovery

Draper Aden Associates conducted a limited data validation of the above noted data set using the data package provided by the analyzing laboratory. Data evaluation was conducted using USEPA Method 300.0 method requirements (current VELAP accredited method of analysis). Validation of this data set is limited to review of items detailed in this data review report.

Validated by:

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Date: 1-12-2015

Draper Aden Associates
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Analyte	Sample ID	Result	Q	Result	Q	QL	DL	Unit	Validation Notes
Method: 2320B									
Laboratory: Pace Analytical, Huntersville, NC									
Alkalinity	13MW3	218		218		5	5	mg/L	No action taken.
	13MW4	166		166		5	5	mg/L	No action taken.
	13MW5	253		253		5	5	mg/L	No action taken.
	13MW6	277		277		5	5	mg/L	No action taken.
	13MW7	206		206		5	5	mg/L	No action taken.
	13MW8	172		172		5	5	mg/L	No action taken.
	13MWDUP	168		168		5	5	mg/L	No action taken. Field duplicate of 13MW4. RPD 1.2.
Method: 300.0									
Laboratory: Pace Analytical, Huntersville, NC									
Chloride	13MW2	5.7		5.7		5	2.5	mg/L	No action taken.
	13MW3	4.5	J	4.5	J	5	2.5	mg/L	Result < QL.
	13MW4	4.9	J	4.9	J	5	2.5	mg/L	Result < QL.
	13MW5	3.6	J	3.6	J	5	2.5	mg/L	Result < QL.
	13MW6	6.7		6.7		5	2.5	mg/L	No action taken.
	13MW7	3.4	J	3.4	J	5	2.5	mg/L	Result < QL.
	13MW8	5.02		5.02		5	2.5	mg/L	No action taken.
	13MWDUP	4.8	J	4.8	J	5	2.5	mg/L	Result < QL. Field duplicate of 13MW4. RPD 2.1.
Nitrate (as N)	13MW3	1.6		1.6		0.05	0.043	mg/L	No action taken.
	13MW4	0.79		0.79		0.05	0.043	mg/L	No action taken.
	13MW5	0.55		0.55		0.05	0.043	mg/L	No action taken.
	13MW6	0.83		0.83		0.05	0.043	mg/L	No action taken.
	13MW7	0.62		0.62		0.05	0.043	mg/L	No action taken.
	13MW8	0.19		0.19		0.05	0.043	mg/L	No action taken.
	13MWDUP	0.78		0.78		0.05	0.043	mg/L	No action taken. Field duplicate of 13MW4. RPD 1.3.
Sulfate	13MW3	112		112		5	2.5	mg/L	No action taken.
	13MW4	50.7		50.7		5	2.5	mg/L	No action taken.
	13MW5	75		75		5	2.5	mg/L	No action taken.
	13MW6	174		174		5	2.5	mg/L	No action taken.
	13MW7	91.5		91.5		5	2.5	mg/L	No action taken.
	13MW8	292		292		5	25	mg/L	Analyzed in dilution (1:10). Actual QL 50 mg/l.
	13MWDUP	50.2		50.2		5	2.5	mg/L	No action taken. Field duplicate of 13MW4. RPD 1.0.

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Analyte	Sample ID	Result	Q	Result	Q	QL	DL	Unit	Validation Notes
Method: 300.1									
Laboratory: Pace Analytical, Huntersville, NC									
Chlorate	13MW2	1.2	U	U		5	1.2	ug/L	Not detected at or above DL or QL.
	13MW3	1.2	U	U		5	1.2	ug/L	Not detected at or above DL or QL.
	13MW4	1.2	U	U		5	1.2	ug/L	Not detected at or above DL or QL.
	13MW5	1.2	U	U		5	1.2	ug/L	Not detected at or above DL or QL.
	13MW6	1.2	U	U		5	1.2	ug/L	Not detected at or above DL or QL.
	13MW7	1.2	U	U		5	1.2	ug/L	Not detected at or above DL or QL.
	13MW8	1.2	U	U		5	1.2	ug/L	Not detected at or above DL or QL.
	13MWDUP	1.2	U	U		5	1.2	ug/L	Not detected at or above DL or QL. Field duplicate of 13MW4.
Chlorite	13MW2	1.2	U	U		5	1.4	ug/L	Not detected at or above DL or QL.
	13MW3	1.2	U	U		5	1.4	ug/L	Not detected at or above DL or QL.
	13MW4	1.2	U	U		5	1.4	ug/L	Not detected at or above DL or QL.
	13MW5	1.2	U	U		5	1.4	ug/L	Not detected at or above DL or QL.
	13MW6	1.2	U	U		5	1.4	ug/L	Not detected at or above DL or QL.
	13MW7	1.2	U	U		5	1.4	ug/L	Not detected at or above DL or QL.
	13MW8	1.2	U	U		5	1.4	ug/L	Not detected at or above DL or QL.
	13MWDUP	1.2	U	U		5	1.4	ug/L	Not detected at or above DL or QL. Field duplicate of 13MW4.
Method: 6010C									
Laboratory: Eurofins Lancaster Laboratories Environmental, Lancaster, PA									
Iron, Dissolved	13MW3	43	U	U		400	43	ug/l	Not detected at or above DL or QL.
	13MW4	43	U	U		400	43	ug/l	Not detected at or above DL or QL.
	13MW5	43	U	U		400	43	ug/l	Not detected at or above DL or QL.
	13MW6	43	U	U		400	43	ug/l	Not detected at or above DL or QL.
	13MW7	43	U	U		400	43	ug/l	Not detected at or above DL or QL.
	13MW8	43	U	U		400	43	ug/l	Not detected at or above DL or QL.
	13MWDUP	43	U	U		400	43	ug/l	Not detected at or above DL or QL. Field duplicate of 13MW4.
Manganese, Dissolved	13MW3	0.83	U	U		10	0.83	ug/l	Not detected at or above DL or QL.
	13MW4	0.83	U	U		10	0.83	ug/l	Not detected at or above DL or QL.
	13MW5	0.83	U	U		10	0.83	ug/l	Not detected at or above DL or QL.
	13MW6	0.83	U	U		10	0.83	ug/l	Not detected at or above DL or QL.
	13MW7	0.83	U	U		10	0.83	ug/l	Not detected at or above DL or QL.
	13MW8	54.4		54.4		10	0.83	ug/l	No action taken.
	13MWDUP	0.92	J	0.92	J	10	0.83	ug/l	No action taken. Field duplicate of 13MW4.

Radford Facility Army Ammunition Plant:Open Burning Ground HWMU-13

Analyte	Sample ID	Result	Q	Result	Q	QL	DL	Unit	Validation Notes
Method: 6020A									
Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC									
Antimony	13MW1							ug/l	not sampled. Used to generate access table. JCF
Method: 6850									
Laboratory: Microbac, Ohio Valley Division, Marrietta, OH									
Perchlorate	13MW2	2.14		2.14		0.2	0.1	ug/L	No action taken.
	13MW3	1.1		1.1		0.2	0.1	ug/L	No action taken.
	13MW4	12.1		12.1		0.2	0.1	ug/L	No action taken. 1:10 dilution.
	13MW5	2.48		2.48		0.2	0.1	ug/L	No action taken.
	13MW6	1.15		1.15		0.2	0.1	ug/L	No action taken.
	13MW7	1.18		1.18		0.2	0.1	ug/L	No action taken.
	13MW8	1.89		1.89		0.2	0.1	ug/L	No action taken.
	13MWDUP	12.5		12.5		0.2	0.1	ug/L	No action taken. Field duplicate of 13MW4. RPD 3.3.

Analyte	Sample ID	Result	Q	Result	Q	QL	DL	Unit	Validation Notes
Method: 8260C									
Laboratory: Eurofins Lancaster Laboratories Environmental, Lancaster, PA									
Carbon tetrachloride	13MW2	0.1	J	0.1	J	1	0.1	ug/l	Result < QL.
	13MW3	8.2		8.2		1	0.1	ug/l	No action taken.
	13MW4	0.3	J	0.3	J	1	0.1	ug/l	Result < QL.
	13MW5	0.1	U	U		1	0.1	ug/l	Not detected at or above DL or QL.
	13MW6	0.1	U	U		1	0.1	ug/l	Not detected at or above DL or QL.
	13MW7	0.1	U	U		1	0.1	ug/l	Not detected at or above DL or QL.
	13MW8	0.5	J	0.5	J	1	0.1	ug/l	Result < QL.
	13MWDUP2	8		8		1	0.1	ug/l	No action taken. Field duplicate of 13MW3. RPD 2.4.
	TRIP BLANK 1	0.1	U	U		1	0.1	ug/l	Not detected at or above DL or QL.
Chloromethane	13MW2	0.2	U	U		0.5	0.2	ug/l	Not detected at or above DL or QL.
	13MW3	0.2	U	U		0.5	0.2	ug/l	Not detected at or above DL or QL.
	13MW4	0.2	U	U		0.5	0.2	ug/l	Not detected at or above DL or QL.
	13MW5	0.2	U	U		0.5	0.2	ug/l	Not detected at or above DL or QL.
	13MW6	0.2	U	U		0.5	0.2	ug/l	Not detected at or above DL or QL.
	13MW7	0.2	U	U		0.5	0.2	ug/l	Not detected at or above DL or QL.
	13MW8	0.2	U	U		0.5	0.2	ug/l	Not detected at or above DL or QL.
	13MWDUP2	0.2	U	U		0.5	0.2	ug/l	Not detected at or above DL or QL.
	TRIP BLANK 1	0.2	U	U		0.5	0.2	ug/l	Not detected at or above DL or QL.
Chloroform	13MW2	0.1	U	U		0.5	0.1	ug/l	Not detected at or above DL or QL.
	13MW3	0.6		0.6		0.5	0.1	ug/l	No action taken.
	13MW4	0.1	U	U		0.5	0.1	ug/l	Not detected at or above DL or QL.
	13MW5	0.1	U	U		0.5	0.1	ug/l	Not detected at or above DL or QL.
	13MW6	0.1	U	U		0.5	0.1	ug/l	Not detected at or above DL or QL.
	13MW7	0.1	U	U		0.5	0.1	ug/l	Not detected at or above DL or QL.
	13MW8	0.1	U	U		0.5	0.1	ug/l	Not detected at or above DL or QL.
	13MWDUP2	0.6		0.6		0.5	0.1	ug/l	No action taken. Field duplicate of 13MW3. RPD <20.
	TRIP BLANK 1	0.1	U	U		0.5	0.1	ug/l	Not detected at or above DL or QL.
Methylene chloride	13MW2	0.2	U	U		1	0.2	ug/l	Not detected at or above DL or QL.
	13MW3	0.2	U	U		1	0.2	ug/l	Not detected at or above DL or QL.
	13MW4	0.2	U	U		1	0.2	ug/l	Not detected at or above DL or QL.
	13MW5	0.2	U	U		1	0.2	ug/l	Not detected at or above DL or QL.
	13MW6	0.2	U	U		1	0.2	ug/l	Not detected at or above DL or QL.
	13MW7	0.2	U	U		1	0.2	ug/l	Not detected at or above DL or QL.
	13MW8	0.2	U	U		1	0.2	ug/l	Not detected at or above DL or QL.

Analyte	Sample ID	Result	Q	Result	Q	QL	DL	Unit	Validation Notes
Method: 8260C									
Laboratory: Eurofins Lancaster Laboratories Environmental, Lancaster, PA									
Methylene chloride	13MWDUP2	0.2	U	U		1	0.2	ug/l	Not detected at or above DL or QL.
	TRIP BLANK 1	0.2	U	U		1	0.2	ug/l	Not detected at or above DL or QL.
Method: 9060A									
Laboratory: Microbac, Ohio Valley Division, Marrietta, OH									
Dissolved Organic Carbon	13MW3	2.65		2.65		1	1	mg/L	Result is mean of 4 replicates.
	13MW4	2.45		2.45		1	1	mg/L	Result is mean of 4 replicates.
	13MW5	1.51		1.51		1	1	mg/L	Result is mean of 4 replicates.
	13MW6	1.78		1.78		1	1	mg/L	Result is mean of 4 replicates.
	13MW7	1.72		1.72		1	1	mg/L	Result is mean of 4 replicates.
	13MW8	6.41		6.41		1	1	mg/L	Result is mean of 4 replicates.
	13MWDUP	2.02		2.02		1	1	mg/L	Result is mean of 4 replicates. Field duplicate of 13MW4. RPD 19.2.
Total Organic Carbon (Rep 1)	13MW3	3.38		3.38	J	1	1	mg/L	Result is mean of 4 replicates. Result estimated due to MSD recovery (134%R) and RPD 39.7.
	13MW4	3.79		3.79	J	1	1	mg/L	Result is mean of 4 replicates. Result estimated due to MSD recovery (134%R) and RPD 39.7.
	13MW5	2.08		2.08	J	1	1	mg/L	Result is mean of 4 replicates. Result estimated due to MSD recovery (134%R) and RPD 39.7.
	13MW6	2.79		2.79	J	1	1	mg/L	Result is mean of 4 replicates. Result estimated due to MSD recovery (134%R) and RPD 39.7.
	13MW7	1.57		1.57	J	1	1	mg/L	Result is mean of 4 replicates. Result estimated due to MSD recovery (134%R) and RPD 39.7.
	13MW8	1.34		1.34	J	1	1	mg/L	Result is mean of 4 replicates. Result estimated due to MSD recovery (134%R) and RPD 39.7.
	13MWDUP	4.34		4.34	J	1	1	mg/L	Result is mean of 4 replicates. Field duplicate of 13MW4. RPD 13.5. Result estimated due to MSD recovery (134%R) and RPD 39.7.
Method: RSK175M									
Laboratory: Eurofins Lancaster Laboratories Environmental, Lancaster, PA									
Methane	13MW2	3	U	U		5	3	ug/l	Not detected at or above DL or QL.
	13MW3	3	U	U		5	3	ug/l	Not detected at or above DL or QL.
	13MW4	3	U	U		5	3	ug/l	Not detected at or above DL or QL.
	13MW5	3	U	U		5	3	ug/l	Not detected at or above DL or QL.
	13MW6	3	U	U		5	3	ug/l	Not detected at or above DL or QL.
	13MW7	3	U	U		5	3	ug/l	Not detected at or above DL or QL.
	13MW8	3	U	U		5	3	ug/l	Not detected at or above DL or QL.
	13MWDUP	3	U	U		5	3	ug/l	Not detected at or above DL or QL. Field duplicate of 13MW4.
	TRIP BLANK 1	3	U	U		5	3	ug/l	Not detected at or above DL or QL.

Draper Aden Associates
Engineering ◆ Surveying ◆ Environmental Services

Analyte	Sample ID	Result	Q	Result	Q	QL	DL	Unit	Validation Notes

Definitions: **QL** Denotes quantitation limit. **DL** Denotes detection limit. Q Denotes data qualifier. **U** Denotes analyte not detected at or above DL or QL.
UA Denotes analyte not detected at or above adjusted sample DL or QL. **J** Denotes result estimated due to quality control reasons.
When used with a "U" (i.e., "UJ"), denotes analyte not detected at or above DL or QL and DL and QL are estimated due to quality control reasons. When used with "UA" (i.e., "**UAJ**"), denotes analyte not detected at or above adjusted DL or QL and adjusted DL and QL are estimated due to quality control reasons. **R** Denotes result rejected.

Laboratory data qualifiers: **B or J** denotes result between DL and QL and result is estimated.

Revisions to Data Set

CHAIN OF CUSTODY RECORD

Laboratory: Microbac - Ohio Valley Division- 158 Starlite Drive, Marrietta, OH 45750 - Michelle Taylor, Project Manager- 1-800-373-4071

Client: Draper Aden Associates **Attn:** 0 **Address:** 0 0 **Phone:** 0 **Fax:** 0 **Fax:** 0	**Consultant:** Draper Aden Associates **Attn:** Janet C. Frazier **Address:** 2206 South Main Street Blacksburg, Virginia 24060 **Phone:** (540) 552-0444 **Fax:** (540) 552-0291	**Sample Site:** RAAP, Radford, Virginia **Location:** Open Burning Ground (OBG)/HWMU13 **Event:** April 2014 Semiannual GW Monitoring Event **DAA JN:** B03204-12 **Lab JN:**	**Project Specific (PS) or Batch (B) QC:** **Sample Collection for Project Complete?** YES UPS: 1Z 237301-01-9569-7256 **Carrier:** **Tracking Number:**

Box 1: Matrix
SW Surface Water, GW Groundwater, L Leachate, S Soil, T Trip Blank, E Equipment Blank, P Product, O Other

Box 2: Preservative
A HCL, B HNO_3, C H_2SO_4, D $Na_2S_2O_3$, E NaOH, F ZnAc, G Other (Specify), H None

Box 3: Filtered/Unfiltered
F Filtered, U Unfiltered

Box 4: Sample Type
G Grab, C Composite

Box 5: Sample Container Type
P Plastic, V VOA, AG Amber Glass, CG Clear Glass

Invoice
Copy to Consultant: YES
Bill: CLIENT OTHER
Preserved and shipped on ice: YES

Sample ID	Date: 2014	Time	Box 1: Matrix	Number of Bottles	Perchlorate by SW-846 Method 6850	Total Organic Carbon (TOC) - 9060A - 4 reps	Dissolved Organic Carbon (DOC) - 9060A- 4 reps							
Box 4 - Sample Type					G	G	G							
Box 3 - Filtered/Unfiltered					F	U	F							
Required pH of Sample					-	<2	<2							
Box 2 - Preservative					H	C	C							
Box 5 - Sample Container Type					1-250ml P	1-250 mL P	1-250 mL P							
13MW2	4/29	1605	GW	1	X									
13MW3		1035	GW	3	X	X	X							
13MW4		1235	GW	3	X	X	X							
13MWDUP		1245	GW	3	X	X	X							
13MW5		1320	GW	3	X	X	X							USE FOR QC
13MW6		1420	GW	3	X	X	X							
13MW7		1515	GW	3	X	X	X							
13MW8	4/29	1135	GW	3	X	X	X							

GENERAL NOTES:
1. Level 4 (comprehensive) deliverable with pdf.
2. REPORT DL/QL and estimated results.
3. Perchlorate field filtered with 0. 2 micron filter. DOC field filtered with 0.45 micron filter

DOC/TOC = SW-846 9060A
JUK 4/15/2014

Clients Special Instructions:

Received by lab in Good Condition _____ Yes _____ No Custody Seal Intact _____ Yes _____ No Temperature upon arrival _____ Received on Ice _____ Yes _____ No
Describe problems, if any:

Sampler Name (Print): LEN CODDINGTON	Date: 4/29/14	#1 Relinquished by (Signature):	Date: 4/30/14	#2 Relinquished by (Signature):	Date:	Sample Storage
Sampler Signature:	Time: 0700	Company Name: DAA	Time: 1700	Company Name:	Time:	Time Requested:
Sampler Name (Print): Tyler Emery	Date: 4/29/14	#1 Received by (Signature):		#2 Received	Date:	30 DYS ORG/6 MTHS INORG
Sampler Signature:	Time: 0700	Company Name:			Time:	

Microbac OVD
Received: 05/01/2014 10:13
By: BRENDA GREENWALT 221000053584

Brenda Greenwalt

Y1 JUK 4/16/2014

Microbac Laboratories Inc.
MDL VERIFICATION REPORT
ID: 2158

Analytical Method: 6850
Prep Method: 6850
Analyst: JWR
Supervisory Approval:

Instrument: LCMS1
Matrix: WATER
Units: ug/L
Management Approval:

Column ID: F

	L13100001-01 10/07/2013	L14010001-01 01/06/2014	L14040006-01 04/02/2014	L14070002-01 07/10/2014		
Analyte	Result	Result	Result	Result	Spike	VER. MDL
PERCHLORATE	0.0882	0.100	0.101	0.105	0.100	0.100

VERIF_MDL - Modified 05/06/2008

Report generated 09/24/2014 15:19

Demonstration of Capability
Certification Statement

Date: 09/12/2014 #: 102735

Laboratory Name: Microbac Laboratories Inc.
Laboratory Address: 158 Starlite Drive
Marietta, OH

Analyst Name: JOHN W RICHARDS
Matrix: WATER
Method Number: 6850
SOP #: HPLC06
Rev #: 6
Prep: 6850
Analysis: PERCHLORATE - METHOD 6850

DOC Sample Reference
WG490445-04
WG491221-03
WG492184-03
WG492184-04

We, the undersigned, CERTIFY that:

1. The analyst identified above, using the cited test method, which is used at this facility for the analyses of samples under the National Environmental Laboratory Accreditation Program, has met the Demonstration of Capability.
2. The test method was performed by the analyst identified on this certification.
3. The most recent version of the test method and the laboratory-specific SOPs have been read/reread and understood by the analyst below and are available for all personnel on-site.
4. The data associated with the demonstration capability are true, accurate, complete and self-explanatory(1).
5. All raw data (including a copy for this certification form) necessary to reconstruct and validate these analyses have been retained at the facility, and that the associated information is well organized available for review by authorized assessors.

JOHN W RICHARDS Analyst	John Richards Signature	09/22/14 Date
MIKE D COCHRAN Supervisor	Signature	9/23/14 Date
WADE T DELONG Quality Assurance	Wade T. DeLong Signature	9-23-14 Date
LESLIE S BUCINA Laboratory Manager	Leslie S. Bucina Signature	9/23/14 Date

This certification form must be completed each time a demonstration of capability study is completed.

(1) True: Consistent with supporting data.
Accurate: Based on good laboratory practices consistent with sound scientific principles/practice.
Complete: Includes the results of all supporting performance testing.
Self-Explanatory: Data properly labeled and stored so that the results required no additional explanation.

Microbac

Demonstration of Capability

DOC ID#: 102735

DOC Analyst: JWR
Matrix: WATER
QC Key: STD
Prep Methodref: 6850
Department: S1
SOP: HPLC06
Analysis Methodref: 6850
Review Date: 09/12/2014
Instrument: LCMS1
Analysis: PERCHLORATE - METHOD 6850

		08/29/2014	09/05/2014	09/12/2014	09/12/2014					
Units	ug/L	% REC	% REC	% REC	% REC	% REC	LCS Limits	RSD	RSD Limit	Q
ANALYTE	Known	WG490445-04	WG491221-03	WG492184-03	WG492184-04	Mean REC				
Perchlorate	0.20	96.5	106	97.5	106.5	101.63	80 - 120	5.274	15	

Q:

* One or more replicates out of accuracy acceptance limits
# Analyte is out of RSD acceptance limits

Allowances are made for sporadic marginal failure and poor-performing analytes.

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF GENERAL SERVICES
DIVISION OF CONSOLIDATED LABORATORY SERVICES

Certifies that

VA Laboratory ID#: 460182
EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC

2425 NEW HOLLAND PIKE
LANCASTER, PA 17601

Owner: EUROFINS SCIENTIFIC
Operator: J. WILSON HERSHEY
Responsible Official: J. WILSON HERSHEY

Having met the requirements of 1 VAC 30-46
and the National Environmental Laboratory Accreditation Conference 2003 Standard

is hereby approved as an

Accredited Laboratory

As more fully described in the attached Scope of Accreditation

Effective Date: **January 30, 2014**
Expiration Date: **June 14, 2014**
Certificate # 2754

Thomas L. York, Ph.D., HCLD
DGS Deputy Director for Laboratories

Continued accreditation status depends on successful ongoing participation in the program.
Certificate to be conspicuously displayed at the laboratory.
Not valid unless accompanied by a valid Virginia Environmental Laboratory Accreditation Program (VELAP) Scope of Accreditation.
Customers are urged to verify the laboratory's current accreditation status.

