

November 6, 2019

Mr. Keo Chen
ACT Enviro, Inc.
PO Box 430
Troutdale, OR 97060

HAI Project No.: 2708

**SUBJECT: Intent to Dispose of Former Water Supply Well Decommissioning Materials
(Steel Casing, Pipe, and Debris) Generated by NW Natural, Gasco
Property, 7900 NW St. Helens Road, Portland, Oregon**

Dear Mr. Chen:

At the request of NW Natural, Hahn and Associates, Inc. (HAI) is coordinating the disposal of certain wastes generated during the decommissioning of water supply well "MULT 802", located at the NW Natural Gasco property. Decommissioning activities were performed between May and August 2019, with HAI overseeing and documenting the activities. HAI collected multiple characterization samples of the waste that are deemed to be representative of the materials to be disposed. This profile package, inclusive of analytical testing results, is to be used to facilitate the disposal of tar and pitch adhering to steel pipe, casing, and debris wastes that were generated during the well decommissioning activities.

Wastes removed from the well during decommissioning included 8-inch diameter steel well casing with tar and pitch material adhering to the metal. The tar and pitch wastes are black with a minor granular component and is solid to highly viscous at ambient temperatures. Other generated wastes with adhering tar included plastic, personal protective equipment (PPE), wood debris, 2-inch diameter steel piping, and a steel submersible pump.

The steel casing, approximately 140 feet in total length and cut into sections less than 15 feet in length, along with the materials described above are contained within a lined 20-cubic yard drop box pending transportation to the disposal facility.

Characterization samples representative of the tar and pitch wastes (adhering to the above-described materials) were collected over the course of the decommissioning work. A description of samples deemed representative of the waste is presented below.

- 2708-190513-COMP1: chemical concentrations detected are deemed representative of the hard, black, solid, tar and pitch component of the waste.
- 2708-190520-006 and 2708-190521-007: chemical concentrations detected are deemed representative of the viscous putty-like tar component of the waste.
- 2708-190522-011: chemical concentrations detected are deemed representative of the softer granular solid tar component of waste.

Characterization samples were provided under chain-of-custody to Apex Laboratories, LLC of Tigard, Oregon. The following analytical parameters were tested in one or more of the identified characterization samples.

- Total petroleum hydrocarbons (TPH): diesel- and oil-range by Northwest Method (NW) TPH-Dx and gasoline-range by NWTPH-Gx;
- Volatile organic compounds (VOCs) by EPA 8260C;
- Toxicity Characteristic Leaching Procedure (TCLP) VOCs by EPA Method SW1311;
- Semi-volatile organic compounds (SVOCs) by EPA Method 8270D;
- Total cyanide by American Standard of Testing and Materials (ASTM) Method D7511-12;
- Total metals by Environmental Protection Agency (EPA) Method 6020A;
- Viscosity, Density, and Specific Gravity by ASTM Methods D4052 and D7042 (Triton Analytics Corp).

Analytical testing results are tabulated on Tables 1 through 5 which are included as Attachment 2. Full laboratory documentation related to these analyses are included as Attachment 3.

These decommissioning wastes were not generated within an area where impacts potentially attributable to a Resource Conservation and Recovery Act (RCRA) listed waste are anticipated, and as such the data are not subject to evaluation with regard to a potential listed RCRA hazardous waste.

Benzene was detected in representative samples of the waste material at concentrations ranging from 55.4 milligrams per kilogram (mg/kg) to 164 mg/kg. Toxicity Characteristic Leaching Procedure (TCLP) testing detected leachable levels of benzene in two samples at concentrations of 0.72 milligrams per liter (mg/L) and 3.15 mg/L, which exceed the RCRA TC value of 0.5 mg/L. Therefore, the generated waste will maintain a D018 waste code (benzene) and will be managed and disposed of as a hazardous waste.

Based on the waste characterization testing results and as described in the attached profile (OR343401), it is requested that Waste Management Inc. approve disposal of the decommissioning wastes (tar and pitch coated steel casing) as D018 hazardous waste at the Chemical Waste Management (CWM) RCRA Subtitle C permitted landfill in Arlington, Oregon.

A completed Waste Management Inc. Hazardous Waste Profile forms (Attachment 1), data summary tables (Attachment 2), and the Apex Laboratories Analytical reports (Attachment 3), are enclosed for your information.

In response to the EZ Profile Addendum #D.7, requesting documentation regarding the State-mandated cleanup, we are also attaching NW Natural's Voluntary Agreement with DEQ, no. WMCVCNWR-94-13, dated August 8, 1994, as amended July 19, 2006, and the Second Addendum dated October 11, 2016 (Attachment 4).

Please contact the undersigned or Rob Ede of HAI with any questions.

Sincerely,



Ben Uhl, R.G.
Sr. Field Manager

benu@hahnenv.com

Attachments (3):

- Attachment 1 - Hazardous Waste Profile Sheets
- Attachment 2 - Data Summary Tables
- Attachment 3 - Apex Laboratories Analytical Reports
- Attachment 4 - Voluntary Agreement No. WMCVC-NWR-94-13, August 8, 1994, as Amended by the First Addendum, Dated July 19, 2006, and the Second Addendum, Dated October 11, 2016

cc: Bob Wyatt, NW Natural (electronic only)
Patty Dost, Pearl Legal Group PC (electronic only)
Rachel Melissa, Pearl Legal Group PC (electronic only)
Sarah Riddle, Pearl Legal Group PC (electronic only)
Ryan Barth, Anchor QEA, LLC (electronic only)
Tim Stone, Anchor QEA, LLC (electronic only)
Jen Mott, Anchor QEA, LLC (electronic only)
Chip Byrd, Severson Environmental Services, Inc. (electronic only)
Rob Ede, Hahn and Associates, Inc. (electronic only)
Dana Bayuk, Oregon DEQ (electronic only)

ATTACHMENT 1

Hazardous Waste Profile Sheets



Requested Facility: Chemical Waste Management (Hazardous Waste Facility) Unisure Profile Number: OR343401
 Multiple Generator Locations (Attach Locations) Request Certificate of Disposal Renewal? Original Profile Number: _____

A. GENERATOR INFORMATION (MATERIAL ORIGIN)

- 1. Generator Name: NW Natural
- 2. Site Address: 7900 NW St Helens Rd
(City, State, ZIP) Portland OR 97210
- 3. County: Multnomah
- 4. Contact Name: Ben Uhl
- 5. Email: benu@hahnenv.com
- 6. Phone: (503) 796-0717 7. Fax: (503) 227-2209
- 8. Generator EPA ID: OR0000204701 N/A
- 9. State ID: _____ N/A

C. MATERIAL INFORMATION

- 1. Common Name: Tarry steel casing
Describe Process Generating Material: See Attached

Approximately 139 ft of 8 inch inner diameter steel casing with adhered tar removed during the decommissioning of former water supply well MULT 802. Casing has been cut into sections up to 15' long pieces.
- 2. Material Composition and Contaminants: See Attached

1. Tar/pitch	5-10 %
2. steel casing	70-80 %
3. plastic/ppe/wood	10-20 %
4. steel pump/piping	15-20 %

Total comp. must be equal to or greater than 100% ≥100%
- 3. State Waste Codes: _____ N/A
- 4. Color: brown/grey steel with black tar
- 5. Physical State at 70°F: Solid Liquid Other: _____
- 6. Free Liquid Range Percentage: _____ to _____ N/A
- 7. pH: _____ to _____ N/A
- 8. Strong Odor: Yes No Describe: _____
- 9. Flash Point: <140°F 140°-199°F ≥200° N/A

E. ANALYTICAL AND OTHER REPRESENTATIVE INFORMATION

- 1. Analytical attached Yes
Please identify applicable samples and/or lab reports:

Apex lab reports A9E0508, A9E0677, A9E0723 and A9E0785. Sample numbers: 2708-190513 Comp1, 2708-190520-006, 2708-190521-007, 2708-190522-011.
- 2. Other information attached (such as MSDS)? Yes

G. GENERATOR CERTIFICATION (PLEASE READ AND CERTIFY BY SIGNATURE)

By signing this EZ Profile™ form, I hereby certify that all information submitted in this and all attached documents contain true and accurate descriptions of this material, and that all relevant information necessary for proper material characterization and to identify known and suspected hazards has been provided. Any analytical data attached was derived from a sample that is representative as defined in 40 CFR 261 - Appendix 1 or by using an equivalent method. All changes occurring in the character of the material (i.e., changes in the process or new analytical) will be identified by the Generator and be disclosed to Waste Management prior to providing the material to Waste Management.

If I am an agent signing on behalf of the Generator, I have confirmed with the Generator that information contained in this Profile is accurate and complete.

Name (Print): Robert J. Wyatt Date: 11/06/19
Title: Director, Legacy Environmental Program
Company: NW Natural

B. BILLING INFORMATION

SAME AS GENERATOR

- 1. Billing Name: ACTenviro
- 2. Billing Address: 967 Mabury St
(City, State, ZIP) San Jose CA 95133
- 3. Contact Name: Katie Nguyen
- 4. Email: knguyen@actenviro.com
- 5. Phone: (408) 548-5050 x509 6. Fax: _____
- 7. WM Hauled? Yes No
- 8. P.O. Number: _____
- 9. Payment Method: Credit Account Cash Credit Card

D. REGULATORY INFORMATION

- 1. EPA Hazardous Waste? Yes* No
Code: D018
- 2. State Hazardous Waste? Yes No
Code: _____
- 3. Is this material non-hazardous due to Treatment, Delisting, or an Exclusion? Yes* No
- 4. Contains Underlying Hazardous Constituents? Yes* No
- 5. From an industry regulated under Benzene NESHAP? Yes* No
- 6. Facility remediation subject to 40 CFR 63 GGGGG? Yes* No
- 7. CERCLA or State-mandated clean-up? Yes* No
- 8. NRC or State-regulated radioactive or NORM waste? Yes* No
***If Yes, see Addendum (page 2) for additional questions and space.**
- 9. Contains PCBs? → If Yes, answer a, b and c. Yes No
a. Regulated by 40 CFR 761? Yes No
b. Remediation under 40 CFR 761.61 (a)? Yes No
c. Were PCB imported into the US? Yes No
- 10. Regulated and/or Untreated Medical/Infectious Waste? Yes No
- 11. Contains Asbestos? Yes No
→ If Yes: Non-Friable Non-Friable - Regulated Friable

F. SHIPPING AND DOT INFORMATION

- 1. One-Time Event Repeat Event/Ongoing Business
- 2. Estimated Quantity/Unit of Measure: 15
 Tons Yards Drums Gallons Other: _____
- 3. Container Type and Size: 20Y box
- 4. USDOT Proper Shipping Name: _____ N/A
NA3077, HAZARDOUS WASTE, SOLID, N.O.S., 9, PG III, BENZENE

Certification Signature





Only complete this Addendum if prompted by responses on EZ Profile™ (page 1) or to provide additional information. Sections and question numbers correspond to EZ Profile™.

Profile Number: OR343401

C. MATERIAL INFORMATION

Describe Process Generating Material (Continued from page 1): If more space is needed, please attach additional pages.

Material Composition and Contaminants (Continued from page 1): If more space is needed, please attach additional pages.

5.		
6.		
7.		
8.		
9.		
Total composition must be equal to or greater than 100%		≥100%

D. REGULATORY INFORMATION

Only questions with a "Yes" response in Section D on the EZ Profile™ form (page 1) need to be answered here.

1. EPA Hazardous Waste

a. Please list all USEPA listed and characteristic waste code numbers:

- b. Is the material subject to the Alternative Debris standards (40 CFR 268.45)? Yes No
- c. Is the material subject to the Alternative Soil standards (40 CFR 268.49)? → If Yes, complete question 4. Yes No
- d. Is the material exempt from Subpart CC Controls (40 CFR 264.1083)? Yes No
 → If Yes, please check **one** of the following:
 - Waste meets LDR or treatment exemptions for organics (40 CFR 264.1082(c)(2) or (c)(4))
 - Waste contains VOCs that average <500 ppmw (CFR 264.1082(c)(1)) – will require annual update.

2. State Hazardous Waste → Please list all state waste codes: _____

3. For material that is Treated, Delisted, or Excluded → Please indicate the category, below:
 Delisted Hazardous Waste Excluded Waste under 40 CFR 261.4 → Specify Exclusion: _____
 Treated Hazardous Waste Debris Treated Characteristic Hazardous Waste → If checked, complete question 4.

4. Underlying Hazardous Constituents → Please list all Underlying Hazardous Constituents:

Naphthalene, lead, ethylbenzene, toluene, acenaphthene, acenaphthylene, anthracene, benzo(b)fluoranthene, benzo(a)anthracene, benzo(a)pyrene, benzo(k)fluoranthene, benzo(g,h,i)perylene, chrysene, dibenz(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-c,d)pyrene, phenanthrene, pyrene, xylene

5. Industries regulated under Benzene NESHAP include petroleum refineries, chemical manufacturing plants, coke by-product recovery plants, and TSDFs.

- a. Are you a TSDF? → If yes, please complete Benzene NESHAP questionnaire. If not, continue. Yes No
- b. Does this material contain benzene? Yes No
 1. If yes, what is the flow weighted average concentration? _____ ppmw
- c. What is your facility's current total annual benzene quantity in Megagrams? <1 Mg 1–9.99 Mg ≥10 Mg
- d. Is this waste soil from a remediation? Yes No
 1. If yes, what is the benzene concentration in remediation waste? _____ ppmw
- e. Does the waste contain >10% water/moisture? Yes No
- f. Has material been treated to remove 99% of the benzene or to achieve <10 ppmw? Yes No
- g. Is material exempt from controls in accordance with 40 CFR 61.342? Yes No
 → If yes, specify exemption: _____
- h. Based on your knowledge of your waste and the BWON regulations, do you believe that this waste stream is subject to treatment and control requirements at an off-site TSDF? Yes No

6. 40 CFR 63 GGGGG → Does the material contain <500 ppmw VOHAPs at the point of determination? Yes No

7. CERCLA or State-Mandated clean up → Please submit the Record of Decision or other documentation with process information to assist others in the evaluation for proper disposal. A "Determination of Acceptability" may be needed for CERCLA wastes not going to a CERCLA approved facility.

8. NRC or state regulated radioactive or NORM Waste → Please identify Isotopes and pCi/g: _____



Additional Profile Information

Profile Number: OR343401

C. MATERIAL INFORMATION

Material Composition and Contaminants (Continued from page 2):

If more space is needed, please attach additional pages.

10.	
11.	
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39.	
40.	
Total composition must be equal to or greater than 100%	
	≥100%

D. REGULATORY INFORMATION

1. EPA Hazardous Waste

a. Please list all USEPA listed and characteristic waste code numbers (Continued from page 2):

2. Form Code:

3. Source Code:



LAND DISPOSAL RESTRICTION (LDR) NOTIFICATION AND CERTIFICATION FORM (PHASE IV)

Generator Name: NW Natural

Profile Number: OR343401

Manifest Number: _____

Ref. #	2. US EPA HAZARDOUS WASTE CODE(S)	3. SUBCATEGORY ENTER THE SUBCATEGORY DESCRIPTION (If not applicable, simply check NONE)		4. HOW MUST THE WASTE BE MANAGED? ENTER LETTER FROM BELOW
		DESCRIPTION	NONE	
1.	D018	N/A	<input checked="" type="checkbox"/>	A
2.			<input type="checkbox"/>	
3.			<input type="checkbox"/>	
4.			<input type="checkbox"/>	

- Is this waste a non-wastewater or wastewater? (See 40 CFR 268.2) Check ONE: Non-Wastewater Wastewater
For hazardous debris meeting the definition of debris and subject to the alternate treatment standards in 268.45, check here:
- In **column 2**, identify ALL USEPA hazardous waste codes that apply to this waste shipment, as defined by 40 CFR 261.
• To list additional waste code(s) use Land Disposal Notification/Certification Supplemental Form (CWM-2005-D) and check here:
- In **column 3**, for each waste code, identify the subcategory if one applies, or check NONE if the waste code has no subcategory.
- In **column 4**, enter the letter from the list below (A. – D.) that describes how the waste must be managed to comply with the land disposal restriction regulations in 40 CFR 268. Please note that if you enter B.1, B.3, B.6 or D, you are certifying that the waste meets all the Land Disposal Restrictions and may be landfilled without further treatment. If you enter B.4, you are certifying that the waste has been decharacterized, but still requires treatment for UHCs. (States authorized by EPA to manage the LDR program may have regulatory citations different from the 40 CFR citations listed on this form. Where these regulatory citations differ, your form will be deemed to refer to those state citations as well as 40 CFR.)
- Constituents of concern for waste codes F001-F005 and F039 and underlying hazardous constituents (UHCs) for D001-D043, must be identified unless the treatment facility will monitor for all constituents. **If any of these codes apply, check appropriate box below:**
 - To identify constituents of concern for F001-F005, F039 and UHCs, use the Identification of Constituents of Concern Form (CWM-2007) and check here:
 - If UHCs are applicable, but none are present at the point of generation, check here:
 - If incineration facility will monitor for all constituents of concern (except dioxins), check here:

MANAGEMENT METHODS

A RESTRICTED WASTE REQUIRES TREATMENT

This waste must be treated to the applicable treatment standards set forth in 40 CFR 268.40.

B.1 RESTRICTED WASTE TREATED TO PERFORMANCE STANDARDS

"I certify under penalty of law that I personally have examined and am familiar with the treatment technology and operation of the treatment process used to support this certification. Based on my inquiry of those individuals immediately responsible for obtaining this information, I believe that the treatment process had been operated and maintained properly so as to comply with the treatment standards specified in 40 CFR 268.40 without impermissible dilution of the prohibited waste. I am aware there are significant penalties for submitting a false certification including the possibility of fine and imprisonment."

B.3 GOOD FAITH ANALYTICAL CERTIFICATION FOR INCINERATED ORGANICS

"I certify under penalty of law that I have personally examined and am familiar with the treatment technology and operation of the treatment process used to support this certification. Based on my inquiry of those individuals immediately responsible for obtaining this information, I believe that the non-wastewater organic constituents have been treated by combustion units as specified in 268.42 Table 1. I have been unable to detect the non-wastewater organic constituents despite having used best faith efforts to analyze for such constituents. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment."

B.4 DECHARACTERIZED WASTE REQUIRES TREATMENT FOR UNDERLYING HAZARDOUS CONSTITUENTS

"I certify under penalty of law that the waste has been treated in accordance with the requirements of 40 CFR 268.40 or 268.49, to remove the hazardous characteristic. This de-characterized waste contains underlying hazardous constituents that require further treatment to meet treatment standards. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment."

B.6 RESTRICTED DEBRIS TREATED TO ALTERNATE PERFORMANCE STANDARDS

"I certify under penalty of law that the debris has been treated in accordance with the requirements of 40CFR 268.45. I am aware that there are significant penalties for making a false certification, including the possibility of fine and imprisonment."

C. RESTRICTED WASTE SUBJECT TO A VARIANCE

This waste is subject to a national capacity variance, a treatability variance, or a case-by-case extension. Enter the effective date of prohibition in column (4) above.

D. RESTRICTED WASTE CAN BE LAND DISPOSED WITHOUT FURTHER TREATMENT

"I certify under penalty of law I personally have examined and am familiar with the waste through analysis and testing or through knowledge of the waste to support this certification that the waste complies with the treatment standards specified in 40 CFR Part 268 Subpart D and LAC 33: V. 2223-2233. I believe that the information I submitted is true, accurate and complete. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment."

I hereby certify that all information submitted in this and all associated documents is complete and accurate to the best of my knowledge and information.

Name: (Print) _____ Title: _____

Signature: _____ Date: _____



Identification of Constituents of Concern for Waste Codes F001-F005, F039 and Underlying Hazardous Constituents (UHCs)

Generator Name: NW Natural Manifest Number: _____

Profile Number OR343401

If D001-D043 requires treatment to 268.48 standards, then each underlying hazardous constituent present in the waste at the point of generation, and at a level above the UTS constituent specific treatment standard, must be listed. Write the letter (A, B.1, B.3, B.4, B.6, C or D which corresponds to the letter on form CWM-LC-2005C) beside each constituent present, to properly describe how the constituent(s) must be managed under 40 CFR 268.7. If contaminated soil requires treatment to the 268.49 standards, then each UHC in the waste at the point of generation, and at a level above 10 x the UTS must be listed. Write the letter (A.1 or B.5) which corresponds to the letter on form CWM-LC-2005-E beside each constituent present.