Certificate Not Transferable

Surrender Upon Revocation

Commonwealth of Virginia

Department of General Services
Division of Consolidated Laboratory Services

Scope of Accreditation

VELAP Certificate No.: 2754

EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601

Virginia Laboratory ID: 460182
Effective Date: January 30, 2014
Expiration Date: June 14, 2014

AIR

METHOD	ANALYTE	PRIMARY	METHOD	ANALYTE	PRIMARY
EPA TO-14A REV 2	1,1,1-TRICHLOROETHANE	LA DEQ	EPA TO-14A REV 2	1,1,2,2-TETRACHLOROETHANE	LA DEQ
EPA TO-14A REV 2	1,1,2-TRICHLORO-1,2,2-TRIFLUOR OETHANE (FREON 113)	LA DEQ	EPA TO-14A REV 2	1,1,2-TRICHLOROETHANE	LA DEQ
EPA TO-14A REV 2	1,1-DICHLOROETHANE	LA DEQ	EPA TO-14A REV 2	1,1-DICHLOROETHYLENE	LA DEQ
EPA TO-14A REV 2	1,2,4-TRICHLOROBENZENE	LA DEQ	EPA TO-14A REV 2	1,2,4-TRIMETHYLBENZENE	LA DEQ
EPA TO-14A REV 2	1,2-DIBROMOETHANE (EDB, ETHYLENE DIBROMIDE)	LA DEQ	EPA TO-14A REV 2	1,2-DICHLOROBENZENE	LA DEQ
EPA TO-14A REV 2	1,2-DICHLOROETHANE (ETHYLENE DICHLORIDE)	LA DEQ	EPA TO-14A REV 2	1,2-DICHLOROPROPANE	LA DEQ
EPA TO-14A REV 2	1,3,5-TRIMETHYLBENZENE	LA DEQ	EPA TO-14A REV 2	1,3-DICHLOROBENZENE	LA DEQ
EPA TO-14A REV 2	1,4-DICHLOROBENZENE	LA DEQ	EPA TO-14A REV 2	2-BUTANONE (METHYL ETHYL KETONE, MEK)	LA DEQ
EPA TO-14A REV 2	BENZENE	LA DEQ	EPA TO-14A REV 2	BROMOFORM	LA DEQ
EPA TO-14A REV 2	CARBON TETRACHLORIDE	LA DEQ	EPA TO-14A REV 2	CHLOROBENZENE	LA DEQ
EPA TO-14A REV 2	CHLOROETHANE (ETHYL CHLORIDE)	LA DEQ	EPA TO-14A REV 2	CHLOROFORM	LA DEQ
EPA TO-14A REV 2	CIS-1,2-DICHLOROETHYLENE	LA DEQ	EPA TO-14A REV 2	CIS-1,3-DICHLOROPROPENE	LA DEQ
EPA TO-14A REV 2	ETHYLBENZENE	LA DEQ	EPA TO-14A REV 2	HEXACHLOROBUTADIENE (1,3-HEXACHLOROBUTADIENE)	LA DEQ
EPA TO-14A REV 2	M+P-XYLENE	LA DEQ	EPA TO-14A REV 2	METHYL BROMIDE (BROMOMETHANE)	LA DEQ
EPA TO-14A REV 2	METHYL CHLORIDE (CHLOROMETHANE)	LA DEQ	EPA TO-14A REV 2	METHYLENE CHLORIDE (DICHLOROMETHANE)	LA DEQ
EPA TO-14A REV 2	O-XYLENE	LA DEQ	EPA TO-14A REV 2	STYRENE	LA DEQ
EPA TO-14A REV 2	TETRACHLOROETHENE (PERCHLOROETHENE)	LA DEQ	EPA TO-14A REV 2	TOLUENE	LA DEQ
EPA TO-14A REV 2	TRANS-1,2-DICHLOROETHENE	LA DEQ	EPA TO-14A REV 2	TRANS-1,3-DICHLOROPROPENE	LA DEQ
EPA TO-14A REV 2	TRICHLOROETHENE (TRICHLOROETHYLENE)	LA DEQ	EPA TO-14A REV 2	TRICHLOROFLUOROMETHANE (FLUOROTRICHLOROMETHANE, FREON 11)	LA DEQ
EPA TO-14A REV 2	VINYL CHLORIDE	LA DEQ	EPA TO-14A REV 2 - EXTENDED	4-METHYL-2-PENTANONE (MIBK)	LA DEQ
EPA TO-14A REV 2 - EXTENDED	BROMODICHLOROMETHANE	LA DEQ	EPA TO-14A REV 2 - EXTENDED	CARBON DISULFIDE	LA DEQ
EPA TO-14A REV 2 - EXTENDED	METHYL TERT-BUTYL ETHER (MTBE)	LA DEQ	EPA TO-14A REV 2 - EXTENDED	XYLENE (TOTAL)	LA DEQ
EPA TO-15	1,1,1-TRICHLOROETHANE	LA DEQ	EPA TO-15	1,1,2,2-TETRACHLOROETHANE	LA DEQ
EPA TO-15	1,1,2-TRICHLORO-1,2,2-TRIFLUOR OETHANE (FREON 113)	LA DEQ	EPA TO-15	1,1,2-TRICHLOROETHANE	LA DEQ
EPA TO-15	1,1-DICHLOROETHANE	LA DEQ	EPA TO-15	1,1-DICHLOROETHYLENE	LA DEQ
EPA TO-15	1,2,4-TRICHLOROBENZENE	LA DEQ	EPA TO-15	1,2,4-TRIMETHYLBENZENE	LA DEQ
EPA TO-15	1,2-DIBROMOETHANE (EDB, ETHYLENE DIBROMIDE)	LA DEQ	EPA TO-15	1,2-DICHLOROBENZENE	LA DEQ
EPA TO-15	1,2-DICHLOROETHANE (ETHYLENE DICHLORIDE)	LA DEQ	EPA TO-15	1,2-DICHLOROPROPANE	LA DEQ
EPA TO-15	1,3,5-TRIMETHYLBENZENE	LA DEQ	EPA TO-15	1,3-BUTADIENE	LA DEQ

Commonwealth of Virginia

Department of General Services
Division of Consolidated Laboratory Services

Scope of Accreditation

VELAP Certificate No.: 2754

EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601

Virginia Laboratory ID: 460182
Effective Date: January 30, 2014
Expiration Date: June 14, 2014

AIR

METHOD	ANALYTE	PRIMARY	METHOD	ANALYTE	PRIMARY
EPA TO-15	1,3-DICHLOROBENZENE	LA DEQ	EPA TO-15	1,4-DICHLOROBENZENE	LA DEQ
EPA TO-15	1,4-DIOXANE (1,4-DIETHYLENEOXIDE)	LA DEQ	EPA TO-15	2-BUTANONE (METHYL ETHYL KETONE, MEK)	LA DEQ
EPA TO-15	4-METHYL-2-PENTANONE (MIBK)	LA DEQ	EPA TO-15	ACETONITRILE	LA DEQ
EPA TO-15	ACROLEIN (PROPENAL)	LA DEQ	EPA TO-15	ACRYLONITRILE	LA DEQ
EPA TO-15	ALLYL CHLORIDE (3-CHLOROPROPENE)	LA DEQ	EPA TO-15	BENZENE	LA DEQ
EPA TO-15	BROMODICHLOROMETHANE	LA DEQ	EPA TO-15	BROMOFORM	LA DEQ
EPA TO-15	CARBON DISULFIDE	LA DEQ	EPA TO-15	CARBON TETRACHLORIDE	LA DEQ
EPA TO-15	CHLOROBENZENE	LA DEQ	EPA TO-15	CHLOROETHANE (ETHYL CHLORIDE)	LA DEQ
EPA TO-15	CHLOROFORM	LA DEQ	EPA TO-15	CIS-1,2-DICHLOROETHYLENE	LA DEQ
EPA TO-15	CIS-1,3-DICHLOROPROPENE	LA DEQ	EPA TO-15	CYCLOHEXANE	LA DEQ
EPA TO-15	ETHYL ACRYLATE	LA DEQ	EPA TO-15	ETHYLBENZENE	LA DEQ
EPA TO-15	HEXACHLOROBUTADIENE (1,3-HEXACHLOROBUTADIENE)	LA DEQ	EPA TO-15	HEXACHLOROETHANE	LA DEQ
EPA TO-15	IODOMETHANE (METHYL IODIDE)	LA DEQ	EPA TO-15	ISOPROPYLBENZENE	LA DEQ
EPA TO-15	M+P-XYLENE	LA DEQ	EPA TO-15	METHYL BROMIDE (BROMOMETHANE)	LA DEQ
EPA TO-15	METHYL CHLORIDE (CHLOROMETHANE)	LA DEQ	EPA TO-15	METHYL METHACRYLATE	LA DEQ
EPA TO-15	METHYL TERT-BUTYL ETHER (MTBE)	LA DEQ	EPA TO-15	METHYLENE CHLORIDE (DICHLOROMETHANE)	LA DEQ
EPA TO-15	O-XYLENE	LA DEQ	EPA TO-15	PROPYLENE	LA DEQ
EPA TO-15	STYRENE	LA DEQ	EPA TO-15	TETRACHLOROETHENE (PERCHLOROETHENE)	LA DEQ
EPA TO-15	TOLUENE	LA DEQ	EPA TO-15	TRANS-1,2-DICHLOROETHENE	LA DEQ
EPA TO-15	TRANS-1,3-DICHLOROPROPENE	LA DEQ	EPA TO-15	TRICHLOROETHENE (TRICHLOROETHYLENE)	LA DEQ
EPA TO-15	TRICHLOROFLUOROMETHANE (FLUOROTRICHLOROMETHANE, FREON 11)	LA DEQ	EPA TO-15	VINYL ACETATE	LA DEQ
EPA TO-15	VINYL CHLORIDE	LA DEQ	EPA TO-15	XYLENE (TOTAL)	LA DEQ
EPA TO-15 - EXTENDED	2-CHLOROTOLUENE	LA DEQ	EPA TO-15 - EXTENDED	2-HEXANONE	LA DEQ
EPA TO-15 - EXTENDED	4-ETHYLTOLUENE	LA DEQ	EPA TO-15 - EXTENDED	ACETONE	LA DEQ
EPA TO-15 - EXTENDED	CHLORODIFLUOROMETHANE (FREON-22)	LA DEQ	EPA TO-15 - EXTENDED	NAPHTHALENE	LA DEQ
EPA TO-15 - EXTENDED	TERT-BUTYL ALCOHOL	LA DEQ			

DRINKING WATER

METHOD	ANALYTE	PRIMARY	METHOD	ANALYTE	PRIMARY
EPA 180.1 REV 2	TURBIDITY	PA	EPA 200.7 REV 4.4	ALUMINUM	PA
EPA 200.7 REV 4.4	BARIUM	PA	EPA 200.7 REV 4.4	BERYLLIUM	PA
EPA 200.7 REV 4.4	CADMIUM	PA	EPA 200.7 REV 4.4	CALCIUM	PA

Commonwealth of Virginia

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2425 NEW HOLLAND PIKE
LANCASTER, PA 17601

Virginia Laboratory ID: 460182
Effective Date: January 30, 2014
Expiration Date: June 14, 2014

DRINKING WATER

METHOD	ANALYTE	PRIMARY	METHOD	ANALYTE	PRIMARY
EPA 200.7 REV 4.4	CHROMIUM	PA	EPA 200.7 REV 4.4	COPPER	PA
EPA 200.7 REV 4.4	IRON	PA	EPA 200.7 REV 4.4	MAGNESIUM	PA
EPA 200.7 REV 4.4	MANGANESE	PA	EPA 200.7 REV 4.4	NICKEL	PA
EPA 200.7 REV 4.4	SILVER	PA	EPA 200.7 REV 4.4	SODIUM	PA
EPA 200.7 REV 4.4	ZINC	PA	EPA 200.8 REV 5.4	ANTIMONY	PA
EPA 200.8 REV 5.4	ARSENIC	PA	EPA 200.8 REV 5.4	BERYLLIUM	PA
EPA 200.8 REV 5.4	CADMIUM	PA	EPA 200.8 REV 5.4	CHROMIUM	PA
EPA 200.8 REV 5.4	COPPER	PA	EPA 200.8 REV 5.4	LEAD	PA
EPA 200.8 REV 5.4	NICKEL	PA	EPA 200.8 REV 5.4	SELENIUM	PA
EPA 200.8 REV 5.4	THALLIUM	PA	EPA 245.1 REV 3	MERCURY	PA
EPA 300.0 REV 2.1	CHLORIDE	PA	EPA 300.0 REV 2.1	FLUORIDE	PA
EPA 300.0 REV 2.1	NITRATE AS N	PA	EPA 300.0 REV 2.1	NITRITE AS N	PA
EPA 300.0 REV 2.1	SULFATE	PA	EPA 335.4	CYANIDE	PA
EPA 353.2 REV 2	NITRATE AS N	PA	EPA 353.2 REV 2	NITRATE/NITRITE	PA
EPA 353.2 REV 2	NITRITE AS N	PA	EPA 504.1 REV 1.1	1,2-DIBROMO-3-CHLOROPROPANE (DBCP)	PA
EPA 504.1 REV 1.1	1,2-DIBROMOETHANE (EDB, ETHYLENE DIBROMIDE)	PA	EPA 507 REV 2.1	ALACHLOR	PA
EPA 507 REV 2.1	ATRAZINE	PA	EPA 507 REV 2.1	SIMAZINE	PA
EPA 508 REV 3.1	AROCLOR-1016 (PCB-1016)	PA	EPA 508 REV 3.1	AROCLOR-1221 (PCB-1221)	PA
EPA 508 REV 3.1	AROCLOR-1232 (PCB-1232)	PA	EPA 508 REV 3.1	AROCLOR-1242 (PCB-1242)	PA
EPA 508 REV 3.1	AROCLOR-1248 (PCB-1248)	PA	EPA 508 REV 3.1	AROCLOR-1254 (PCB-1254)	PA
EPA 508 REV 3.1	AROCLOR-1260 (PCB-1260)	PA	EPA 508 REV 3.1	CHLORDANE (TECH.)	PA
EPA 508 REV 3.1	ENDRIN	PA	EPA 508 REV 3.1	GAMMA-BHC (LINDANE, GAMMA-HEXACHLOROCYCLOHEXANE)	PA
EPA 508 REV 3.1	HEPTACHLOR	PA	EPA 508 REV 3.1	HEPTACHLOR EPOXIDE	PA
EPA 508 REV 3.1	HEXACHLOROBENZENE	PA	EPA 508 REV 3.1	HEXACHLOROCYCLOPENTADIENE	PA
EPA 508 REV 3.1	METHOXYCHLOR	PA	EPA 508 REV 3.1	TOXAPHENE (CHLORINATED CAMPHENE)	PA
EPA 515.1 REV 4	2,4-D	PA	EPA 515.1 REV 4	DALAPON	PA
EPA 515.1 REV 4	DINOSEB (2-SEC-BUTYL-4,6-DINITROPHENOL, DNBP)	PA	EPA 515.1 REV 4	PENTACHLOROPHENOL	PA
EPA 515.1 REV 4	PICLORAM	PA	EPA 515.1 REV 4	SILVEX (2,4,5-TP)	PA
EPA 524.2 REV 4.1	1,1,1-TRICHLOROETHANE	PA	EPA 524.2 REV 4.1	1,1,2-TRICHLOROETHANE	PA
EPA 524.2 REV 4.1	1,1-DICHLOROETHYLENE	PA	EPA 524.2 REV 4.1	1,2,4-TRICHLOROBENZENE	PA
EPA 524.2 REV 4.1	1,2-DICHLOROBENZENE	PA	EPA 524.2 REV 4.1	1,2-DICHLOROETHANE (ETHYLENE DICHLORIDE)	PA
EPA 524.2 REV 4.1	1,2-DICHLOROPROPANE	PA	EPA 524.2 REV 4.1	1,4-DICHLOROBENZENE	PA
EPA 524.2 REV 4.1	BENZENE	PA	EPA 524.2 REV 4.1	BROMODICHLOROMETHANE	PA
EPA 524.2 REV 4.1	BROMOFORM	PA	EPA 524.2 REV 4.1	CARBON TETRACHLORIDE	PA

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DRINKING WATER

METHOD	ANALYTE	PRIMARY	METHOD	ANALYTE	PRIMARY
EPA 524.2 REV 4.1	CHLOROBENZENE	PA	EPA 524.2 REV 4.1	CHLORODIBROMOMETHANE	PA
EPA 524.2 REV 4.1	CHLOROFORM	PA	EPA 524.2 REV 4.1	CIS-1,2-DICHLOROETHYLENE	PA
EPA 524.2 REV 4.1	ETHYLBENZENE	PA	EPA 524.2 REV 4.1	METHYLENE CHLORIDE (DICHLOROMETHANE)	PA
EPA 524.2 REV 4.1	STYRENE	PA	EPA 524.2 REV 4.1	TETRACHLOROETHENE (PERCHLOROETHENE)	PA
EPA 524.2 REV 4.1	TOLUENE	PA	EPA 524.2 REV 4.1	TRANS-1,2-DICHLOROETHENE	PA
EPA 524.2 REV 4.1	TRICHLOROETHENE (TRICHLOROETHYLENE)	PA	EPA 524.2 REV 4.1	VINYL CHLORIDE	PA
EPA 524.2 REV 4.1	XYLENE (TOTAL)	PA	EPA 525.2 REV 2	ALACHLOR	PA
EPA 525.2 REV 2	ATRAZINE	PA	EPA 525.2 REV 2	BENZO(A)PYRENE	PA
EPA 525.2 REV 2	BIS(2-ETHYLHEXYL) PHTHALATE (DI(2-ETHYLHEXYL)PHTHALATE), (DEHP)	PA	EPA 525.2 REV 2	BIS(2-ETHYLHEXYL)ADIPATE (DI(2-ETHYLHEXYL)ADIPATE)	PA
EPA 525.2 REV 2	ENDRIN	PA	EPA 525.2 REV 2	GAMMA-BHC (LINDANE, GAMMA-HEXACHLOROCYCLOHEXANE)	PA
EPA 525.2 REV 2	HEPTACHLOR	PA	EPA 525.2 REV 2	HEPTACHLOR EPOXIDE	PA
EPA 525.2 REV 2	HEXACHLOROBENZENE	PA	EPA 525.2 REV 2	HEXACHLOROCYCLOPENTADIENE	PA
EPA 525.2 REV 2	METHOXYCHLOR	PA	EPA 531.1 REV 3.1	CARBOFURAN (FURADEN)	PA
EPA 531.1 REV 3.1	OXAMYL	PA	SM 2320 B-1997	ALKALINITY AS CACO3	PA
SM 2510 B-1997	CONDUCTIVITY	PA	SM 2540 C-1997	RESIDUE-FILTERABLE (TDS)	PA
SM 4500-F⁻ C-1997	FLUORIDE	PA	SM 4500-H+ B-2000	PH	PA
SM 4500-P E-1999	ORTHOPHOSPHATE AS P	PA	SM 5540 C-2000	SURFACTANTS - MBAS	PA
SM 9215 B-1994	HETEROTROPHIC PLATE COUNT	PA	SM 9223 COLILERT P/A	ESCHERICHIA COLI	PA
SM 9223 COLILERT P/A	TOTAL COLIFORMS	PA			

NON-POTABLE WATER

METHOD	ANALYTE	PRIMARY	METHOD	ANALYTE	PRIMARY
EPA 1010	FLASHPOINT	PA	EPA 1311	PREP: TOXICITY CHARACTERISTIC LEACHING PROCEDURE	PA
EPA 1312	PREP: SYNTHETIC PRECIPITATION LEACHING PROCEDURE	PA	EPA 160.4	RESIDUE-VOLATILE	PA
EPA 1613 B	1,2,3,4,6,7,8,9-OCTACHLORODIBENZO-P-DIOXIN (OCDD)	PA	EPA 1613 B	1,2,3,4,6,7,8,9-OCTACHLORODIBENZOFURAN (OCDF)	PA
EPA 1613 B	1,2,3,4,6,7,8-HEPTACHLORODIBENZO-P-DIOXIN (1,2,3,4,6,7,8-HPCDD)	PA	EPA 1613 B	1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN (1,2,3,4,6,7,8-HPCDF)	PA
EPA 1613 B	1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN (1,2,3,4,7,8,9-HPCDF)	PA	EPA 1613 B	1,2,3,4,7,8-HEXACHLORODIBENZO-P-DIOXIN (1,2,3,4,7,8-HXCDD)	PA
EPA 1613 B	1,2,3,4,7,8-HEXACHLORODIBENZOFURAN (1,2,3,4,7,8-HXCDF)	PA	EPA 1613 B	1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN(1,2,3,6,7,8-HXCDD)	PA
EPA 1613 B	1,2,3,6,7,8-HEXACHLORODIBENZOFURAN (1,2,3,6,7,8-HXCDF)	PA	EPA 1613 B	1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN (1,2,3,7,8,9-HXCDD)	PA

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EPA 1613 B	1,2,3,7,8,9-HEXACHLORODIBENZO FURAN (1,2,3,7,8,9-HXCDF)	PA	EPA 1613 B	1,2,3,7,8-PENTACHLORODIBENZO -P-DIOXIN (1,2,3,7,8-PECDD)	PA
EPA 1613 B	1,2,3,7,8-PENTACHLORODIBENZO FURAN (1,2,3,7,8-PECDF)	PA	EPA 1613 B	2,3,4,6,7,8-HEXACHLORODIBENZO FURAN	PA
EPA 1613 B	2,3,4,7,8-PENTACHLORODIBENZO FURAN	PA	EPA 1613 B	2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN (2,3,7,8-TCDD)	PA
EPA 1613 B	2,3,7,8-TETRACHLORODIBENZOF URAN	PA	EPA 1631 E	MERCURY	PA
EPA 1664 A	OIL & GREASE	PA	EPA 1664 A	TOTAL PETROLEUM HYDROCARBONS (TPH)	PA
EPA 1666 A	4-METHYL-2-PENTANONE (MIBK)	PA	EPA 1666 A	DI-ISOPROPYLETHER (DIPE, ISOPROPYL ETHER)	PA
EPA 1666 A	ETHYL ACETATE	PA	EPA 1666 A	ISOBUTYRALDEHYDE	PA
EPA 1666 A	ISOPROPYL ACETATE	PA	EPA 1666 A	ISOPROPYL ALCOHOL (2-PROPANOL, ISOPROPANOL)	PA
EPA 1666 A	METHYL FORMATE	PA	EPA 1666 A	N-AMYL ACETATE	PA
EPA 1666 A	N-AMYL ALCOHOL	PA	EPA 1666 A	N-BUTYL-ACETATE	PA
EPA 1666 A	N-HEPTANE	PA	EPA 1666 A	N-HEXANE	PA
EPA 1666 A	TERT-BUTYL ALCOHOL	PA	EPA 1666 A	TETRAHYDROFURAN (THF)	PA
EPA 1666 A	XYLENE (TOTAL)	PA	EPA 1668 A	2,2',3,3',4,4',5,5',6-NONACHLOROBI PHENYL (BZ-206)	PA
EPA 1668 A	2,2',3,3',4,4',5,5'-OCTACHLOROBIP HENYL (BZ-194)	PA	EPA 1668 A	2,2',3,3',4,4',5,6'-OCTACHLOROBIP HENYL (BZ-196)	PA
EPA 1668 A	2,2',3,3',4,4',5,6,6'-NONACHLOROBI PHENYL (BZ-207)	PA	EPA 1668 A	2,2',3,3',4,4',5,6-OCTACHLOROBIP HENYL BZ-195)	PA
EPA 1668 A	2,2',3,3',4,4',5-HEPTACHLOROBIPH ENYL (BZ-170)	PA	EPA 1668 A	2,2',3,3',4,4',6,6'-OCTACHLOROBIP HENYL (BZ-197)	PA
EPA 1668 A	2,2',3,3',4,4',6-HEPTACHLOROBIPH ENYL (BZ-171)	PA	EPA 1668 A	2,2',3,3',4,4'-HEXACHLOROBIPHEN YL (BZ-128)	PA
EPA 1668 A	2,2',3,3',4,5',6'-HEPTACHLOROBIP HENYL (BZ-177)	PA	EPA 1668 A	2,2',3,3',4,5',6,6'-OCTACHLOROBIP HENYL (BZ-201)	PA
EPA 1668 A	2,2',3,3',4,5',6-HEPTACHLOROBIPH ENYL (BZ-175)	PA	EPA 1668 A	2,2',3,3',4,5'-HEXACHLOROBIPHEN YL (BZ-130)	PA
EPA 1668 A	2,2',3,3',4,5,5',6'-OCTACHLOROBIP HENYL (BZ-199)	PA	EPA 1668 A	2,2',3,3',4,5,5',6,6'-NONACHLOROBI PHENYL (BZ-208)	PA
EPA 1668 A	2,2',3,3',4,5,5',6-OCTACHLOROBIP HENYL (BZ-198)	PA	EPA 1668 A	2,2',3,3',4,5,5'-HEPTACHLOROBIPH ENYL (BZ-172)	PA
EPA 1668 A	2,2',3,3',4,5,6'-HEPTACHLOROBIPH ENYL (BZ-174)	PA	EPA 1668 A	2,2',3,3',4,5,6,6'-OCTACHLOROBIP HENYL (BZ-200)	PA
EPA 1668 A	2,2',3,3',4,5,6-HEPTACHLOROBIPH ENYL (BZ-173)	PA	EPA 1668 A	2,2',3,3',4,5-HEXACHLOROBIPHEN YL (BZ-129)	PA
EPA 1668 A	2,2',3,3',4,6'-HEXACHLOROBIPHEN YL (BZ-132)	PA	EPA 1668 A	2,2',3,3',4,6,6'-HEPTACHLOROBIPH ENYL (BZ-176)	PA
EPA 1668 A	2,2',3,3',4,6-HEXACHLOROBIPHEN YL (BZ-131)	PA	EPA 1668 A	2,2',3,3',4-PENTACHLOROBIPHEN YL (BZ-82)	PA
EPA 1668 A	2,2',3,3',5,5',6,6'-OCTACHLOROBIP HENYL (BZ-202)	PA	EPA 1668 A	2,2',3,3',5,5',6-HEPTACHLOROBIPH ENYL (BZ-178)	PA
EPA 1668 A	2,2',3,3',5,5'-HEXACHLOROBIPHEN YL (BZ-133)	PA	EPA 1668 A	2,2',3,3',5,6'-HEXACHLOROBIPHEN YL (BZ-135)	PA

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EPA 1668 A	2,2',3,3',5,6,6'-HEPTACHLOROBIPHENYL (BZ-179)	PA	EPA 1668 A	2,2',3,3',5,6-HEXACHLOROBIPHENYL (BZ-134)	PA
EPA 1668 A	2,2',3,3',5-PENTACHLOROBIPHENYL (BZ-83)	PA	EPA 1668 A	2,2',3,3',6,6'-HEXACHLOROBIPHENYL (BZ-136)	PA
EPA 1668 A	2,2',3,3',6-PENTACHLOROBIPHENYL (BZ-84)	PA	EPA 1668 A	2,2',3,3'-TETRACHLOROBIPHENYL (BZ-40)	PA
EPA 1668 A	2,2',3,4',5',6-HEXACHLOROBIPHENYL (BZ-149)	PA	EPA 1668 A	2,2',3,4',5'-PENTACHLOROBIPHENYL (BZ-97)	PA
EPA 1668 A	2,2',3,4',5,5',6-HEPTACHLOROBIPHENYL (BZ-187)	PA	EPA 1668 A	2,2',3,4',5,5'-HEXACHLOROBIPHENYL (BZ-146)	PA
EPA 1668 A	2,2',3,4',5,6'-HEXACHLOROBIPHENYL (BZ-148)	PA	EPA 1668 A	2,2',3,4',5,6,6'-HEPTACHLOROBIPHENYL (BZ-188)	PA
EPA 1668 A	2,2',3,4',5,6-HEXACHLOROBIPHENYL (BZ-147)	PA	EPA 1668 A	2,2',3,4',5-PENTACHLOROBIPHENYL (BZ-90)	PA
EPA 1668 A	2,2',3,4',6'-PENTACHLOROBIPHENYL (BZ-98)	PA	EPA 1668 A	2,2',3,4',6,6'-HEXACHLOROBIPHENYL (BZ-150)	PA
EPA 1668 A	2,2',3,4',6-PENTACHLOROBIPHENYL (BZ-91)	PA	EPA 1668 A	2,2',3,4'-TETRACHLOROBIPHENYL (BZ-42)	PA
EPA 1668 A	2,2',3,4,4',5',6-HEPTACHLOROBIPHENYL (BZ-183)	PA	EPA 1668 A	2,2',3,4,4',5'-HEXACHLOROBIPHENYL (BZ-138)	PA
EPA 1668 A	2,2',3,4,4',5,5',6-OCTACHLOROBIPHENYL (BZ-203)	PA	EPA 1668 A	2,2',3,4,4',5,5'-HEPTACHLOROBIPHENYL (BZ-180)	PA
EPA 1668 A	2,2',3,4,4',5,6'-HEPTACHLOROBIPHENYL (BZ-182)	PA	EPA 1668 A	2,2',3,4,4',5,6,6'-OCTACHLOROBIPHENYL (BZ-204)	PA
EPA 1668 A	2,2',3,4,4',5,6-HEPTACHLOROBIPHENYL (BZ-181)	PA	EPA 1668 A	2,2',3,4,4',5-HEXACHLOROBIPHENYL (BZ-137)	PA
EPA 1668 A	2,2',3,4,4',6'-HEXACHLOROBIPHENYL (BZ-140)	PA	EPA 1668 A	2,2',3,4,4',6,6'-HEPTACHLOROBIPHENYL (BZ-184)	PA
EPA 1668 A	2,2',3,4,4',6-HEXACHLOROBIPHENYL (BZ-139)	PA	EPA 1668 A	2,2',3,4,4'-PENTACHLOROBIPHENYL (BZ-85)	PA
EPA 1668 A	2,2',3,4,5',6-HEXACHLOROBIPHENYL (BZ-144)	PA	EPA 1668 A	2,2',3,4,5'-PENTACHLOROBIPHENYL (BZ-87)	PA
EPA 1668 A	2,2',3,4,5,5',6-HEPTACHLOROBIPHENYL (BZ-185)	PA	EPA 1668 A	2,2',3,4,5,5'-HEXACHLOROBIPHENYL (BZ-141)	PA
EPA 1668 A	2,2',3,4,5,6'-HEXACHLOROBIPHENYL (BZ-143)	PA	EPA 1668 A	2,2',3,4,5,6,6'-HEPTACHLOROBIPHENYL (BZ-186)	PA
EPA 1668 A	2,2',3,4,5,6-HEXACHLOROBIPHENYL (BZ-142)	PA	EPA 1668 A	2,2',3,4,5-PENTACHLOROBIPHENYL (BZ-86)	PA
EPA 1668 A	2,2',3,4,6'-PENTACHLOROBIPHENYL (BZ-89)	PA	EPA 1668 A	2,2',3,4,6,6'-HEXACHLOROBIPHENYL (BZ-145)	PA
EPA 1668 A	2,2',3,4,6-PENTACHLOROBIPHENYL (BZ-88)	PA	EPA 1668 A	2,2',3,4-TETRACHLOROBIPHENYL (BZ-41)	PA
EPA 1668 A	2,2',3,5',6-PENTACHLOROBIPHENYL (BZ-95)	PA	EPA 1668 A	2,2',3,5'-TETRACHLOROBIPHENYL (BZ-44)	PA
EPA 1668 A	2,2',3,5,5',6-HEXACHLOROBIPHENYL (BZ-151)	PA	EPA 1668 A	2,2',3,5,5'-PENTACHLOROBIPHENYL (BZ-92)	PA
EPA 1668 A	2,2',3,5,6'-PENTACHLOROBIPHENYL (BZ-94)	PA	EPA 1668 A	2,2',3,5,6,6'-HEXACHLOROBIPHENYL (BZ-152)	PA
EPA 1668 A	2,2',3,5,6-PENTACHLOROBIPHENYL (BZ-93)	PA	EPA 1668 A	2,2',3,5-TETRACHLOROBIPHENYL (BZ-43)	PA

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EPA 1668 A	2,2',3,6'-TETRACHLOROBIPHENYL (BZ-46)	PA	EPA 1668 A	2,2',3,6,6'-PENTACHLOROBIPHENYL (BZ-96)	PA
EPA 1668 A	2,2',3,6-TETRACHLOROBIPHENYL (BZ-45)	PA	EPA 1668 A	2,2',3-TRICHLOROBIPHENYL (BZ-16)	PA
EPA 1668 A	2,2',4,4',5,5'-HEXACHLOROBIPHENYL (BZ-153)	PA	EPA 1668 A	2,2',4,4',5,6'-HEXACHLOROBIPHENYL (BZ-154)	PA
EPA 1668 A	2,2',4,4',5-PENTACHLOROBIPHENYL (BZ-99)	PA	EPA 1668 A	2,2',4,4',6,6'-HEXACHLOROBIPHENYL (BZ-155)	PA
EPA 1668 A	2,2',4,4',6-PENTACHLOROBIPHENYL (BZ-100)	PA	EPA 1668 A	2,2',4,4'-TETRACHLOROBIPHENYL (BZ-47)	PA
EPA 1668 A	2,2',4,5',6-PENTACHLOROBIPHENYL (BZ-103)	PA	EPA 1668 A	2,2',4,5'-TETRACHLOROBIPHENYL (BZ-49)	PA
EPA 1668 A	2,2',4,5,5'-PENTACHLOROBIPHENYL (BZ-101)	PA	EPA 1668 A	2,2',4,5,6'-PENTACHLOROBIPHENYL (BZ-102)	PA
EPA 1668 A	2,2',4,5-TETRACHLOROBIPHENYL (BZ-48)	PA	EPA 1668 A	2,2',4,6'-TETRACHLOROBIPHENYL (BZ-51)	PA
EPA 1668 A	2,2',4,6,6'-PENTACHLOROBIPHENYL (BZ-104)	PA	EPA 1668 A	2,2',4,6-TETRACHLOROBIPHENYL (BZ-50)	PA
EPA 1668 A	2,2',4-TRICHLOROBIPHENYL (BZ-17)	PA	EPA 1668 A	2,2',5,5'-TETRACHLOROBIPHENYL (BZ-52)	PA
EPA 1668 A	2,2',5,6'-TETRACHLOROBIPHENYL (BZ-53)	PA	EPA 1668 A	2,2',5-TRICHLOROBIPHENYL (BZ-18)	PA
EPA 1668 A	2,2',6,6'-TETRACHLOROBIPHENYL (BZ-54)	PA	EPA 1668 A	2,2',6-TRICHLOROBIPHENYL (BZ-19)	PA
EPA 1668 A	2,2'-DICHLOROBIPHENYL (BZ-4)	PA	EPA 1668 A	2,3',4',5',6-PENTACHLOROBIPHENYL (BZ-125)	PA
EPA 1668 A	2,3',4',5'-TETRACHLOROBIPHENYL (BZ-76)	PA	EPA 1668 A	2,3',4',5,5'-PENTACHLOROBIPHENYL (BZ-124)	PA
EPA 1668 A	2,3',4',5-TETRACHLOROBIPHENYL (BZ-70)	PA	EPA 1668 A	2,3',4',6-TETRACHLOROBIPHENYL (BZ-71)	PA
EPA 1668 A	2,3',4'-TRICHLOROBIPHENYL (BZ-33)	PA	EPA 1668 A	2,3',4,4',5',6-HEXACHLOROBIPHENYL (BZ-168)	PA
EPA 1668 A	2,3',4,4',5'-PENTACHLOROBIPHENYL (BZ-123)	PA	EPA 1668 A	2,3',4,4',5,5'-HEXACHLOROBIPHENYL (BZ-167)	PA
EPA 1668 A	2,3',4,4',5-PENTACHLOROBIPHENYL (BZ-118)	PA	EPA 1668 A	2,3',4,4',6-PENTACHLOROBIPHENYL (BZ-119)	PA
EPA 1668 A	2,3',4,4'-TETRACHLOROBIPHENYL (BZ-66)	PA	EPA 1668 A	2,3',4,5',6-PENTACHLOROBIPHENYL (BZ-121)	PA
EPA 1668 A	2,3',4,5'-TETRACHLOROBIPHENYL (BZ-68)	PA	EPA 1668 A	2,3',4,5,5'-PENTACHLOROBIPHENYL (BZ-120)	PA
EPA 1668 A	2,3',4,5-TETRACHLOROBIPHENYL (BZ-67)	PA	EPA 1668 A	2,3',4,6-TETRACHLOROBIPHENYL (BZ-69)	PA
EPA 1668 A	2,3',4-TRICHLOROBIPHENYL (BZ-25)	PA	EPA 1668 A	2,3',5',6-TETRACHLOROBIPHENYL (BZ-73)	PA
EPA 1668 A	2,3',5'-TRICHLOROBIPHENYL (BZ-34)	PA	EPA 1668 A	2,3',5,5'-TETRACHLOROBIPHENYL (BZ-72)	PA
EPA 1668 A	2,3',5-TRICHLOROBIPHENYL (BZ-26)	PA	EPA 1668 A	2,3',6-TRICHLOROBIPHENYL (BZ-27)	PA
EPA 1668 A	2,3'-DICHLOROBIPHENYL (BZ-6)	PA	EPA 1668 A	2,3,3',4',5',6-HEXACHLOROBIPHENYL (BZ-164)	PA

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EPA 1668 A	2,3,3',4',5'-PENTACHLOROBIPHENYL (BZ-122)	PA	EPA 1668 A	2,3,3',4',5,5',6-HEPTACHLOROBIPHENYL (BZ-193)	PA
EPA 1668 A	2,3,3',4',5,5'-HEXACHLOROBIPHENYL (BZ-162)	PA	EPA 1668 A	2,3,3',4',5,6-HEXACHLOROBIPHENYL (BZ-163)	PA
EPA 1668 A	2,3,3',4',5-PENTACHLOROBIPHENYL (BZ-107)	PA	EPA 1668 A	2,3,3',4',6-PENTACHLOROBIPHENYL (BZ-110)	PA
EPA 1668 A	2,3,3',4'-TETRACHLOROBIPHENYL (BZ-56)	PA	EPA 1668 A	2,3,3',4,4',5',6-HEPTACHLOROBIPHENYL (BZ-191)	PA
EPA 1668 A	2,3,3',4,4',5'-HEXACHLOROBIPHENYL (BZ-157)	PA	EPA 1668 A	2,3,3',4,4',5,5',6-OCTACHLOROBIPHENYL (BZ-205)	PA
EPA 1668 A	2,3,3',4,4',5,5'-HEPTACHLOROBIPHENYL (BZ-189)	PA	EPA 1668 A	2,3,3',4,4',5,6-HEPTACHLOROBIPHENYL (BZ-190)	PA
EPA 1668 A	2,3,3',4,4',5-HEXACHLOROBIPHENYL (BZ-156)	PA	EPA 1668 A	2,3,3',4,4',6-HEXACHLOROBIPHENYL (BZ-158)	PA
EPA 1668 A	2,3,3',4,4'-PENTACHLOROBIPHENYL (BZ-105)	PA	EPA 1668 A	2,3,3',4,5',6-HEXACHLOROBIPHENYL (BZ-161)	PA
EPA 1668 A	2,3,3',4,5'-PENTACHLOROBIPHENYL (BZ-108)	PA	EPA 1668 A	2,3,3',4,5,5',6-HEPTACHLOROBIPHENYL (BZ-192)	PA
EPA 1668 A	2,3,3',4,5,5'-HEXACHLOROBIPHENYL (BZ-159)	PA	EPA 1668 A	2,3,3',4,5,6-HEXACHLOROBIPHENYL (BZ-160)	PA
EPA 1668 A	2,3,3',4,5-PENTACHLOROBIPHENYL (BZ-106)	PA	EPA 1668 A	2,3,3',4,6-PENTACHLOROBIPHENYL (BZ-109)	PA
EPA 1668 A	2,3,3',4-TETRACHLOROBIPHENYL (BZ-55)	PA	EPA 1668 A	2,3,3',5',6-PENTACHLOROBIPHENYL (BZ-113)	PA
EPA 1668 A	2,3,3',5'-TETRACHLOROBIPHENYL (BZ-58)	PA	EPA 1668 A	2,3,3',5,5',6-HEXACHLOROBIPHENYL (BZ-165)	PA
EPA 1668 A	2,3,3',5,5'-PENTACHLOROBIPHENYL (BZ-111)	PA	EPA 1668 A	2,3,3',5,6-PENTACHLOROBIPHENYL (BZ-112)	PA
EPA 1668 A	2,3,3',5-TETRACHLOROBIPHENYL (BZ-57)	PA	EPA 1668 A	2,3,3',6-TETRACHLOROBIPHENYL (BZ-59)	PA
EPA 1668 A	2,3,3'-TRICHLOROBIPHENYL (BZ-20)	PA	EPA 1668 A	2,3,4',5,6-PENTACHLOROBIPHENYL (BZ-117)	PA
EPA 1668 A	2,3,4',5-TETRACHLOROBIPHENYL (BZ-63)	PA	EPA 1668 A	2,3,4',6-TETRACHLOROBIPHENYL (BZ-64)	PA
EPA 1668 A	2,3,4'-TRICHLOROBIPHENYL (BZ-22)	PA	EPA 1668 A	2,3,4,4',5,6-HEXACHLOROBIPHENYL (BZ-166)	PA
EPA 1668 A	2,3,4,4',5-PENTACHLOROBIPHENYL (BZ-114)	PA	EPA 1668 A	2,3,4,4',6-PENTACHLOROBIPHENYL (BZ-115)	PA
EPA 1668 A	2,3,4,4'-TETRACHLOROBIPHENYL (BZ-60)	PA	EPA 1668 A	2,3,4,5,6-PENTACHLOROBIPHENYL (BZ-116)	PA
EPA 1668 A	2,3,4,5-TETRACHLOROBIPHENYL (BZ-61)	PA	EPA 1668 A	2,3,4,6-TETRACHLOROBIPHENYL (BZ-62)	PA
EPA 1668 A	2,3,4-TRICHLOROBIPHENYL (BZ-21)	PA	EPA 1668 A	2,3,5,6-TETRACHLOROBIPHENYL (BZ-65)	PA
EPA 1668 A	2,3,5-TRICHLOROBIPHENYL (BZ-23)	PA	EPA 1668 A	2,3,6-TRICHLOROBIPHENYL (BZ-24)	PA
EPA 1668 A	2,3-DICHLOROBIPHENYL (BZ-5)	PA	EPA 1668 A	2,4',5-TRICHLOROBIPHENYL (BZ-31)	PA
EPA 1668 A	2,4',6-TRICHLOROBIPHENYL (BZ-32)	PA	EPA 1668 A	2,4'-DICHLOROBIPHENYL (BZ-8)	PA

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METHOD	ANALYTE	PRIMARY	METHOD	ANALYTE	PRIMARY
EPA 1668 A	2,4,4',5-TETRACHLOROBIPHENYL (BZ-74)	PA	EPA 1668 A	2,4,4',6-TETRACHLOROBIPHENYL (BZ-75)	PA
EPA 1668 A	2,4,4'-TRICHLOROBIPHENYL (BZ-28)	PA	EPA 1668 A	2,4,5-TRICHLOROBIPHENYL (BZ-29)	PA
EPA 1668 A	2,4,6-TRICHLOROBIPHENYL (BZ-30)	PA	EPA 1668 A	2,4-DICHLOROBIPHENYL (BZ-7)	PA
EPA 1668 A	2,5-DICHLOROBIPHENYL (BZ-9)	PA	EPA 1668 A	2,6-DICHLOROBIPHENYL (BZ-10)	PA
EPA 1668 A	2-CHLOROBIPHENYL (BZ-1)	PA	EPA 1668 A	3,3',4,4',5,5'-HEXACHLOROBIPHENYL (BZ-169)	PA
EPA 1668 A	3,3',4,4',5-PENTACHLOROBIPHENYL (BZ-126)	PA	EPA 1668 A	3,3',4,4'-TETRACHLOROBIPHENYL (BZ-77)	PA
EPA 1668 A	3,3',4,5'-TETRACHLOROBIPHENYL (BZ-79)	PA	EPA 1668 A	3,3',4,5,5'-PENTACHLOROBIPHENYL (BZ-127)	PA
EPA 1668 A	3,3',4,5-TETRACHLOROBIPHENYL (BZ-78)	PA	EPA 1668 A	3,3',4-TRICHLOROBIPHENYL (BZ-35)	PA
EPA 1668 A	3,3',5,5'-TETRACHLOROBIPHENYL (BZ-80)	PA	EPA 1668 A	3,3',5-TRICHLOROBIPHENYL (BZ-36)	PA
EPA 1668 A	3,3'-DICHLOROBIPHENYL (BZ-11)	PA	EPA 1668 A	3,4',5-TRICHLOROBIPHENYL (BZ-39)	PA
EPA 1668 A	3,4'-DICHLOROBIPHENYL (BZ-13)	PA	EPA 1668 A	3,4,4',5-TETRACHLOROBIPHENYL (BZ-81)	PA
EPA 1668 A	3,4,4'-TRICHLOROBIPHENYL (BZ-37)	PA	EPA 1668 A	3,4,5-TRICHLOROBIPHENYL (BZ-38)	PA
EPA 1668 A	3,4-DICHLOROBIPHENYL (BZ-12)	PA	EPA 1668 A	3,5-DICHLOROBIPHENYL (BZ-14)	PA
EPA 1668 A	3-CHLOROBIPHENYL (BZ-2)	PA	EPA 1668 A	4,4'-DICHLOROBIPHENYL (BZ-15)	PA
EPA 1668 A	4-CHLOROBIPHENYL (BZ-3)	PA	EPA 1668 A	DECACHLOROBIPHENYL (BZ-209)	PA
EPA 1671 A	ACETONITRILE	PA	EPA 1671 A	DIETHYLAMINE	PA
EPA 1671 A	DIMETHYL SULFOXIDE	PA	EPA 1671 A	ETHANOL	PA
EPA 1671 A	METHANOL	PA	EPA 1671 A	METHYL CELLOSOLVE	PA
EPA 1671 A	N-PROPANOL (1-PROPANOL)	PA	EPA 1671 A	TRIETHYLAMINE	PA
EPA 180.1 REV 2	TURBIDITY	PA	EPA 200.2 REV 2.8	PREP: SAMPLE PREPARATION PROCEDURE FOR SPECTROCHEMICAL DETERMINATION OF TOTAL RECOVERABLE ELEMENTS	PA
EPA 200.7 REV 4.4	ALUMINUM	PA	EPA 200.7 REV 4.4	ANTIMONY	PA
EPA 200.7 REV 4.4	ARSENIC	PA	EPA 200.7 REV 4.4	BARIUM	PA
EPA 200.7 REV 4.4	BERYLLIUM	PA	EPA 200.7 REV 4.4	BORON	PA
EPA 200.7 REV 4.4	CADMIUM	PA	EPA 200.7 REV 4.4	CALCIUM	PA
EPA 200.7 REV 4.4	CHROMIUM	PA	EPA 200.7 REV 4.4	COBALT	PA
EPA 200.7 REV 4.4	COPPER	PA	EPA 200.7 REV 4.4	IRON	PA
EPA 200.7 REV 4.4	LEAD	PA	EPA 200.7 REV 4.4	MAGNESIUM	PA
EPA 200.7 REV 4.4	MANGANESE	PA	EPA 200.7 REV 4.4	MOLYBDENUM	PA
EPA 200.7 REV 4.4	NICKEL	PA	EPA 200.7 REV 4.4	POTASSIUM	PA
EPA 200.7 REV 4.4	SELENIUM	PA	EPA 200.7 REV 4.4	SILVER	PA