CONSTITUENT	HOW MUST THIS CONSTITUENT BE MANAGED?	WW Mg/l	NWW Mg/kg	CONSTITUENT	HOW MUST THIS CONSTITUENT BE MANAGED?	WW Mg/l	NWW Mg/kg
Acenaphthene	A	0.059	3.4	n- Butanol (butly alcohol)		5.6	2.6
Acenaphthylene	A	0.059	3.4	Butyl benzyl phthalate		0.017	28
Acetone		0.28	160	Butylate ²		0.042	1.4
Acetonitrile		5.6	38 ²	2-sec-Butyl-4,6-dinitrophenol (<i>Dinoseb</i>)		0.066	2.5
Acetophenone		0.010	9.7	Carbaryl ²		0.006	0.14
2-Acetylaminofluorene		0.059	140	Carbenzadim ²		0.056	1.4
Acrolein		0.29	NA	Carbofuran ²		0.006	0.14
Acrylamide ²		19	23	Carbofuran phenol ²		0.056	1.4
Acrylonitrile		0.24	84	Carbon disulfide (TCLP)		3.8	4.8 ^{1,2}
Aldicarb sulfone ²		0.056	0.28	Carbon tetrachloride		0.057	6.0
Aldrin		0.021	0.066	Carbosulfan ²		0.028	1.4
4-Aminobiphenyl		0.13	NA	Chlordane (alpha & gamma)		0.0033	0.26
Aniline		0.81	14	p-Chloroaniline		0.46	16
o-Ansidine		0.010	0.66	Chlorobenzene		0.057	6.0
Anthracene	A	0.059	3.4	Chlorobenzilate		0.10	NA
Aramite		0.36	NA	2-chloro-1,3-butadiene		0.057	0.28 ²
Barban ²		0.056	1.4	Chlorodibromomethane		0.057	15
Bendiocarb ²		0.056	1.4	Chloroethane		0.27	6.0
Benomyl ²		0.056	1.4	bis-(2-Chloroethoxy) methane		0.036	7.2
Benz (a) anthracene	A	0.059	3.4	bis-(2-Chloroethyl) ether		0.033	6.0
Benzal chloride ²		0.055	6.0	2-Chloroethyl vinyl ether ²		0.062	NA
Benzene		0.14	10	Chloroform		0.046	6.0
Benzo (b) flouranthene ⁴	A	0.11	6.8	bis-(2-Chloroisopropyl) ether		0.055	7.2
Benzo (k) flouranthene ⁴	A	0.11	6.8	p-Chloro-m-cresol		0.018	14
Benzo (g,h,i) perylene	A	0.0055	1.8	Chloromethane (methyl chloride)		0.19	30
Benzo (a) pyrene	A	0.061	3.4	2-Chloronaphthalene		0.055	5.6
alpha-BHC		0.00014	0.066	2-Chlorophenol		0.044	5.7
beta-BHC		0.00014	0.066	3-Chloropropylene		0.036	30
delta-BHC		0.023	0.066	Chrysene	A	0.059	3.4
gamma-BHC (Lindane)		0.0017	0.066	p- Cresidine		0.010	0.66
Bromodichloromethane		0.35	15	o-Cresol		0.11	5.6
Bromomethane (methyl bromide)		0.11	15	m-Cresol		0.77	5.6
4-Bromophenyl phenyl ether		0.055	15	p-Cresol		0.77	5.6



Identification of Constituents of Concern for Waste Codes F001-F005, F039 and Underlying Hazardous Constituents (UHCs)

CONSTITUENT	HOW MUST THIS CONSTITUENT BE MANAGED?	WW Mg/l	NWW Mg/kg	CONSTITUENT	HOW MUST THIS CONSTITUENT BE MANAGED?	WW Mg/l	NWW Mg/kg
m-Cumeyl methylcarbamate ²		0.056	1.4	1,4-Dioxane		12	170
Cyclohexanone (TCLP)		0.36	0.75 ^{1,2}	Diphenyl amine ⁴		0.92	13 ²
o,p'-DDD		0.023	0.087	Diphenylnitrosoamine ⁴		0.92	13 ²
p,p'-DDD		0.023	0.087	1,2-Diphenylhydrazine		0.087	NA
o,p'-DDE		0.031	0.087	Disulfoton		0.017	6.2
p,p'-DDE		0.031	0.087	Dithiocarbamates (total) ^{2,4}		0.028	28
o,p'-DDT		0.0039	0.087	Endosulfan I		0.023	0.066
p,p'-DDT		0.0039	0.087	Endosulfan II		0.029	0.13
Dibenz (a,h) anthracene	A	0.055	8.2	Endosulfan Sulfate		0.029	0.13
Dibenz (a,e) pyrene		0.061	NA	Endrin		0.0028	0.13
1,2-Dibromo-3-Chloropropane		0.11	15	Endrin aldehyde		0.025	0.13
1,2-Dibromoethane (<i>Ethylene dibromide</i>)		0.028	15	EPTC ²		0.042	1.4
Dibromomethane		0.11	15	Ethyl acetate		0.34	33
m-Dichlorobenzene		0.036	6.0	Ethyl benzene	A	0.057	10
o-Dichlorobenzene		0.088	6.0	Ethyl cyanide (Propanenitrile)		0.24	360
p-Dichlorobenzene		0.090	6.0	Ethyl ether		0.12	160
Dichlorodifluoromethane		0.23	7.2	Ethyl methacrylate		0.14	160
1,1-Dichloroethane		0.059	6.0	Ethylene oxide		0.12	NA
1,2-Dichloroethane		0.21	6.0	bis-(2-Ethylhexyl) phthalate		0.28	28
1,1-Dichloroethylene		0.025	6.0	Famphur		0.017	15
trans-1,2-Dichloroethylene		0.054	30	Fluoranthene	A	0.068	3.4
2,4-Dichlorophenol		0.044	14	Fluorene	A	0.059	3.4
2,6-Dichlorophenol		0.044	14	Formetamate hydrochloride ²		0.056	1.4
2,4-Dichlorophenoxyacetic acid (<i>2,4-D</i>)		0.72	10	Heptachlor		0.0012	0.066
1,2-Dichloropropane		0.85	18	1,2,3,4,6,7,8-HpCDD		0.000035	0.0025
cis-1,3-Dichloropropylene		0.036	18	1,2,3,4,6,7,8-HpCDF		0.000035	0.0025
trans-1,3-Dichloropropylene		0.036	18	1,2,3,4,7,8,9-HpCDF		0.000035	0.0025
Dieldrin		0.017	0.13	Heptachlor epoxide		0.016	0.066
Diethyl phthalate		0.20	28	Hexachlorobenzene		0.055	10
p-Dimethylaminoazobenzene ²		0.13 ²	NA	Hexachlorobutadiene		0.055	5.6
2,4-Dimethylethaniline		0.010	0.66	Hexachlorocyclopentadiene		0.057	2.4
2,4-Dimethyl phenol		0.036	14	Hexachloroethane		0.055	30
Dimethyl phthalate		0.047	28	Hexachloropropylene		0.035	30
Di-n-butyl phthalate		0.057	28	Hexachlorodibenzo-p-dioxins		0.000063	0.001
1,4-Dinitrobenzene		0.32	2.3	Hexachlorodibenzo-furans		0.000063	0.001
4,6-Dinitro-o-cresol		0.28	160	Indeno (1,2,3-c,d) pyrene	A	0.0055	3.4
2,4-Dinitrophenol		0.12	160	Iodomethane		0.19	65
2,4-Dinitrotoluene		0.32	140	Isobutanol (Isobutyl Alcohol)		5.6	170
2,6-Dinitrotoluene		0.55	28	Isodrin		0.021	0.066
Di-n-octyl phthalate		0.017	28				
Di-n-propylnitrosoamine		0.40	14				



Identification of Constituents of Concern for Waste Codes F001-F005, F039 and Underlying Hazardous Constituents (UHCs)

CONSTITUENT	HOW MUST THIS CONSTITUENT BE MANAGED?	WW Mg/l	NWW Mg/kg	CONSTITUENT	HOW MUST THIS CONSTITUENT BE MANAGED?	WW Mg/l	NWW Mg/kg
Isosafrole		0.081	2.6	1,2,3,4,6,7,8,9-OCDD		.000063	0.005
Kepone		0.0011	0.13	1,2,3,4,6,7,8,9-OCDF		.000063	0.005
Methacrylonitrile		0.24	84	Oxamyl ²		0.056	0.28
Methanol (TCLP)		5.6	0.75 ^{1,2}	Parathion		0.014	4.6
Methapyrilene		0.081	1.5	PCBs (Total) all isomers or Aroclors		0.10	10
Methiocarb ²		0.056	1.4	Pebulate ²		0.042	1.4
Methomyl ²		0.028	0.14	Pentachlorobenzene		0.055	10
Methoxychlor		0.25	0.18	Pentachlorodibenzo-p-dioxins		.000063	0.001
Methyl ethyl ketone		0.28	36	Pentachlorodibenzo-furans		.000035	0.001
Methyl isobutyl ketone		0.14	33	Pentachloroethane ²		0.055	6.0
Methyl methacrylate		0.14	160	Pentachloronitrobenzene		0.055	4.8
Methyl methanesulfonate		0.018	NA	Pentachlorophenol		0.089	7.4
Methyl parathion		0.014	4.6	Phenacetin		0.081	16
3-Methylcholanthrene		0.0055	15	Phenathrene	A	0.059	5.6
4,4-Methylene-bis-(2-chloroaniline)		0.50	30	Phenol		0.039	6.2
Methylene chloride		0.089	30	1,2-Phenylenediamine ^{2,3}		CMBST	CMBST
Metolcarb ²		0.056	1.4	1,3-Phenylenediamine		0.010	0.66
Mexacarbate ²		0.056	1.4	Phorate		0.021	4.6
Molinate ²		0.042	1.4	Phthalic acid ²		0.055	28
Naphthalene	A	0.059	5.6	Phthalic anhydride		0.055	28
2-Naphthylamine		0.52	NA	Physostigmine ²		0.056	1.4
o-Nitroaniline ²		0.27	14	Physostigmine salicylate ²		0.056	1.4
p-Nitroaniline		0.028	28	Promecarb ²		0.056	1.4
Nitrobenzene		0.068	14	Pronamide		0.093	1.5
5-Nitro-o-toluidine		0.32	28	Propam ²		0.056	1.4
o-Nitrophenol ²		0.028	13	Propoxur ²		0.056	1.4
p-Nitrophenol		0.12	29	Prosulfocarb ²		0.042	1.4
N-Nitrosodiethylamine		0.40	28	Pyrene	A	0.067	8.2
N-Nitrosodimethylamine		0.40	2.3 ²	Pyridine		0.014	16
N-Nitroso-di-n-butylamine		0.40	17	Safrole		0.081	22
N-Nitrosomethylethylamine		0.40	2.3	Silvex (2,4,5-TP)		0.72	7.9
N-Nitrosomorpholine		0.40	2.3	1,2,4,5-Tetrachlorobenzene		0.055	14
N-Nitrosopiperidine		0.013	35	Tetrachlorodibenzo-dioxins		.000063	0.001
N-Nitrosopyrrolidine		0.013	35	Tetrachlorodibenzo-furans		.000063	0.001
				1,1,1,2-Tetrachloroethane		0.057	6.0
				1,1,2,2-Tetrachloroethane		0.057	6.0
				Tetrachloroethylene		0.056	6.0
				2,3,4,6-Tetrachlorophenol		0.030	7.4
				Thiodicarb ²		0.019	1.4



Identification of Constituents of Concern for Waste Codes F001-F005, F039 and Underlying Hazardous Constituents (UHCs)

CONSTITUENT	HOW MUST THIS CONSTITUENT BE MANAGED?	WW Mg/l	NWW Mg/kg	CONSTITUENT	HOW MUST THIS CONSTITUENT BE MANAGED?	WW Mg/l	NWW Mg/kg
Thiophanate-methyl ²		0.056	1.4	Antimony		1.9	1.15 ¹
Toluene	A	0.080	10	Arsenic		1.4	5.0 ¹
Toxaphene		0.0095	2.6	Barium		1.2	21.0 ¹
Triallate ²		0.042	1.4	Beryllium		0.82	1.22 ^{1,6}
Bromoform (Tribromomethane)		0.63	15	Cadmium		0.69	0.11 ¹
1,2,4-Trichlorobenzene		0.055	19	Chromium (Total)		2.77	0.60 ¹
1,1,1-Trichloroethane		0.054	6.0	Cyanides (Total)		1.2	590
1,1,2-Trichloroethane		0.054	6.0	Cyanides (Amenable)		0.86	30 ⁶
Trichloroethylene		0.054	6.0	Fluoride ³		35	NA
Trichloromonofluoromethane		0.020	30	Lead	A	0.69	0.75 ¹
2,4,5-Trichlorophenol		0.18	7.4	Mercury (non-waste water from retort)		NA	0.20 ^{1,2}
2,4,6-Trichlorophenol		0.035	7.4	Mercury (All others)		0.15	0.025 ¹
2,4,5-T		0.72	7.9	Nickel		3.98	11.0 ¹
1,2,3-Trichloropropane		0.85	30	Selenium		0.82	5.7 ^{1,5}
1,1,2-Trichloro-1,2,2-trifluoroethane		0.057	30	Silver		0.43	0.14 ¹
Triethylamine ²		0.081	1.5	Sulfide ³		14	NA
Tris(2,3-dibromopropyl)phosphate		0.11	0.10 ²	Thallium		1.4	0.20 ¹
Vernolate ²		0.042	1.4	Vanadium ³		4.3	NA 1.6 ¹
Vinyl chloride		0.27	6.0	Zinc ³		2.61	NA 4.3 ¹
Xylene(sum of o-,m-,and p- isomers) ⁴	A	0.32	30	2-Ethoxyethanol (F005) ⁷		INCIN or BIODG	INCIN
				2-Nitropropane (F005) ⁷		INCIN or CHOXD	INCIN

No UHC's apply

1. These concentrations are expressed in mg/l and are measured through an analysis of TCLP extract; all others measured through a total waste analysis.
2. These constituents are only applicable as Underlying Hazardous Constituents. They are not constituents requiring treatment in F039 wastes.
3. Not an underlying hazardous constituent requiring treatment in D001-D043 wastes, per 268.2(i). F039 WW standard only.
4. These compounds are regulated by the sum of their concentration instead of as individual constituents.
5. Effective August 24, 1998 in unauthorized states or states with no LDR program, Selenium at 5.7 Mg/L is not considered an underlying hazardous constituent in D001-D043 waste as it is above the characteristic level. This becomes effective in authorized states once that state adopts.
6. These constituents are applicable as Underlying Hazardous Constituents. F039 WW standard applicable.
7. Waste contains this compound as the only listed F001-F005 solvent.

I hereby certify that all information submitted in this and all associated documents is complete and accurate to the best of my knowledge and information.

Name: (Print) _____ Title: _____

Signature: _____ Date: _____

ATTACHMENT 2

Data Summary Tables

Table 1 - Summary of Analytical Results for Tar Material Samples: TPH and VOCs

MULT 802 Decommissioning
 NW Natural, Gasco Property
 Portland, Oregon

Waste Type ==>	Tar / Pitch	Tar - Viscous		Tar - Solid	
Sample Number ==>	2708-190513-COMP1	2708-190520-006	2708-190521-007	2708-190522-011	
Sample Date ==>	13-May-19	20-May-19	21-May-19	22-May-19	
Sample Depth (feet bgs) ==>	47, 96, and 136	318	352	363	
Location ==>	12-inch Casing	8-inch Casing	8-inch Casing	Borehole	
EPA Toxicity Screening Level (20 Times Toxicity Threshold Value) in mg/kg	Analytical Results in mg/kg (ppm)				
Total Petroleum Hydrocarbons by NW Method					
Gasoline-Range TPH	-	2,400.	-	39,200.	21,800. J
Diesel-Range TPH	-	91,500.	-	305,000.	162,000.
Oil-Range TPH	-	176,000.	-	132,000.	133,000.
Volatile Organic Compounds (VOCs) by EPA Method 8260C					
1,1-Dichloroethane	-	7.39 U	79.9 U	141. U	17.5 UJ
1,1-Dichloroethene	14.	7.39 U	79.9 U	141. U	17.5 UJ
1,1-Dichloropropene	-	14.8 U	160. U	282. U	35. UJ
1,1,1-Trichloroethane	-	7.39 U	79.9 U	141. U	17.5 UJ
1,1,1,2-Tetrachloroethane	-	29.6 U	319. U	565. U	17.5 UJ
1,1,2-Trichloroethane	-	7.39 U	79.9 U	141. U	17.5 UJ
1,1,2,2-Tetrachloroethane	-	14.8 U	160. U	282. U	35. UJ
1,2-Dibromo-3-chloropropane	-	73.9 U	799. U	1,410. U	175. UJ
1,2-Dichlorobenzene	-	7.39 U	79.9 U	141. U	17.5 UJ
1,2-Dichloroethane	10.	7.39 U	79.9 U	141. U	17.5 UJ
1,2-Dichloroethene, cis-	-	7.39 U	79.9 U	141. U	17.5 UJ
1,2-Dichloroethene, trans-	-	7.39 U	79.9 U	141. U	17.5 UJ
1,2-Dichloropropane	-	7.39 U	79.9 U	141. U	17.5 UJ
1,2,3-Trichlorobenzene	-	73.9 U	799. U	1,410. U	175. UJ
1,2,3-Trichloropropane	-	14.8 U	160. U	282. U	35. UJ
1,2,4-Trichlorobenzene	-	73.9 U	799. U	1,410. U	175. UJ
1,2,4-Trimethylbenzene	-	14.8 U	160. U	282. U	58. J
1,3-Dichlorobenzene	-	7.39 U	79.9 U	141. U	17.5 UJ
1,3-Dichloropropane	-	14.8 U	160. U	282. U	35. UJ
1,3-Dichloropropene, cis-	-	14.8 U	160. U	282. U	35. UJ
1,3-Dichloropropene, trans-	-	14.8 U	160. U	282. U	35. UJ
1,3,5-Trimethylbenzene (Mesitylene)	-	14.8 U	160. U	282. U	35. UJ
1,4-Dichlorobenzene	150.	7.39 U	79.9 U	141. U	17.5 UJ
2-Chlorotoluene	-	14.8 U	160. U	282. U	35. UJ
2-Hexanone (Methyl butyl ketone)	-	148. U	1,600. U	2,820. U	350. UJ
2,2-Dichloropropane	-	14.8 U	160. U	282. U	35. UJ
4-Chlorotoluene	-	14.8 U	160. U	282. U	35. UJ
4-Methyl-2-pentanone (Methyl isobutyl ketone)	-	148. U	1,600. U	2,820. U	350. UJ
Acetone	-	296. U	3,190. U	5,650. U	699. UJ
Acrylonitrile	-	29.6 U	319. U	565. U	69.9 UJ
Benzene	10.	55.4	114.	164.	114. J
Bromobenzene	-	7.39 U	79.9 U	141. U	17.5 UJ
Bromochloromethane	-	14.8 U	160. U	282. U	35. UJ
Bromodichloromethane	-	29.6 U	319. U	565. U	35. UJ
Bromoform (Tribromomethane)	-	59.1 U	639. U	1,130. U	69.9 UJ
Bromomethane (Methyl bromide)	-	148. U	1,600. U	2,820. U	350. UJ
Carbon disulfide	-	148. U	1,600. U	2,820. U	350. UJ
Carbon tetrachloride (Tetrachloromethane)	10.	29.6 U	319. U	565. U	35. UJ
Chlorobenzene	2,000.	7.39 U	79.9 U	141. U	17.5 UJ
Chloroethane	-	148. U	1,600. U	2,820. U	350. UJ
Chloroform	120.	14.8 U	160. U	282. U	35. UJ
Chloromethane	-	73.9 U	799. U	1,410. U	175. UJ
Cymene, p- (4-Isopropyltoluene)	-	14.8 U	160. U	282. U	35. UJ
Dibromochloromethane	-	29.6 U	319. U	565. U	69.9 UJ
Dibromomethane	-	14.8 U	160. U	282. U	35. UJ
Dichlorodifluoromethane	-	29.6 U	319. U	565. U	69.9 UJ
Dichloromethane (Methylene chloride)	-	73.9 UJ	799. UJ	1,410. UJ	175. UJ
Ethylbenzene	-	12.4	95.5	141.	104. J
Ethylene dibromide (1,2-Dibromoethane)	-	14.8 U	160. U	282. U	35. UJ

Table 1 - Summary of Analytical Results for Tar Material Samples: TPH and VOCs

MULT 802 Decommissioning
 NW Natural, Gasco Property
 Portland, Oregon

Waste Type ==>	Tar / Pitch	Tar - Viscous		Tar - Solid
Sample Number ==>	2708-190513-COMP1	2708-190520-006	2708-190521-007	2708-190522-011
Sample Date ==>	13-May-19	20-May-19	21-May-19	22-May-19
Sample Depth (feet bgs) ==>	47, 96, and 136	318	352	363
Location ==>	12-inch Casing	8-inch Casing	8-inch Casing	Borehole

EPA Toxicity Screening Level (20 Times Toxicity Threshold Value) in mg/kg	Analytical Results in mg/kg (ppm)				
Volatile Organic Compounds (VOCs) by EPA Method 8260C					
Hexachlorobutadiene (Hexachloro-1,3-butadiene)	10.	29.6 U	319. U	565. U	69.9 UJ
Isopropylbenzene (Cumene)	-	14.8 U	160. U	282. U	35. UJ
m,p-Xylene	-	17.1	160. U	282. U	156. J
Methyl ethyl ketone (2-Butanone)	-	148. U	1,600. U	2,820. U	350. UJ
Methyl tert-butyl ether (MTBE)	-	14.8 U	160. U	282. U	35. UJ
n-Butylbenzene	-	14.8 U	160. U	282. U	35. UJ
n-Propylbenzene	-	7.39 U	79.9 U	141. U	17.5 UJ
Naphthalene	-	475.	10,300.	10,500.	9,020.
o-Xylene	-	8.02	79.9 U	141. U	50.3 J
sec-Butylbenzene	-	14.8 U	160. U	282. U	35. UJ
Styrene	-	14.8 U	160. U	282. U	39.5 J
tert-Butylbenzene	-	14.8 U	160. U	282. U	35. UJ
Tetrachloroethene (PCE)	14.	7.39 U	79.9 U	141. U	17.5 UJ
Toluene	-	29.3	160. U	282. U	145. J
Trichloroethene (TCE)	10.	7.39 U	79.9 U	141. U	17.5 UJ
Trichlorofluoromethane (Fluorotrichloromethane)	-	29.6 U	319. U	565. U	69.9 UJ
Vinyl chloride	4.	7.39 U	79.9 U	141. U	17.5 UJ