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METHOD	ANALYTE	PRIMARY	METHOD	ANALYTE	PRIMARY
EPA 200.7 REV 4.4	SODIUM	PA	EPA 200.7 REV 4.4	THALLIUM	PA
EPA 200.7 REV 4.4	TIN	PA	EPA 200.7 REV 4.4	TITANIUM	PA
EPA 200.7 REV 4.4	VANADIUM	PA	EPA 200.7 REV 4.4	ZINC	PA
EPA 200.8 REV 5.4	ALUMINUM	PA	EPA 200.8 REV 5.4	ANTIMONY	PA
EPA 200.8 REV 5.4	ARSENIC	PA	EPA 200.8 REV 5.4	BARIUM	PA
EPA 200.8 REV 5.4	BERYLLIUM	PA	EPA 200.8 REV 5.4	CADMIUM	PA
EPA 200.8 REV 5.4	CHROMIUM	PA	EPA 200.8 REV 5.4	COBALT	PA
EPA 200.8 REV 5.4	COPPER	PA	EPA 200.8 REV 5.4	LEAD	PA
EPA 200.8 REV 5.4	MANGANESE	PA	EPA 200.8 REV 5.4	MOLYBDENUM	PA
EPA 200.8 REV 5.4	NICKEL	PA	EPA 200.8 REV 5.4	SELENIUM	PA
EPA 200.8 REV 5.4	SILVER	PA	EPA 200.8 REV 5.4	THALLIUM	PA
EPA 200.8 REV 5.4	VANADIUM	PA	EPA 200.8 REV 5.4	ZINC	PA
EPA 200.8 REV 5.4 - EXTENDED	BORON	PA	EPA 200.8 REV 5.4 - EXTENDED	CALCIUM	PA
EPA 200.8 REV 5.4 - EXTENDED	IRON	PA	EPA 200.8 REV 5.4 - EXTENDED	MAGNESIUM	PA
EPA 200.8 REV 5.4 - EXTENDED	POTASSIUM	PA	EPA 200.8 REV 5.4 - EXTENDED	SODIUM	PA
EPA 200.8 REV 5.4 - EXTENDED	TIN	PA	EPA 200.8 REV 5.4 - EXTENDED	TITANIUM	PA
EPA 245.1 REV 3	MERCURY	PA	EPA 300.0 REV 2.1	BROMIDE	PA
EPA 300.0 REV 2.1	CHLORIDE	PA	EPA 300.0 REV 2.1	FLUORIDE	PA
EPA 300.0 REV 2.1	NITRATE AS N	PA	EPA 300.0 REV 2.1	NITRITE AS N	PA
EPA 300.0 REV 2.1	ORTHOPHOSPHATE AS P	PA	EPA 300.0 REV 2.1	SULFATE	PA
EPA 3005 A	PREP: ACID DIGESTION OF WATERS FOR TOTAL RECOVERABLE OR DISSOLVED METALS	PA	EPA 3010 A	PREP: ACID DIGESTION OF AQUEOUS SAMPLES AND EXTRACTS FOR TOTAL METALS	PA
EPA 3020 A	PREP: ACID DIGESTION OF AQUEOUS SAMPLES AND EXTRACTS FOR TOTAL METALS	PA	EPA 335.4	CYANIDE	PA
EPA 351.2 REV 2	KJELDAHL NITROGEN - TOTAL	PA	EPA 3510 C	PREP: LIQUID-LIQUID EXTRACTION	PA
EPA 3511	PREP: ORGANIC EXTRACTION AND SAMPLE PREPARATION	PA	EPA 3520 C	PREP: CONTINUOUS LIQUID-LIQUID EXTRACTION	PA
EPA 353.2 REV 2	NITRATE AS N	PA	EPA 353.2 REV 2	NITRATE/NITRITE	PA
EPA 353.2 REV 2	NITRITE AS N	PA	EPA 3620 C	PREP: FLORISIL CLEANUP	PA
EPA 3630 C	PREP: SILICA GEL CLEANUP	PA	EPA 365.1 REV 2	PHOSPHORUS, TOTAL	PA
EPA 365.3	ORTHOPHOSPHATE AS P	PA	EPA 410.4 REV 2	CHEMICAL OXYGEN DEMAND	PA
EPA 420.4 REV 1	TOTAL PHENOLICS	PA	EPA 5030	PREP: PURGE AND TRAP FOR AQUEOUS SAMPLES	PA
EPA 6010 B	ALUMINUM	PA	EPA 6010 B	ANTIMONY	PA
EPA 6010 B	ARSENIC	PA	EPA 6010 B	BARIUM	PA
EPA 6010 B	BERYLLIUM	PA	EPA 6010 B	BORON	PA

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NON-POTABLE WATER

METHOD	ANALYTE	PRIMARY	METHOD	ANALYTE	PRIMARY
EPA 6010 B	CADMIUM	PA	EPA 6010 B	CALCIUM	PA
EPA 6010 B	CHROMIUM	PA	EPA 6010 B	COBALT	PA
EPA 6010 B	COPPER	PA	EPA 6010 B	IRON	PA
EPA 6010 B	LEAD	PA	EPA 6010 B	LITHIUM	PA
EPA 6010 B	MAGNESIUM	PA	EPA 6010 B	MANGANESE	PA
EPA 6010 B	MOLYBDENUM	PA	EPA 6010 B	NICKEL	PA
EPA 6010 B	POTASSIUM	PA	EPA 6010 B	SELENIUM	PA
EPA 6010 B	SILVER	PA	EPA 6010 B	SODIUM	PA
EPA 6010 B	STRONTIUM	PA	EPA 6010 B	THALLIUM	PA
EPA 6010 B	TIN	PA	EPA 6010 B	TITANIUM	PA
EPA 6010 B	VANADIUM	PA	EPA 6010 B	ZINC	PA
EPA 6010 C	ALUMINUM	PA	EPA 6010 C	ANTIMONY	PA
EPA 6010 C	ARSENIC	PA	EPA 6010 C	BARIUM	PA
EPA 6010 C	BERYLLIUM	PA	EPA 6010 C	BORON	PA
EPA 6010 C	CADMIUM	PA	EPA 6010 C	CALCIUM	PA
EPA 6010 C	CHROMIUM	PA	EPA 6010 C	COBALT	PA
EPA 6010 C	COPPER	PA	EPA 6010 C	IRON	PA
EPA 6010 C	LEAD	PA	EPA 6010 C	LITHIUM	PA
EPA 6010 C	MAGNESIUM	PA	EPA 6010 C	MANGANESE	PA
EPA 6010 C	MOLYBDENUM	PA	EPA 6010 C	NICKEL	PA
EPA 6010 C	POTASSIUM	PA	EPA 6010 C	SELENIUM	PA
EPA 6010 C	SILVER	PA	EPA 6010 C	SODIUM	PA
EPA 6010 C	STRONTIUM	PA	EPA 6010 C	THALLIUM	PA
EPA 6010 C	TIN	PA	EPA 6010 C	TITANIUM	PA
EPA 6010 C	VANADIUM	PA	EPA 6010 C	ZINC	PA
EPA 602	BENZENE	PA	EPA 602	ETHYLBENZENE	PA
EPA 602	TOLUENE	PA	EPA 602	XYLENE (TOTAL)	PA
EPA 6020 A	ALUMINUM	PA	EPA 6020 A	ANTIMONY	PA
EPA 6020 A	ARSENIC	PA	EPA 6020 A	BARIUM	PA
EPA 6020 A	BERYLLIUM	PA	EPA 6020 A	CADMIUM	PA
EPA 6020 A	CALCIUM	PA	EPA 6020 A	CHROMIUM	PA
EPA 6020 A	COBALT	PA	EPA 6020 A	COPPER	PA
EPA 6020 A	IRON	PA	EPA 6020 A	LEAD	PA
EPA 6020 A	MAGNESIUM	PA	EPA 6020 A	MANGANESE	PA
EPA 6020 A	NICKEL	PA	EPA 6020 A	POTASSIUM	PA
EPA 6020 A	SELENIUM	PA	EPA 6020 A	SILVER	PA
EPA 6020 A	SODIUM	PA	EPA 6020 A	THALLIUM	PA
EPA 6020 A	VANADIUM	PA	EPA 6020 A	ZINC	PA

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EPA 6020 A - EXTENDED	BORON	PA	EPA 6020 A - EXTENDED	MOLYBDENUM	PA
EPA 6020 A - EXTENDED	STRONTIUM	PA	EPA 6020 A - EXTENDED	TIN	PA
EPA 6020 A - EXTENDED	TITANIUM	PA	EPA 608	4,4'-DDD	PA
EPA 608	4,4'-DDE	PA	EPA 608	4,4'-DDT	PA
EPA 608	ALDRIN	PA	EPA 608	ALPHA-BHC (ALPHA-HEXACHLOROCYCLOHEXANE)	PA
EPA 608	AROCLOR-1016 (PCB-1016)	PA	EPA 608	AROCLOR-1221 (PCB-1221)	PA
EPA 608	AROCLOR-1232 (PCB-1232)	PA	EPA 608	AROCLOR-1242 (PCB-1242)	PA
EPA 608	AROCLOR-1248 (PCB-1248)	PA	EPA 608	AROCLOR-1254 (PCB-1254)	PA
EPA 608	AROCLOR-1260 (PCB-1260)	PA	EPA 608	BETA-BHC (BETA-HEXACHLOROCYCLOHEXANE)	PA
EPA 608	CHLORDANE (TECH.)	PA	EPA 608	DELTA-BHC	PA
EPA 608	DIELDRIN	PA	EPA 608	ENDOSULFAN I	PA
EPA 608	ENDOSULFAN II	PA	EPA 608	ENDOSULFAN SULFATE	PA
EPA 608	ENDRIN	PA	EPA 608	ENDRIN ALDEHYDE	PA
EPA 608	GAMMA-BHC (LINDANE, GAMMA-HEXACHLOROCYCLOHEXANE)	PA	EPA 608	HEPTACHLOR	PA
EPA 608	HEPTACHLOR EPOXIDE	PA	EPA 608	TOXAPHENE (CHLORINATED CAMPHENE)	PA
EPA 610 (HPLC)	ACENAPHTHENE	PA	EPA 610 (HPLC)	ACENAPHTHYLENE	PA
EPA 610 (HPLC)	ANTHRACENE	PA	EPA 610 (HPLC)	BENZO(A)ANTHRACENE	PA
EPA 610 (HPLC)	BENZO(A)PYRENE	PA	EPA 610 (HPLC)	BENZO(G,H,I)PERYLENE	PA
EPA 610 (HPLC)	BENZO(K)FLUORANTHENE	PA	EPA 610 (HPLC)	BENZO[B]FLUORANTHENE	PA
EPA 610 (HPLC)	CHRYSENE	PA	EPA 610 (HPLC)	DIBENZO(A,H) ANTHRACENE	PA
EPA 610 (HPLC)	FLUORANTHENE	PA	EPA 610 (HPLC)	FLUORENE	PA
EPA 610 (HPLC)	INDENO(1,2,3-CD) PYRENE	PA	EPA 610 (HPLC)	NAPHTHALENE	PA
EPA 610 (HPLC)	PHENANTHRENE	PA	EPA 610 (HPLC)	PYRENE	PA
EPA 622	AZINPHOS-METHYL (GUTHION)	PA	EPA 622	BOLSTAR (SULPROFOS)	PA
EPA 622	CHLORPYRIFOS	PA	EPA 622	DEMETON-O	PA
EPA 622	DEMETON-S	PA	EPA 622	DIAZINON	PA
EPA 622	DICHLOROVOS (DDVP, DICHLORVOS)	PA	EPA 622	DISULFOTON	PA
EPA 622	ETHOPROP	PA	EPA 622	FENSULFOTHION	PA
EPA 622	FENTHION	PA	EPA 622	MERPHOS	PA
EPA 622	METHYL PARATHION (PARATHION, METHYL)	PA	EPA 622	MEVINPHOS	PA
EPA 622	NALED	PA	EPA 622	PHORATE	PA
EPA 622	STIROFOS	PA	EPA 624	1,1,1-TRICHLOROETHANE	PA

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EPA 624	1,1,2,2-TETRACHLOROETHANE	PA	EPA 624	1,1,2-TRICHLOROETHANE	PA
EPA 624	1,1-DICHLOROETHANE	PA	EPA 624	1,2-DICHLOROBENZENE	PA
EPA 624	1,2-DICHLOROETHANE (ETHYLENE DICHLORIDE)	PA	EPA 624	1,2-DICHLOROPROPANE	PA
EPA 624	1,3-DICHLOROBENZENE	PA	EPA 624	1,4-DICHLOROBENZENE	PA
EPA 624	2-CHLOROETHYL VINYL ETHER	PA	EPA 624	ACROLEIN (PROPENAL)	PA
EPA 624	ACRYLONITRILE	PA	EPA 624	BENZENE	PA
EPA 624	BROMODICHLOROMETHANE	PA	EPA 624	BROMOFORM	PA
EPA 624	CARBON TETRACHLORIDE	PA	EPA 624	CHLOROBENZENE	PA
EPA 624	CHLORODIBROMOMETHANE	PA	EPA 624	CHLOROETHANE (ETHYL CHLORIDE)	PA
EPA 624	CHLOROFORM	PA	EPA 624	CIS-1,3-DICHLOROPROPENE	PA
EPA 624	ETHYLBENZENE	PA	EPA 624	METHYL BROMIDE (BROMOMETHANE)	PA
EPA 624	METHYL CHLORIDE (CHLOROMETHANE)	PA	EPA 624	METHYLENE CHLORIDE (DICHLOROMETHANE)	PA
EPA 624	TETRACHLOROETHENE (PERCHLOROETHENE)	PA	EPA 624	TOLUENE	PA
EPA 624	TRANS-1,2-DICHLOROETHENE	PA	EPA 624	TRANS-1,3-DICHLOROPROPENE	PA
EPA 624	TRICHLOROETHENE (TRICHLOROETHYLENE)	PA	EPA 624	TRICHLOROFLUOROMETHANE (FLUOROTRICHLOROMETHANE, FREON 11)	PA
EPA 624	VINYL CHLORIDE	PA	EPA 624 - EXTENDED	1,1-DICHLOROETHYLENE	PA
EPA 625	1,2,4-TRICHLOROBENZENE	PA	EPA 625	2,4,6-TRICHLOROPHENOL	PA
EPA 625	2,4-DICHLOROPHENOL	PA	EPA 625	2,4-DIMETHYLPHENOL	PA
EPA 625	2,4-DINITROPHENOL	PA	EPA 625	2,4-DINITROTOLUENE (2,4-DNT)	PA
EPA 625	2,6-DINITROTOLUENE (2,6-DNT)	PA	EPA 625	2-CHLORONAPHTHALENE	PA
EPA 625	2-CHLOROPHENOL	PA	EPA 625	2-METHYL-4,6-DINITROPHENOL (4,6-DINITRO-2-METHYLPHENOL)	PA
EPA 625	2-METHYLPHENOL (O-CRESOL)	PA	EPA 625	2-NITROPHENOL	PA
EPA 625	3,3'-DICHLOROBENZIDINE	PA	EPA 625	4-BROMOPHENYL PHENYL ETHER	PA
EPA 625	4-CHLORO-3-METHYLPHENOL	PA	EPA 625	4-CHLOROPHENYL PHENYLETHER	PA
EPA 625	4-NITROPHENOL	PA	EPA 625	ACENAPHTHENE	PA
EPA 625	ACENAPHTHYLENE	PA	EPA 625	ANTHRACENE	PA
EPA 625	BENZIDINE	PA	EPA 625	BENZO(A)ANTHRACENE	PA
EPA 625	BENZO(A)PYRENE	PA	EPA 625	BENZO(G,H,I)PERYLENE	PA
EPA 625	BENZO(K)FLUORANTHENE	PA	EPA 625	BENZO[B]FLUORANTHENE	PA
EPA 625	BIS(2-CHLOROETHOXY)METHANE	PA	EPA 625	BIS(2-CHLOROETHYL) ETHER	PA
EPA 625	BIS(2-CHLOROISOPROPYL) ETHER	PA	EPA 625	BIS(2-ETHYLHEXYL) PHTHALATE (DI(2-ETHYLHEXYL)PHTHALATE), (DEHP)	PA
EPA 625	BUTYL BENZYL PHTHALATE	PA	EPA 625	CHRYSENE	PA

Commonwealth of Virginia

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EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601

Virginia Laboratory ID: 460182
Effective Date: January 30, 2014
Expiration Date: June 14, 2014

NON-POTABLE WATER

METHOD	ANALYTE	PRIMARY	METHOD	ANALYTE	PRIMARY
EPA 625	DI-N-BUTYL PHTHALATE	PA	EPA 625	DI-N-OCTYL PHTHALATE	PA
EPA 625	DIBENZO(A,H) ANTHRACENE	PA	EPA 625	DIETHYL PHTHALATE	PA
EPA 625	DIMETHYL PHTHALATE	PA	EPA 625	FLUORANTHENE	PA
EPA 625	FLUORENE	PA	EPA 625	HEXACHLOROBENZENE	PA
EPA 625	HEXACHLOROBUTADIENE (1,3-HEXACHLOROBUTADIENE)	PA	EPA 625	HEXACHLOROCYCLOPENTADIENE	PA
EPA 625	HEXACHLOROETHANE	PA	EPA 625	INDENO(1,2,3-CD) PYRENE	PA
EPA 625	ISOPHORONE	PA	EPA 625	N-NITROSODI-N-PROPYLAMINE	PA
EPA 625	N-NITROSODIMETHYLAMINE	PA	EPA 625	N-NITROSODIPHENYLAMINE	PA
EPA 625	NAPHTHALENE	PA	EPA 625	NITROBENZENE	PA
EPA 625	PENTACHLOROPHENOL	PA	EPA 625	PHENANTHRENE	PA
EPA 625	PHENOL	PA	EPA 625	PYRENE	PA
EPA 625 - EXTENDED	1,2-DIPHENYLHYDRAZINE	PA	EPA 625 - EXTENDED	4-METHYLPHENOL (P-CRESOL)	PA
EPA 625 - EXTENDED	ACETOPHENONE	PA	EPA 625 - EXTENDED	ANILINE	PA
EPA 625 - EXTENDED	CARBAZOLE	PA	EPA 625 - EXTENDED	N-DECANE	PA
EPA 625 - EXTENDED	N-OCTADECANE	PA	EPA 625 - EXTENDED	PYRIDINE	PA
EPA 6850	PERCHLORATE	PA	EPA 7196 A	CHROMIUM VI	PA
EPA 7470 A	MERCURY	PA	EPA 8011	1,2-DIBROMO-3-CHLOROPROPANE (DBCP)	PA
EPA 8011	1,2-DIBROMOETHANE (EDB, ETHYLENE DIBROMIDE)	PA	EPA 8015 B	DIESEL RANGE ORGANICS (DRO)	PA
EPA 8015 B	ETHANOL	PA	EPA 8015 B	ETHYLENE GLYCOL	PA
EPA 8015 B	GASOLINE RANGE ORGANICS (GRO)	PA	EPA 8015 B	ISOPROPYL ALCOHOL (2-PROPANOL, ISOPROPANOL)	PA
EPA 8015 B	METHANOL	PA	EPA 8015 C	DIESEL RANGE ORGANICS (DRO)	PA
EPA 8015 C	ETHANOL	PA	EPA 8015 C	ETHYLENE GLYCOL	PA
EPA 8015 C	GASOLINE RANGE ORGANICS (GRO)	PA	EPA 8015 C	ISOPROPYL ALCOHOL (2-PROPANOL, ISOPROPANOL)	PA
EPA 8015 C	METHANOL	PA	EPA 8015 D - EXTENDED	FORMIC ACID	PA
EPA 8021 B	BENZENE	PA	EPA 8021 B	ETHYLBENZENE	PA
EPA 8021 B	ISOPROPYLBENZENE	PA	EPA 8021 B	M+P-XYLENE	PA
EPA 8021 B	NAPHTHALENE	PA	EPA 8021 B	O-XYLENE	PA
EPA 8021 B	TOLUENE	PA	EPA 8021 B	XYLENE (TOTAL)	PA
EPA 8021 B - EXTENDED	METHYL TERT-BUTYL ETHER (MTBE)	PA	EPA 8081 A	4,4'-DDD	PA
EPA 8081 A	4,4'-DDE	PA	EPA 8081 A	4,4'-DDT	PA
EPA 8081 A	ALDRIN	PA	EPA 8081 A	ALPHA-BHC (ALPHA-HEXACHLOROCYCLOHEXANE)	PA
EPA 8081 A	ALPHA-CHLORDANE [CIS-CHLORDANE]	PA	EPA 8081 A	BETA-BHC (BETA-HEXACHLOROCYCLOHEXANE)	PA
EPA 8081 A	CHLORDANE (TECH.)	PA	EPA 8081 A	DELTA-BHC	PA

Commonwealth of Virginia

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LANCASTER, PA 17601

Virginia Laboratory ID: 460182
Effective Date: January 30, 2014
Expiration Date: June 14, 2014

NON-POTABLE WATER

METHOD	ANALYTE	PRIMARY	METHOD	ANALYTE	PRIMARY
EPA 8081 A	DIELDRIN	PA	EPA 8081 A	ENDOSULFAN I	PA
EPA 8081 A	ENDOSULFAN II	PA	EPA 8081 A	ENDOSULFAN SULFATE	PA
EPA 8081 A	ENDRIN	PA	EPA 8081 A	ENDRIN ALDEHYDE	PA
EPA 8081 A	ENDRIN KETONE	PA	EPA 8081 A	GAMMA-BHC (LINDANE, GAMMA-HEXACHLOROCYCLOHEXANE)	PA
EPA 8081 A	GAMMA-CHLORDANE [BETA-CHLORDANE, TRANS-CHLORDANE]	PA	EPA 8081 A	HEPTACHLOR	PA
EPA 8081 A	HEPTACHLOR EPOXIDE	PA	EPA 8081 A	METHOXYCHLOR	PA
EPA 8081 A	TOXAPHENE (CHLORINATED CAMPHENE)	PA	EPA 8081 B	4,4'-DDD	PA
EPA 8081 B	4,4'-DDE	PA	EPA 8081 B	4,4'-DDT	PA
EPA 8081 B	ALDRIN	PA	EPA 8081 B	ALPHA-BHC (ALPHA-HEXACHLOROCYCLOHEXANE)	PA
EPA 8081 B	ALPHA-CHLORDANE [CIS-CHLORDANE]	PA	EPA 8081 B	BETA-BHC (BETA-HEXACHLOROCYCLOHEXANE)	PA
EPA 8081 B	CHLORDANE (TECH.)	PA	EPA 8081 B	DELTA-BHC	PA
EPA 8081 B	DIELDRIN	PA	EPA 8081 B	ENDOSULFAN I	PA
EPA 8081 B	ENDOSULFAN II	PA	EPA 8081 B	ENDOSULFAN SULFATE	PA
EPA 8081 B	ENDRIN	PA	EPA 8081 B	ENDRIN ALDEHYDE	PA
EPA 8081 B	ENDRIN KETONE	PA	EPA 8081 B	GAMMA-BHC (LINDANE, GAMMA-HEXACHLOROCYCLOHEXANE)	PA
EPA 8081 B	GAMMA-CHLORDANE [BETA-CHLORDANE, TRANS-CHLORDANE]	PA	EPA 8081 B	HEPTACHLOR	PA
EPA 8081 B	HEPTACHLOR EPOXIDE	PA	EPA 8081 B	METHOXYCHLOR	PA
EPA 8081 B	TOXAPHENE (CHLORINATED CAMPHENE)	PA	EPA 8082 A	AROCLOR-1016 (PCB-1016)	PA
EPA 8082 A	AROCLOR-1221 (PCB-1221)	PA	EPA 8082 A	AROCLOR-1232 (PCB-1232)	PA
EPA 8082 A	AROCLOR-1242 (PCB-1242)	PA	EPA 8082 A	AROCLOR-1248 (PCB-1248)	PA
EPA 8082 A	AROCLOR-1254 (PCB-1254)	PA	EPA 8082 A	AROCLOR-1260 (PCB-1260)	PA
EPA 8082 A - EXTENDED	AROCLOR-1262 (PCB-1262)	PA	EPA 8082 A - EXTENDED	AROCLOR-1268 (PCB-1268)	PA
EPA 8141 A	ATRAZINE	PA	EPA 8141 A	BOLSTAR (SULPROFOS)	PA
EPA 8141 A	CHLORPYRIFOS	PA	EPA 8141 A	COUMAPHOS	PA
EPA 8141 A	DEMETON-O	PA	EPA 8141 A	DEMETON-S	PA
EPA 8141 A	DIAZINON	PA	EPA 8141 A	DICHLOROVOS (DDVP, DICHLORVOS)	PA
EPA 8141 A	DISULFOTON	PA	EPA 8141 A	ETHION	PA
EPA 8141 A	ETHOPROP	PA	EPA 8141 A	FAMPHUR	PA
EPA 8141 A	FENSULFOTHION	PA	EPA 8141 A	FENTHION	PA

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METHOD	ANALYTE	PRIMARY	METHOD	ANALYTE	PRIMARY
EPA 8141 A	MALATHION	PA	EPA 8141 A	MERPHOS	PA
EPA 8141 A	METHYL PARATHION (PARATHION, METHYL)	PA	EPA 8141 A	MEVINPHOS	PA
EPA 8141 A	NALED	PA	EPA 8141 A	PARATHION (PARATHION - ETHYL)	PA
EPA 8141 A	PHORATE	PA	EPA 8141 A	RONNEL	PA
EPA 8141 A	SIMAZINE	PA	EPA 8141 A	TETRACHLORVINPHOS (STIROPHOS, GARDONA) Z-ISOMER	PA
EPA 8141 A	TOKUTHION (PROTHIOPHOS)	PA	EPA 8141 A	TRICHLORONATE	PA
EPA 8141 B	ATRAZINE	PA	EPA 8141 B	AZINPHOS-METHYL (GUTHION)	PA
EPA 8141 B	BOLSTAR (SULPROFOS)	PA	EPA 8141 B	CHLORPYRIFOS	PA
EPA 8141 B	COUMAPHOS	PA	EPA 8141 B	DEMETON-O	PA
EPA 8141 B	DEMETON-S	PA	EPA 8141 B	DICHLOROVOS (DDVP, DICHLORVOS)	PA
EPA 8141 B	DISULFOTON	PA	EPA 8141 B	EPN (PHOSPHONOTHIOIC ACID, PHENYL-, O-ETHYL O-(P-NITROPHENYL) ESTER)	PA
EPA 8141 B	ETHION	PA	EPA 8141 B	ETHOPROP	PA
EPA 8141 B	FAMPHUR	PA	EPA 8141 B	FENSULFOTHION	PA
EPA 8141 B	FENTHION	PA	EPA 8141 B	MALATHION	PA
EPA 8141 B	MERPHOS	PA	EPA 8141 B	METHYL PARATHION (PARATHION, METHYL)	PA
EPA 8141 B	MEVINPHOS	PA	EPA 8141 B	NALED	PA
EPA 8141 B	PARATHION (PARATHION - ETHYL)	PA	EPA 8141 B	PHORATE	PA
EPA 8141 B	RONNEL	PA	EPA 8141 B	SIMAZINE	PA
EPA 8141 B	TETRACHLORVINPHOS (STIROPHOS, GARDONA) Z-ISOMER	PA	EPA 8141 B	TOKUTHION (PROTHIOPHOS)	PA
EPA 8141 B	TRICHLORONATE	PA	EPA 8151 A	2,4,5-T	PA
EPA 8151 A	2,4-D	PA	EPA 8151 A	2,4-DB	PA
EPA 8151 A	DALAPON	PA	EPA 8151 A	DICAMBA	PA
EPA 8151 A	DICHLOROPROP (DICHLORPROP)	PA	EPA 8151 A	DINOSEB (2-SEC-BUTYL-4,6-DINITROPHENOL, DNBP)	PA
EPA 8151 A	MCPA	PA	EPA 8151 A	MCPP	PA
EPA 8151 A	PENTACHLOROPHENOL	PA	EPA 8151 A	PICLORAM	PA
EPA 8151 A	SILVEX (2,4,5-TP)	PA	EPA 8260 B	1,1,1,2-TETRACHLOROETHANE	PA
EPA 8260 B	1,1,1-TRICHLOROETHANE	PA	EPA 8260 B	1,1,2,2-TETRACHLOROETHANE	PA
EPA 8260 B	1,1,2-TRICHLOROETHANE	PA	EPA 8260 B	1,1-DICHLOROETHANE	PA
EPA 8260 B	1,1-DICHLOROETHYLENE	PA	EPA 8260 B	1,1-DICHLOROPROPENE	PA
EPA 8260 B	1,2,3-TRICHLOROBENZENE	PA	EPA 8260 B	1,2,3-TRICHLOROPROPANE	PA
EPA 8260 B	1,2,4-TRICHLOROBENZENE	PA	EPA 8260 B	1,2,4-TRIMETHYLBENZENE	PA

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NON-POTABLE WATER

METHOD	ANALYTE	PRIMARY	METHOD	ANALYTE	PRIMARY
EPA 8260 B	1,2-DIBROMO-3-CHLOROPROPANE (DBCP)	PA	EPA 8260 B	1,2-DIBROMOETHANE (EDB, ETHYLENE DIBROMIDE)	PA
EPA 8260 B	1,2-DICHLOROBENZENE	PA	EPA 8260 B	1,2-DICHLOROETHANE (ETHYLENE DICHLORIDE)	PA
EPA 8260 B	1,2-DICHLOROPROPANE	PA	EPA 8260 B	1,3,5-TRIMETHYLBENZENE	PA
EPA 8260 B	1,3-DICHLOROBENZENE	PA	EPA 8260 B	1,3-DICHLOROPROPANE	PA
EPA 8260 B	1,4-DICHLOROBENZENE	PA	EPA 8260 B	1,4-DIOXANE (1,4-DIETHYLENEOXIDE)	PA
EPA 8260 B	1-BUTANOL (N-BUTANOL)	PA	EPA 8260 B	2,2-DICHLOROPROPANE	PA
EPA 8260 B	2-BUTANONE (METHYL ETHYL KETONE, MEK)	PA	EPA 8260 B	2-CHLOROETHYL VINYL ETHER	PA
EPA 8260 B	2-CHLOROTOLUENE	PA	EPA 8260 B	2-HEXANONE	PA
EPA 8260 B	2-NITROPROPANE	PA	EPA 8260 B	4-CHLOROTOLUENE	PA
EPA 8260 B	4-ISOPROPYLTOLUENE (P-CYMENE)	PA	EPA 8260 B	4-METHYL-2-PENTANONE (MIBK)	PA
EPA 8260 B	ACETONE	PA	EPA 8260 B	ACETONITRILE	PA
EPA 8260 B	ACROLEIN (PROPENAL)	PA	EPA 8260 B	ACRYLONITRILE	PA
EPA 8260 B	ALLYL CHLORIDE (3-CHLOROPROPENE)	PA	EPA 8260 B	BENZENE	PA
EPA 8260 B	BENZYL CHLORIDE	PA	EPA 8260 B	BROMOBENZENE	PA
EPA 8260 B	BROMOCHLOROMETHANE	PA	EPA 8260 B	BROMODICHLOROMETHANE	PA
EPA 8260 B	BROMOFORM	PA	EPA 8260 B	CARBON DISULFIDE	PA
EPA 8260 B	CARBON TETRACHLORIDE	PA	EPA 8260 B	CHLOROBENZENE	PA
EPA 8260 B	CHLORODIBROMOMETHANE	PA	EPA 8260 B	CHLOROETHANE (ETHYL CHLORIDE)	PA
EPA 8260 B	CHLOROFORM	PA	EPA 8260 B	CHLOROPRENE (2-CHLORO-1,3-BUTADIENE)	PA
EPA 8260 B	CIS-1,2-DICHLOROETHYLENE	PA	EPA 8260 B	CIS-1,3-DICHLOROPROPENE	PA
EPA 8260 B	DIBROMOMETHANE (METHYLENE BROMIDE)	PA	EPA 8260 B	DICHLORODIFLUOROMETHANE (FREON-12)	PA
EPA 8260 B	DIETHYL ETHER	PA	EPA 8260 B	EPICHLOROHYDRIN (1-CHLORO-2,3-EPOXYPROPANE)	PA
EPA 8260 B	ETHANOL	PA	EPA 8260 B	ETHYL ACETATE	PA
EPA 8260 B	ETHYL METHACRYLATE	PA	EPA 8260 B	ETHYL-T-BUTYLETHER (2-ETHOXY-2-METHYLPROPANE, ETBE)	PA
EPA 8260 B	ETHYLBENZENE	PA	EPA 8260 B	HEXACHLOROBUTADIENE (1,3-HEXACHLOROBUTADIENE)	PA
EPA 8260 B	IODOMETHANE (METHYL IODIDE)	PA	EPA 8260 B	ISOBUTYL ALCOHOL (2-METHYL-1-PROPANOL)	PA
EPA 8260 B	ISOPROPYL ALCOHOL (2-PROPANOL, ISOPROPANOL)	PA	EPA 8260 B	ISOPROPYLBENZENE	PA
EPA 8260 B	M+P-XYLENE	PA	EPA 8260 B	METHACRYLONITRILE	PA
EPA 8260 B	METHYL BROMIDE (BROMOMETHANE)	PA	EPA 8260 B	METHYL CHLORIDE (CHLOROMETHANE)	PA
EPA 8260 B	METHYL METHACRYLATE	PA	EPA 8260 B	METHYL TERT-BUTYL ETHER (MTBE)	PA

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NON-POTABLE WATER

METHOD	ANALYTE	PRIMARY	METHOD	ANALYTE	PRIMARY
			EPA 8260 B	METHYLENE CHLORIDE (DICHLOROMETHANE)	PA
EPA 8260 B	N-BUTYLBENZENE	PA	EPA 8260 B	N-PROPYLAMINE	PA
EPA 8260 B	N-PROPYLBENZENE	PA	EPA 8260 B	NAPHTHALENE	PA
EPA 8260 B	O-XYLENE	PA	EPA 8260 B	PENTACHLOROETHANE	PA
EPA 8260 B	PROPIONITRILE (ETHYL CYANIDE)	PA	EPA 8260 B	SEC-BUTYLBENZENE	PA
EPA 8260 B	STYRENE	PA	EPA 8260 B	TERT-BUTYL ALCOHOL	PA
EPA 8260 B	TERT-BUTYLBENZENE	PA	EPA 8260 B	TETRACHLOROETHENE (PERCHLOROETHENE)	PA
EPA 8260 B	TOLUENE	PA	EPA 8260 B	TRANS-1,2-DICHLOROETHENE	PA
EPA 8260 B	TRANS-1,3-DICHLOROPROPENE	PA	EPA 8260 B	TRANS-1,4-DICHLORO-2-BUTENE	PA
EPA 8260 B	TRICHLOROETHENE (TRICHLOROETHYLENE)	PA	EPA 8260 B	TRICHLOROFLUOROMETHANE (FLUOROTRICHLOROMETHANE, FREON 11)	PA
EPA 8260 B	VINYL ACETATE	PA	EPA 8260 B	VINYL CHLORIDE	PA
EPA 8260 B	XYLENE (TOTAL)	PA	EPA 8260 B - EXTENDED	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE (FREON 113)	PA
EPA 8260 B - EXTENDED	1,3,5-TRICHLOROBENZENE	PA	EPA 8260 B - EXTENDED	CYCLOHEXANE	PA
EPA 8260 B - EXTENDED	DI-ISOPROPYLETHER (DIPE, ISOPROPYL ETHER)	PA	EPA 8260 B - EXTENDED	ETHYL-T-BUTYLETHER (2-ETHOXY-2-METHYLPROPANE, ETBE)	PA
EPA 8260 B - EXTENDED	GASOLINE RANGE ORGANICS (GRO)	PA	EPA 8260 B - EXTENDED	METHYL ACETATE	PA
EPA 8260 B - EXTENDED	METHYLCYCLOHEXANE	PA	EPA 8260 B - EXTENDED	N-HEXANE	PA
EPA 8260 B - EXTENDED	T-AMYL ALCOHOL (TAA)	PA	EPA 8260 B - EXTENDED	T-AMYLMETHYLETHER (TAME)	PA
EPA 8260 B - EXTENDED	TETRAHYDROFURAN (THF)	PA	EPA 8260 C	1,1,1,2-TETRACHLOROETHANE	PA
EPA 8260 C	1,1,1-TRICHLOROETHANE	PA	EPA 8260 C	1,1,2,2-TETRACHLOROETHANE	PA
EPA 8260 C	1,1,2-TRICHLOROETHANE	PA	EPA 8260 C	1,1-DICHLOROETHANE	PA
EPA 8260 C	1,1-DICHLOROETHYLENE	PA	EPA 8260 C	1,1-DICHLOROPROPENE	PA
EPA 8260 C	1,2,3-TRICHLOROBENZENE	PA	EPA 8260 C	1,2,3-TRICHLOROPROPANE	PA
EPA 8260 C	1,2,4-TRICHLOROBENZENE	PA	EPA 8260 C	1,2,4-TRIMETHYLBENZENE	PA
EPA 8260 C	1,2-DIBROMO-3-CHLOROPROPANE (DBCP)	PA	EPA 8260 C	1,2-DIBROMOETHANE (EDB, ETHYLENE DIBROMIDE)	PA
EPA 8260 C	1,2-DICHLOROBENZENE	PA	EPA 8260 C	1,2-DICHLOROETHANE (ETHYLENE DICHLORIDE)	PA
EPA 8260 C	1,2-DICHLOROPROPANE	PA	EPA 8260 C	1,3,5-TRIMETHYLBENZENE	PA
EPA 8260 C	1,3-DICHLOROBENZENE	PA	EPA 8260 C	1,3-DICHLOROPROPANE	PA
EPA 8260 C	1,4-DICHLOROBENZENE	PA	EPA 8260 C	1,4-DIOXANE (1,4-DIETHYLENEOXIDE)	PA
EPA 8260 C	1-BUTANOL (N-BUTANOL)	PA	EPA 8260 C	2,2-DICHLOROPROPANE	PA

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NON-POTABLE WATER

METHOD	ANALYTE	PRIMARY	METHOD	ANALYTE	PRIMARY
EPA 8260 C	2-BUTANONE (METHYL ETHYL KETONE, MEK)	PA	EPA 8260 C	2-CHLOROETHYL VINYL ETHER	PA
EPA 8260 C	2-CHLOROTOLUENE	PA	EPA 8260 C	2-HEXANONE	PA
EPA 8260 C	2-NITROPROPANE	PA	EPA 8260 C	4-CHLOROTOLUENE	PA
EPA 8260 C	4-ISOPROPYLTOLUENE (P-CYMENE)	PA	EPA 8260 C	4-METHYL-2-PENTANONE (MIBK)	PA
EPA 8260 C	ACETONE	PA	EPA 8260 C	ACETONITRILE	PA
EPA 8260 C	ACROLEIN (PROPENAL)	PA	EPA 8260 C	ACRYLONITRILE	PA
EPA 8260 C	ALLYL CHLORIDE (3-CHLOROPROPENE)	PA	EPA 8260 C	BENZENE	PA
EPA 8260 C	BENZYL CHLORIDE	PA	EPA 8260 C	BROMOBENZENE	PA
EPA 8260 C	BROMOCHLOROMETHANE	PA	EPA 8260 C	BROMODICHLOROMETHANE	PA
EPA 8260 C	BROMOFORM	PA	EPA 8260 C	CARBON DISULFIDE	PA
EPA 8260 C	CARBON TETRACHLORIDE	PA	EPA 8260 C	CHLOROBENZENE	PA
EPA 8260 C	CHLORODIBROMOMETHANE	PA	EPA 8260 C	CHLOROETHANE (ETHYL CHLORIDE)	PA
EPA 8260 C	CHLOROFORM	PA	EPA 8260 C	CHLOROPRENE (2-CHLORO-1,3-BUTADIENE)	PA
EPA 8260 C	CIS-1,2-DICHLOROETHYLENE	PA	EPA 8260 C	CIS-1,3-DICHLOROPROPENE	PA
EPA 8260 C	CYCLOHEXANE	PA	EPA 8260 C	DIBROMOMETHANE (METHYLENE BROMIDE)	PA
EPA 8260 C	DICHLORODIFLUOROMETHANE (FREON-12)	PA	EPA 8260 C	DIETHYL ETHER	PA
EPA 8260 C	EPICHLOROHYDRIN (1-CHLORO-2,3-EPOXYPROPANE)	PA	EPA 8260 C	ETHANOL	PA
EPA 8260 C	ETHYL ACETATE	PA	EPA 8260 C	ETHYL METHACRYLATE	PA
EPA 8260 C	ETHYL-T-BUTYLETHER (2-ETHOXY-2-METHYLPROPANE, ETBE)	PA	EPA 8260 C	ETHYLBENZENE	PA
EPA 8260 C	HEXACHLOROBUTADIENE (1,3-HEXACHLOROBUTADIENE)	PA	EPA 8260 C	HEXACHLOROETHANE	PA
EPA 8260 C	IODOMETHANE (METHYL IODIDE)	PA	EPA 8260 C	ISOBUTYL ALCOHOL (2-METHYL-1-PROPANOL)	PA
EPA 8260 C	ISOPROPYL ALCOHOL (2-PROPANOL, ISOPROPANOL)	PA	EPA 8260 C	ISOPROPYLBENZENE	PA
EPA 8260 C	METHACRYLONITRILE	PA	EPA 8260 C	METHYL BROMIDE (BROMOMETHANE)	PA
EPA 8260 C	METHYL CHLORIDE (CHLOROMETHANE)	PA	EPA 8260 C	METHYL METHACRYLATE	PA
EPA 8260 C	METHYL TERT-BUTYL ETHER (MTBE)	PA	EPA 8260 C	METHYLCYCLOHEXANE	PA
EPA 8260 C	METHYLENE CHLORIDE (DICHLOROMETHANE)	PA	EPA 8260 C	N-BUTYLBENZENE	PA
EPA 8260 C	N-PROPYLBENZENE	PA	EPA 8260 C	NAPHTHALENE	PA
EPA 8260 C	PENTACHLOROETHANE	PA	EPA 8260 C	PROPIONITRILE (ETHYL CYANIDE)	PA
EPA 8260 C	SEC-BUTYLBENZENE	PA	EPA 8260 C	STYRENE	PA

Commonwealth of Virginia

Department of General Services
Division of Consolidated Laboratory Services

Scope of Accreditation

VELAP Certificate No.: 2754

EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601

Virginia Laboratory ID: 460182
Effective Date: January 30, 2014
Expiration Date: June 14, 2014