Notes:

bgs = below ground surface

bold = detected concentration

bold and yellow = Detected concentration exceeds EPA Toxicity Screening Level

EPA = Environmental Protection Agency

J = estimated concentration

mg/kg = milligrams per kilogram

ppm = parts per million

TPH = total petroleum hydrocarbons

U = not detected

VOCs = volatile organic compounds

"-" = not tested

Table 2 - Summary of Analytical Results for Tar Material Samples: TCLP VOCs

MULT 802 Decommissioning
 NW Natural, Gasco Property
 Portland, Oregon

Waste Type ==>	Tar / Pitch		Tar - Viscous		Tar - Solid	
Sample Number ==>	2708-190513-COMP1		2708-190520-006		2708-190521-007	
Sample Date ==>	13-May-19		20-May-19		21-May-19	
Sample Depth (feet bgs) ==>	47, 96, and 136		318		352	
Location ==>	12-inch Casing		8-inch Casing		8-inch Casing	
EPA Toxicity Level in mg/L (ppm) ¹	Analytical Results in mg/L (ppm)					
TCLP Volatile Organic Compounds (VOCs) by EPA Method SW1311/8260C						
1,1-Dichloroethane	-	0.03	U	-	0.03	U
1,1-Dichloroethane	0.7	0.03	U	-	0.03	U
1,1-Dichloropropene	-	0.05	U	-	0.05	U
1,1,1-Trichloroethane	-	0.03	U	-	0.03	U
1,1,1,2-Tetrachloroethane	-	0.03	U	-	0.03	U
1,1,2-Trichloroethane	-	0.03	U	-	0.03	U
1,1,2,2-Tetrachloroethane	-	0.03	U	-	0.03	U
1,2-Dibromo-3-chloropropane	-	0.25	U	-	0.25	U
1,2-Dichlorobenzene	-	0.03	U	-	0.03	U
1,2-Dichloroethane	0.5	0.03	U	-	0.03	U
1,2-Dichloroethene, cis-	-	0.05	U	-	0.05	U
1,2-Dichloroethene, trans-	-	0.03	U	-	0.03	U
1,2-Dichloropropane	-	0.03	U	-	0.03	U
1,2,3-Trichlorobenzene	-	0.05	U	-	0.05	U
1,2,3-Trichloropropane	-	0.05	U	-	0.05	U
1,2,4-Trichlorobenzene	-	0.1	U	-	0.1	U
1,2,4-Trimethylbenzene	-	0.05	U	-	0.06	U
1,3-Dichlorobenzene	-	0.03	U	-	0.03	U
1,3-Dichloropropane	-	0.05	U	-	0.05	U
1,3-Dichloropropene, cis-	-	0.05	U	-	0.05	U
1,3-Dichloropropene, trans-	-	0.05	U	-	0.05	U
1,3,5-Trimethylbenzene (Mesitylene)	-	0.05	U	-	0.05	U
1,4-Dichlorobenzene	7.5	0.03	U	-	0.03	U
2-Chlorotoluene	-	0.05	U	-	0.05	U
2-Hexanone (Methyl butyl ketone)	-	0.5	U	-	0.5	U
2,2-Dichloropropane	-	0.05	U	-	0.05	U
4-Chlorotoluene	-	0.05	U	-	0.05	U
4-Methyl-2-pentanone (Methyl isobutyl ketone)	-	0.5	U	-	0.5	U
Acetone	-	1	U	-	1	U
Benzene	0.5	0.72	U	-	3.15	U
Bromobenzene	-	0.03	U	-	0.03	U
Bromochloromethane	-	0.05	U	-	0.05	U
Bromodichloromethane	-	0.05	U	-	0.05	U
Bromoform (Tribromomethane)	-	0.05	U	-	0.05	U
Bromomethane (Methyl bromide)	-	0.25	U	-	0.25	U
Carbon tetrachloride (Tetrachloromethane)	0.5	0.05	U	-	0.05	U
Chlorobenzene	100	0.03	U	-	0.03	U
Chloroethane	-	0.25	U	-	0.25	U
Chloroform	6	0.05	U	-	0.05	U
Chloromethane	-	0.25	U	-	0.25	U
Cymene, p- (4-Isopropyltoluene)	-	0.05	U	-	0.05	U
Dibromochloromethane	-	0.05	U	-	0.05	U
Dibromomethane	-	0.05	U	-	0.05	U
Dichlorodifluoromethane	-	0.05	U	-	0.05	U
Dichloromethane (Methylene chloride)	-	0.3	U	-	0.25	U
Ethylbenzene	-	0.13	U	-	0.38	U
Ethylene dibromide (1,2-Dibromoethane)	-	0.03	U	-	0.03	U
Hexachlorobutadiene (Hexachloro-1,3-butadiene)	0.5	0.25	U	-	0.25	U
Isopropylbenzene (Cumene)	-	0.05	U	-	0.05	U
m,p-Xylene	-	0.11	U	-	0.52	U
Methyl ethyl ketone (2-Butanone)	200	0.5	U	-	0.5	U
Methyl tert-butyl ether (MTBE)	-	0.05	U	-	0.05	U
n-Butylbenzene	-	0.05	U	-	0.05	U
n-Propylbenzene	-	0.03	U	-	0.03	U
Naphthalene	-	1.76	J	-	11.2	U

Table 2 - Summary of Analytical Results for Tar Material Samples: TCLP VOCs

MULT 802 Decommissioning
 NW Natural, Gasco Property
 Portland, Oregon

Waste Type ==>	Tar / Pitch	Tar - Viscous		Tar - Solid
Sample Number ==>	2708-190513-COMP1	2708-190520-006	2708-190521-007	2708-190522-011
Sample Date ==>	13-May-19	20-May-19	21-May-19	22-May-19
Sample Depth (feet bgs) ==>	47, 96, and 136	318	352	363
Location ==>	12-inch Casing	8-inch Casing	8-inch Casing	Borehole

EPA Toxicity Level in mg/L (ppm) ¹	Analytical Results in mg/L (ppm)			
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TCLP Volatile Organic Compounds (VOCs) by EPA Method SW1311/8260C					
o-Xylene	-	0.06	-	0.18	-
sec-Butylbenzene	-	0.05 U	-	0.05 U	-
Styrene	-	0.05 U	-	0.18	-
tert-Butylbenzene	-	0.05 U	-	0.05 U	-
Tetrachloroethene (PCE)	0.7	0.03 U	-	0.03 U	-
Toluene	-	0.26	-	1.56	-
Trichloroethene (TCE)	0.5	0.03 U	-	0.03 U	-
Trichlorofluoromethane (Fluorotrichloromethane)	-	0.1 U	-	0.1 U	-
Vinyl chloride	0.2	0.03 U	-	0.03 U	-

Notes:

1 = Characteristic Hazardous Waste Level (40 CFR 261 Subpart C)
 bgs = below ground surface
bold = detected concentration
Bold and Yellow = Detected concentration exceeds EPA Toxicity Level
 EPA = Environmental Protection Agency
 J = estimated concentration

mg/L = milligrams per liter
 ppm = parts per million
 TCLP = Toxicity Characteristic Leaching Procedure
 U = not detected
 VOCs = volatile organic compounds
 "-" = not tested

Table 3 - Summary of Analytical Results for Tar Material Samples: SVOCs

MULT 802 Decommissioning
 NW Natural, Gasco Property
 Portland, Oregon

Waste Type ==>	Tar / Pitch	Tar - Viscous		Tar - Solid
Sample Number ==>	2708-190513-COMP1	2708-190520-006	2708-190521-007	2708-190522-011
Sample Date ==>	13-May-19	20-May-19	21-May-19	22-May-19
Sample Depth (feet bgs) ==>	47, 96, and 136	318	352	363
Location ==>	12-inch Casing	8-inch Casing	8-inch Casing	Borehole

EPA Toxicity Screening Level (20 times Toxicity Threshold Value) in mg/kg	Analytical Results in mg/kg (ppm)			

SVOCs by EPA Method 8270D						
1-Methylnaphthalene	-	1,720	U	6,420	0.58	2,960
1,2-Dichlorobenzene	-	2,160	U	1,960	U	0.5
1,2-Dinitrobenzene	-	21,600	U	19,600	U	5
1,2,4-Trichlorobenzene	-	2,160	U	1,960	U	0.5
1,3-Dichlorobenzene	-	2,160	U	1,960	U	0.5
1,3-Dinitrobenzene	-	21,600	U	19,600	U	5
1,4-Dichlorobenzene	150	2,160	U	1,960	U	0.5
1,4-Dinitrobenzene	-	21,600	U	19,600	U	5
2-Chloronaphthalene	-	863	U	785	U	0.2
2-Chlorophenol	-	4,300	U	3,910	U	1
2-Methylnaphthalene	-	1,720	U	13,300	0.81	5,650
2-Methylphenol (o-Cresol)	-	2,160	U	1,960	U	8.84
2-Nitroaniline	-	17,200	U	15,700	U	4
2-Nitrophenol	-	8,630	U	7,850	U	2
2,2'-Oxybis (1-chloropropane)	-	2,160	U	1,960	U	0.5
2,3,4,6-Tetrachlorophenol	-	4,300	U	3,910	U	1
2,3,5,6-Tetrachlorophenol	-	4,300	U	3,910	U	1
2,4-Dichlorophenol	-	4,300	U	3,910	U	1
2,4-Dimethylphenol	-	4,300	U	3,910	U	2.93
2,4-Dinitrophenol	-	21,600	U	19,600	U	5
2,4-Dinitrotoluene	2.6	8,630	U	7,850	U	2
2,4,5-Trichlorophenol	8,000	4,300	U	3,910	U	1
2,4,6-Trichlorophenol	40	4,300	U	3,910	U	1
2,6-Dinitrotoluene	-	8,630	U	7,850	U	2
3-Methylphenol & 4-Methylphenol (m&p-Cresol)	-	2,160	U	1,960	U	23.9
3-Nitroaniline	-	17,200	U	15,700	U	4
3,3'-Dichlorobenzidine	-	17,300	U	15,700	U	-
4-Bromophenyl-phenyl ether	-	2,160	U	1,960	U	0.5
4-Chloro-3-methylphenol	-	8,630	U	7,850	U	2
4-Chloroaniline	-	2,160	U	1,960	U	0.5
4-Chlorophenyl phenyl ether	-	2,160	U	1,960	U	0.5
4-Nitroaniline	-	17,200	U	15,700	U	4
4-Nitrophenol	-	8,630	U	7,850	U	2
4,6-Dichloro-2-methylphenol	-	21,600	U	19,600	U	5
Acenaphthene	-	880	J	22,600	0.86	9,320
Acenaphthylene	-	863	U	785	U	0.2
Aniline	-	4,300	U	3,910	U	7.23
Anthracene	-	2,050	U	11,700	0.2	6,230
Azobenzene	-	2,160	U	1,960	U	0.5
Benzo(a)anthracene	-	7,230	U	6,200	U	0.2
Benzo(a)pyrene	-	9,030	U	6,980	U	0.3
Benzo(b)fluoranthene	-	10,100	U	7,190	U	0.3
Benzo(g,h,i)perylene	-	6,990	U	4,560	U	0.2
Benzo(k)fluoranthene	-	3,740	U	2,850	U	0.3
Benzoic acid	-	108,000	U	97,900	U	20
Benzyl alcohol	-	4,300	U	3,910	U	2
bis(2-Chloroethoxy)methane	-	2,160	U	1,960	U	0.5
bis(2-Chloroethyl)ether	-	2,160	U	1,960	U	0.5
bis(2-Ethylhexyl)adipate	-	21,600	U	19,600	U	5
bis(2-Ethylhexyl)phthalate	-	12,900	U	11,800	U	4
Butylbenzyl phthalate	-	8,630	U	7,850	U	4
Carbazole	-	2,280	U	5,590	0.74	-
Chrysene	-	7,850	U	6,140	U	0.2
Di-n-butyl phthalate	-	8,630	U	7,850	U	4
Di-n-octyl phthalate	-	8,630	U	7,850	U	4

Table 3 - Summary of Analytical Results for Tar Material Samples: SVOCs

MULT 802 Decommissioning
 NW Natural, Gasco Property
 Portland, Oregon

Waste Type ==>	Tar / Pitch	Tar - Viscous		Tar - Solid	
Sample Number ==>	2708-190513-COMP1	2708-190520-006	2708-190521-007	2708-190522-011	
Sample Date ==>	13-May-19	20-May-19	21-May-19	22-May-19	
Sample Depth (feet bgs) ==>	47, 96, and 136	318	352	363	
Location ==>	12-inch Casing	8-inch Casing	8-inch Casing	Borehole	
EPA Toxicity Screening Level (20 times Toxicity Threshold Value) in mg/kg	Analytical Results in mg/kg (ppm)				
SVOCs by EPA Method 8270D					
Dibenzo(a,h)anthracene	-	973.	785. U	0.2 U	904.
Dibenzofuran	-	863 U	12,500.	0.39	5,590.
Diethyl phthalate	-	8,630. U	7,850. U	4. U	-
Dimethyl phthalate	-	8,630. U	7,850. U	4. U	-
Fluoranthene	-	18,700.	27,500.	0.2 U	19,300.
Fluorene	-	863 U	11,600.	0.21	5,240.
Hexachlorobenzene	2.6	863 U	785. U	0.2 U	-
Hexachlorobutadiene (Hexachloro-1,3-butadiene)	10	2,160. U	1,960. U	0.5 UJ	-
Hexachlorocyclopentadiene	-	4,300. U	3,910. U	1. UJ	-
Hexachloroethane	60	2,160. U	1,960. U	0.5 UJ	-
Indeno(1,2,3-c,d)pyrene	-	6,560.	4,470.	0.2 U	4,670.
Isophorone	-	2,160. U	1,960. U	0.5 U	-
n-Nitrosodi-n-propylamine	-	2,160. U	1,960. U	0.5 U	-
n-Nitrosodimethylamine	-	2,160. U	1,960. U	0.5 U	-
n-Nitrosodiphenylamine	-	2,160. U	1,960. U	0.5 U	-
Naphthalene	-	1,720. U	36,900.	9.36	16,200. J
Nitrobenzene	-	8,630. U	7,850. U	2. U	-
Pentachlorophenol	2,000	8,630. U	7,850. U	2. U	-
Phenanthrene	-	8,820.	42,000.	0.27	20,600.
Phenol	-	1,720. U	1,570. U	16.4 J	-
Pyrene	-	18,500.	23,400.	0.2 U	18,100.
Pyridine	100	4,300. U	3,910. U	2.31	-

Notes:

bgs = below ground surface
bold = detected concentration

Bold and Yellow = Detected concentration exceeds EPA Toxicity Level

EPA = Environmental Protection Agency

J = estimated concentration

mg/kg = milligrams per kilogram

ppm = parts per million

SVOCs = semivolatile organic compounds

U = not detected

"-" = not tested

Table 4 - Summary of Analytical Results for Tar Material Samples: Metals and Cyanide

MULT 802 Decommissioning
 NW Natural, Gasco Property
 Portland, Oregon

Waste Type ==>	Tar / Pitch	Tar - Viscous		Tar - Solid	
Sample Number ==>	2708-190513-COMP1	2708-190520-006	2708-190521-007	2708-190522-011	
Sample Date ==>	13-May-19	20-May-19	21-May-19	22-May-19	
Sample Depth (feet bgs) ==>	47, 96, and 136	318	352	363	
Location ==>	12-inch Casing	8-inch Casing	8-inch Casing	Borehole	
EPA Toxicity Screening Level (20 times Toxicity Threshold Value) in mg/kg	Analytical Results in mg/kg (ppm)				
Metals by EPA Method 6020A					
Aluminum	-	1,690. J	55.6 U	238. U	-
Antimony	-	1.04 U	1.11 U	4.76 U	-
Arsenic	10	1.66 U	1.11 U	4.76 U	-
Barium	2,000	20.5 J	2.27 J	4.76 U	-
Beryllium	-	0.21 U	0.22 U	0.95 U	-
Cadmium	20	0.35 U	0.37 U	0.95 U	-
Calcium	-	559. U	111. U	476. U	-
Chromium	100	2.83 U	1.11 U	4.76 U	-
Copper	-	10.9 J	1.78 U	4.76 U	-
Iron	-	30,800. U	1,250. J	1,130. J	-
Lead	100	26.8 U	27.9 U	13.1 J	-
Magnesium	-	82.2 U	55.6 U	238. U	-
Manganese	-	363. U	8.74 U	16.7 U	-
Mercury	4	0.08 U	0.09 U	0.38 U	-
Nickel	-	7.86 J	1.11 U	4.76 U	-
Potassium	-	104. U	111. U	476. U	-
Selenium	20	1.04 U	1.11 U	4.76 U	-
Silver	100	0.21 U	0.22 U	0.95 U	-
Sodium	-	104. U	160. U	476. U	-
Thallium	-	0.21 U	0.22 U	0.95 U	-
Vanadium	-	16.3 U	1.16 U	4.76 U	-
Zinc	-	71.3 J	35. J	19. U	-
Total Cyanide by ASTM D7511-12					
Total Cyanide	-	14.5	0.846 J	-	-

Notes:
 ASTM = American Society for Testing and Materials
 bgs = below ground surface
bold = detected concentration
Bold and Yellow = Detected concentration exceeds EPA Toxicity Level
 EPA = Environmental Protection Agency
 J = estimated concentration
 mg/kg = milligrams per kilogram
 ppm = parts per million
 U = not detected
 "-" = not tested

Table 5 - Viscosity and Density of Tar Sample -007

MULT 802 Decommissioning
 NW Natural, Gasco Property
 Portland, Oregon

Waste Type ==>	Tar - Viscous
Sample Number ==>	2708-190521-007
Sample Date ==>	21-May-19
Sample Depth (feet bgs) ==>	21-May-19
Location ==>	8-inch Casing

Parameters	30 Degrees C (86 F)	35 Degrees C (95F)	40 Degrees C (104F)	45 Degrees C (113F)	50 Degrees C (122F)
Dynamic Viscosity (mPa-s) by ASTM D7042	10,096.	5,262.48	2,846.8	1,601.01	964.26
Kinematic Viscosity (mm ² /s) by ASTM D7042	8,432.1	4,405.77 ±3.4%	2,386.9	1,347.4 ±3.2%	813.72 ±3.1%
Density (g/cm ³) by ASTM D7042	1.2	1.19	1.19	1.19	1.19

Notes:

1 = Sample -007 collected on May 21, 2019 from tar contents present inside 8-inch ID steel casing at 352 feet below ground surface

ASTM = American Society for Testing and Materials

C = Celsius

F = Fahrenheit

g/cm³ = grams per cubic centimeter

mm²/s = square millimeters per second

mPa-s = millipascal per second

ATTACHMENT 3

Apex Laboratories Analytical Reports



Wednesday, May 29, 2019

Rob Ede
Hahn and Associates
434 NW 6th Ave. Suite 203
Portland, OR 97209

RE: A9E0508 - Mult 802 Decommissioning - 2708-60F

Thank you for using Apex Laboratories. We greatly appreciate your business and strive to provide the highest quality services to the environmental industry.

Enclosed are the results of analyses for work order A9E0508, which was received by the laboratory on 5/15/2019 at 12:35:00PM.

If you have any questions concerning this report or the services we offer, please feel free to contact me by email at: pnerenberg@apex-labs.com, or by phone at 503-718-2323.

Please note: All samples will be disposed of within 30 days of final reporting, unless prior arrangements have been made.

Cooler Receipt Information

(See Cooler Receipt Form for details)

Cooler #1 4.9 degC

This Final Report is the official version of the data results for this sample submission, unless superseded by a subsequent, labeled amended report.

All other deliverables derived from this data, including Electronic Data Deliverables (EDDs), CLP-like forms, client requested summary sheets, and all other products are considered secondary to this report.



Apex Laboratories

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

Philip Nerenberg, Lab Director



Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Hahn and Associates

434 NW 6th Ave. Suite 203
Portland, OR 97209

Project: **Mult 802 Decommissioning**

Project Number: **2708-60F**

Project Manager: **Rob Ede**

Report ID:

A9E0508 - 05 29 19 1543

ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
2708-190513-001	A9E0508-01	Solid	05/13/19 15:15	05/15/19 12:35
2708-190513-002	A9E0508-02	Solid	05/13/19 16:00	05/15/19 12:35
2708-190514-004	A9E0508-04	Solid	05/14/19 15:00	05/15/19 12:35
COMP1	A9E0508-05	Solid	05/13/19 15:15	05/15/19 12:35

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Philip Nerenberg, Lab Director



Apex Laboratories, LLC

6700 S.W. Sandburg Street
 Tigard, OR 97223
 503-718-2323
 EPA ID: OR01039

Hahn and Associates 434 NW 6th Ave. Suite 203 Portland, OR 97209	Project: Mult 802 Decommissioning Project Number: 2708-60F Project Manager: Rob Ede	Report ID: A9E0508 - 05 29 19 1543
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ANALYTICAL SAMPLE RESULTS

Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes	
COMP1 (A9E0508-05)				Matrix: Solid		Batch: 9051067			
Diesel	91500	---	16900	mg/kg	100	05/21/19	NWTPH-Dx	F-17	
Oil	176000	---	33900	mg/kg	100	05/21/19	NWTPH-Dx	F-17	
<i>Surrogate: o-Terphenyl (Surr)</i>		<i>Recovery: %</i>		<i>Limits: 50-150 %</i>		<i>100</i>	<i>05/21/19</i>	<i>NWTPH-Dx</i>	<i>S-01</i>

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Philip Nerenberg, Lab Director



Apex Laboratories, LLC

6700 S.W. Sandburg Street
 Tigard, OR 97223
 503-718-2323
 EPA ID: OR01039

Hahn and Associates 434 NW 6th Ave. Suite 203 Portland, OR 97209	Project: Mult 802 Decommissioning Project Number: 2708-60F Project Manager: Rob Ede	Report ID: A9E0508 - 05 29 19 1543
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ANALYTICAL SAMPLE RESULTS

Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
COMP1 (A9E0508-05)				Matrix: Solid			Batch: 9051006	COMP
Gasoline Range Organics	2400	---	1480	mg/kg	10000	05/17/19	NWTPH-Gx (MS)	
<i>Surrogate: 4-Bromofluorobenzene (Sur)</i>			<i>Recovery: 117 %</i>	<i>Limits: 50-150 %</i>	<i>1</i>	<i>05/17/19</i>	<i>NWTPH-Gx (MS)</i>	
<i>1,4-Difluorobenzene (Sur)</i>			<i>97 %</i>	<i>50-150 %</i>	<i>1</i>	<i>05/17/19</i>	<i>NWTPH-Gx (MS)</i>	

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Philip Nerenberg, Lab Director



Hahn and Associates 434 NW 6th Ave. Suite 203 Portland, OR 97209	Project: Mult 802 Decommissioning Project Number: 2708-60F Project Manager: Rob Ede	Report ID: A9E0508 - 05 29 19 1543
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ANALYTICAL SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
COMP1 (A9E0508-05)				Matrix: Solid			Batch: 9051006	COMP
Acetone	ND	---	296000	ug/kg	10000	05/17/19	5035A/8260C	
Acrylonitrile	ND	---	29600	ug/kg	10000	05/17/19	5035A/8260C	
Benzene	55400	---	2960	ug/kg	10000	05/17/19	5035A/8260C	
Bromobenzene	ND	---	7390	ug/kg	10000	05/17/19	5035A/8260C	
Bromochloromethane	ND	---	14800	ug/kg	10000	05/17/19	5035A/8260C	
Bromodichloromethane	ND	---	29600	ug/kg	10000	05/17/19	5035A/8260C	
Bromoform	ND	---	59100	ug/kg	10000	05/17/19	5035A/8260C	
Bromomethane	ND	---	148000	ug/kg	10000	05/17/19	5035A/8260C	
2-Butanone (MEK)	ND	---	148000	ug/kg	10000	05/17/19	5035A/8260C	
n-Butylbenzene	ND	---	14800	ug/kg	10000	05/17/19	5035A/8260C	
sec-Butylbenzene	ND	---	14800	ug/kg	10000	05/17/19	5035A/8260C	
tert-Butylbenzene	ND	---	14800	ug/kg	10000	05/17/19	5035A/8260C	
Carbon disulfide	ND	---	148000	ug/kg	10000	05/17/19	5035A/8260C	
Carbon tetrachloride	ND	---	29600	ug/kg	10000	05/17/19	5035A/8260C	
Chlorobenzene	ND	---	7390	ug/kg	10000	05/17/19	5035A/8260C	
Chloroethane	ND	---	148000	ug/kg	10000	05/17/19	5035A/8260C	
Chloroform	ND	---	14800	ug/kg	10000	05/17/19	5035A/8260C	
Chloromethane	ND	---	73900	ug/kg	10000	05/17/19	5035A/8260C	
2-Chlorotoluene	ND	---	14800	ug/kg	10000	05/17/19	5035A/8260C	
4-Chlorotoluene	ND	---	14800	ug/kg	10000	05/17/19	5035A/8260C	
Dibromochloromethane	ND	---	29600	ug/kg	10000	05/17/19	5035A/8260C	
1,2-Dibromo-3-chloropropane	ND	---	73900	ug/kg	10000	05/17/19	5035A/8260C	
1,2-Dibromoethane (EDB)	ND	---	14800	ug/kg	10000	05/17/19	5035A/8260C	
Dibromomethane	ND	---	14800	ug/kg	10000	05/17/19	5035A/8260C	
1,2-Dichlorobenzene	ND	---	7390	ug/kg	10000	05/17/19	5035A/8260C	
1,3-Dichlorobenzene	ND	---	7390	ug/kg	10000	05/17/19	5035A/8260C	
1,4-Dichlorobenzene	ND	---	7390	ug/kg	10000	05/17/19	5035A/8260C	
Dichlorodifluoromethane	ND	---	29600	ug/kg	10000	05/17/19	5035A/8260C	
1,1-Dichloroethane	ND	---	7390	ug/kg	10000	05/17/19	5035A/8260C	
1,2-Dichloroethane (EDC)	ND	---	7390	ug/kg	10000	05/17/19	5035A/8260C	
1,1-Dichloroethene	ND	---	7390	ug/kg	10000	05/17/19	5035A/8260C	
cis-1,2-Dichloroethene	ND	---	7390	ug/kg	10000	05/17/19	5035A/8260C	
trans-1,2-Dichloroethene	ND	---	7390	ug/kg	10000	05/17/19	5035A/8260C	

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Philip Nerenberg, Lab Director



Hahn and Associates 434 NW 6th Ave. Suite 203 Portland, OR 97209	Project: Mult 802 Decommissioning Project Number: 2708-60F Project Manager: Rob Ede	Report ID: A9E0508 - 05 29 19 1543
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ANALYTICAL SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
COMP1 (A9E0508-05)				Matrix: Solid			Batch: 9051006	COMP
1,2-Dichloropropane	ND	---	7390	ug/kg	10000	05/17/19	5035A/8260C	
1,3-Dichloropropane	ND	---	14800	ug/kg	10000	05/17/19	5035A/8260C	
2,2-Dichloropropane	ND	---	14800	ug/kg	10000	05/17/19	5035A/8260C	
1,1-Dichloropropene	ND	---	14800	ug/kg	10000	05/17/19	5035A/8260C	
cis-1,3-Dichloropropene	ND	---	14800	ug/kg	10000	05/17/19	5035A/8260C	
trans-1,3-Dichloropropene	ND	---	14800	ug/kg	10000	05/17/19	5035A/8260C	
Ethylbenzene	12400	---	7390	ug/kg	10000	05/17/19	5035A/8260C	
Hexachlorobutadiene	ND	---	29600	ug/kg	10000	05/17/19	5035A/8260C	
2-Hexanone	ND	---	148000	ug/kg	10000	05/17/19	5035A/8260C	
Isopropylbenzene	ND	---	14800	ug/kg	10000	05/17/19	5035A/8260C	
4-Isopropyltoluene	ND	---	14800	ug/kg	10000	05/17/19	5035A/8260C	
Methylene chloride	ND	---	73900	ug/kg	10000	05/17/19	5035A/8260C	
4-Methyl-2-pentanone (MIBK)	ND	---	148000	ug/kg	10000	05/17/19	5035A/8260C	
Methyl tert-butyl ether (MTBE)	ND	---	14800	ug/kg	10000	05/17/19	5035A/8260C	
Naphthalene	475000	---	29600	ug/kg	10000	05/17/19	5035A/8260C	
n-Propylbenzene	ND	---	7390	ug/kg	10000	05/17/19	5035A/8260C	
Styrene	ND	---	14800	ug/kg	10000	05/17/19	5035A/8260C	
1,1,1,2-Tetrachloroethane	ND	---	29600	ug/kg	10000	05/17/19	5035A/8260C	
1,1,2,2-Tetrachloroethane	ND	---	14800	ug/kg	10000	05/17/19	5035A/8260C	
Tetrachloroethene (PCE)	ND	---	7390	ug/kg	10000	05/17/19	5035A/8260C	
Toluene	29300	---	14800	ug/kg	10000	05/17/19	5035A/8260C	
1,2,3-Trichlorobenzene	ND	---	73900	ug/kg	10000	05/17/19	5035A/8260C	
1,2,4-Trichlorobenzene	ND	---	73900	ug/kg	10000	05/17/19	5035A/8260C	
1,1,1-Trichloroethane	ND	---	7390	ug/kg	10000	05/17/19	5035A/8260C	
1,1,2-Trichloroethane	ND	---	7390	ug/kg	10000	05/17/19	5035A/8260C	
Trichloroethene (TCE)	ND	---	7390	ug/kg	10000	05/17/19	5035A/8260C	
Trichlorofluoromethane	ND	---	29600	ug/kg	10000	05/17/19	5035A/8260C	
1,2,3-Trichloropropane	ND	---	14800	ug/kg	10000	05/17/19	5035A/8260C	
1,2,4-Trimethylbenzene	ND	---	14800	ug/kg	10000	05/17/19	5035A/8260C	
1,3,5-Trimethylbenzene	ND	---	14800	ug/kg	10000	05/17/19	5035A/8260C	
Vinyl chloride	ND	---	7390	ug/kg	10000	05/17/19	5035A/8260C	
m,p-Xylene	17100	---	14800	ug/kg	10000	05/17/19	5035A/8260C	
o-Xylene	8020	---	7390	ug/kg	10000	05/17/19	5035A/8260C	



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EPA ID: OR01039

Hahn and Associates

434 NW 6th Ave. Suite 203

Portland, OR 97209

Project: **Mult 802 Decommissioning**

Project Number: **2708-60F**

Project Manager: **Rob Ede**

Report ID:

A9E0508 - 05 29 19 1543

ANALYTICAL SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
COMP1 (A9E0508-05)				Matrix: Solid		Batch: 9051006		COMP
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 106 %</i>	<i>Limits: 80-120 %</i>	<i>80-120 %</i>	<i>1</i>	<i>05/17/19</i>	<i>5035A/8260C</i>	
<i>Toluene-d8 (Surr)</i>		<i>95 %</i>	<i>80-120 %</i>	<i>80-120 %</i>	<i>1</i>	<i>05/17/19</i>	<i>5035A/8260C</i>	
<i>4-Bromofluorobenzene (Surr)</i>		<i>100 %</i>	<i>80-120 %</i>	<i>80-120 %</i>	<i>1</i>	<i>05/17/19</i>	<i>5035A/8260C</i>	

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ANALYTICAL SAMPLE RESULTS

TCLP Volatile Organic Compounds by EPA 1311/8260C

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
COMP1 (A9E0508-05)				Matrix: Solid		Batch: 9051246		
Acetone	ND	---	1.00	mg/L	50	05/24/19	1311/8260C	
Benzene	0.720	---	0.0125	mg/L	50	05/24/19	1311/8260C	
Bromobenzene	ND	---	0.0250	mg/L	50	05/24/19	1311/8260C	
Bromochloromethane	ND	---	0.0500	mg/L	50	05/24/19	1311/8260C	
Bromodichloromethane	ND	---	0.0500	mg/L	50	05/24/19	1311/8260C	
Bromoform	ND	---	0.0500	mg/L	50	05/24/19	1311/8260C	
Bromomethane	ND	---	0.250	mg/L	50	05/24/19	1311/8260C	
2-Butanone (MEK)	ND	---	0.500	mg/L	50	05/24/19	1311/8260C	
n-Butylbenzene	ND	---	0.0500	mg/L	50	05/24/19	1311/8260C	
sec-Butylbenzene	ND	---	0.0500	mg/L	50	05/24/19	1311/8260C	
tert-Butylbenzene	ND	---	0.0500	mg/L	50	05/24/19	1311/8260C	
Carbon tetrachloride	ND	---	0.0500	mg/L	50	05/24/19	1311/8260C	
Chlorobenzene	ND	---	0.0250	mg/L	50	05/24/19	1311/8260C	
Chloroethane	ND	---	0.250	mg/L	50	05/24/19	1311/8260C	
Chloroform	ND	---	0.0500	mg/L	50	05/24/19	1311/8260C	
Chloromethane	ND	---	0.250	mg/L	50	05/24/19	1311/8260C	
2-Chlorotoluene	ND	---	0.0500	mg/L	50	05/24/19	1311/8260C	
4-Chlorotoluene	ND	---	0.0500	mg/L	50	05/24/19	1311/8260C	
1,2-Dibromo-3-chloropropane	ND	---	0.250	mg/L	50	05/24/19	1311/8260C	
Dibromochloromethane	ND	---	0.0500	mg/L	50	05/24/19	1311/8260C	
1,2-Dibromoethane (EDB)	ND	---	0.0250	mg/L	50	05/24/19	1311/8260C	
Dibromomethane	ND	---	0.0500	mg/L	50	05/24/19	1311/8260C	
1,2-Dichlorobenzene	ND	---	0.0250	mg/L	50	05/24/19	1311/8260C	
1,3-Dichlorobenzene	ND	---	0.0250	mg/L	50	05/24/19	1311/8260C	
1,4-Dichlorobenzene	ND	---	0.0250	mg/L	50	05/24/19	1311/8260C	
Dichlorodifluoromethane	ND	---	0.0500	mg/L	50	05/24/19	1311/8260C	
1,1-Dichloroethane	ND	---	0.0250	mg/L	50	05/24/19	1311/8260C	
1,1-Dichloroethene	ND	---	0.0250	mg/L	50	05/24/19	1311/8260C	
1,2-Dichloroethane (EDC)	ND	---	0.0250	mg/L	50	05/24/19	1311/8260C	
cis-1,2-Dichloroethene	ND	---	0.0500	mg/L	50	05/24/19	1311/8260C	
trans-1,2-Dichloroethene	ND	---	0.0250	mg/L	50	05/24/19	1311/8260C	
1,2-Dichloropropane	ND	---	0.0250	mg/L	50	05/24/19	1311/8260C	
1,3-Dichloropropane	ND	---	0.0500	mg/L	50	05/24/19	1311/8260C	

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ANALYTICAL SAMPLE RESULTS

TCLP Volatile Organic Compounds by EPA 1311/8260C

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
COMP1 (A9E0508-05)				Matrix: Solid		Batch: 9051246		
2,2-Dichloropropane	ND	---	0.0500	mg/L	50	05/24/19	1311/8260C	
1,1-Dichloropropene	ND	---	0.0500	mg/L	50	05/24/19	1311/8260C	
cis-1,3-Dichloropropene	ND	---	0.0500	mg/L	50	05/24/19	1311/8260C	
trans-1,3-Dichloropropene	ND	---	0.0500	mg/L	50	05/24/19	1311/8260C	
Ethylbenzene	0.126	---	0.0250	mg/L	50	05/24/19	1311/8260C	
Hexachlorobutadiene	ND	---	0.250	mg/L	50	05/24/19	1311/8260C	
2-Hexanone	ND	---	0.500	mg/L	50	05/24/19	1311/8260C	
Isopropylbenzene	ND	---	0.0500	mg/L	50	05/24/19	1311/8260C	
4-Isopropyltoluene	ND	---	0.0500	mg/L	50	05/24/19	1311/8260C	
4-Methyl-2-pentanone (MiBK)	ND	---	0.500	mg/L	50	05/24/19	1311/8260C	
Methyl tert-butyl ether (MTBE)	ND	---	0.0500	mg/L	50	05/24/19	1311/8260C	
Methylene chloride	ND	---	0.300	mg/L	50	05/24/19	1311/8260C	A-01
Naphthalene	1.76	---	0.100	mg/L	50	05/24/19	1311/8260C	Q-42
n-Propylbenzene	ND	---	0.0250	mg/L	50	05/24/19	1311/8260C	
Styrene	ND	---	0.0500	mg/L	50	05/24/19	1311/8260C	
1,1,1,2-Tetrachloroethane	ND	---	0.0250	mg/L	50	05/24/19	1311/8260C	
1,1,2,2-Tetrachloroethane	ND	---	0.0250	mg/L	50	05/24/19	1311/8260C	
Tetrachloroethene (PCE)	ND	---	0.0250	mg/L	50	05/24/19	1311/8260C	
Toluene	0.263	---	0.0500	mg/L	50	05/24/19	1311/8260C	
1,2,3-Trichlorobenzene	ND	---	0.0500	mg/L	50	05/24/19	1311/8260C	
1,2,4-Trichlorobenzene	ND	---	0.100	mg/L	50	05/24/19	1311/8260C	
1,1,1-Trichloroethane	ND	---	0.0250	mg/L	50	05/24/19	1311/8260C	
1,1,2-Trichloroethane	ND	---	0.0250	mg/L	50	05/24/19	1311/8260C	
Trichloroethene (TCE)	ND	---	0.0250	mg/L	50	05/24/19	1311/8260C	
Trichlorofluoromethane	ND	---	0.100	mg/L	50	05/24/19	1311/8260C	
1,2,3-Trichloropropane	ND	---	0.0500	mg/L	50	05/24/19	1311/8260C	
1,2,4-Trimethylbenzene	ND	---	0.0500	mg/L	50	05/24/19	1311/8260C	
1,3,5-Trimethylbenzene	ND	---	0.0500	mg/L	50	05/24/19	1311/8260C	
Vinyl chloride	ND	---	0.0250	mg/L	50	05/24/19	1311/8260C	
m,p-Xylene	0.113	---	0.0500	mg/L	50	05/24/19	1311/8260C	
o-Xylene	0.0634	---	0.0250	mg/L	50	05/24/19	1311/8260C	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 106 %</i>		<i>Limits: 80-120 %</i>		<i>1</i>	<i>05/24/19</i>	<i>1311/8260C</i>
<i>Toluene-d8 (Surr)</i>		<i>98 %</i>		<i>80-120 %</i>		<i>1</i>	<i>05/24/19</i>	<i>1311/8260C</i>

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ANALYTICAL SAMPLE RESULTS

TCLP Volatile Organic Compounds by EPA 1311/8260C

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
COMP1 (A9E0508-05)				Matrix: Solid		Batch: 9051246		
<i>Surrogate: 4-Bromofluorobenzene (Surr)</i>		<i>Recovery: 93 %</i>		<i>Limits: 80-120 %</i>		<i>1</i>	<i>05/24/19</i>	<i>1311/8260C</i>

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ANALYTICAL SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
COMP1 (A9E0508-05)				Matrix: Solid		Batch: 9051065		
Acenaphthene	880000	---	863000	ug/kg	10000	05/21/19	EPA 8270D	B, Q-29
Acenaphthylene	ND	---	863000	ug/kg	10000	05/21/19	EPA 8270D	
Anthracene	2050000	---	863000	ug/kg	10000	05/21/19	EPA 8270D	B-02
Benz(a)anthracene	7230000	---	863000	ug/kg	10000	05/21/19	EPA 8270D	
Benzo(a)pyrene	9030000	---	1290000	ug/kg	10000	05/21/19	EPA 8270D	
Benzo(b)fluoranthene	10100000	---	1290000	ug/kg	10000	05/21/19	EPA 8270D	M-05
Benzo(k)fluoranthene	3740000	---	1290000	ug/kg	10000	05/21/19	EPA 8270D	M-05
Benzo(g,h,i)perylene	6990000	---	863000	ug/kg	10000	05/21/19	EPA 8270D	
Chrysene	7850000	---	863000	ug/kg	10000	05/21/19	EPA 8270D	
Dibenz(a,h)anthracene	973000	---	863000	ug/kg	10000	05/21/19	EPA 8270D	
Fluoranthene	18700000	---	863000	ug/kg	10000	05/21/19	EPA 8270D	B-02
Fluorene	ND	---	863000	ug/kg	10000	05/21/19	EPA 8270D	
Indeno(1,2,3-cd)pyrene	6560000	---	863000	ug/kg	10000	05/21/19	EPA 8270D	
1-Methylnaphthalene	ND	---	1720000	ug/kg	10000	05/21/19	EPA 8270D	
2-Methylnaphthalene	ND	---	1720000	ug/kg	10000	05/21/19	EPA 8270D	
Naphthalene	ND	---	1720000	ug/kg	10000	05/21/19	EPA 8270D	Q-42
Phenanthrene	8820000	---	863000	ug/kg	10000	05/21/19	EPA 8270D	B
Pyrene	18500000	---	863000	ug/kg	10000	05/21/19	EPA 8270D	B-02
Carbazole	2280000	---	1290000	ug/kg	10000	05/21/19	EPA 8270D	
Dibenzofuran	ND	---	863000	ug/kg	10000	05/21/19	EPA 8270D	
4-Chloro-3-methylphenol	ND	---	8630000	ug/kg	10000	05/21/19	EPA 8270D	
2-Chlorophenol	ND	---	4300000	ug/kg	10000	05/21/19	EPA 8270D	
2,4-Dichlorophenol	ND	---	4300000	ug/kg	10000	05/21/19	EPA 8270D	
2,4-Dimethylphenol	ND	---	4300000	ug/kg	10000	05/21/19	EPA 8270D	
2,4-Dinitrophenol	ND	---	21600000	ug/kg	10000	05/21/19	EPA 8270D	
4,6-Dinitro-2-methylphenol	ND	---	21600000	ug/kg	10000	05/21/19	EPA 8270D	
2-Methylphenol	ND	---	2160000	ug/kg	10000	05/21/19	EPA 8270D	
3+4-Methylphenol(s)	ND	---	2160000	ug/kg	10000	05/21/19	EPA 8270D	
2-Nitrophenol	ND	---	8630000	ug/kg	10000	05/21/19	EPA 8270D	
4-Nitrophenol	ND	---	8630000	ug/kg	10000	05/21/19	EPA 8270D	
Pentachlorophenol (PCP)	ND	---	8630000	ug/kg	10000	05/21/19	EPA 8270D	
Phenol	ND	---	1720000	ug/kg	10000	05/21/19	EPA 8270D	
2,3,4,6-Tetrachlorophenol	ND	---	4300000	ug/kg	10000	05/21/19	EPA 8270D	