NON-POTABLE WATER

METHOD	ANALYTE	PRIMARY	METHOD	ANALYTE	PRIMARY
EPA 8260 C	T-AMYLMETHYLETHER (TAME)	PA	EPA 8260 C	TERT-BUTYL ALCOHOL	PA
EPA 8260 C	TERT-BUTYLBENZENE	PA	EPA 8260 C	TETRACHLOROETHENE (PERCHLOROETHENE)	PA
EPA 8260 C	TOLUENE	PA	EPA 8260 C	TRANS-1,2-DICHLOROETHENE	PA
EPA 8260 C	TRANS-1,3-DICHLOROPROPENE	PA	EPA 8260 C	TRANS-1,4-DICHLORO-2-BUTENE	PA
EPA 8260 C	TRICHLOROETHENE (TRICHLOROETHYLENE)	PA	EPA 8260 C	TRICHLOROFLUOROMETHANE (FLUOROTRICHLOROMETHANE, FREON 11)	PA
EPA 8260 C	VINYL ACETATE	PA	EPA 8260 C	VINYL CHLORIDE	PA
EPA 8260 C	XYLENE (TOTAL)	PA	EPA 8260 C - EXTENDED	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE (FREON 113)	PA
EPA 8260 C - EXTENDED	CYCLOHEXANONE	PA	EPA 8260 C - EXTENDED	DI-ISOPROPYLETHER (DIPE, ISOPROPYL ETHER)	PA
EPA 8260 C - EXTENDED	DIMETHYL ETHER	PA	EPA 8260 C - EXTENDED	GASOLINE RANGE ORGANICS (GRO)	PA
EPA 8260 C - EXTENDED	METHYL ACETATE	PA	EPA 8260 C - EXTENDED	N-HEPTANE	PA
EPA 8260 C - EXTENDED	T-AMYL ALCOHOL (TAA)	PA	EPA 8260 C - EXTENDED	TETRAHYDROFURAN (THF)	PA
EPA 8270 C	1,2,4,5-TETRACHLOROBENZENE	PA	EPA 8270 C	1,2,4-TRICHLOROBENZENE	PA
EPA 8270 C	1,2-DICHLOROBENZENE	PA	EPA 8270 C	1,2-DIPHENYLHYDRAZINE	PA
EPA 8270 C	1,3,5-TRINITROBENZENE (1,3,5-TNB)	PA	EPA 8270 C	1,3-DICHLOROBENZENE	PA
EPA 8270 C	1,3-DINITROBENZENE (1,3-DNB)	PA	EPA 8270 C	1,4-DICHLOROBENZENE	PA
EPA 8270 C	1,4-DINITROBENZENE	PA	EPA 8270 C	1,4-NAPHTHOQUINONE	PA
EPA 8270 C	1,4-PHENYLENEDIAMINE	PA	EPA 8270 C	1-CHLORONAPHTHALENE	PA
EPA 8270 C	1-NAPHTHYLAMINE	PA	EPA 8270 C	2,3,4,6-TETRACHLOROPHENOL	PA
EPA 8270 C	2,4,5-TRICHLOROPHENOL	PA	EPA 8270 C	2,4,6-TRICHLOROPHENOL	PA
EPA 8270 C	2,4-DICHLOROPHENOL	PA	EPA 8270 C	2,4-DIMETHYLPHENOL	PA
EPA 8270 C	2,4-DINITROPHENOL	PA	EPA 8270 C	2,4-DINITROTOLUENE (2,4-DNT)	PA
EPA 8270 C	2,6-DICHLOROPHENOL	PA	EPA 8270 C	2,6-DINITROTOLUENE (2,6-DNT)	PA
EPA 8270 C	2-ACETYLAMINOFLUORENE	PA	EPA 8270 C	2-CHLORONAPHTHALENE	PA
EPA 8270 C	2-CHLOROPHENOL	PA	EPA 8270 C	2-METHYL-4,6-DINITROPHENOL (4,6-DINITRO-2-METHYLPHENOL)	PA
EPA 8270 C	2-METHYLNAPHTHALENE	PA	EPA 8270 C	2-METHYLPHENOL (O-CRESOL)	PA
EPA 8270 C	2-NAPHTHYLAMINE	PA	EPA 8270 C	2-NITROANILINE	PA
EPA 8270 C	2-NITROPHENOL	PA	EPA 8270 C	2-PICOLINE (2-METHYLPYRIDINE)	PA
EPA 8270 C	3,3'-DICHLOROBENZIDINE	PA	EPA 8270 C	3,3'-DIMETHYLBENZIDINE	PA
EPA 8270 C	3-METHYLCHOLANTHRENE	PA	EPA 8270 C	3-METHYLPHENOL (M-CRESOL)	PA
EPA 8270 C	3-NITROANILINE	PA	EPA 8270 C	4,4'-METHYLENEBIS(2-CHLOROANILINE)	PA
EPA 8270 C	4-AMINOBIPHENYL	PA	EPA 8270 C	4-BROMOPHENYL PHENYL ETHER	PA
EPA 8270 C	4-CHLORO-3-METHYLPHENOL	PA	EPA 8270 C	4-CHLOROANILINE	PA

Commonwealth of Virginia

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NON-POTABLE WATER

METHOD	ANALYTE	PRIMARY	METHOD	ANALYTE	PRIMARY
EPA 8270 C	4-CHLOROPHENYL PHENYLETHER	PA	EPA 8270 C	4-DIMETHYL AMINOAZOBENZENE	PA
EPA 8270 C	4-METHYLPHENOL (P-CRESOL)	PA	EPA 8270 C	4-NITROANILINE	PA
EPA 8270 C	4-NITROPHENOL	PA	EPA 8270 C	5-NITRO-O-TOLUIDINE	PA
EPA 8270 C	7,12-DIMETHYLBENZ(A) ANTHRACENE	PA	EPA 8270 C	A-A-DIMETHYLPHENETHYLAMINE	PA
EPA 8270 C	ACENAPHTHENE	PA	EPA 8270 C	ACENAPHTHYLENE	PA
EPA 8270 C	ACETOPHENONE	PA	EPA 8270 C	ANILINE	PA
EPA 8270 C	ANTHRACENE	PA	EPA 8270 C	ARAMITE	PA
EPA 8270 C	BENZIDINE	PA	EPA 8270 C	BENZO(A)ANTHRACENE	PA
EPA 8270 C	BENZO(A)PYRENE	PA	EPA 8270 C	BENZO(G,H,I)PERYLENE	PA
EPA 8270 C	BENZO(K)FLUORANTHENE	PA	EPA 8270 C	BENZOIC ACID	PA
EPA 8270 C	BENZO[B]FLUORANTHENE	PA	EPA 8270 C	BENZYL ALCOHOL	PA
EPA 8270 C	BIS(2-CHLOROETHOXY)METHANE	PA	EPA 8270 C	BIS(2-CHLOROETHYL) ETHER	PA
EPA 8270 C	BIS(2-CHLOROISOPROPYL) ETHER	PA	EPA 8270 C	BIS(2-ETHYLHEXYL) PHTHALATE (DI(2-ETHYLHEXYL)PHTHALATE), (DEHP)	PA
EPA 8270 C	BUTYL BENZYL PHTHALATE	PA	EPA 8270 C	CHLOROBENZILATE	PA
EPA 8270 C	CHRYSENE	PA	EPA 8270 C	DI-N-BUTYL PHTHALATE	PA
EPA 8270 C	DI-N-OCTYL PHTHALATE	PA	EPA 8270 C	DIALLATE	PA
EPA 8270 C	DIBENZ(A, J) ACRIDINE	PA	EPA 8270 C	DIBENZO(A,H) ANTHRACENE	PA
EPA 8270 C	DIBENZOFURAN	PA	EPA 8270 C	DIETHYL PHTHALATE	PA
EPA 8270 C	DIMETHOATE	PA	EPA 8270 C	DIMETHYL PHTHALATE	PA
EPA 8270 C	DIPHENYLAMINE	PA	EPA 8270 C	DISULFOTON	PA
EPA 8270 C	ETHYL METHANESULFONATE	PA	EPA 8270 C	FAMPHUR	PA
EPA 8270 C	FLUORANTHENE	PA	EPA 8270 C	FLUORENE	PA
EPA 8270 C	HEXACHLOROBENZENE	PA	EPA 8270 C	HEXACHLOROBUTADIENE (1,3-HEXACHLOROBUTADIENE)	PA
EPA 8270 C	HEXACHLOROCYCLOPENTADIEN E	PA	EPA 8270 C	HEXACHLOROETHANE	PA
EPA 8270 C	HEXACHLOROPROPENE	PA	EPA 8270 C	INDENO(1,2,3-CD) PYRENE	PA
EPA 8270 C	ISODRIN	PA	EPA 8270 C	ISOPHORONE	PA
EPA 8270 C	ISOSAFROLE	PA	EPA 8270 C	KEPONE	PA
EPA 8270 C	METHAPYRILENE	PA	EPA 8270 C	METHYL METHANESULFONATE	PA
EPA 8270 C	METHYL PARATHION (PARATHION, METHYL)	PA	EPA 8270 C	N-NITROSO-DI-N-BUTYLAMINE	PA
EPA 8270 C	N-NITROSODI-N-PROPYLAMINE	PA	EPA 8270 C	N-NITROSODIETHYLAMINE	PA
EPA 8270 C	N-NITROSODIMETHYLAMINE	PA	EPA 8270 C	N-NITROSODIPHENYLAMINE	PA
EPA 8270 C	N-NITROSOMETHYLETHYLAMINE	PA	EPA 8270 C	N-NITROSOMORPHOLINE	PA
EPA 8270 C	N-NITROSOPIPERIDINE	PA	EPA 8270 C	N-NITROSOPYRROLIDINE	PA
EPA 8270 C	NAPHTHALENE	PA	EPA 8270 C	NITROBENZENE	PA
EPA 8270 C	NITROQUINOLINE-1-OXIDE	PA	EPA 8270 C	O,O,O-TRIETHYL PHOSPHOROTHIOATE	PA

Commonwealth of Virginia

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EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC
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Virginia Laboratory ID: 460182
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NON-POTABLE WATER

METHOD	ANALYTE	PRIMARY	METHOD	ANALYTE	PRIMARY
			EPA 8270 C	O-TOLUIDINE (2-METHYLANILINE)	PA
EPA 8270 C	PARATHION (PARATHION - ETHYL)	PA	EPA 8270 C	PENTACHLOROBENZENE	PA
EPA 8270 C	PENTACHLORONITROBENZENE	PA	EPA 8270 C	PENTACHLOROPHENOL	PA
EPA 8270 C	PHENACETIN	PA	EPA 8270 C	PHENANTHRENE	PA
EPA 8270 C	PHENOL	PA	EPA 8270 C	PHORATE	PA
EPA 8270 C	PHTHALIC ANHYDRIDE	PA	EPA 8270 C	PRONAMIDE (KERB)	PA
EPA 8270 C	PYRENE	PA	EPA 8270 C	PYRIDINE	PA
EPA 8270 C	SAFROLE	PA	EPA 8270 C	THIONAZIN (ZINOPHOS)	PA
EPA 8270 C	THIOPHENOL (BENZENETHIOL)	PA	EPA 8270 C	TRIS-(2,3-DIBROMOPROPYL) PHOSPHATE (TRIS-BP)	PA
EPA 8270 C SIM	2-METHYLNAPHTHALENE	PA	EPA 8270 C SIM	ACENAPHTHENE	PA
EPA 8270 C SIM	ACENAPHTHYLENE	PA	EPA 8270 C SIM	ANTHRACENE	PA
EPA 8270 C SIM	BENZO(A)ANTHRACENE	PA	EPA 8270 C SIM	BENZO(A)PYRENE	PA
EPA 8270 C SIM	BENZO(G,H,I)PERYLENE	PA	EPA 8270 C SIM	BENZO(K)FLUORANTHENE	PA
EPA 8270 C SIM	BENZO[B]FLUORANTHENE	PA	EPA 8270 C SIM	CHRYSENE	PA
EPA 8270 C SIM	DIBENZO(A,H) ANTHRACENE	PA	EPA 8270 C SIM	FLUORANTHENE	PA
EPA 8270 C SIM	FLUORENE	PA	EPA 8270 C SIM	INDENO(1,2,3-CD) PYRENE	PA
EPA 8270 C SIM	NAPHTHALENE	PA	EPA 8270 C SIM	PHENANTHRENE	PA
EPA 8270 C SIM	PYRENE	PA	EPA 8270 C SIM - EXTENDED	1-METHYLNAPHTHALENE	PA
EPA 8270 D	1,2,4,5-TETRACHLOROBENZENE	PA	EPA 8270 D	1,2,4-TRICHLOROBENZENE	PA
EPA 8270 D	1,2-DICHLOROBENZENE	PA	EPA 8270 D	1,2-DIPHENYLHYDRAZINE	PA
EPA 8270 D	1,3,5-TRINITROBENZENE (1,3,5-TNB)	PA	EPA 8270 D	1,3-DICHLOROBENZENE	PA
EPA 8270 D	1,3-DINITROBENZENE (1,3-DNB)	PA	EPA 8270 D	1,4-DICHLOROBENZENE	PA
EPA 8270 D	1,4-DINITROBENZENE	PA	EPA 8270 D	1,4-NAPHTHOQUINONE	PA
EPA 8270 D	1,4-PHENYLENEDIAMINE	PA	EPA 8270 D	1-CHLORONAPHTHALENE	PA
EPA 8270 D	1-NAPHTHYLAMINE	PA	EPA 8270 D	2,3,4,6-TETRACHLOROPHENOL	PA
EPA 8270 D	2,4,5-TRICHLOROPHENOL	PA	EPA 8270 D	2,4,6-TRICHLOROPHENOL	PA
EPA 8270 D	2,4-DICHLOROPHENOL	PA	EPA 8270 D	2,4-DIMETHYLPHENOL	PA
EPA 8270 D	2,4-DINITROPHENOL	PA	EPA 8270 D	2,4-DINITROTOLUENE (2,4-DNT)	PA
EPA 8270 D	2,6-DICHLOROPHENOL	PA	EPA 8270 D	2,6-DINITROTOLUENE (2,6-DNT)	PA
EPA 8270 D	2-ACETYLAMINOFLUORENE	PA	EPA 8270 D	2-CHLORONAPHTHALENE	PA
EPA 8270 D	2-CHLOROPHENOL	PA	EPA 8270 D	2-METHYL-4,6-DINITROPHENOL (4,6-DINITRO-2-METHYLPHENOL)	PA
EPA 8270 D	2-METHYLNAPHTHALENE	PA	EPA 8270 D	2-METHYLPHENOL (O-CRESOL)	PA
EPA 8270 D	2-NAPHTHYLAMINE	PA	EPA 8270 D	2-NITROANILINE	PA
EPA 8270 D	2-NITROPHENOL	PA	EPA 8270 D	2-PICOLINE (2-METHYLPYRIDINE)	PA
EPA 8270 D	3,3'-DICHLOROBENZIDINE	PA	EPA 8270 D	3,3'-DIMETHYLBENZIDINE	PA
EPA 8270 D	3-METHYLCHOLANTHRENE	PA	EPA 8270 D	3-METHYLPHENOL (M-CRESOL)	PA

Commonwealth of Virginia

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NON-POTABLE WATER

METHOD	ANALYTE	PRIMARY	METHOD	ANALYTE	PRIMARY
EPA 8270 D	3-NITROANILINE	PA	EPA 8270 D	4,4'-METHYLENEBIS(2-CHLOROANILINE)	PA
EPA 8270 D	4-AMINOBIPHENYL	PA	EPA 8270 D	4-BROMOPHENYL PHENYL ETHER	PA
EPA 8270 D	4-CHLORO-3-METHYLPHENOL	PA	EPA 8270 D	4-CHLOROANILINE	PA
EPA 8270 D	4-CHLOROPHENYL PHENYLETHER	PA	EPA 8270 D	4-DIMETHYL AMINOAZOBENZENE	PA
EPA 8270 D	4-METHYLPHENOL (P-CRESOL)	PA	EPA 8270 D	4-NITROANILINE	PA
EPA 8270 D	4-NITROPHENOL	PA	EPA 8270 D	5-NITRO-O-TOLUIDINE	PA
EPA 8270 D	7,12-DIMETHYLBENZ(A) ANTHRACENE	PA	EPA 8270 D	A-A-DIMETHYLPHENETHYLAMINE	PA
EPA 8270 D	ACENAPHTHENE	PA	EPA 8270 D	ACENAPHTHYLENE	PA
EPA 8270 D	ACETOPHENONE	PA	EPA 8270 D	ANILINE	PA
EPA 8270 D	ANTHRACENE	PA	EPA 8270 D	ARAMITE	PA
EPA 8270 D	BENZIDINE	PA	EPA 8270 D	BENZO(A)ANTHRACENE	PA
EPA 8270 D	BENZO(A)PYRENE	PA	EPA 8270 D	BENZO(G,H,I)PERYLENE	PA
EPA 8270 D	BENZO(K)FLUORANTHENE	PA	EPA 8270 D	BENZOIC ACID	PA
EPA 8270 D	BENZO[B]FLUORANTHENE	PA	EPA 8270 D	BENZYL ALCOHOL	PA
EPA 8270 D	BIS(2-CHLOROETHOXY)METHANE	PA	EPA 8270 D	BIS(2-CHLOROETHYL) ETHER	PA
EPA 8270 D	BIS(2-CHLOROISOPROPYL) ETHER	PA	EPA 8270 D	BIS(2-ETHYLHEXYL) PHTHALATE (DI(2-ETHYLHEXYL)PHTHALATE), (DEHP)	PA
EPA 8270 D	BUTYL BENZYL PHTHALATE	PA	EPA 8270 D	CHLOROBENZILATE	PA
EPA 8270 D	CHRYSENE	PA	EPA 8270 D	DI-N-BUTYL PHTHALATE	PA
EPA 8270 D	DI-N-OCTYL PHTHALATE	PA	EPA 8270 D	DIALLATE	PA
EPA 8270 D	DIBENZ(A, J) ACRIDINE	PA	EPA 8270 D	DIBENZO(A,H) ANTHRACENE	PA
EPA 8270 D	DIBENZOFURAN	PA	EPA 8270 D	DIETHYL PHTHALATE	PA
EPA 8270 D	DIMETHOATE	PA	EPA 8270 D	DIMETHYL PHTHALATE	PA
EPA 8270 D	DINOSEB (2-SEC-BUTYL-4,6-DINITROPHENOL, DNBP)	PA	EPA 8270 D	DIPHENYLAMINE	PA
EPA 8270 D	DISULFOTON	PA	EPA 8270 D	ETHYL METHANESULFONATE	PA
EPA 8270 D	FAMPHUR	PA	EPA 8270 D	FLUORANTHENE	PA
EPA 8270 D	FLUORENE	PA	EPA 8270 D	HEXACHLOROBENZENE	PA
EPA 8270 D	HEXACHLOROBUTADIENE (1,3-HEXACHLOROBUTADIENE)	PA	EPA 8270 D	HEXACHLOROCYCLOPENTADIENE	PA
EPA 8270 D	HEXACHLOROETHANE	PA	EPA 8270 D	HEXACHLOROPROPENE	PA
EPA 8270 D	INDENO(1,2,3-CD) PYRENE	PA	EPA 8270 D	ISODRIN	PA
EPA 8270 D	ISOPHORONE	PA	EPA 8270 D	ISOSAFROLE	PA
EPA 8270 D	KEPONE	PA	EPA 8270 D	METHAPYRILENE	PA
EPA 8270 D	METHYL METHANESULFONATE	PA	EPA 8270 D	METHYL PARATHION (PARATHION, METHYL)	PA
EPA 8270 D	N-NITROSO-DI-N-BUTYLAMINE	PA	EPA 8270 D	N-NITROSODI-N-PROPYLAMINE	PA

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NON-POTABLE WATER

METHOD	ANALYTE	PRIMARY	METHOD	ANALYTE	PRIMARY
EPA 8270 D	N-NITROSODIETHYLAMINE	PA	EPA 8270 D	N-NITROSODIMETHYLAMINE	PA
EPA 8270 D	N-NITROSODIPHENYLAMINE	PA	EPA 8270 D	N-NITROSOMETHYLETHYLAMINE	PA
EPA 8270 D	N-NITROSOMORPHOLINE	PA	EPA 8270 D	N-NITROSOPIPERIDINE	PA
EPA 8270 D	N-NITROSOPYRROLIDINE	PA	EPA 8270 D	NAPHTHALENE	PA
EPA 8270 D	NITROBENZENE	PA	EPA 8270 D	NITROQUINOLINE-1-OXIDE	PA
EPA 8270 D	O,O,O-TRIETHYL PHOSPHOROTHIOATE	PA	EPA 8270 D	O-TOLUIDINE (2-METHYLANILINE)	PA
EPA 8270 D	PARATHION (PARATHION - ETHYL)	PA	EPA 8270 D	PENTACHLOROBENZENE	PA
EPA 8270 D	PENTACHLORONITROBENZENE	PA	EPA 8270 D	PENTACHLOROPHENOL	PA
EPA 8270 D	PHENACETIN	PA	EPA 8270 D	PHENANTHRENE	PA
EPA 8270 D	PHENOL	PA	EPA 8270 D	PHORATE	PA
EPA 8270 D	PHTHALIC ANHYDRIDE	PA	EPA 8270 D	PRONAMIDE (KERB)	PA
EPA 8270 D	PYRENE	PA	EPA 8270 D	SAFROLE	PA
EPA 8270 D	THIONAZIN (ZINOPHOS)	PA	EPA 8270 D	TRIS-(2,3-DIBROMOPROPYL) PHOSPHATE (TRIS-BP)	PA
EPA 8270 D - EXTENDED	1,1-BIPHENYL	PA	EPA 8270 D - EXTENDED	1-METHYLNAPHTHALENE	PA
EPA 8270 D - EXTENDED	ATRAZINE	PA	EPA 8270 D - EXTENDED	BENZALDEHYDE	PA
EPA 8270 D - EXTENDED	CAPROLACTAM	PA	EPA 8270 D - EXTENDED	CARBAZOLE	PA
EPA 8270 D - EXTENDED	PYRIDINE	PA	EPA 8270 D SIM	2-METHYLNAPHTHALENE	PA
EPA 8270 D SIM	ACENAPHTHENE	PA	EPA 8270 D SIM	ACENAPHTHYLENE	PA
EPA 8270 D SIM	ANTHRACENE	PA	EPA 8270 D SIM	BENZO(A)ANTHRACENE	PA
EPA 8270 D SIM	BENZO(A)PYRENE	PA	EPA 8270 D SIM	BENZO(G,H,I)PERYLENE	PA
EPA 8270 D SIM	BENZO(K)FLUORANTHENE	PA	EPA 8270 D SIM	BENZO[B]FLUORANTHENE	PA
EPA 8270 D SIM	CHRYSENE	PA	EPA 8270 D SIM	FLUORANTHENE	PA
EPA 8270 D SIM	FLUORENE	PA	EPA 8270 D SIM	INDENO(1,2,3-CD) PYRENE	PA
EPA 8270 D SIM	NAPHTHALENE	PA	EPA 8270 D SIM	PHENANTHRENE	PA
EPA 8270 D SIM	PYRENE	PA	EPA 8270 D SIM - EXTENDED	1-METHYLNAPHTHALENE	PA
EPA 8270 D SIM - EXTENDED	DIBENZO(A, H) PYRENE	PA	EPA 8290 A	1,2,3,4,6,7,8,9-OCTACHLORODIBENZO-P-DIOXIN (OCDD)	PA
EPA 8290 A	1,2,3,4,6,7,8,9-OCTACHLORODIBENZOFURAN (OCDF)	PA	EPA 8290 A	1,2,3,4,6,7,8-HEPTACHLORODIBENZO-P-DIOXIN (1,2,3,4,6,7,8-HPCDD)	PA
EPA 8290 A	1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN (1,2,3,4,6,7,8-HPCDF)	PA	EPA 8290 A	1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN (1,2,3,4,7,8,9-HPCDF)	PA
EPA 8290 A	1,2,3,4,7,8-HEXACHLORODIBENZO-P-DIOXIN (1,2,3,4,7,8-HXCDD)	PA	EPA 8290 A	1,2,3,4,7,8-HEXACHLORODIBENZOFURAN (1,2,3,4,7,8-HXCDF)	PA
EPA 8290 A	1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN(1,2,3,6,7,8-HXCDD)	PA	EPA 8290 A	1,2,3,6,7,8-HEXACHLORODIBENZOFURAN (1,2,3,6,7,8-HXCDF)	PA
EPA 8290 A	1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN (1,2,3,7,8,9-HXCDD)	PA	EPA 8290 A	1,2,3,7,8,9-HEXACHLORODIBENZOFURAN (1,2,3,7,8,9-HXCDF)	PA