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Project: **Mult 802 Decommissioning**
 Project Number: **2708-60F**
 Project Manager: **Rob Ede**

Report ID:
A9E0508 - 05 29 19 1543

ANALYTICAL SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
COMP1 (A9E0508-05)				Matrix: Solid		Batch: 9051065		
2,3,5,6-Tetrachlorophenol	ND	---	4300000	ug/kg	10000	05/21/19	EPA 8270D	
2,4,5-Trichlorophenol	ND	---	4300000	ug/kg	10000	05/21/19	EPA 8270D	
2,4,6-Trichlorophenol	ND	---	4300000	ug/kg	10000	05/21/19	EPA 8270D	
Bis(2-ethylhexyl)phthalate	ND	---	12900000	ug/kg	10000	05/21/19	EPA 8270D	
Butyl benzyl phthalate	ND	---	8630000	ug/kg	10000	05/21/19	EPA 8270D	
Diethylphthalate	ND	---	8630000	ug/kg	10000	05/21/19	EPA 8270D	
Dimethylphthalate	ND	---	8630000	ug/kg	10000	05/21/19	EPA 8270D	
Di-n-butylphthalate	ND	---	8630000	ug/kg	10000	05/21/19	EPA 8270D	
Di-n-octyl phthalate	ND	---	8630000	ug/kg	10000	05/21/19	EPA 8270D	
N-Nitrosodimethylamine	ND	---	2160000	ug/kg	10000	05/21/19	EPA 8270D	
N-Nitroso-di-n-propylamine	ND	---	2160000	ug/kg	10000	05/21/19	EPA 8270D	
N-Nitrosodiphenylamine	ND	---	2160000	ug/kg	10000	05/21/19	EPA 8270D	
Bis(2-Chloroethoxy) methane	ND	---	2160000	ug/kg	10000	05/21/19	EPA 8270D	
Bis(2-Chloroethyl) ether	ND	---	2160000	ug/kg	10000	05/21/19	EPA 8270D	
2,2'-Oxybis(1-Chloropropane)	ND	---	2160000	ug/kg	10000	05/21/19	EPA 8270D	
Hexachlorobenzene	ND	---	863000	ug/kg	10000	05/21/19	EPA 8270D	
Hexachlorobutadiene	ND	---	2160000	ug/kg	10000	05/21/19	EPA 8270D	
Hexachlorocyclopentadiene	ND	---	4300000	ug/kg	10000	05/21/19	EPA 8270D	
Hexachloroethane	ND	---	2160000	ug/kg	10000	05/21/19	EPA 8270D	
2-Chloronaphthalene	ND	---	863000	ug/kg	10000	05/21/19	EPA 8270D	
1,2-Dichlorobenzene	ND	---	2160000	ug/kg	10000	05/21/19	EPA 8270D	
1,3-Dichlorobenzene	ND	---	2160000	ug/kg	10000	05/21/19	EPA 8270D	
1,4-Dichlorobenzene	ND	---	2160000	ug/kg	10000	05/21/19	EPA 8270D	
1,2,4-Trichlorobenzene	ND	---	2160000	ug/kg	10000	05/21/19	EPA 8270D	
4-Bromophenyl phenyl ether	ND	---	2160000	ug/kg	10000	05/21/19	EPA 8270D	
4-Chlorophenyl phenyl ether	ND	---	2160000	ug/kg	10000	05/21/19	EPA 8270D	
Aniline	ND	---	4300000	ug/kg	10000	05/21/19	EPA 8270D	
4-Chloroaniline	ND	---	2160000	ug/kg	10000	05/21/19	EPA 8270D	
2-Nitroaniline	ND	---	17200000	ug/kg	10000	05/21/19	EPA 8270D	
3-Nitroaniline	ND	---	17200000	ug/kg	10000	05/21/19	EPA 8270D	
4-Nitroaniline	ND	---	17200000	ug/kg	10000	05/21/19	EPA 8270D	
Nitrobenzene	ND	---	8630000	ug/kg	10000	05/21/19	EPA 8270D	
2,4-Dinitrotoluene	ND	---	8630000	ug/kg	10000	05/21/19	EPA 8270D	

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ANALYTICAL SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes	
COMP1 (A9E0508-05)				Matrix: Solid		Batch: 9051065			
2,6-Dinitrotoluene	ND	---	8630000	ug/kg	10000	05/21/19	EPA 8270D		
Benzoic acid	ND	---	108000000	ug/kg	10000	05/21/19	EPA 8270D		
Benzyl alcohol	ND	---	4300000	ug/kg	10000	05/21/19	EPA 8270D		
Isophorone	ND	---	2160000	ug/kg	10000	05/21/19	EPA 8270D		
Azobenzene (1,2-DPH)	ND	---	2160000	ug/kg	10000	05/21/19	EPA 8270D		
Bis(2-Ethylhexyl) adipate	ND	---	21600000	ug/kg	10000	05/21/19	EPA 8270D		
3,3'-Dichlorobenzidine	ND	---	17300000	ug/kg	10000	05/21/19	EPA 8270D	Q-52	
1,2-Dinitrobenzene	ND	---	21600000	ug/kg	10000	05/21/19	EPA 8270D		
1,3-Dinitrobenzene	ND	---	21600000	ug/kg	10000	05/21/19	EPA 8270D		
1,4-Dinitrobenzene	ND	---	21600000	ug/kg	10000	05/21/19	EPA 8270D		
Pyridine	ND	---	4300000	ug/kg	10000	05/21/19	EPA 8270D		
<i>Surrogate: Nitrobenzene-d5 (Surr)</i>		<i>Recovery: 1310 %</i>		<i>Limits: 37-122 %</i>		<i>10000</i>	<i>05/21/19</i>	<i>EPA 8270D</i>	<i>S-05</i>
<i>2-Fluorobiphenyl (Surr)</i>		<i>%</i>		<i>44-115 %</i>		<i>10000</i>	<i>05/21/19</i>	<i>EPA 8270D</i>	<i>S-01</i>
<i>Phenol-d6 (Surr)</i>		<i>%</i>		<i>33-122 %</i>		<i>10000</i>	<i>05/21/19</i>	<i>EPA 8270D</i>	<i>S-01</i>
<i>p-Terphenyl-d14 (Surr)</i>		<i>513 %</i>		<i>54-127 %</i>		<i>10000</i>	<i>05/21/19</i>	<i>EPA 8270D</i>	<i>S-05</i>
<i>2-Fluorophenol (Surr)</i>		<i>%</i>		<i>35-115 %</i>		<i>10000</i>	<i>05/21/19</i>	<i>EPA 8270D</i>	<i>S-01</i>
<i>2,4,6-Tribromophenol (Surr)</i>		<i>%</i>		<i>39-132 %</i>		<i>10000</i>	<i>05/21/19</i>	<i>EPA 8270D</i>	<i>S-01</i>



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ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020A (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
COMP1 (A9E0508-05)		Matrix: Solid						
Batch: 9051011								
Aluminum	1690	---	51.9	mg/kg	10	05/20/19	EPA 6020A	
Antimony	ND	---	1.04	mg/kg	10	05/20/19	EPA 6020A	
Arsenic	1.66	---	1.04	mg/kg	10	05/20/19	EPA 6020A	
Barium	20.5	---	1.04	mg/kg	10	05/20/19	EPA 6020A	
Beryllium	0.211	---	0.207	mg/kg	10	05/20/19	EPA 6020A	
Cadmium	0.349	---	0.207	mg/kg	10	05/20/19	EPA 6020A	
Calcium	559	---	104	mg/kg	10	05/20/19	EPA 6020A	
Chromium	2.83	---	1.04	mg/kg	10	05/20/19	EPA 6020A	
Copper	10.9	---	1.04	mg/kg	10	05/20/19	EPA 6020A	
Iron	30800	---	51.9	mg/kg	10	05/20/19	EPA 6020A	
Lead	26.8	---	0.207	mg/kg	10	05/20/19	EPA 6020A	
Magnesium	82.2	---	51.9	mg/kg	10	05/20/19	EPA 6020A	
Manganese	363	---	1.04	mg/kg	10	05/20/19	EPA 6020A	
Mercury	ND	---	0.0830	mg/kg	10	05/20/19	EPA 6020A	
Nickel	7.86	---	1.04	mg/kg	10	05/20/19	EPA 6020A	
Potassium	ND	---	104	mg/kg	10	05/20/19	EPA 6020A	
Selenium	ND	---	1.04	mg/kg	10	05/20/19	EPA 6020A	
Silver	ND	---	0.207	mg/kg	10	05/20/19	EPA 6020A	
Thallium	ND	---	0.207	mg/kg	10	05/20/19	EPA 6020A	
Vanadium	16.3	---	1.04	mg/kg	10	05/20/19	EPA 6020A	
Zinc	71.3	---	4.15	mg/kg	10	05/20/19	EPA 6020A	
COMP1 (A9E0508-05RE1)		Matrix: Solid						
Batch: 9051011								
Sodium	ND	---	104	mg/kg	10	05/21/19	EPA 6020A	



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---	--	--

ANALYTICAL SAMPLE RESULTS

Total Cyanide by UV Digestion/Gas Diffusion/Amperometric Detection

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
COMP1 (A9E0508-05)				Matrix: Solid		Batch: 9051027		
Cyanide, Total	14.5	---	1.97	mg/kg	20	05/20/19	D7511-12	

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Project: **Mult 802 Decommissioning**

Project Number: **2708-60F**

Project Manager: **Rob Ede**

Report ID:

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ANALYTICAL SAMPLE RESULTS

TCLP Extraction by EPA 1311 (ZHE)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
COMP1 (A9E0508-05)				Matrix: Solid		Batch: 9051218		
TCLP ZHE Extraction	PREP	---		N/A	1	05/23/19	EPA 1311 ZHE	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051067 - EPA 3546 (Fuels)						Solid						
Blank (9051067-BLK1)			Prepared: 05/20/19 16:21 Analyzed: 05/21/19 02:49									
<u>NWTPH-Dx</u>												
Diesel	ND	---	25.0	mg/kg	1	---	---	---	---	---	---	
Oil	ND	---	50.0	mg/kg	1	---	---	---	---	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 103 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
LCS (9051067-BS1)			Prepared: 05/20/19 16:21 Analyzed: 05/21/19 03:09									
<u>NWTPH-Dx</u>												
Diesel	111	---	25.0	mg/kg	1	125	---	89	70-130%	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 104 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
Duplicate (9051067-DUP1)			Prepared: 05/20/19 16:21 Analyzed: 05/21/19 03:51									
<u>QC Source Sample: COMP1 (A9E0508-05)</u>												
<u>NWTPH-Dx</u>												
Diesel	92800	---	17500	mg/kg	100	---	91500	---	---	1	30%	F-17
Oil	184000	---	35100	mg/kg	100	---	176000	---	---	5	30%	F-17
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 100x</i>						S-01



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QUALITY CONTROL (QC) SAMPLE RESULTS

Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051006 - EPA 5035A												
Soil												
Blank (9051006-BLK1)												
Prepared: 05/17/19 10:00 Analyzed: 05/17/19 12:11												
<u>NWTPH-Gx (MS)</u>												
Gasoline Range Organics	ND	---	3.33	mg/kg	50	---	---	---	---	---	---	
Surr: 4-Bromofluorobenzene (Sur)			Recovery: 115 %	Limits: 50-150 %		Dilution: 1x						
1,4-Difluorobenzene (Sur)			97 %	50-150 %		"						
LCS (9051006-BS2)												
Prepared: 05/17/19 10:00 Analyzed: 05/17/19 11:44												
<u>NWTPH-Gx (MS)</u>												
Gasoline Range Organics	28.1	---	5.00	mg/kg	50	25.0	---	113	80-120%	---	---	
Surr: 4-Bromofluorobenzene (Sur)			Recovery: 111 %	Limits: 50-150 %		Dilution: 1x						
1,4-Difluorobenzene (Sur)			100 %	50-150 %		"						
Duplicate (9051006-DUP1)												
Prepared: 05/14/19 00:00 Analyzed: 05/17/19 14:27												
<u>QC Source Sample: Non-SDG (A9E0511-50)</u>												
Gasoline Range Organics	ND	---	5.43	mg/kg	50	---	ND	---	---	---	30%	
Surr: 4-Bromofluorobenzene (Sur)			Recovery: 118 %	Limits: 50-150 %		Dilution: 1x						
1,4-Difluorobenzene (Sur)			98 %	50-150 %		"						
Duplicate (9051006-DUP2)												
Prepared: 05/14/19 00:00 Analyzed: 05/17/19 15:21												
<u>QC Source Sample: Non-SDG (A9E0511-51)</u>												
Gasoline Range Organics	ND	---	5.78	mg/kg	50	---	ND	---	---	---	30%	
Surr: 4-Bromofluorobenzene (Sur)			Recovery: 128 %	Limits: 50-150 %		Dilution: 1x						
1,4-Difluorobenzene (Sur)			102 %	50-150 %		"						



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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051006 - EPA 5035A						Soil						
Blank (9051006-BLK1)			Prepared: 05/17/19 10:00 Analyzed: 05/17/19 12:11									
<u>5035A/8260C</u>												
Acetone	ND	---	667	ug/kg	50	---	---	---	---	---	---	---
Acrylonitrile	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	---
Benzene	ND	---	6.67	ug/kg	50	---	---	---	---	---	---	---
Bromobenzene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	---
Bromochloromethane	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	---
Bromodichloromethane	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	---
Bromoform	ND	---	133	ug/kg	50	---	---	---	---	---	---	---
Bromomethane	ND	---	333	ug/kg	50	---	---	---	---	---	---	---
2-Butanone (MEK)	ND	---	333	ug/kg	50	---	---	---	---	---	---	---
n-Butylbenzene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	---
sec-Butylbenzene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	---
tert-Butylbenzene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	---
Carbon disulfide	ND	---	333	ug/kg	50	---	---	---	---	---	---	---
Carbon tetrachloride	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	---
Chlorobenzene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	---
Chloroethane	ND	---	333	ug/kg	50	---	---	---	---	---	---	---
Chloroform	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	---
Chloromethane	ND	---	167	ug/kg	50	---	---	---	---	---	---	---
2-Chlorotoluene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	---
4-Chlorotoluene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	---
Dibromochloromethane	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	---
1,2-Dibromo-3-chloropropane	ND	---	167	ug/kg	50	---	---	---	---	---	---	---
1,2-Dibromoethane (EDB)	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	---
Dibromomethane	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	---
1,2-Dichlorobenzene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	---
1,3-Dichlorobenzene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	---
1,4-Dichlorobenzene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	---
Dichlorodifluoromethane	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	---
1,1-Dichloroethane	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	---
1,2-Dichloroethane (EDC)	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	---
1,1-Dichloroethene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	---
cis-1,2-Dichloroethene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	---
trans-1,2-Dichloroethene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	---

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Philip Nerenberg, Lab Director



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Project: **Mult 802 Decommissioning**
 Project Number: **2708-60F**
 Project Manager: **Rob Ede**

Report ID:
A9E0508 - 05 29 19 1543

QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051006 - EPA 5035A												
Soil												
Blank (9051006-BLK1)												
Prepared: 05/17/19 10:00 Analyzed: 05/17/19 12:11												
1,2-Dichloropropane	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
1,3-Dichloropropane	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
2,2-Dichloropropane	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
1,1-Dichloropropene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
cis-1,3-Dichloropropene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
trans-1,3-Dichloropropene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Ethylbenzene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Hexachlorobutadiene	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	
2-Hexanone	ND	---	333	ug/kg	50	---	---	---	---	---	---	
Isopropylbenzene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
4-Isopropyltoluene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Methylene chloride	ND	---	167	ug/kg	50	---	---	---	---	---	---	
4-Methyl-2-pentanone (MiBK)	ND	---	333	ug/kg	50	---	---	---	---	---	---	
Methyl tert-butyl ether (MTBE)	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Naphthalene	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	
n-Propylbenzene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Styrene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
1,1,1,2-Tetrachloroethane	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	
1,1,2,2-Tetrachloroethane	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Tetrachloroethene (PCE)	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Toluene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
1,2,3-Trichlorobenzene	ND	---	167	ug/kg	50	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	---	167	ug/kg	50	---	---	---	---	---	---	
1,1,1-Trichloroethane	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
1,1,2-Trichloroethane	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Trichloroethene (TCE)	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Trichlorofluoromethane	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	
1,2,3-Trichloropropane	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
1,2,4-Trimethylbenzene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
1,3,5-Trimethylbenzene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Vinyl chloride	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
m,p-Xylene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
o-Xylene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	

Surr: 1,4-Difluorobenzene (Surr)

Recovery: 105 % Limits: 80-120 %

Dilution: 1x

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Project: **Mult 802 Decommissioning**
Project Number: **2708-60F**
Project Manager: **Rob Ede**

Report ID:
A9E0508 - 05 29 19 1543

QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051006 - EPA 5035A												
Soil												
Blank (9051006-BLK1)												
Prepared: 05/17/19 10:00 Analyzed: 05/17/19 12:11												
Surr: Toluene-d8 (Surr) Recovery: 96 % Limits: 80-120 % Dilution: 1x												
4-Bromofluorobenzene (Surr) 102 % 80-120 % "												
LCS (9051006-BS1)												
Prepared: 05/17/19 10:00 Analyzed: 05/17/19 11:17												
5035A/8260C												
Acetone	1640	---	1000	ug/kg	50	2000	---	82	80-120%	---	---	
Acrylonitrile	945	---	100	ug/kg	50	1000	---	94	80-120%	---	---	
Benzene	1050	---	10.0	ug/kg	50	1000	---	105	80-120%	---	---	
Bromobenzene	1050	---	25.0	ug/kg	50	1000	---	105	80-120%	---	---	
Bromochloromethane	1030	---	50.0	ug/kg	50	1000	---	103	80-120%	---	---	
Bromodichloromethane	1070	---	100	ug/kg	50	1000	---	107	80-120%	---	---	
Bromoform	1240	---	200	ug/kg	50	1000	---	124	80-120%	---	---	Q-56
Bromomethane	1240	---	500	ug/kg	50	1000	---	124	80-120%	---	---	Q-56
2-Butanone (MEK)	1880	---	500	ug/kg	50	2000	---	94	80-120%	---	---	
n-Butylbenzene	1180	---	50.0	ug/kg	50	1000	---	118	80-120%	---	---	
sec-Butylbenzene	1180	---	50.0	ug/kg	50	1000	---	118	80-120%	---	---	
tert-Butylbenzene	1140	---	50.0	ug/kg	50	1000	---	114	80-120%	---	---	
Carbon disulfide	894	---	500	ug/kg	50	1000	---	89	80-120%	---	---	
Carbon tetrachloride	1230	---	100	ug/kg	50	1000	---	123	80-120%	---	---	Q-56
Chlorobenzene	978	---	25.0	ug/kg	50	1000	---	98	80-120%	---	---	
Chloroethane	1080	---	500	ug/kg	50	1000	---	108	80-120%	---	---	
Chloroform	1070	---	50.0	ug/kg	50	1000	---	107	80-120%	---	---	
Chloromethane	936	---	250	ug/kg	50	1000	---	94	80-120%	---	---	
2-Chlorotoluene	1100	---	50.0	ug/kg	50	1000	---	110	80-120%	---	---	
4-Chlorotoluene	1150	---	50.0	ug/kg	50	1000	---	115	80-120%	---	---	
Dibromochloromethane	1050	---	100	ug/kg	50	1000	---	105	80-120%	---	---	
1,2-Dibromo-3-chloropropane	908	---	250	ug/kg	50	1000	---	91	80-120%	---	---	
1,2-Dibromoethane (EDB)	975	---	50.0	ug/kg	50	1000	---	98	80-120%	---	---	
Dibromomethane	1070	---	50.0	ug/kg	50	1000	---	107	80-120%	---	---	
1,2-Dichlorobenzene	1040	---	25.0	ug/kg	50	1000	---	104	80-120%	---	---	
1,3-Dichlorobenzene	1060	---	25.0	ug/kg	50	1000	---	106	80-120%	---	---	
1,4-Dichlorobenzene	1010	---	25.0	ug/kg	50	1000	---	101	80-120%	---	---	
Dichlorodifluoromethane	992	---	100	ug/kg	50	1000	---	99	80-120%	---	---	
1,1-Dichloroethane	944	---	25.0	ug/kg	50	1000	---	94	80-120%	---	---	