Commonwealth of Virginia

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NON-POTABLE WATER

METHOD	ANALYTE	PRIMARY	METHOD	ANALYTE	PRIMARY
EPA 8290 A	1,2,3,7,8-PENTACHLORODIBENZO -P-DIOXIN (1,2,3,7,8-PECDD)	PA	EPA 8290 A	1,2,3,7,8-PENTACHLORODIBENZO FURAN (1,2,3,7,8-PECDF)	PA
EPA 8290 A	2,3,4,6,7,8-HEXACHLORODIBENZO FURAN	PA	EPA 8290 A	2,3,4,7,8-PENTACHLORODIBENZO FURAN	PA
EPA 8290 A	2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN (2,3,7,8-TCDD)	PA	EPA 8290 A	2,3,7,8-TETRACHLORODIBENZOF URAN	PA
EPA 8315 A	ACETALDEHYDE	PA	EPA 8315 A	ACROLEIN (PROPENAL)	PA
EPA 8315 A	BENZALDEHYDE	PA	EPA 8315 A	BUTYLALDEHYDE (BUTANAL)	PA
EPA 8315 A	CROTONALDEHYDE	PA	EPA 8315 A	FORMALDEHYDE	PA
EPA 8315 A	HEXANALDEHYDE (HEXANAL)	PA	EPA 8315 A	ISOVALERALDEHYDE	PA
EPA 8315 A	M-TOLUALDEHYDE (1,3-TOLUALDEHYDE)	PA	EPA 8315 A	O-TOLUALDEHYDE (1,2-TOLUALDEHYDE)	PA
EPA 8315 A	P-TOLUALDEHYDE (1,4-TOLUALDEHYDE)	PA	EPA 8315 A	PENTANAL (VALERALDEHYDE)	PA
EPA 8315 A	PROPIONALDEHYDE (PROPANAL)	PA	EPA 8330 A	1,3,5-TRINITROBENZENE (1,3,5-TNB)	PA
EPA 8330 A	1,3-DINITROBENZENE (1,3-DNB)	PA	EPA 8330 A	2,4,6-TRINITROTOLUENE (2,4,6-TNT)	PA
EPA 8330 A	2,4-DINITROTOLUENE (2,4-DNT)	PA	EPA 8330 A	2,6-DINITROTOLUENE (2,6-DNT)	PA
EPA 8330 A	2-AMINO-4,6-DINITROTOLUENE (2-AM-DNT)	PA	EPA 8330 A	2-NITROTOLUENE	PA
EPA 8330 A	3-NITROTOLUENE	PA	EPA 8330 A	4-AMINO-2,6-DINITROTOLUENE (4-AM-DNT)	PA
EPA 8330 A	4-NITROTOLUENE	PA	EPA 8330 A	METHYL-2,4,6-TRINITROPHENYLN ITRAMINE (TETRYL)	PA
EPA 8330 A	NITROBENZENE	PA	EPA 8330 A	NITROGLYCERIN	PA
EPA 8330 A	OCTAHYDRO-1,3,5,7-TETRANITRO -1,3,5,7-TETRAZOCINE (HMX)	PA	EPA 8330 A	RDX (HEXAHYDRO-1,3,5-TRINITRO-1,3, 5-TRIAZINE)	PA
EPA 9012 A	TOTAL CYANIDE	PA	EPA 9012 B	TOTAL CYANIDE	PA
EPA 9040 C	PH	PA	EPA 9050 A	CONDUCTIVITY	PA
EPA 9056 A	BROMIDE	PA	EPA 9056 A	CHLORIDE	PA
EPA 9056 A	FLUORIDE	PA	EPA 9056 A	NITRATE AS N	PA
EPA 9056 A	NITRITE	PA	EPA 9056 A	ORTHOPHOSPHATE AS P	PA
EPA 9056 A	SULFATE	PA	EPA 9066	TOTAL PHENOLICS	PA
EPA 9095 B	FREE LIQUID	PA	RSK-175	ETHANE	PA
RSK-175	ETHENE	PA	RSK-175	METHANE	PA
SM 2120 B-2001	COLOR	PA	SM 2310 B-1997	ACIDITY, AS CACO3	PA
SM 2320 B-1997	ALKALINITY AS CACO3	PA	SM 2340 B-1997	TOTAL HARDNESS AS CACO3	PA
SM 2340 C-1997	TOTAL HARDNESS AS CACO3	PA	SM 2510 B-1997	CONDUCTIVITY	PA
SM 2540 B-1997	RESIDUE-TOTAL	PA	SM 2540 C-1997	RESIDUE-FILTERABLE (TDS)	PA
SM 2540 D-1997	RESIDUE-NONFILTERABLE (TSS)	PA	SM 2540 F-1997	RESIDUE-SETTLEABLE	PA
SM 3500-CR B-2009	CHROMIUM VI	PA	SM 4500-CN$^-$ C-1999	CYANIDE	PA
SM 4500-CN$^-$ E-1999	CYANIDE	PA	SM 4500-F$^-$ B-1997	FLUORIDE	PA

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NON-POTABLE WATER

METHOD	ANALYTE	PRIMARY	METHOD	ANALYTE	PRIMARY
SM 4500-F⁻ C-1997	FLUORIDE	PA	SM 4500-NH3 B-1997	AMMONIA AS N	PA
SM 4500-NH3 D-1997	AMMONIA AS N	PA	SM 4500-P E-1999	ORTHOPHOSPHATE AS P	PA
SM 4500-P F-1999	PHOSPHORUS, TOTAL	PA	SM 4500-S2⁻ D-2000	SULFIDE	PA
SM 4500-SIO2 C-1997	SILICA AS SIO2	PA	SM 5210 B-2001	BIOCHEMICAL OXYGEN DEMAND	PA
SM 5210 B-2001	CARBONACEOUS BOD, CBOD	PA	SM 5310 C-2000	TOTAL ORGANIC CARBON	PA
SM 5540 C-2000	SURFACTANTS - MBAS	PA	SM 9222 D-1997	FECAL COLIFORMS	PA

SOLID AND CHEMICAL MATERIALS

METHOD	ANALYTE	PRIMARY	METHOD	ANALYTE	PRIMARY
EPA 1010 A	FLASHPOINT	PA	EPA 1311	PREP: TOXICITY CHARACTERISTIC LEACHING PROCEDURE	PA
EPA 1312	PREP: SYNTHETIC PRECIPITATION LEACHING PROCEDURE	PA	EPA 1668 A	2,2',3,3',4,4',5,5',6-NONACHLOROBIPHENYL (BZ-206)	PA
EPA 1668 A	2,2',3,3',4,4',5,5'-OCTACHLOROBIPHENYL (BZ-194)	PA	EPA 1668 A	2,2',3,3',4,4',5,6'-OCTACHLOROBIPHENYL (BZ-196)	PA
EPA 1668 A	2,2',3,3',4,4',5,6,6'-NONACHLOROBIPHENYL (BZ-207)	PA	EPA 1668 A	2,2',3,3',4,4',5,6-OCTACHLOROBIPHENYL BZ-195)	PA
EPA 1668 A	2,2',3,3',4,4',5-HEPTACHLOROBIPHENYL (BZ-170)	PA	EPA 1668 A	2,2',3,3',4,4',6,6'-OCTACHLOROBIPHENYL (BZ-197)	PA
EPA 1668 A	2,2',3,3',4,4',6-HEPTACHLOROBIPHENYL (BZ-171)	PA	EPA 1668 A	2,2',3,3',4,4'-HEXACHLOROBIPHENYL (BZ-128)	PA
EPA 1668 A	2,2',3,3',4,5',6'-HEPTACHLOROBIPHENYL (BZ-177)	PA	EPA 1668 A	2,2',3,3',4,5',6,6'-OCTACHLOROBIPHENYL (BZ-201)	PA
EPA 1668 A	2,2',3,3',4,5',6-HEPTACHLOROBIPHENYL (BZ-175)	PA	EPA 1668 A	2,2',3,3',4,5'-HEXACHLOROBIPHENYL (BZ-130)	PA
EPA 1668 A	2,2',3,3',4,5,5',6'-OCTACHLOROBIPHENYL (BZ-199)	PA	EPA 1668 A	2,2',3,3',4,5,5',6,6'-NONACHLOROBIPHENYL (BZ-208)	PA
EPA 1668 A	2,2',3,3',4,5,5',6-OCTACHLOROBIPHENYL (BZ-198)	PA	EPA 1668 A	2,2',3,3',4,5,5'-HEPTACHLOROBIPHENYL (BZ-172)	PA
EPA 1668 A	2,2',3,3',4,5,6'-HEPTACHLOROBIPHENYL (BZ-174)	PA	EPA 1668 A	2,2',3,3',4,5,6,6'-OCTACHLOROBIPHENYL (BZ-200)	PA
EPA 1668 A	2,2',3,3',4,5,6-HEPTACHLOROBIPHENYL (BZ-173)	PA	EPA 1668 A	2,2',3,3',4,5-HEXACHLOROBIPHENYL (BZ-129)	PA
EPA 1668 A	2,2',3,3',4,6'-HEXACHLOROBIPHENYL (BZ-132)	PA	EPA 1668 A	2,2',3,3',4,6,6'-HEPTACHLOROBIPHENYL (BZ-176)	PA
EPA 1668 A	2,2',3,3',4,6-HEXACHLOROBIPHENYL (BZ-131)	PA	EPA 1668 A	2,2',3,3',4-PENTACHLOROBIPHENYL (BZ-82)	PA
EPA 1668 A	2,2',3,3',5,5',6,6'-OCTACHLOROBIPHENYL (BZ-202)	PA	EPA 1668 A	2,2',3,3',5,5',6-HEPTACHLOROBIPHENYL (BZ-178)	PA
EPA 1668 A	2,2',3,3',5,5'-HEXACHLOROBIPHENYL (BZ-133)	PA	EPA 1668 A	2,2',3,3',5,6'-HEXACHLOROBIPHENYL (BZ-135)	PA
EPA 1668 A	2,2',3,3',5,6,6'-HEPTACHLOROBIPHENYL (BZ-179)	PA	EPA 1668 A	2,2',3,3',5,6-HEXACHLOROBIPHENYL (BZ-134)	PA
EPA 1668 A	2,2',3,3',5-PENTACHLOROBIPHENYL (BZ-83)	PA	EPA 1668 A	2,2',3,3',6,6'-HEXACHLOROBIPHENYL (BZ-136)	PA

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SOLID AND CHEMICAL MATERIALS

METHOD	ANALYTE	PRIMARY	METHOD	ANALYTE	PRIMARY
EPA 1668 A	2,2',3,3',6-PENTACHLOROBIPHENYL (BZ-84)	PA	EPA 1668 A	2,2',3,3'-TETRACHLOROBIPHENYL (BZ-40)	PA
EPA 1668 A	2,2',3,4',5',6-HEXACHLOROBIPHENYL (BZ-149)	PA	EPA 1668 A	2,2',3,4',5'-PENTACHLOROBIPHENYL (BZ-97)	PA
EPA 1668 A	2,2',3,4',5,5',6-HEPTACHLOROBIPHENYL (BZ-187)	PA	EPA 1668 A	2,2',3,4',5,5'-HEXACHLOROBIPHENYL (BZ-146)	PA
EPA 1668 A	2,2',3,4',5,6'-HEXACHLOROBIPHENYL (BZ-148)	PA	EPA 1668 A	2,2',3,4',5,6,6'-HEPTACHLOROBIPHENYL (BZ-188)	PA
EPA 1668 A	2,2',3,4',5,6-HEXACHLOROBIPHENYL (BZ-147)	PA	EPA 1668 A	2,2',3,4',5-PENTACHLOROBIPHENYL (BZ-90)	PA
EPA 1668 A	2,2',3,4',6'-PENTACHLOROBIPHENYL (BZ-98)	PA	EPA 1668 A	2,2',3,4',6,6'-HEXACHLOROBIPHENYL (BZ-150)	PA
EPA 1668 A	2,2',3,4',6-PENTACHLOROBIPHENYL (BZ-91)	PA	EPA 1668 A	2,2',3,4'-TETRACHLOROBIPHENYL (BZ-42)	PA
EPA 1668 A	2,2',3,4,4',5',6-HEPTACHLOROBIPHENYL (BZ-183)	PA	EPA 1668 A	2,2',3,4,4',5'-HEXACHLOROBIPHENYL (BZ-138)	PA
EPA 1668 A	2,2',3,4,4',5,5',6-OCTACHLOROBIPHENYL (BZ-203)	PA	EPA 1668 A	2,2',3,4,4',5,5'-HEPTACHLOROBIPHENYL (BZ-180)	PA
EPA 1668 A	2,2',3,4,4',5,6'-HEPTACHLOROBIPHENYL (BZ-182)	PA	EPA 1668 A	2,2',3,4,4',5,6,6'-OCTACHLOROBIPHENYL (BZ-204)	PA
EPA 1668 A	2,2',3,4,4',5,6-HEPTACHLOROBIPHENYL (BZ-181)	PA	EPA 1668 A	2,2',3,4,4',5-HEXACHLOROBIPHENYL (BZ-137)	PA
EPA 1668 A	2,2',3,4,4',6'-HEXACHLOROBIPHENYL (BZ-140)	PA	EPA 1668 A	2,2',3,4,4',6,6'-HEPTACHLOROBIPHENYL (BZ-184)	PA
EPA 1668 A	2,2',3,4,4',6-HEXACHLOROBIPHENYL (BZ-139)	PA	EPA 1668 A	2,2',3,4,4'-PENTACHLOROBIPHENYL (BZ-85)	PA
EPA 1668 A	2,2',3,4,5',6-HEXACHLOROBIPHENYL (BZ-144)	PA	EPA 1668 A	2,2',3,4,5'-PENTACHLOROBIPHENYL (BZ-87)	PA
EPA 1668 A	2,2',3,4,5,5',6-HEPTACHLOROBIPHENYL (BZ-185)	PA	EPA 1668 A	2,2',3,4,5,5'-HEXACHLOROBIPHENYL (BZ-141)	PA
EPA 1668 A	2,2',3,4,5,6'-HEXACHLOROBIPHENYL (BZ-143)	PA	EPA 1668 A	2,2',3,4,5,6,6'-HEPTACHLOROBIPHENYL (BZ-186)	PA
EPA 1668 A	2,2',3,4,5,6-HEXACHLOROBIPHENYL (BZ-142)	PA	EPA 1668 A	2,2',3,4,5-PENTACHLOROBIPHENYL (BZ-86)	PA
EPA 1668 A	2,2',3,4,6'-PENTACHLOROBIPHENYL (BZ-89)	PA	EPA 1668 A	2,2',3,4,6,6'-HEXACHLOROBIPHENYL (BZ-145)	PA
EPA 1668 A	2,2',3,4,6-PENTACHLOROBIPHENYL (BZ-88)	PA	EPA 1668 A	2,2',3,4-TETRACHLOROBIPHENYL (BZ-41)	PA
EPA 1668 A	2,2',3,5',6-PENTACHLOROBIPHENYL (BZ-95)	PA	EPA 1668 A	2,2',3,5'-TETRACHLOROBIPHENYL (BZ-44)	PA
EPA 1668 A	2,2',3,5,5',6-HEXACHLOROBIPHENYL (BZ-151)	PA	EPA 1668 A	2,2',3,5,5'-PENTACHLOROBIPHENYL (BZ-92)	PA
EPA 1668 A	2,2',3,5,6'-PENTACHLOROBIPHENYL (BZ-94)	PA	EPA 1668 A	2,2',3,5,6,6'-HEXACHLOROBIPHENYL (BZ-152)	PA
EPA 1668 A	2,2',3,5,6-PENTACHLOROBIPHENYL (BZ-93)	PA	EPA 1668 A	2,2',3,5-TETRACHLOROBIPHENYL (BZ-43)	PA
EPA 1668 A	2,2',3,6'-TETRACHLOROBIPHENYL (BZ-46)	PA	EPA 1668 A	2,2',3,6,6'-PENTACHLOROBIPHENYL (BZ-96)	PA
EPA 1668 A	2,2',3,6-TETRACHLOROBIPHENYL (BZ-45)	PA	EPA 1668 A	2,2',3-TRICHLOROBIPHENYL (BZ-16)	PA

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EPA 1668 A	2,2',4,4',5,5'-HEXACHLOROBIPHENYL (BZ-153)	PA	EPA 1668 A	2,2',4,4',5,6'-HEXACHLOROBIPHENYL (BZ-154)	PA
EPA 1668 A	2,2',4,4',5-PENTACHLOROBIPHENYL (BZ-99)	PA	EPA 1668 A	2,2',4,4',6,6'-HEXACHLOROBIPHENYL (BZ-155)	PA
EPA 1668 A	2,2',4,4',6-PENTACHLOROBIPHENYL (BZ-100)	PA	EPA 1668 A	2,2',4,4'-TETRACHLOROBIPHENYL (BZ-47)	PA
EPA 1668 A	2,2',4,5',6-PENTACHLOROBIPHENYL (BZ-103)	PA	EPA 1668 A	2,2',4,5'-TETRACHLOROBIPHENYL (BZ-49)	PA
EPA 1668 A	2,2',4,5,5'-PENTACHLOROBIPHENYL (BZ-101)	PA	EPA 1668 A	2,2',4,5,6'-PENTACHLOROBIPHENYL (BZ-102)	PA
EPA 1668 A	2,2',4,5-TETRACHLOROBIPHENYL (BZ-48)	PA	EPA 1668 A	2,2',4,6'-TETRACHLOROBIPHENYL (BZ-51)	PA
EPA 1668 A	2,2',4,6,6'-PENTACHLOROBIPHENYL (BZ-104)	PA	EPA 1668 A	2,2',4,6-TETRACHLOROBIPHENYL (BZ-50)	PA
EPA 1668 A	2,2',4-TRICHLOROBIPHENYL (BZ-17)	PA	EPA 1668 A	2,2',5,5'-TETRACHLOROBIPHENYL (BZ-52)	PA
EPA 1668 A	2,2',5,6'-TETRACHLOROBIPHENYL (BZ-53)	PA	EPA 1668 A	2,2',5-TRICHLOROBIPHENYL (BZ-18)	PA
EPA 1668 A	2,2',6,6'-TETRACHLOROBIPHENYL (BZ-54)	PA	EPA 1668 A	2,2',6-TRICHLOROBIPHENYL (BZ-19)	PA
EPA 1668 A	2,2'-DICHLOROBIPHENYL (BZ-4)	PA	EPA 1668 A	2,3',4',5',6-PENTACHLOROBIPHENYL (BZ-125)	PA
EPA 1668 A	2,3',4',5'-TETRACHLOROBIPHENYL (BZ-76)	PA	EPA 1668 A	2,3',4',5,5'-PENTACHLOROBIPHENYL (BZ-124)	PA
EPA 1668 A	2,3',4',5-TETRACHLOROBIPHENYL (BZ-70)	PA	EPA 1668 A	2,3',4',6-TETRACHLOROBIPHENYL (BZ-71)	PA
EPA 1668 A	2,3',4'-TRICHLOROBIPHENYL (BZ-33)	PA	EPA 1668 A	2,3',4,4',5',6-HEXACHLOROBIPHENYL (BZ-168)	PA
EPA 1668 A	2,3',4,4',5'-PENTACHLOROBIPHENYL (BZ-123)	PA	EPA 1668 A	2,3',4,4',5,5'-HEXACHLOROBIPHENYL (BZ-167)	PA
EPA 1668 A	2,3',4,4',5-PENTACHLOROBIPHENYL (BZ-118)	PA	EPA 1668 A	2,3',4,4',6-PENTACHLOROBIPHENYL (BZ-119)	PA
EPA 1668 A	2,3',4,4'-TETRACHLOROBIPHENYL (BZ-66)	PA	EPA 1668 A	2,3',4,5',6-PENTACHLOROBIPHENYL (BZ-121)	PA
EPA 1668 A	2,3',4,5'-TETRACHLOROBIPHENYL (BZ-68)	PA	EPA 1668 A	2,3',4,5,5'-PENTACHLOROBIPHENYL (BZ-120)	PA
EPA 1668 A	2,3',4,5-TETRACHLOROBIPHENYL (BZ-67)	PA	EPA 1668 A	2,3',4,6-TETRACHLOROBIPHENYL (BZ-69)	PA
EPA 1668 A	2,3',4-TRICHLOROBIPHENYL (BZ-25)	PA	EPA 1668 A	2,3',5',6-TETRACHLOROBIPHENYL (BZ-73)	PA
EPA 1668 A	2,3',5'-TRICHLOROBIPHENYL (BZ-34)	PA	EPA 1668 A	2,3',5,5'-TETRACHLOROBIPHENYL (BZ-72)	PA
EPA 1668 A	2,3',5-TRICHLOROBIPHENYL (BZ-26)	PA	EPA 1668 A	2,3',6-TRICHLOROBIPHENYL (BZ-27)	PA
EPA 1668 A	2,3'-DICHLOROBIPHENYL (BZ-6)	PA	EPA 1668 A	2,3,3',4',5',6-HEXACHLOROBIPHENYL (BZ-164)	PA
EPA 1668 A	2,3,3',4',5'-PENTACHLOROBIPHENYL (BZ-122)	PA	EPA 1668 A	2,3,3',4',5,5',6-HEPTACHLOROBIPHENYL (BZ-193)	PA
EPA 1668 A	2,3,3',4',5,5'-HEXACHLOROBIPHENYL (BZ-162)	PA	EPA 1668 A	2,3,3',4',5,6-HEXACHLOROBIPHENYL (BZ-163)	PA

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EPA 1668 A	2,3,3',4',5-PENTACHLOROBIPHENYL (BZ-107)	PA	EPA 1668 A	2,3,3',4',6-PENTACHLOROBIPHENYL (BZ-110)	PA
EPA 1668 A	2,3,3',4'-TETRACHLOROBIPHENYL (BZ-56)	PA	EPA 1668 A	2,3,3',4,4',5',6-HEPTACHLOROBIPHENYL (BZ-191)	PA
EPA 1668 A	2,3,3',4,4',5'-HEXACHLOROBIPHENYL (BZ-157)	PA	EPA 1668 A	2,3,3',4,4',5,5',6-OCTACHLOROBIPHENYL (BZ-205)	PA
EPA 1668 A	2,3,3',4,4',5,5'-HEPTACHLOROBIPHENYL (BZ-189)	PA	EPA 1668 A	2,3,3',4,4',5,6-HEPTACHLOROBIPHENYL (BZ-190)	PA
EPA 1668 A	2,3,3',4,4',5-HEXACHLOROBIPHENYL (BZ-156)	PA	EPA 1668 A	2,3,3',4,4',6-HEXACHLOROBIPHENYL (BZ-158)	PA
EPA 1668 A	2,3,3',4,4'-PENTACHLOROBIPHENYL (BZ-105)	PA	EPA 1668 A	2,3,3',4,5',6-HEXACHLOROBIPHENYL (BZ-161)	PA
EPA 1668 A	2,3,3',4,5'-PENTACHLOROBIPHENYL (BZ-108)	PA	EPA 1668 A	2,3,3',4,5,5',6-HEPTACHLOROBIPHENYL (BZ-192)	PA
EPA 1668 A	2,3,3',4,5,5'-HEXACHLOROBIPHENYL (BZ-159)	PA	EPA 1668 A	2,3,3',4,5,6-HEXACHLOROBIPHENYL (BZ-160)	PA
EPA 1668 A	2,3,3',4,5-PENTACHLOROBIPHENYL (BZ-106)	PA	EPA 1668 A	2,3,3',4,6-PENTACHLOROBIPHENYL (BZ-109)	PA
EPA 1668 A	2,3,3',4-TETRACHLOROBIPHENYL (BZ-55)	PA	EPA 1668 A	2,3,3',5',6-PENTACHLOROBIPHENYL (BZ-113)	PA
EPA 1668 A	2,3,3',5'-TETRACHLOROBIPHENYL (BZ-58)	PA	EPA 1668 A	2,3,3',5,5',6-HEXACHLOROBIPHENYL (BZ-165)	PA
EPA 1668 A	2,3,3',5,5'-PENTACHLOROBIPHENYL (BZ-111)	PA	EPA 1668 A	2,3,3',5,6-PENTACHLOROBIPHENYL (BZ-112)	PA
EPA 1668 A	2,3,3',5-TETRACHLOROBIPHENYL (BZ-57)	PA	EPA 1668 A	2,3,3',6-TETRACHLOROBIPHENYL (BZ-59)	PA
EPA 1668 A	2,3,3'-TRICHLOROBIPHENYL (BZ-20)	PA	EPA 1668 A	2,3,4',5,6-PENTACHLOROBIPHENYL (BZ-117)	PA
EPA 1668 A	2,3,4',5-TETRACHLOROBIPHENYL (BZ-63)	PA	EPA 1668 A	2,3,4',6-TETRACHLOROBIPHENYL (BZ-64)	PA
EPA 1668 A	2,3,4'-TRICHLOROBIPHENYL (BZ-22)	PA	EPA 1668 A	2,3,4,4',5,6-HEXACHLOROBIPHENYL (BZ-166)	PA
EPA 1668 A	2,3,4,4',5-PENTACHLOROBIPHENYL (BZ-114)	PA	EPA 1668 A	2,3,4,4',6-PENTACHLOROBIPHENYL (BZ-115)	PA
EPA 1668 A	2,3,4,4'-TETRACHLOROBIPHENYL (BZ-60)	PA	EPA 1668 A	2,3,4,5,6-PENTACHLOROBIPHENYL (BZ-116)	PA
EPA 1668 A	2,3,4,5-TETRACHLOROBIPHENYL (BZ-61)	PA	EPA 1668 A	2,3,4,6-TETRACHLOROBIPHENYL (BZ-62)	PA
EPA 1668 A	2,3,4-TRICHLOROBIPHENYL (BZ-21)	PA	EPA 1668 A	2,3,5,6-TETRACHLOROBIPHENYL (BZ-65)	PA
EPA 1668 A	2,3,5-TRICHLOROBIPHENYL (BZ-23)	PA	EPA 1668 A	2,3,6-TRICHLOROBIPHENYL (BZ-24)	PA
EPA 1668 A	2,3-DICHLOROBIPHENYL (BZ-5)	PA	EPA 1668 A	2,4',5-TRICHLOROBIPHENYL (BZ-31)	PA
EPA 1668 A	2,4',6-TRICHLOROBIPHENYL (BZ-32)	PA	EPA 1668 A	2,4'-DICHLOROBIPHENYL (BZ-8)	PA
EPA 1668 A	2,4,4',5-TETRACHLOROBIPHENYL (BZ-74)	PA	EPA 1668 A	2,4,4',6-TETRACHLOROBIPHENYL (BZ-75)	PA
EPA 1668 A	2,4,4'-TRICHLOROBIPHENYL (BZ-28)	PA	EPA 1668 A	2,4,5-TRICHLOROBIPHENYL (BZ-29)	PA