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Project Number: **2708-60F**
Project Manager: **Rob Ede**

Report ID:
A9E0508 - 05 29 19 1543

QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051006 - EPA 5035A												
Soil												
LCS (9051006-BS1)												
Prepared: 05/17/19 10:00 Analyzed: 05/17/19 11:17												
1,2-Dichloroethane (EDC)	990	---	25.0	ug/kg	50	1000	---	99	80-120%	---	---	
1,1-Dichloroethene	836	---	25.0	ug/kg	50	1000	---	84	80-120%	---	---	
cis-1,2-Dichloroethene	1050	---	25.0	ug/kg	50	1000	---	105	80-120%	---	---	
trans-1,2-Dichloroethene	928	---	25.0	ug/kg	50	1000	---	93	80-120%	---	---	
1,2-Dichloropropane	1070	---	25.0	ug/kg	50	1000	---	107	80-120%	---	---	
1,3-Dichloropropane	1050	---	50.0	ug/kg	50	1000	---	105	80-120%	---	---	
2,2-Dichloropropane	1290	---	50.0	ug/kg	50	1000	---	129	80-120%	---	---	Q-56
1,1-Dichloropropene	1080	---	50.0	ug/kg	50	1000	---	108	80-120%	---	---	
cis-1,3-Dichloropropene	956	---	50.0	ug/kg	50	1000	---	96	80-120%	---	---	
trans-1,3-Dichloropropene	1000	---	50.0	ug/kg	50	1000	---	100	80-120%	---	---	
Ethylbenzene	1040	---	25.0	ug/kg	50	1000	---	104	80-120%	---	---	
Hexachlorobutadiene	1090	---	100	ug/kg	50	1000	---	109	80-120%	---	---	
2-Hexanone	1800	---	500	ug/kg	50	2000	---	90	80-120%	---	---	
Isopropylbenzene	1160	---	50.0	ug/kg	50	1000	---	116	80-120%	---	---	
4-Isopropyltoluene	1130	---	50.0	ug/kg	50	1000	---	113	80-120%	---	---	
Methylene chloride	742	---	250	ug/kg	50	1000	---	74	80-120%	---	---	Q-55
4-Methyl-2-pentanone (MiBK)	1950	---	500	ug/kg	50	2000	---	97	80-120%	---	---	
Methyl tert-butyl ether (MTBE)	1030	---	50.0	ug/kg	50	1000	---	103	80-120%	---	---	
Naphthalene	870	---	100	ug/kg	50	1000	---	87	80-120%	---	---	
n-Propylbenzene	1140	---	25.0	ug/kg	50	1000	---	114	80-120%	---	---	
Styrene	1010	---	50.0	ug/kg	50	1000	---	101	80-120%	---	---	
1,1,1,2-Tetrachloroethane	1170	---	100	ug/kg	50	1000	---	117	80-120%	---	---	
1,1,2,2-Tetrachloroethane	1140	---	50.0	ug/kg	50	1000	---	114	80-120%	---	---	
Tetrachloroethene (PCE)	993	---	25.0	ug/kg	50	1000	---	99	80-120%	---	---	
Toluene	933	---	50.0	ug/kg	50	1000	---	93	80-120%	---	---	
1,2,3-Trichlorobenzene	987	---	250	ug/kg	50	1000	---	99	80-120%	---	---	
1,2,4-Trichlorobenzene	1050	---	250	ug/kg	50	1000	---	105	80-120%	---	---	
1,1,1-Trichloroethane	1200	---	25.0	ug/kg	50	1000	---	120	80-120%	---	---	
1,1,2-Trichloroethane	1070	---	25.0	ug/kg	50	1000	---	107	80-120%	---	---	
Trichloroethene (TCE)	1060	---	25.0	ug/kg	50	1000	---	106	80-120%	---	---	
Trichlorofluoromethane	1160	---	100	ug/kg	50	1000	---	116	80-120%	---	---	
1,2,3-Trichloropropane	1060	---	50.0	ug/kg	50	1000	---	106	80-120%	---	---	
1,2,4-Trimethylbenzene	1160	---	50.0	ug/kg	50	1000	---	116	80-120%	---	---	
1,3,5-Trimethylbenzene	1170	---	50.0	ug/kg	50	1000	---	117	80-120%	---	---	



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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051006 - EPA 5035A												
Soil												
LCS (9051006-BS1)												
Prepared: 05/17/19 10:00 Analyzed: 05/17/19 11:17												
Vinyl chloride	1010	---	25.0	ug/kg	50	1000	---	101	80-120%	---	---	
m,p-Xylene	2170	---	50.0	ug/kg	50	2000	---	109	80-120%	---	---	
o-Xylene	1090	---	25.0	ug/kg	50	1000	---	109	80-120%	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 104 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>95 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>101 %</i>		<i>80-120 %</i>		<i>"</i>						

Duplicate (9051006-DUP1)												
Prepared: 05/14/19 00:00 Analyzed: 05/17/19 14:27												
QC Source Sample: Non-SDG (A9E0511-50)												
Acetone	ND	---	1090	ug/kg	50	---	ND	---	---	---	30%	
Acrylonitrile	ND	---	109	ug/kg	50	---	ND	---	---	---	30%	
Benzene	ND	---	10.9	ug/kg	50	---	ND	---	---	---	30%	
Bromobenzene	ND	---	27.1	ug/kg	50	---	ND	---	---	---	30%	
Bromochloromethane	ND	---	54.3	ug/kg	50	---	ND	---	---	---	30%	
Bromodichloromethane	ND	---	109	ug/kg	50	---	ND	---	---	---	30%	
Bromoform	ND	---	217	ug/kg	50	---	ND	---	---	---	30%	
Bromomethane	ND	---	543	ug/kg	50	---	ND	---	---	---	30%	
2-Butanone (MEK)	ND	---	543	ug/kg	50	---	ND	---	---	---	30%	
n-Butylbenzene	ND	---	54.3	ug/kg	50	---	ND	---	---	---	30%	
sec-Butylbenzene	ND	---	54.3	ug/kg	50	---	ND	---	---	---	30%	
tert-Butylbenzene	ND	---	54.3	ug/kg	50	---	ND	---	---	---	30%	
Carbon disulfide	ND	---	543	ug/kg	50	---	ND	---	---	---	30%	
Carbon tetrachloride	ND	---	109	ug/kg	50	---	ND	---	---	---	30%	
Chlorobenzene	ND	---	27.1	ug/kg	50	---	ND	---	---	---	30%	
Chloroethane	ND	---	543	ug/kg	50	---	ND	---	---	---	30%	
Chloroform	ND	---	54.3	ug/kg	50	---	ND	---	---	---	30%	
Chloromethane	ND	---	271	ug/kg	50	---	ND	---	---	---	30%	
2-Chlorotoluene	ND	---	54.3	ug/kg	50	---	ND	---	---	---	30%	
4-Chlorotoluene	ND	---	54.3	ug/kg	50	---	ND	---	---	---	30%	
Dibromochloromethane	ND	---	109	ug/kg	50	---	ND	---	---	---	30%	
1,2-Dibromo-3-chloropropane	ND	---	271	ug/kg	50	---	ND	---	---	---	30%	
1,2-Dibromoethane (EDB)	ND	---	54.3	ug/kg	50	---	ND	---	---	---	30%	
Dibromomethane	ND	---	54.3	ug/kg	50	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	---	27.1	ug/kg	50	---	ND	---	---	---	30%	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051006 - EPA 5035A							Soil					
Duplicate (9051006-DUP1)			Prepared: 05/14/19 00:00 Analyzed: 05/17/19 14:27									
QC Source Sample: Non-SDG (A9E0511-50)												
1,3-Dichlorobenzene	ND	---	27.1	ug/kg	50	---	ND	---	---	---	30%	
1,4-Dichlorobenzene	ND	---	27.1	ug/kg	50	---	ND	---	---	---	30%	
Dichlorodifluoromethane	ND	---	109	ug/kg	50	---	ND	---	---	---	30%	
1,1-Dichloroethane	ND	---	27.1	ug/kg	50	---	ND	---	---	---	30%	
1,2-Dichloroethane (EDC)	ND	---	27.1	ug/kg	50	---	ND	---	---	---	30%	
1,1-Dichloroethene	ND	---	27.1	ug/kg	50	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	ND	---	27.1	ug/kg	50	---	ND	---	---	---	30%	
trans-1,2-Dichloroethene	ND	---	27.1	ug/kg	50	---	ND	---	---	---	30%	
1,2-Dichloropropane	ND	---	27.1	ug/kg	50	---	ND	---	---	---	30%	
1,3-Dichloropropane	ND	---	54.3	ug/kg	50	---	ND	---	---	---	30%	
2,2-Dichloropropane	ND	---	54.3	ug/kg	50	---	ND	---	---	---	30%	
1,1-Dichloropropene	ND	---	54.3	ug/kg	50	---	ND	---	---	---	30%	
cis-1,3-Dichloropropene	ND	---	54.3	ug/kg	50	---	ND	---	---	---	30%	
trans-1,3-Dichloropropene	ND	---	54.3	ug/kg	50	---	ND	---	---	---	30%	
Ethylbenzene	ND	---	27.1	ug/kg	50	---	ND	---	---	---	30%	
Hexachlorobutadiene	ND	---	109	ug/kg	50	---	ND	---	---	---	30%	
2-Hexanone	ND	---	54.3	ug/kg	50	---	ND	---	---	---	30%	
Isopropylbenzene	ND	---	54.3	ug/kg	50	---	ND	---	---	---	30%	
4-Isopropyltoluene	ND	---	54.3	ug/kg	50	---	ND	---	---	---	30%	
Methylene chloride	ND	---	27.1	ug/kg	50	---	ND	---	---	---	30%	
4-Methyl-2-pentanone (MIBK)	ND	---	54.3	ug/kg	50	---	ND	---	---	---	30%	
Methyl tert-butyl ether (MTBE)	ND	---	54.3	ug/kg	50	---	ND	---	---	---	30%	
Naphthalene	ND	---	109	ug/kg	50	---	ND	---	---	---	30%	
n-Propylbenzene	ND	---	27.1	ug/kg	50	---	ND	---	---	---	30%	
Styrene	ND	---	54.3	ug/kg	50	---	ND	---	---	---	30%	
1,1,1,2-Tetrachloroethane	ND	---	109	ug/kg	50	---	ND	---	---	---	30%	
1,1,2,2-Tetrachloroethane	ND	---	54.3	ug/kg	50	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	ND	---	27.1	ug/kg	50	---	ND	---	---	---	30%	
Toluene	ND	---	54.3	ug/kg	50	---	ND	---	---	---	30%	
1,2,3-Trichlorobenzene	ND	---	27.1	ug/kg	50	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	---	27.1	ug/kg	50	---	ND	---	---	---	30%	
1,1,1-Trichloroethane	ND	---	27.1	ug/kg	50	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	---	27.1	ug/kg	50	---	ND	---	---	---	30%	



Hahn and Associates

434 NW 6th Ave. Suite 203
Portland, OR 97209

Project: **Mult 802 Decommissioning**

Project Number: **2708-60F**

Project Manager: **Rob Ede**

Report ID:

A9E0508 - 05 29 19 1543

QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051006 - EPA 5035A												
Soil												
Duplicate (9051006-DUP1)												
Prepared: 05/14/19 00:00 Analyzed: 05/17/19 14:27												
QC Source Sample: Non-SDG (A9E0511-50)												
Trichloroethene (TCE)	ND	---	27.1	ug/kg	50	---	ND	---	---	---	30%	
Trichlorofluoromethane	ND	---	109	ug/kg	50	---	ND	---	---	---	30%	
1,2,3-Trichloropropane	ND	---	54.3	ug/kg	50	---	ND	---	---	---	30%	
1,2,4-Trimethylbenzene	ND	---	54.3	ug/kg	50	---	ND	---	---	---	30%	
1,3,5-Trimethylbenzene	ND	---	54.3	ug/kg	50	---	ND	---	---	---	30%	
Vinyl chloride	ND	---	27.1	ug/kg	50	---	ND	---	---	---	30%	
m,p-Xylene	ND	---	54.3	ug/kg	50	---	ND	---	---	---	30%	
o-Xylene	ND	---	27.1	ug/kg	50	---	ND	---	---	---	30%	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 107 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>95 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>102 %</i>		<i>80-120 %</i>		<i>"</i>						

Duplicate (9051006-DUP2)												
Prepared: 05/14/19 00:00 Analyzed: 05/17/19 15:21												
QC Source Sample: Non-SDG (A9E0511-51)												
Acetone	ND	---	1160	ug/kg	50	---	ND	---	---	---	30%	
Acrylonitrile	ND	---	116	ug/kg	50	---	ND	---	---	---	30%	
Benzene	ND	---	11.6	ug/kg	50	---	ND	---	---	---	30%	
Bromobenzene	ND	---	28.9	ug/kg	50	---	ND	---	---	---	30%	
Bromochloromethane	ND	---	57.8	ug/kg	50	---	ND	---	---	---	30%	
Bromodichloromethane	ND	---	116	ug/kg	50	---	ND	---	---	---	30%	
Bromoform	ND	---	231	ug/kg	50	---	ND	---	---	---	30%	
Bromomethane	ND	---	578	ug/kg	50	---	ND	---	---	---	30%	
2-Butanone (MEK)	ND	---	578	ug/kg	50	---	ND	---	---	---	30%	
n-Butylbenzene	ND	---	57.8	ug/kg	50	---	ND	---	---	---	30%	
sec-Butylbenzene	ND	---	57.8	ug/kg	50	---	ND	---	---	---	30%	
tert-Butylbenzene	ND	---	57.8	ug/kg	50	---	ND	---	---	---	30%	
Carbon disulfide	ND	---	578	ug/kg	50	---	ND	---	---	---	30%	
Carbon tetrachloride	ND	---	116	ug/kg	50	---	ND	---	---	---	30%	
Chlorobenzene	ND	---	28.9	ug/kg	50	---	ND	---	---	---	30%	
Chloroethane	ND	---	578	ug/kg	50	---	ND	---	---	---	30%	
Chloroform	ND	---	57.8	ug/kg	50	---	ND	---	---	---	30%	
Chloromethane	ND	---	289	ug/kg	50	---	ND	---	---	---	30%	
2-Chlorotoluene	ND	---	57.8	ug/kg	50	---	ND	---	---	---	30%	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051006 - EPA 5035A							Soil					
Duplicate (9051006-DUP2)			Prepared: 05/14/19 00:00 Analyzed: 05/17/19 15:21									
QC Source Sample: Non-SDG (A9E0511-51)												
4-Chlorotoluene	ND	---	57.8	ug/kg	50	---	ND	---	---	---	30%	
Dibromochloromethane	ND	---	116	ug/kg	50	---	ND	---	---	---	30%	
1,2-Dibromo-3-chloropropane	ND	---	289	ug/kg	50	---	ND	---	---	---	30%	
1,2-Dibromoethane (EDB)	ND	---	57.8	ug/kg	50	---	ND	---	---	---	30%	
Dibromomethane	ND	---	57.8	ug/kg	50	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	---	28.9	ug/kg	50	---	ND	---	---	---	30%	
1,3-Dichlorobenzene	ND	---	28.9	ug/kg	50	---	ND	---	---	---	30%	
1,4-Dichlorobenzene	ND	---	28.9	ug/kg	50	---	ND	---	---	---	30%	
Dichlorodifluoromethane	ND	---	116	ug/kg	50	---	ND	---	---	---	30%	
1,1-Dichloroethane	ND	---	28.9	ug/kg	50	---	ND	---	---	---	30%	
1,2-Dichloroethane (EDC)	ND	---	28.9	ug/kg	50	---	ND	---	---	---	30%	
1,1-Dichloroethene	ND	---	28.9	ug/kg	50	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	ND	---	28.9	ug/kg	50	---	ND	---	---	---	30%	
trans-1,2-Dichloroethene	ND	---	28.9	ug/kg	50	---	ND	---	---	---	30%	
1,2-Dichloropropane	ND	---	28.9	ug/kg	50	---	ND	---	---	---	30%	
1,3-Dichloropropane	ND	---	57.8	ug/kg	50	---	ND	---	---	---	30%	
2,2-Dichloropropane	ND	---	57.8	ug/kg	50	---	ND	---	---	---	30%	
1,1-Dichloropropene	ND	---	57.8	ug/kg	50	---	ND	---	---	---	30%	
cis-1,3-Dichloropropene	ND	---	57.8	ug/kg	50	---	ND	---	---	---	30%	
trans-1,3-Dichloropropene	ND	---	57.8	ug/kg	50	---	ND	---	---	---	30%	
Ethylbenzene	ND	---	28.9	ug/kg	50	---	ND	---	---	---	30%	
Hexachlorobutadiene	ND	---	116	ug/kg	50	---	ND	---	---	---	30%	
2-Hexanone	ND	---	57.8	ug/kg	50	---	ND	---	---	---	30%	
Isopropylbenzene	ND	---	57.8	ug/kg	50	---	ND	---	---	---	30%	
4-Isopropyltoluene	ND	---	57.8	ug/kg	50	---	ND	---	---	---	30%	
Methylene chloride	ND	---	289	ug/kg	50	---	ND	---	---	---	30%	
4-Methyl-2-pentanone (MiBK)	ND	---	57.8	ug/kg	50	---	ND	---	---	---	30%	
Methyl tert-butyl ether (MTBE)	ND	---	57.8	ug/kg	50	---	ND	---	---	---	30%	
Naphthalene	ND	---	116	ug/kg	50	---	ND	---	---	---	30%	
n-Propylbenzene	ND	---	28.9	ug/kg	50	---	ND	---	---	---	30%	
Styrene	ND	---	57.8	ug/kg	50	---	ND	---	---	---	30%	
1,1,1,2-Tetrachloroethane	ND	---	116	ug/kg	50	---	ND	---	---	---	30%	
1,1,2,2-Tetrachloroethane	ND	---	57.8	ug/kg	50	---	ND	---	---	---	30%	



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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051006 - EPA 5035A												
Soil												
Duplicate (9051006-DUP2)												
Prepared: 05/14/19 00:00 Analyzed: 05/17/19 15:21												
QC Source Sample: Non-SDG (A9E0511-51)												
Tetrachloroethene (PCE)	ND	---	28.9	ug/kg	50	---	ND	---	---	---	30%	
Toluene	ND	---	57.8	ug/kg	50	---	ND	---	---	---	30%	
1,2,3-Trichlorobenzene	ND	---	289	ug/kg	50	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	---	289	ug/kg	50	---	ND	---	---	---	30%	
1,1,1-Trichloroethane	ND	---	28.9	ug/kg	50	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	---	28.9	ug/kg	50	---	ND	---	---	---	30%	
Trichloroethene (TCE)	ND	---	28.9	ug/kg	50	---	ND	---	---	---	30%	
Trichlorofluoromethane	ND	---	116	ug/kg	50	---	ND	---	---	---	30%	
1,2,3-Trichloropropane	ND	---	57.8	ug/kg	50	---	ND	---	---	---	30%	
1,2,4-Trimethylbenzene	ND	---	57.8	ug/kg	50	---	ND	---	---	---	30%	
1,3,5-Trimethylbenzene	ND	---	57.8	ug/kg	50	---	ND	---	---	---	30%	
Vinyl chloride	ND	---	28.9	ug/kg	50	---	ND	---	---	---	30%	
m,p-Xylene	ND	---	57.8	ug/kg	50	---	ND	---	---	---	30%	
o-Xylene	ND	---	28.9	ug/kg	50	---	ND	---	---	---	30%	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 110 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>93 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>103 %</i>		<i>80-120 %</i>		<i>"</i>						

Matrix Spike (9051006-MS1)												
Prepared: 05/14/19 00:00 Analyzed: 05/17/19 16:15												
QC Source Sample: Non-SDG (A9E0511-53)												
5035A/8260C												
Acetone	2670	---	1220	ug/kg	50	2440	ND	109	36-164%	---	---	
Acrylonitrile	1500	---	122	ug/kg	50	1220	ND	123	65-134%	---	---	
Benzene	1320	---	12.2	ug/kg	50	1220	ND	108	77-121%	---	---	
Bromobenzene	1270	---	30.5	ug/kg	50	1220	ND	104	78-121%	---	---	
Bromochloromethane	1460	---	60.9	ug/kg	50	1220	ND	119	78-125%	---	---	
Bromodichloromethane	1500	---	122	ug/kg	50	1220	ND	123	75-127%	---	---	
Bromoform	1690	---	244	ug/kg	50	1220	ND	139	67-132%	---	---	Q-54c
Bromomethane	1720	---	609	ug/kg	50	1220	ND	141	53-143%	---	---	Q-54d
2-Butanone (MEK)	3090	---	609	ug/kg	50	2440	ND	127	51-148%	---	---	
n-Butylbenzene	1270	---	60.9	ug/kg	50	1220	ND	104	70-128%	---	---	
sec-Butylbenzene	1280	---	60.9	ug/kg	50	1220	ND	105	73-126%	---	---	
tert-Butylbenzene	1270	---	60.9	ug/kg	50	1220	ND	104	73-125%	---	---	

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Hahn and Associates 434 NW 6th Ave. Suite 203 Portland, OR 97209	Project: Mult 802 Decommissioning Project Number: 2708-60F Project Manager: Rob Ede	Report ID: A9E0508 - 05 29 19 1543
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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051006 - EPA 5035A						Soil						
Matrix Spike (9051006-MS1)						Prepared: 05/14/19 00:00 Analyzed: 05/17/19 16:15						
QC Source Sample: Non-SDG (A9E0511-53)												
Carbon disulfide	1160	---	609	ug/kg	50	1220	ND	95	63-132%	---	---	
Carbon tetrachloride	1530	---	122	ug/kg	50	1220	ND	125	70-135%	---	---	Q-54b
Chlorobenzene	1170	---	30.5	ug/kg	50	1220	ND	96	79-120%	---	---	
Chloroethane	2490	---	609	ug/kg	50	1220	ND	204	59-139%	---	---	Q-01
Chloroform	1380	---	60.9	ug/kg	50	1220	ND	113	78-123%	---	---	
Chloromethane	1190	---	305	ug/kg	50	1220	ND	97	50-136%	---	---	
2-Chlorotoluene	1260	---	60.9	ug/kg	50	1220	ND	104	75-122%	---	---	
4-Chlorotoluene	1320	---	60.9	ug/kg	50	1220	ND	108	72-124%	---	---	
Dibromochloromethane	1390	---	122	ug/kg	50	1220	ND	114	74-126%	---	---	
1,2-Dibromo-3-chloropropane	1170	---	305	ug/kg	50	1220	ND	96	61-132%	---	---	
1,2-Dibromoethane (EDB)	1270	---	60.9	ug/kg	50	1220	ND	104	78-122%	---	---	
Dibromomethane	1540	---	60.9	ug/kg	50	1220	ND	127	78-125%	---	---	Q-01
1,2-Dichlorobenzene	1290	---	30.5	ug/kg	50	1220	ND	105	78-121%	---	---	
1,3-Dichlorobenzene	1250	---	30.5	ug/kg	50	1220	ND	103	77-121%	---	---	
1,4-Dichlorobenzene	1180	---	30.5	ug/kg	50	1220	ND	97	75-120%	---	---	
Dichlorodifluoromethane	1260	---	122	ug/kg	50	1220	ND	103	29-149%	---	---	
1,1-Dichloroethane	1220	---	30.5	ug/kg	50	1220	ND	100	76-125%	---	---	
1,2-Dichloroethane (EDC)	1400	---	30.5	ug/kg	50	1220	ND	115	73-128%	---	---	
1,1-Dichloroethene	1090	---	30.5	ug/kg	50	1220	ND	90	70-131%	---	---	
cis-1,2-Dichloroethene	1340	---	30.5	ug/kg	50	1220	ND	110	77-123%	---	---	
trans-1,2-Dichloroethene	1140	---	30.5	ug/kg	50	1220	ND	94	74-125%	---	---	
1,2-Dichloropropane	1450	---	30.5	ug/kg	50	1220	ND	119	76-123%	---	---	
1,3-Dichloropropane	1310	---	60.9	ug/kg	50	1220	ND	107	77-121%	---	---	
2,2-Dichloropropane	1460	---	60.9	ug/kg	50	1220	ND	120	67-133%	---	---	Q-54h
1,1-Dichloropropene	1310	---	60.9	ug/kg	50	1220	ND	107	76-125%	---	---	
cis-1,3-Dichloropropene	1140	---	60.9	ug/kg	50	1220	ND	93	74-126%	---	---	
trans-1,3-Dichloropropene	1260	---	60.9	ug/kg	50	1220	ND	103	71-130%	---	---	
Ethylbenzene	1190	---	30.5	ug/kg	50	1220	ND	97	76-122%	---	---	
Hexachlorobutadiene	1190	---	122	ug/kg	50	1220	ND	97	61-135%	---	---	
2-Hexanone	2610	---	609	ug/kg	50	2440	ND	107	53-145%	---	---	
Isopropylbenzene	1330	---	60.9	ug/kg	50	1220	ND	109	68-134%	---	---	
4-Isopropyltoluene	1240	---	60.9	ug/kg	50	1220	ND	101	73-127%	---	---	
Methylene chloride	1020	---	305	ug/kg	50	1220	ND	84	70-128%	---	---	Q-54i

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

Philip Nerenberg, Lab Director



Hahn and Associates
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 Portland, OR 97209

Project: **Mult 802 Decommissioning**
 Project Number: **2708-60F**
 Project Manager: **Rob Ede**

Report ID:
A9E0508 - 05 29 19 1543

QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051006 - EPA 5035A												Soil
Matrix Spike (9051006-MS1)												Prepared: 05/14/19 00:00 Analyzed: 05/17/19 16:15
QC Source Sample: Non-SDG (A9E0511-53)												
4-Methyl-2-pentanone (MiBK)	2900	---	609	ug/kg	50	2440	ND	119	65-135%	---	---	
Methyl tert-butyl ether (MTBE)	1450	---	60.9	ug/kg	50	1220	ND	119	73-125%	---	---	
Naphthalene	1020	---	122	ug/kg	50	1220	ND	84	62-129%	---	---	
n-Propylbenzene	1250	---	30.5	ug/kg	50	1220	ND	103	73-125%	---	---	
Styrene	1260	---	60.9	ug/kg	50	1220	ND	104	76-124%	---	---	
1,1,1,2-Tetrachloroethane	1420	---	122	ug/kg	50	1220	ND	117	78-125%	---	---	
1,1,2,2-Tetrachloroethane	1590	---	60.9	ug/kg	50	1220	ND	130	70-124%	---	---	Q-01
Tetrachloroethene (PCE)	1070	---	30.5	ug/kg	50	1220	ND	88	73-128%	---	---	
Toluene	1060	---	60.9	ug/kg	50	1220	ND	87	77-121%	---	---	
1,2,3-Trichlorobenzene	1180	---	305	ug/kg	50	1220	ND	97	66-130%	---	---	
1,2,4-Trichlorobenzene	1220	---	305	ug/kg	50	1220	ND	100	67-129%	---	---	
1,1,1-Trichloroethane	1490	---	30.5	ug/kg	50	1220	ND	122	73-130%	---	---	
1,1,2-Trichloroethane	1360	---	30.5	ug/kg	50	1220	ND	112	78-121%	---	---	
Trichloroethene (TCE)	1260	---	30.5	ug/kg	50	1220	ND	103	77-123%	---	---	
Trichlorofluoromethane	5040	---	122	ug/kg	50	1220	ND	413	62-140%	---	---	Q-01
1,2,3-Trichloropropane	1360	---	60.9	ug/kg	50	1220	ND	112	73-125%	---	---	
1,2,4-Trimethylbenzene	1320	---	60.9	ug/kg	50	1220	ND	108	75-123%	---	---	
1,3,5-Trimethylbenzene	1320	---	60.9	ug/kg	50	1220	ND	108	73-124%	---	---	
Vinyl chloride	1380	---	30.5	ug/kg	50	1220	ND	113	56-135%	---	---	
m,p-Xylene	2530	---	60.9	ug/kg	50	2440	ND	104	77-124%	---	---	
o-Xylene	1290	---	30.5	ug/kg	50	1220	ND	106	77-123%	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 108 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>90 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>100 %</i>		<i>80-120 %</i>		<i>"</i>						



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Project: **Mult 802 Decommissioning**
Project Number: **2708-60F**
Project Manager: **Rob Ede**

Report ID:
A9E0508 - 05 29 19 1543

QUALITY CONTROL (QC) SAMPLE RESULTS

TCLP Volatile Organic Compounds by EPA 1311/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051246 - EPA 1311/5030B TCLP Volatiles						Water						
Blank (9051246-BLK1)						Prepared: 05/24/19 09:00 Analyzed: 05/24/19 10:44						TCLP
1311/8260C												
Acetone	ND	---	1.00	mg/L	50	---	---	---	---	---	---	
Benzene	ND	---	0.0125	mg/L	50	---	---	---	---	---	---	
Bromobenzene	ND	---	0.0250	mg/L	50	---	---	---	---	---	---	
Bromochloromethane	ND	---	0.0500	mg/L	50	---	---	---	---	---	---	
Bromodichloromethane	ND	---	0.0500	mg/L	50	---	---	---	---	---	---	
Bromoform	ND	---	0.0500	mg/L	50	---	---	---	---	---	---	
Bromomethane	ND	---	0.250	mg/L	50	---	---	---	---	---	---	
2-Butanone (MEK)	ND	---	0.500	mg/L	50	---	---	---	---	---	---	
n-Butylbenzene	ND	---	0.0500	mg/L	50	---	---	---	---	---	---	
sec-Butylbenzene	ND	---	0.0500	mg/L	50	---	---	---	---	---	---	
tert-Butylbenzene	ND	---	0.0500	mg/L	50	---	---	---	---	---	---	
Carbon tetrachloride	ND	---	0.0500	mg/L	50	---	---	---	---	---	---	
Chlorobenzene	ND	---	0.0250	mg/L	50	---	---	---	---	---	---	
Chloroethane	ND	---	0.250	mg/L	50	---	---	---	---	---	---	
Chloroform	ND	---	0.0500	mg/L	50	---	---	---	---	---	---	
Chloromethane	ND	---	0.250	mg/L	50	---	---	---	---	---	---	
2-Chlorotoluene	ND	---	0.0500	mg/L	50	---	---	---	---	---	---	
4-Chlorotoluene	ND	---	0.0500	mg/L	50	---	---	---	---	---	---	
1,2-Dibromo-3-chloropropane	ND	---	0.250	mg/L	50	---	---	---	---	---	---	
Dibromochloromethane	ND	---	0.0500	mg/L	50	---	---	---	---	---	---	
1,2-Dibromoethane (EDB)	ND	---	0.0250	mg/L	50	---	---	---	---	---	---	
Dibromomethane	ND	---	0.0500	mg/L	50	---	---	---	---	---	---	
1,2-Dichlorobenzene	ND	---	0.0250	mg/L	50	---	---	---	---	---	---	
1,3-Dichlorobenzene	ND	---	0.0250	mg/L	50	---	---	---	---	---	---	
1,4-Dichlorobenzene	ND	---	0.0250	mg/L	50	---	---	---	---	---	---	
Dichlorodifluoromethane	ND	---	0.0500	mg/L	50	---	---	---	---	---	---	
1,1-Dichloroethane	ND	---	0.0250	mg/L	50	---	---	---	---	---	---	
1,1-Dichloroethene	ND	---	0.0250	mg/L	50	---	---	---	---	---	---	
1,2-Dichloroethane (EDC)	ND	---	0.0250	mg/L	50	---	---	---	---	---	---	
cis-1,2-Dichloroethene	ND	---	0.0500	mg/L	50	---	---	---	---	---	---	
trans-1,2-Dichloroethene	ND	---	0.0250	mg/L	50	---	---	---	---	---	---	
1,2-Dichloropropane	ND	---	0.0250	mg/L	50	---	---	---	---	---	---	
1,3-Dichloropropane	ND	---	0.0500	mg/L	50	---	---	---	---	---	---	

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Philip Nerenberg, Lab Director



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QUALITY CONTROL (QC) SAMPLE RESULTS

TCLP Volatile Organic Compounds by EPA 1311/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes	
Batch 9051246 - EPA 1311/5030B TCLP Volatiles						Water							
Blank (9051246-BLK1)			Prepared: 05/24/19 09:00 Analyzed: 05/24/19 10:44						TCLP				
2,2-Dichloropropane	ND	---	0.0500	mg/L	50	---	---	---	---	---	---		
1,1-Dichloropropene	ND	---	0.0500	mg/L	50	---	---	---	---	---	---		
cis-1,3-Dichloropropene	ND	---	0.0500	mg/L	50	---	---	---	---	---	---		
trans-1,3-Dichloropropene	ND	---	0.0500	mg/L	50	---	---	---	---	---	---		
Ethylbenzene	ND	---	0.0250	mg/L	50	---	---	---	---	---	---		
Hexachlorobutadiene	ND	---	0.250	mg/L	50	---	---	---	---	---	---		
2-Hexanone	ND	---	0.500	mg/L	50	---	---	---	---	---	---		
Isopropylbenzene	ND	---	0.0500	mg/L	50	---	---	---	---	---	---		
4-Isopropyltoluene	ND	---	0.0500	mg/L	50	---	---	---	---	---	---		
4-Methyl-2-pentanone (MiBK)	ND	---	0.500	mg/L	50	---	---	---	---	---	---		
Methyl tert-butyl ether (MTBE)	ND	---	0.0500	mg/L	50	---	---	---	---	---	---		
Methylene chloride	0.281	---	0.250	mg/L	50	---	---	---	---	---	---	B	
Naphthalene	ND	---	0.100	mg/L	50	---	---	---	---	---	---		
n-Propylbenzene	ND	---	0.0250	mg/L	50	---	---	---	---	---	---		
Styrene	ND	---	0.0500	mg/L	50	---	---	---	---	---	---		
1,1,1,2-Tetrachloroethane	ND	---	0.0250	mg/L	50	---	---	---	---	---	---		
1,1,2,2-Tetrachloroethane	ND	---	0.0250	mg/L	50	---	---	---	---	---	---		
Tetrachloroethene (PCE)	ND	---	0.0250	mg/L	50	---	---	---	---	---	---		
Toluene	ND	---	0.0500	mg/L	50	---	---	---	---	---	---		
1,2,3-Trichlorobenzene	ND	---	0.0500	mg/L	50	---	---	---	---	---	---		
1,2,4-Trichlorobenzene	ND	---	0.100	mg/L	50	---	---	---	---	---	---		
1,1,1-Trichloroethane	ND	---	0.0250	mg/L	50	---	---	---	---	---	---		
1,1,2-Trichloroethane	ND	---	0.0250	mg/L	50	---	---	---	---	---	---		
Trichloroethene (TCE)	ND	---	0.0250	mg/L	50	---	---	---	---	---	---		
Trichlorofluoromethane	ND	---	0.100	mg/L	50	---	---	---	---	---	---		
1,2,3-Trichloropropane	ND	---	0.0500	mg/L	50	---	---	---	---	---	---		
1,2,4-Trimethylbenzene	ND	---	0.0500	mg/L	50	---	---	---	---	---	---		
1,3,5-Trimethylbenzene	ND	---	0.0500	mg/L	50	---	---	---	---	---	---		
Vinyl chloride	ND	---	0.0250	mg/L	50	---	---	---	---	---	---		
m,p-Xylene	ND	---	0.0500	mg/L	50	---	---	---	---	---	---		
o-Xylene	ND	---	0.0250	mg/L	50	---	---	---	---	---	---		
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 107 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>							
<i>Toluene-d8 (Surr)</i>		<i>97 %</i>		<i>80-120 %</i>		<i>"</i>							
<i>4-Bromofluorobenzene (Surr)</i>		<i>95 %</i>		<i>80-120 %</i>		<i>"</i>							



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QUALITY CONTROL (QC) SAMPLE RESULTS

TCLP Volatile Organic Compounds by EPA 1311/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051246 - EPA 1311/5030B TCLP Volatiles						Water						
LCS (9051246-BS1)						Prepared: 05/24/19 09:00 Analyzed: 05/24/19 10:15						TCLP
1311/8260C												
Acetone	2.02	---	1.00	mg/L	50	2.00	---	101	80-120%	---	---	
Benzene	1.12	---	0.0125	mg/L	50	1.00	---	112	80-120%	---	---	
Bromobenzene	1.04	---	0.0250	mg/L	50	1.00	---	104	80-120%	---	---	
Bromochloromethane	1.33	---	0.0500	mg/L	50	1.00	---	133	80-120%	---	---	Q-56
Bromodichloromethane	1.28	---	0.0500	mg/L	50	1.00	---	128	80-120%	---	---	Q-56
Bromoform	1.26	---	0.0500	mg/L	50	1.00	---	126	80-120%	---	---	Q-56
Bromomethane	1.62	---	0.250	mg/L	50	1.00	---	162	80-120%	---	---	E-05, Q-56
2-Butanone (MEK)	2.14	---	0.500	mg/L	50	2.00	---	107	80-120%	---	---	
n-Butylbenzene	1.11	---	0.0500	mg/L	50	1.00	---	111	80-120%	---	---	
sec-Butylbenzene	1.12	---	0.0500	mg/L	50	1.00	---	112	80-120%	---	---	
tert-Butylbenzene	1.06	---	0.0500	mg/L	50	1.00	---	106	80-120%	---	---	
Carbon tetrachloride	1.32	---	0.0500	mg/L	50	1.00	---	132	80-120%	---	---	Q-56
Chlorobenzene	1.08	---	0.0250	mg/L	50	1.00	---	108	80-120%	---	---	
Chloroethane	0.882	---	0.250	mg/L	50	1.00	---	88	80-120%	---	---	
Chloroform	1.18	---	0.0500	mg/L	50	1.00	---	118	80-120%	---	---	
Chloromethane	0.957	---	0.250	mg/L	50	1.00	---	96	80-120%	---	---	
2-Chlorotoluene	1.05	---	0.0500	mg/L	50	1.00	---	105	80-120%	---	---	
4-Chlorotoluene	1.09	---	0.0500	mg/L	50	1.00	---	109	80-120%	---	---	
1,2-Dibromo-3-chloropropane	0.940	---	0.250	mg/L	50	1.00	---	94	80-120%	---	---	
Dibromochloromethane	1.15	---	0.0500	mg/L	50	1.00	---	115	80-120%	---	---	
1,2-Dibromoethane (EDB)	1.10	---	0.0250	mg/L	50	1.00	---	110	80-120%	---	---	
Dibromomethane	1.18	---	0.0500	mg/L	50	1.00	---	118	80-120%	---	---	
1,2-Dichlorobenzene	1.03	---	0.0250	mg/L	50	1.00	---	103	80-120%	---	---	
1,3-Dichlorobenzene	1.06	---	0.0250	mg/L	50	1.00	---	106	80-120%	---	---	
1,4-Dichlorobenzene	1.03	---	0.0250	mg/L	50	1.00	---	103	80-120%	---	---	
Dichlorodifluoromethane	1.17	---	0.0500	mg/L	50	1.00	---	117	80-120%	---	---	
1,1-Dichloroethane	1.09	---	0.0250	mg/L	50	1.00	---	109	80-120%	---	---	
1,1-Dichloroethene	1.02	---	0.0250	mg/L	50	1.00	---	102	80-120%	---	---	
1,2-Dichloroethane (EDC)	1.17	---	0.0250	mg/L	50	1.00	---	117	80-120%	---	---	
cis-1,2-Dichloroethene	1.18	---	0.0500	mg/L	50	1.00	---	118	80-120%	---	---	
trans-1,2-Dichloroethene	1.08	---	0.0250	mg/L	50	1.00	---	108	80-120%	---	---	
1,2-Dichloropropane	1.15	---	0.0250	mg/L	50	1.00	---	115	80-120%	---	---	
1,3-Dichloropropane	1.10	---	0.0500	mg/L	50	1.00	---	110	80-120%	---	---	

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Philip Nerenberg, Lab Director



Hahn and Associates
434 NW 6th Ave. Suite 203
Portland, OR 97209

Project: **Mult 802 Decommissioning**
Project Number: **2708-60F**
Project Manager: **Rob Ede**

Report ID:
A9E0508 - 05 29 19 1543

QUALITY CONTROL (QC) SAMPLE RESULTS

TCLP Volatile Organic Compounds by EPA 1311/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051246 - EPA 1311/5030B TCLP Volatiles						Water						
LCS (9051246-BS1)						Prepared: 05/24/19 09:00 Analyzed: 05/24/19 10:15						TCLP
2,2-Dichloropropane	1.13	---	0.0500	mg/L	50	1.00	---	113	80-120%	---	---	
1,1-Dichloropropene	1.16	---	0.0500	mg/L	50	1.00	---	116	80-120%	---	---	
cis-1,3-Dichloropropene	1.03	---	0.0500	mg/L	50	1.00	---	103	80-120%	---	---	
trans-1,3-Dichloropropene	1.13	---	0.0500	mg/L	50	1.00	---	113	80-120%	---	---	
Ethylbenzene	1.13	---	0.0250	mg/L	50	1.00	---	113	80-120%	---	---	
Hexachlorobutadiene	1.04	---	0.250	mg/L	50	1.00	---	104	80-120%	---	---	
2-Hexanone	1.96	---	0.500	mg/L	50	2.00	---	98	80-120%	---	---	
Isopropylbenzene	1.10	---	0.0500	mg/L	50	1.00	---	110	80-120%	---	---	
4-Isopropyltoluene	1.09	---	0.0500	mg/L	50	1.00	---	109	80-120%	---	---	
4-Methyl-2-pentanone (MiBK)	2.02	---	0.500	mg/L	50	2.00	---	101	80-120%	---	---	
Methyl tert-butyl ether (MTBE)	1.03	---	0.0500	mg/L	50	1.00	---	103	80-120%	---	---	
Methylene chloride	1.32	---	0.250	mg/L	50	1.00	---	132	80-120%	---	---	B, Q-56
Naphthalene	0.863	---	0.100	mg/L	50	1.00	---	86	80-120%	---	---	
n-Propylbenzene	1.13	---	0.0250	mg/L	50	1.00	---	113	80-120%	---	---	
Styrene	1.15	---	0.0500	mg/L	50	1.00	---	115	80-120%	---	---	
1,1,1,2-Tetrachloroethane	1.18	---	0.0250	mg/L	50	1.00	---	118	80-120%	---	---	
1,1,2,2-Tetrachloroethane	1.09	---	0.0250	mg/L	50	1.00	---	109	80-120%	---	---	
Tetrachloroethene (PCE)	1.11	---	0.0250	mg/L	50	1.00	---	111	80-120%	---	---	
Toluene	1.10	---	0.0500	mg/L	50	1.00	---	110	80-120%	---	---	
1,2,3-Trichlorobenzene	0.916	---	0.0500	mg/L	50	1.00	---	92	80-120%	---	---	
1,2,4-Trichlorobenzene	0.909	---	0.100	mg/L	50	1.00	---	91	80-120%	---	---	
1,1,1-Trichloroethane	1.18	---	0.0250	mg/L	50	1.00	---	118	80-120%	---	---	
1,1,2-Trichloroethane	1.08	---	0.0250	mg/L	50	1.00	---	108	80-120%	---	---	
Trichloroethene (TCE)	1.13	---	0.0250	mg/L	50	1.00	---	113	80-120%	---	---	
Trichlorofluoromethane	1.05	---	0.100	mg/L	50	1.00	---	105	80-120%	---	---	
1,2,3-Trichloropropane	1.10	---	0.0500	mg/L	50	1.00	---	110	80-120%	---	---	
1,2,4-Trimethylbenzene	1.10	---	0.0500	mg/L	50	1.00	---	110	80-120%	---	---	
1,3,5-Trimethylbenzene	1.09	---	0.0500	mg/L	50	1.00	---	109	80-120%	---	---	
Vinyl chloride	0.867	---	0.0250	mg/L	50	1.00	---	87	80-120%	---	---	
m,p-Xylene	2.25	---	0.0500	mg/L	50	2.00	---	113	80-120%	---	---	
o-Xylene	1.06	---	0.0250	mg/L	50	1.00	---	106	80-120%	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 105 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>96 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>91 %</i>		<i>80-120 %</i>		<i>"</i>						