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METHOD	ANALYTE	PRIMARY	METHOD	ANALYTE	PRIMARY
EPA 1668 A	2,4,6-TRICHLOROBIPHENYL (BZ-30)	PA	EPA 1668 A	2,4-DICHLOROBIPHENYL (BZ-7)	PA
EPA 1668 A	2,5-DICHLOROBIPHENYL (BZ-9)	PA	EPA 1668 A	2,6-DICHLOROBIPHENYL (BZ-10)	PA
EPA 1668 A	2-CHLOROBIPHENYL (BZ-1)	PA	EPA 1668 A	3,3',4,4',5,5'-HEXACHLOROBIPHENYL (BZ-169)	PA
EPA 1668 A	3,3',4,4',5-PENTACHLOROBIPHENYL (BZ-126)	PA	EPA 1668 A	3,3',4,4'-TETRACHLOROBIPHENYL (BZ-77)	PA
EPA 1668 A	3,3',4,5'-TETRACHLOROBIPHENYL (BZ-79)	PA	EPA 1668 A	3,3',4,5,5'-PENTACHLOROBIPHENYL (BZ-127)	PA
EPA 1668 A	3,3',4,5-TETRACHLOROBIPHENYL (BZ-78)	PA	EPA 1668 A	3,3',4-TRICHLOROBIPHENYL (BZ-35)	PA
EPA 1668 A	3,3',5,5'-TETRACHLOROBIPHENYL (BZ-80)	PA	EPA 1668 A	3,3',5-TRICHLOROBIPHENYL (BZ-36)	PA
EPA 1668 A	3,3'-DICHLOROBIPHENYL (BZ-11)	PA	EPA 1668 A	3,4',5-TRICHLOROBIPHENYL (BZ-39)	PA
EPA 1668 A	3,4'-DICHLOROBIPHENYL (BZ-13)	PA	EPA 1668 A	3,4,4',5-TETRACHLOROBIPHENYL (BZ-81)	PA
EPA 1668 A	3,4,4'-TRICHLOROBIPHENYL (BZ-37)	PA	EPA 1668 A	3,4,5-TRICHLOROBIPHENYL (BZ-38)	PA
EPA 1668 A	3,4-DICHLOROBIPHENYL (BZ-12)	PA	EPA 1668 A	3,5-DICHLOROBIPHENYL (BZ-14)	PA
EPA 1668 A	3-CHLOROBIPHENYL (BZ-2)	PA	EPA 1668 A	4,4'-DICHLOROBIPHENYL (BZ-15)	PA
EPA 1668 A	4-CHLOROBIPHENYL (BZ-3)	PA	EPA 1668 A	DECACHLOROBIPHENYL (BZ-209)	PA
EPA 3010 A	PREP: ACID DIGESTION OF AQUEOUS SAMPLES AND EXTRACTS FOR TOTAL METALS	PA	EPA 3050 B	PREP: ACID DIGESTION OF SEDIMENTS, SLUDGES, AND SOILS	PA
EPA 3540 C	PREP: SOXHLET EXTRACTION	PA	EPA 3546	PREP: MICROWAVE EXTRACTION	PA
EPA 3550 B	PREP: ULTRASONIC EXTRACTION	PA	EPA 3620 B	PREP: FLORISIL CLEANUP	PA
EPA 3630 C	PREP: SILICA GEL CLEANUP	PA	EPA 3640 A	PREP: GEL PERMEATION CLEANUP	PA
EPA 3660 B	PREP: SULFUR CLEANUP	PA	EPA 3665 A	SULFURIC ACID/PERMANGANATE CLEAN-UP	PA
EPA 5030 B	PREP: PURGE AND TRAP FOR AQUEOUS SAMPLES	PA	EPA 5035	PREP: CLOSED-SYSTEM PURGE AND TRAP AND EXTRACTION	PA
EPA 6010 B	ALUMINUM	PA	EPA 6010 B	ANTIMONY	PA
EPA 6010 B	ARSENIC	PA	EPA 6010 B	BARIUM	PA
EPA 6010 B	BERYLLIUM	PA	EPA 6010 B	BORON	PA
EPA 6010 B	CADMIUM	PA	EPA 6010 B	CALCIUM	PA
EPA 6010 B	CHROMIUM	PA	EPA 6010 B	COBALT	PA
EPA 6010 B	COPPER	PA	EPA 6010 B	IRON	PA
EPA 6010 B	LEAD	PA	EPA 6010 B	MAGNESIUM	PA
EPA 6010 B	MANGANESE	PA	EPA 6010 B	MOLYBDENUM	PA
EPA 6010 B	NICKEL	PA	EPA 6010 B	POTASSIUM	PA
EPA 6010 B	SELENIUM	PA	EPA 6010 B	SILVER	PA
EPA 6010 B	SODIUM	PA	EPA 6010 B	STRONTIUM	PA
EPA 6010 B	THALLIUM	PA	EPA 6010 B	TIN	PA

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SOLID AND CHEMICAL MATERIALS

METHOD	ANALYTE	PRIMARY	METHOD	ANALYTE	PRIMARY
EPA 6010 B	TITANIUM	PA	EPA 6010 B	VANADIUM	PA
EPA 6010 B	ZINC	PA	EPA 6010 C	ALUMINUM	PA
EPA 6010 C	ANTIMONY	PA	EPA 6010 C	ARSENIC	PA
EPA 6010 C	BARIUM	PA	EPA 6010 C	BERYLLIUM	PA
EPA 6010 C	BORON	PA	EPA 6010 C	CADMIUM	PA
EPA 6010 C	CALCIUM	PA	EPA 6010 C	CHROMIUM	PA
EPA 6010 C	COBALT	PA	EPA 6010 C	COPPER	PA
EPA 6010 C	IRON	PA	EPA 6010 C	LEAD	PA
EPA 6010 C	MAGNESIUM	PA	EPA 6010 C	MANGANESE	PA
EPA 6010 C	MOLYBDENUM	PA	EPA 6010 C	NICKEL	PA
EPA 6010 C	POTASSIUM	PA	EPA 6010 C	SELENIUM	PA
EPA 6010 C	SILVER	PA	EPA 6010 C	SODIUM	PA
EPA 6010 C	STRONTIUM	PA	EPA 6010 C	THALLIUM	PA
EPA 6010 C	TIN	PA	EPA 6010 C	TITANIUM	PA
EPA 6010 C	VANADIUM	PA	EPA 6010 C	ZINC	PA
EPA 6020 A	ALUMINUM	PA	EPA 6020 A	ANTIMONY	PA
EPA 6020 A	ARSENIC	PA	EPA 6020 A	BERYLLIUM	PA
EPA 6020 A	CADMIUM	PA	EPA 6020 A	CALCIUM	PA
EPA 6020 A	CHROMIUM	PA	EPA 6020 A	COBALT	PA
EPA 6020 A	COPPER	PA	EPA 6020 A	IRON	PA
EPA 6020 A	LEAD	PA	EPA 6020 A	MAGNESIUM	PA
EPA 6020 A	MANGANESE	PA	EPA 6020 A	NICKEL	PA
EPA 6020 A	POTASSIUM	PA	EPA 6020 A	SELENIUM	PA
EPA 6020 A	SILVER	PA	EPA 6020 A	SODIUM	PA
EPA 6020 A	THALLIUM	PA	EPA 6020 A	VANADIUM	PA
EPA 6020 A	ZINC	PA	EPA 6020 A - EXTENDED	BORON	PA
EPA 6020 A - EXTENDED	STRONTIUM	PA	EPA 6020 A - EXTENDED	TIN	PA
EPA 6020 A - EXTENDED	TITANIUM	PA	EPA 6850	PERCHLORATE	PA
EPA 7196 A	CHROMIUM VI	PA	EPA 7471 A	MERCURY	PA
EPA 7471 B	MERCURY	PA	EPA 8015 B	DIESEL RANGE ORGANICS (DRO)	PA
EPA 8015 B	ETHANOL	PA	EPA 8015 B	ETHYLENE GLYCOL	PA
EPA 8015 B	GASOLINE RANGE ORGANICS (GRO)	PA	EPA 8015 B	ISOPROPYL ALCOHOL (2-PROPANOL, ISOPROPANOL)	PA
EPA 8015 B	METHANOL	PA	EPA 8015 B	TERT-BUTYL ALCOHOL	PA
EPA 8015 C	ETHANOL	PA	EPA 8015 C	ETHYLENE GLYCOL	PA
EPA 8015 C	ISOPROPYL ALCOHOL (2-PROPANOL, ISOPROPANOL)	PA	EPA 8015 C	METHANOL	PA
EPA 8015 C	TERT-BUTYL ALCOHOL	PA	EPA 8015 D - EXTENDED	FORMIC ACID	PA

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EPA 8021 B	BENZENE	PA	EPA 8021 B	ETHYLBENZENE	PA
EPA 8021 B	ISOPROPYLBENZENE	PA	EPA 8021 B	M+P-XYLENE	PA
EPA 8021 B	NAPHTHALENE	PA	EPA 8021 B	O-XYLENE	PA
EPA 8021 B	TOLUENE	PA	EPA 8021 B	XYLENE (TOTAL)	PA
EPA 8021 B - EXTENDED	METHYL TERT-BUTYL ETHER (MTBE)	PA	EPA 8081 A	4,4'-DDD	PA
EPA 8081 A	4,4'-DDE	PA	EPA 8081 A	4,4'-DDT	PA
EPA 8081 A	ALDRIN	PA	EPA 8081 A	ALPHA-BHC (ALPHA-HEXACHLOROCYCLOHEXANE)	PA
EPA 8081 A	ALPHA-CHLORDANE [CIS-CHLORDANE]	PA	EPA 8081 A	BETA-BHC (BETA-HEXACHLOROCYCLOHEXANE)	PA
EPA 8081 A	CHLORDANE (TECH.)	PA	EPA 8081 A	DELTA-BHC	PA
EPA 8081 A	DIELDRIN	PA	EPA 8081 A	ENDOSULFAN I	PA
EPA 8081 A	ENDOSULFAN II	PA	EPA 8081 A	ENDOSULFAN SULFATE	PA
EPA 8081 A	ENDRIN	PA	EPA 8081 A	ENDRIN ALDEHYDE	PA
EPA 8081 A	ENDRIN KETONE	PA	EPA 8081 A	GAMMA-BHC (LINDANE, GAMMA-HEXACHLOROCYCLOHEXANE)	PA
EPA 8081 A	GAMMA-CHLORDANE [BETA-CHLORDANE, TRANS-CHLORDANE]	PA	EPA 8081 A	HEPTACHLOR	PA
EPA 8081 A	HEPTACHLOR EPOXIDE	PA	EPA 8081 A	METHOXYCHLOR	PA
EPA 8081 A	TOXAPHENE (CHLORINATED CAMPHENE)	PA	EPA 8081 B	4,4'-DDD	PA
EPA 8081 B	4,4'-DDE	PA	EPA 8081 B	4,4'-DDT	PA
EPA 8081 B	ALDRIN	PA	EPA 8081 B	ALPHA-BHC (ALPHA-HEXACHLOROCYCLOHEXANE)	PA
EPA 8081 B	ALPHA-CHLORDANE [CIS-CHLORDANE]	PA	EPA 8081 B	BETA-BHC (BETA-HEXACHLOROCYCLOHEXANE)	PA
EPA 8081 B	CHLORDANE (TECH.)	PA	EPA 8081 B	DELTA-BHC	PA
EPA 8081 B	DIELDRIN	PA	EPA 8081 B	ENDOSULFAN I	PA
EPA 8081 B	ENDOSULFAN II	PA	EPA 8081 B	ENDOSULFAN SULFATE	PA
EPA 8081 B	ENDRIN	PA	EPA 8081 B	ENDRIN ALDEHYDE	PA
EPA 8081 B	ENDRIN KETONE	PA	EPA 8081 B	GAMMA-BHC (LINDANE, GAMMA-HEXACHLOROCYCLOHEXANE)	PA
EPA 8081 B	GAMMA-CHLORDANE [BETA-CHLORDANE, TRANS-CHLORDANE]	PA	EPA 8081 B	HEPTACHLOR	PA
EPA 8081 B	HEPTACHLOR EPOXIDE	PA	EPA 8081 B	METHOXYCHLOR	PA
EPA 8081 B	TOXAPHENE (CHLORINATED CAMPHENE)	PA	EPA 8081 B - EXTENDED	KEPONE	PA

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EPA 8081 B - EXTENDED	MIREX	PA	EPA 8082 - OIL A	AROCLOR-1016 (PCB-1016)	PA
EPA 8082 - OIL A	AROCLOR-1221 (PCB-1221)	PA	EPA 8082 - OIL A	AROCLOR-1232 (PCB-1232)	PA
EPA 8082 - OIL A	AROCLOR-1242 (PCB-1242)	PA	EPA 8082 - OIL A	AROCLOR-1248 (PCB-1248)	PA
EPA 8082 - OIL A	AROCLOR-1254 (PCB-1254)	PA	EPA 8082 - OIL A	AROCLOR-1260 (PCB-1260)	PA
EPA 8082 A	AROCLOR-1016 (PCB-1016)	PA	EPA 8082 A	AROCLOR-1221 (PCB-1221)	PA
EPA 8082 A	AROCLOR-1232 (PCB-1232)	PA	EPA 8082 A	AROCLOR-1242 (PCB-1242)	PA
EPA 8082 A	AROCLOR-1248 (PCB-1248)	PA	EPA 8082 A	AROCLOR-1254 (PCB-1254)	PA
EPA 8082 A	AROCLOR-1260 (PCB-1260)	PA	EPA 8082 A - EXTENDED	AROCLOR-1262 (PCB-1262)	PA
EPA 8082 A - EXTENDED	AROCLOR-1268 (PCB-1268)	PA	EPA 8141 A	ATRAZINE	PA
EPA 8141 A	BOLSTAR (SULPROFOS)	PA	EPA 8141 A	CHLORPYRIFOS	PA
EPA 8141 A	COUMAPHOS	PA	EPA 8141 A	DEMETON-O	PA
EPA 8141 A	DEMETON-S	PA	EPA 8141 A	DIAZINON	PA
EPA 8141 A	DICHLOROVOS (DDVP, DICHLORVOS)	PA	EPA 8141 A	DISULFOTON	PA
EPA 8141 A	EPN (PHOSPHONOTHIOIC ACID, PHENYL-, O-ETHYL O-(P-NITROPHENYL) ESTER)	PA	EPA 8141 A	ETHION	PA
EPA 8141 A	ETHOPROP	PA	EPA 8141 A	FAMPHUR	PA
EPA 8141 A	FENSULFOTHION	PA	EPA 8141 A	FENTHION	PA
EPA 8141 A	MALATHION	PA	EPA 8141 A	MERPHOS	PA
EPA 8141 A	METHYL PARATHION (PARATHION, METHYL)	PA	EPA 8141 A	MEVINPHOS	PA
EPA 8141 A	NALED	PA	EPA 8141 A	PARATHION (PARATHION - ETHYL)	PA
EPA 8141 A	PHORATE	PA	EPA 8141 A	RONNEL	PA
EPA 8141 A	SIMAZINE	PA	EPA 8141 A	TETRACHLORVINPHOS (STIROPHOS, GARDONA) Z-ISOMER	PA
EPA 8141 A	TOKUTHION (PROTHIOPHOS)	PA	EPA 8141 A	TRICHLORONATE	PA
EPA 8141 B	ATRAZINE	PA	EPA 8141 B	BOLSTAR (SULPROFOS)	PA
EPA 8141 B	COUMAPHOS	PA	EPA 8141 B	DEMETON-O	PA
EPA 8141 B	DEMETON-S	PA	EPA 8141 B	DIAZINON	PA
EPA 8141 B	DICHLOROVOS (DDVP, DICHLORVOS)	PA	EPA 8141 B	DISULFOTON	PA
EPA 8141 B	EPN (PHOSPHONOTHIOIC ACID, PHENYL-, O-ETHYL O-(P-NITROPHENYL) ESTER)	PA	EPA 8141 B	ETHION	PA
EPA 8141 B	ETHOPROP	PA	EPA 8141 B	FAMPHUR	PA
EPA 8141 B	FENSULFOTHION	PA	EPA 8141 B	FENTHION	PA
EPA 8141 B	MALATHION	PA	EPA 8141 B	MERPHOS	PA
EPA 8141 B	METHYL PARATHION (PARATHION, METHYL)	PA	EPA 8141 B	MEVINPHOS	PA

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EPA 8141 B	NALED	PA	EPA 8141 B	PARATHION (PARATHION - ETHYL)	PA
EPA 8141 B	PHORATE	PA	EPA 8141 B	RONNEL	PA
EPA 8141 B	SIMAZINE	PA	EPA 8141 B	TETRACHLORVINPHOS (STIROPHOS, GARDONA) Z-ISOMER	PA
EPA 8141 B	TOKUTHION (PROTHIOPHOS)	PA	EPA 8141 B	TRICHLORONATE	PA
EPA 8151 A	2,4,5-T	PA	EPA 8151 A	2,4-D	PA
EPA 8151 A	2,4-DB	PA	EPA 8151 A	DALAPON	PA
EPA 8151 A	DICAMBA	PA	EPA 8151 A	DICHLOROPROP (DICHLORPROP)	PA
EPA 8151 A	DINOSEB (2-SEC-BUTYL-4,6-DINITROPHENOL, DNBP)	PA	EPA 8151 A	MCPA	PA
EPA 8151 A	MCPP	PA	EPA 8151 A	PENTACHLOROPHENOL	PA
EPA 8151 A	PICLORAM	PA	EPA 8151 A	SILVEX (2,4,5-TP)	PA
EPA 8260 B	1,1,1,2-TETRACHLOROETHANE	PA	EPA 8260 B	1,1,1-TRICHLOROETHANE	PA
EPA 8260 B	1,1,2,2-TETRACHLOROETHANE	PA	EPA 8260 B	1,1,2-TRICHLOROETHANE	PA
EPA 8260 B	1,1-DICHLOROETHANE	PA	EPA 8260 B	1,1-DICHLOROETHYLENE	PA
EPA 8260 B	1,1-DICHLOROPROPENE	PA	EPA 8260 B	1,2,3-TRICHLOROBENZENE	PA
EPA 8260 B	1,2,3-TRICHLOROPROPANE	PA	EPA 8260 B	1,2,4-TRICHLOROBENZENE	PA
EPA 8260 B	1,2,4-TRIMETHYLBENZENE	PA	EPA 8260 B	1,2-DIBROMO-3-CHLOROPROPANE (DBCP)	PA
EPA 8260 B	1,2-DIBROMOETHANE (EDB, ETHYLENE DIBROMIDE)	PA	EPA 8260 B	1,2-DICHLOROBENZENE	PA
EPA 8260 B	1,2-DICHLOROETHANE (ETHYLENE DICHLORIDE)	PA	EPA 8260 B	1,2-DICHLOROPROPANE	PA
EPA 8260 B	1,3,5-TRIMETHYLBENZENE	PA	EPA 8260 B	1,3-DICHLOROBENZENE	PA
EPA 8260 B	1,3-DICHLOROPROPANE	PA	EPA 8260 B	1,4-DICHLOROBENZENE	PA
EPA 8260 B	1,4-DIOXANE (1,4-DIETHYLENEOXIDE)	PA	EPA 8260 B	1-BUTANOL (N-BUTANOL)	PA
EPA 8260 B	2,2-DICHLOROPROPANE	PA	EPA 8260 B	2-BUTANONE (METHYL ETHYL KETONE, MEK)	PA
EPA 8260 B	2-CHLOROETHYL VINYL ETHER	PA	EPA 8260 B	2-CHLOROTOLUENE	PA
EPA 8260 B	2-HEXANONE	PA	EPA 8260 B	4-CHLOROTOLUENE	PA
EPA 8260 B	4-ISOPROPYLTOLUENE (P-CYMENE)	PA	EPA 8260 B	4-METHYL-2-PENTANONE (MIBK)	PA
EPA 8260 B	ACETONE	PA	EPA 8260 B	ACETONITRILE	PA
EPA 8260 B	ACROLEIN (PROPENAL)	PA	EPA 8260 B	ACRYLONITRILE	PA
EPA 8260 B	ALLYL CHLORIDE (3-CHLOROPROPENE)	PA	EPA 8260 B	BENZENE	PA
EPA 8260 B	BENZYL CHLORIDE	PA	EPA 8260 B	BROMOBENZENE	PA
EPA 8260 B	BROMOCHLOROMETHANE	PA	EPA 8260 B	BROMODICHLOROMETHANE	PA
EPA 8260 B	BROMOFORM	PA	EPA 8260 B	CARBON DISULFIDE	PA
EPA 8260 B	CARBON TETRACHLORIDE	PA	EPA 8260 B	CHLOROBENZENE	PA