Hahn and Associates
 434 NW 6th Ave. Suite 203
 Portland, OR 97209

Project: **Mult 802 Decommissioning**
 Project Number: **2708-60F**
 Project Manager: **Rob Ede**

Report ID:
A9E0508 - 05 29 19 1543

QUALITY CONTROL (QC) SAMPLE RESULTS

TCLP Volatile Organic Compounds by EPA 1311/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051246 - EPA 1311/5030B TCLP Volatiles						Water						
Duplicate (9051246-DUP1)						Prepared: 05/24/19 10:48 Analyzed: 05/24/19 11:41						
QC Source Sample: COMP1 (A9E0508-05)												
1311/8260C												
Acetone	ND	---	1.00	mg/L	50	---	ND	---	---	---	30%	
Benzene	0.737	---	0.0125	mg/L	50	---	0.720	---	---	2	30%	
Bromobenzene	ND	---	0.0250	mg/L	50	---	ND	---	---	---	30%	
Bromochloromethane	ND	---	0.0500	mg/L	50	---	ND	---	---	---	30%	
Bromodichloromethane	ND	---	0.0500	mg/L	50	---	ND	---	---	---	30%	
Bromoform	ND	---	0.0500	mg/L	50	---	ND	---	---	---	30%	
Bromomethane	ND	---	0.250	mg/L	50	---	ND	---	---	---	30%	
2-Butanone (MEK)	ND	---	0.500	mg/L	50	---	ND	---	---	---	30%	
n-Butylbenzene	ND	---	0.0500	mg/L	50	---	ND	---	---	---	30%	
sec-Butylbenzene	ND	---	0.0500	mg/L	50	---	ND	---	---	---	30%	
tert-Butylbenzene	ND	---	0.0500	mg/L	50	---	ND	---	---	---	30%	
Carbon tetrachloride	ND	---	0.0500	mg/L	50	---	ND	---	---	---	30%	
Chlorobenzene	ND	---	0.0250	mg/L	50	---	ND	---	---	---	30%	
Chloroethane	ND	---	0.250	mg/L	50	---	ND	---	---	---	30%	
Chloroform	ND	---	0.0500	mg/L	50	---	ND	---	---	---	30%	
Chloromethane	ND	---	0.250	mg/L	50	---	ND	---	---	---	30%	
2-Chlorotoluene	ND	---	0.0500	mg/L	50	---	ND	---	---	---	30%	
4-Chlorotoluene	ND	---	0.0500	mg/L	50	---	ND	---	---	---	30%	
1,2-Dibromo-3-chloropropane	ND	---	0.250	mg/L	50	---	ND	---	---	---	30%	
Dibromochloromethane	ND	---	0.0500	mg/L	50	---	ND	---	---	---	30%	
1,2-Dibromoethane (EDB)	ND	---	0.0250	mg/L	50	---	ND	---	---	---	30%	
Dibromomethane	ND	---	0.0500	mg/L	50	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	---	0.0250	mg/L	50	---	ND	---	---	---	30%	
1,3-Dichlorobenzene	ND	---	0.0250	mg/L	50	---	ND	---	---	---	30%	
1,4-Dichlorobenzene	ND	---	0.0250	mg/L	50	---	ND	---	---	---	30%	
Dichlorodifluoromethane	ND	---	0.0500	mg/L	50	---	ND	---	---	---	30%	
1,1-Dichloroethane	ND	---	0.0250	mg/L	50	---	ND	---	---	---	30%	
1,1-Dichloroethene	ND	---	0.0250	mg/L	50	---	ND	---	---	---	30%	
1,2-Dichloroethane (EDC)	ND	---	0.0250	mg/L	50	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	ND	---	0.0500	mg/L	50	---	ND	---	---	---	30%	
trans-1,2-Dichloroethene	ND	---	0.0250	mg/L	50	---	ND	---	---	---	30%	

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Philip Nerenberg, Lab Director



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QUALITY CONTROL (QC) SAMPLE RESULTS

TCLP Volatile Organic Compounds by EPA 1311/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051246 - EPA 1311/5030B TCLP Volatiles						Water						
Duplicate (9051246-DUP1)			Prepared: 05/24/19 10:48 Analyzed: 05/24/19 11:41									
QC Source Sample: COMP1 (A9E0508-05)												
1,2-Dichloropropane	ND	---	0.0250	mg/L	50	---	ND	---	---	---	30%	
1,3-Dichloropropane	ND	---	0.0500	mg/L	50	---	ND	---	---	---	30%	
2,2-Dichloropropane	ND	---	0.0500	mg/L	50	---	ND	---	---	---	30%	
1,1-Dichloropropene	ND	---	0.0500	mg/L	50	---	ND	---	---	---	30%	
cis-1,3-Dichloropropene	ND	---	0.0500	mg/L	50	---	ND	---	---	---	30%	
trans-1,3-Dichloropropene	ND	---	0.0500	mg/L	50	---	ND	---	---	---	30%	
Ethylbenzene	0.127	---	0.0250	mg/L	50	---	0.126	---	---	0.8	30%	
Hexachlorobutadiene	ND	---	0.250	mg/L	50	---	ND	---	---	---	30%	
2-Hexanone	ND	---	0.500	mg/L	50	---	ND	---	---	---	30%	
Isopropylbenzene	ND	---	0.0500	mg/L	50	---	ND	---	---	---	30%	
4-Isopropyltoluene	ND	---	0.0500	mg/L	50	---	ND	---	---	---	30%	
4-Methyl-2-pentanone (MiBK)	ND	---	0.500	mg/L	50	---	ND	---	---	---	30%	
Methyl tert-butyl ether (MTBE)	ND	---	0.0500	mg/L	50	---	ND	---	---	---	30%	
Methylene chloride	ND	---	0.350	mg/L	50	---	ND	---	---	---	30%	A-01
Naphthalene	1.95	---	0.100	mg/L	50	---	1.76	---	---	11	30%	
n-Propylbenzene	ND	---	0.0250	mg/L	50	---	ND	---	---	---	30%	
Styrene	ND	---	0.0500	mg/L	50	---	ND	---	---	---	30%	
1,1,1,2-Tetrachloroethane	ND	---	0.0250	mg/L	50	---	ND	---	---	---	30%	
1,1,1,2,2-Tetrachloroethane	ND	---	0.0250	mg/L	50	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	ND	---	0.0250	mg/L	50	---	ND	---	---	---	30%	
Toluene	0.266	---	0.0500	mg/L	50	---	0.263	---	---	1	30%	
1,2,3-Trichlorobenzene	ND	---	0.0500	mg/L	50	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	---	0.100	mg/L	50	---	ND	---	---	---	30%	
1,1,1-Trichloroethane	ND	---	0.0250	mg/L	50	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	---	0.0250	mg/L	50	---	ND	---	---	---	30%	
Trichloroethene (TCE)	ND	---	0.0250	mg/L	50	---	ND	---	---	---	30%	
Trichlorofluoromethane	ND	---	0.100	mg/L	50	---	ND	---	---	---	30%	
1,2,3-Trichloropropane	ND	---	0.0500	mg/L	50	---	ND	---	---	---	30%	
1,2,4-Trimethylbenzene	ND	---	0.0500	mg/L	50	---	0.0418	---	---	***	30%	
1,3,5-Trimethylbenzene	ND	---	0.0500	mg/L	50	---	ND	---	---	---	30%	
Vinyl chloride	ND	---	0.0250	mg/L	50	---	ND	---	---	---	30%	
m,p-Xylene	0.112	---	0.0500	mg/L	50	---	0.113	---	---	0.5	30%	
o-Xylene	0.0632	---	0.0250	mg/L	50	---	0.0634	---	---	0.4	30%	



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QUALITY CONTROL (QC) SAMPLE RESULTS

TCLP Volatile Organic Compounds by EPA 1311/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051246 - EPA 1311/5030B TCLP Volatiles						Water						
Duplicate (9051246-DUP1)						Prepared: 05/24/19 10:48 Analyzed: 05/24/19 11:41						
QC Source Sample: COMP1 (A9E0508-05)												
Surr: 1,4-Difluorobenzene (Surr) Recovery: 106 % Limits: 80-120 % Dilution: 1x												
Toluene-d8 (Surr) 98 % 80-120 % "												
4-Bromofluorobenzene (Surr) 94 % 80-120 % "												
Matrix Spike (9051246-MS1)						Prepared: 05/24/19 10:48 Analyzed: 05/24/19 12:09						
QC Source Sample: COMP1 (A9E0508-05)												
1311/8260C												
Acetone	2.10	---	1.00	mg/L	50	2.00	ND	105	70-130%	---	---	
Benzene	1.89	---	0.0125	mg/L	50	1.00	0.720	117	70-130%	---	---	
Bromobenzene	1.06	---	0.0250	mg/L	50	1.00	ND	106	70-130%	---	---	
Bromochloromethane	1.32	---	0.0500	mg/L	50	1.00	ND	132	70-130%	---	---	Q-54a
Bromodichloromethane	1.28	---	0.0500	mg/L	50	1.00	ND	128	70-130%	---	---	Q-54g
Bromoform	1.27	---	0.0500	mg/L	50	1.00	ND	127	70-130%	---	---	Q-54f
Bromomethane	1.41	---	0.250	mg/L	50	1.00	ND	141	70-130%	---	---	E-05, Q-54e
2-Butanone (MEK)	2.16	---	0.500	mg/L	50	2.00	ND	108	70-130%	---	---	
n-Butylbenzene	1.16	---	0.0500	mg/L	50	1.00	ND	116	70-130%	---	---	
sec-Butylbenzene	1.13	---	0.0500	mg/L	50	1.00	ND	113	70-130%	---	---	
tert-Butylbenzene	1.07	---	0.0500	mg/L	50	1.00	ND	107	70-130%	---	---	
Carbon tetrachloride	1.31	---	0.0500	mg/L	50	1.00	ND	131	70-130%	---	---	Q-54
Chlorobenzene	1.08	---	0.0250	mg/L	50	1.00	ND	108	70-130%	---	---	
Chloroethane	0.885	---	0.250	mg/L	50	1.00	ND	89	70-130%	---	---	
Chloroform	1.20	---	0.0500	mg/L	50	1.00	ND	120	70-130%	---	---	
Chloromethane	1.01	---	0.250	mg/L	50	1.00	ND	101	70-130%	---	---	
2-Chlorotoluene	1.06	---	0.0500	mg/L	50	1.00	ND	106	70-130%	---	---	
4-Chlorotoluene	1.09	---	0.0500	mg/L	50	1.00	ND	109	70-130%	---	---	
1,2-Dibromo-3-chloropropane	0.931	---	0.250	mg/L	50	1.00	ND	93	70-130%	---	---	
Dibromochloromethane	1.14	---	0.0500	mg/L	50	1.00	ND	114	70-130%	---	---	
1,2-Dibromoethane (EDB)	1.10	---	0.0250	mg/L	50	1.00	ND	110	70-130%	---	---	
Dibromomethane	1.21	---	0.0500	mg/L	50	1.00	ND	121	70-130%	---	---	
1,2-Dichlorobenzene	1.03	---	0.0250	mg/L	50	1.00	ND	103	70-130%	---	---	
1,3-Dichlorobenzene	1.06	---	0.0250	mg/L	50	1.00	ND	106	70-130%	---	---	
1,4-Dichlorobenzene	1.04	---	0.0250	mg/L	50	1.00	ND	104	70-130%	---	---	
Dichlorodifluoromethane	1.18	---	0.0500	mg/L	50	1.00	ND	118	70-130%	---	---	

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Philip Nerenberg, Lab Director



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Portland, OR 97209

Project: **Mult 802 Decommissioning**

Project Number: **2708-60F**

Project Manager: **Rob Ede**

Report ID:

A9E0508 - 05 29 19 1543

QUALITY CONTROL (QC) SAMPLE RESULTS

TCLP Volatile Organic Compounds by EPA 1311/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051246 - EPA 1311/5030B TCLP Volatiles						Water						
Matrix Spike (9051246-MS1)						Prepared: 05/24/19 10:48 Analyzed: 05/24/19 12:09						
QC Source Sample: COMP1 (A9E0508-05)												
1,1-Dichloroethane	1.11	---	0.0250	mg/L	50	1.00	ND	111	70-130%	---	---	
1,1-Dichloroethene	1.03	---	0.0250	mg/L	50	1.00	ND	103	70-130%	---	---	
1,2-Dichloroethane (EDC)	1.19	---	0.0250	mg/L	50	1.00	ND	119	70-130%	---	---	
cis-1,2-Dichloroethene	1.18	---	0.0500	mg/L	50	1.00	ND	118	70-130%	---	---	
trans-1,2-Dichloroethene	1.08	---	0.0250	mg/L	50	1.00	ND	108	70-130%	---	---	
1,2-Dichloropropane	1.18	---	0.0250	mg/L	50	1.00	ND	118	70-130%	---	---	
1,3-Dichloropropane	1.10	---	0.0500	mg/L	50	1.00	ND	110	70-130%	---	---	
2,2-Dichloropropane	1.20	---	0.0500	mg/L	50	1.00	ND	120	70-130%	---	---	
1,1-Dichloropropene	1.18	---	0.0500	mg/L	50	1.00	ND	118	70-130%	---	---	
cis-1,3-Dichloropropene	1.02	---	0.0500	mg/L	50	1.00	ND	102	70-130%	---	---	
trans-1,3-Dichloropropene	1.14	---	0.0500	mg/L	50	1.00	ND	114	70-130%	---	---	
Ethylbenzene	1.27	---	0.0250	mg/L	50	1.00	0.126	114	70-130%	---	---	
Hexachlorobutadiene	1.04	---	0.250	mg/L	50	1.00	ND	104	70-130%	---	---	
2-Hexanone	1.96	---	0.500	mg/L	50	2.00	ND	98	70-130%	---	---	
Isopropylbenzene	1.11	---	0.0500	mg/L	50	1.00	ND	111	70-130%	---	---	
4-Isopropyltoluene	1.10	---	0.0500	mg/L	50	1.00	ND	110	70-130%	---	---	
4-Methyl-2-pentanone (MiBK)	2.00	---	0.500	mg/L	50	2.00	ND	100	70-130%	---	---	
Methyl tert-butyl ether (MTBE)	1.05	---	0.0500	mg/L	50	1.00	ND	105	70-130%	---	---	
Methylene chloride	1.29	---	0.250	mg/L	50	1.00	ND	102	70-130%	---	---	B, Q-54
Naphthalene	3.07	---	0.100	mg/L	50	1.00	1.76	131	70-130%	---	---	Q-01
n-Propylbenzene	1.15	---	0.0250	mg/L	50	1.00	ND	115	70-130%	---	---	
Styrene	1.19	---	0.0500	mg/L	50	1.00	ND	119	70-130%	---	---	
1,1,1,2-Tetrachloroethane	1.16	---	0.0250	mg/L	50	1.00	ND	116	70-130%	---	---	
1,1,2,2-Tetrachloroethane	1.09	---	0.0250	mg/L	50	1.00	ND	109	70-130%	---	---	
Tetrachloroethene (PCE)	1.11	---	0.0250	mg/L	50	1.00	ND	111	70-130%	---	---	
Toluene	1.37	---	0.0500	mg/L	50	1.00	0.263	111	70-130%	---	---	
1,2,3-Trichlorobenzene	0.964	---	0.0500	mg/L	50	1.00	ND	96	70-130%	---	---	
1,2,4-Trichlorobenzene	0.953	---	0.100	mg/L	50	1.00	ND	95	70-130%	---	---	
1,1,1-Trichloroethane	1.16	---	0.0250	mg/L	50	1.00	ND	116	70-130%	---	---	
1,1,2-Trichloroethane	1.07	---	0.0250	mg/L	50	1.00	ND	107	70-130%	---	---	
Trichloroethene (TCE)	1.12	---	0.0250	mg/L	50	1.00	ND	112	70-130%	---	---	
Trichlorofluoromethane	1.03	---	0.100	mg/L	50	1.00	ND	103	70-130%	---	---	
1,2,3-Trichloropropane	1.10	---	0.0500	mg/L	50	1.00	ND	110	70-130%	---	---	

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QUALITY CONTROL (QC) SAMPLE RESULTS

TCLP Volatile Organic Compounds by EPA 1311/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051246 - EPA 1311/5030B TCLP Volatiles						Water						
Matrix Spike (9051246-MS1)						Prepared: 05/24/19 10:48 Analyzed: 05/24/19 12:09						
QC Source Sample: COMP1 (A9E0508-05)												
1,2,4-Trimethylbenzene	1.18	---	0.0500	mg/L	50	1.00	0.0418	114	70-130%	---	---	
1,3,5-Trimethylbenzene	1.13	---	0.0500	mg/L	50	1.00	ND	113	70-130%	---	---	
Vinyl chloride	0.890	---	0.0250	mg/L	50	1.00	ND	89	70-130%	---	---	
m,p-Xylene	2.41	---	0.0500	mg/L	50	2.00	0.113	115	70-130%	---	---	
o-Xylene	1.15	---	0.0250	mg/L	50	1.00	0.0634	109	70-130%	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 105 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>96 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>91 %</i>		<i>80-120 %</i>		<i>"</i>						



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QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051065 - EPA 3546						Solid						
Blank (9051065-BLK1)			Prepared: 05/20/19 16:13 Analyzed: 05/21/19 09:51									
EPA 8270D												
Acenaphthene	148	---	6.68	ug/kg	1	---	---	---	---	---	---	B, Q-29
Acenaphthylene	ND	---	6.68	ug/kg	1	---	---	---	---	---	---	
Anthracene	ND	---	6.68	ug/kg	1	---	---	---	---	---	---	B-02
Benz(a)anthracene	ND	---	6.68	ug/kg	1	---	---	---	---	---	---	
Benzo(a)pyrene	ND	---	10.0	ug/kg	1	---	---	---	---	---	---	
Benzo(b)fluoranthene	ND	---	10.0	ug/kg	1	---	---	---	---	---	---	
Benzo(k)fluoranthene	ND	---	10.0	ug/kg	1	---	---	---	---	---	---	
Benzo(g,h,i)perylene	ND	---	6.68	ug/kg	1	---	---	---	---	---	---	
Chrysene	ND	---	6.68	ug/kg	1	---	---	---	---	---	---	
Dibenz(a,h)anthracene	ND	---	6.68	ug/kg	1	---	---	---	---	---	---	
Fluoranthene	ND	---	6.68	ug/kg	1	---	---	---	---	---	---	B-02
Fluorene	26.2	---	6.68	ug/kg	1	---	---	---	---	---	---	B
Indeno(1,2,3-cd)pyrene	ND	---	6.68	ug/kg	1	---	---	---	---	---	---	
1-Methylnaphthalene	108	---	13.3	ug/kg	1	---	---	---	---	---	---	B
2-Methylnaphthalene	223	---	13.3	ug/kg	1	---	---	---	---	---	---	B, Q-29
Naphthalene	1070	---	13.3	ug/kg	1	---	---	---	---	---	---	B, Q-29
Phenanthrene	27.7	---	6.68	ug/kg	1	---	---	---	---	---	---	B
Pyrene	ND	---	6.68	ug/kg	1	---	---	---	---	---	---	B-02
Carbazole	ND	---	10.0	ug/kg	1	---	---	---	---	---	---	
Dibenzofuran	46.6	---	6.68	ug/kg	1	---	---	---	---	---	---	B
4-Chloro-3-methylphenol	ND	---	66.8	ug/kg	1	---	---	---	---	---	---	
2-Chlorophenol	ND	---	33.2	ug/kg	1	---	---	---	---	---	---	
2,4-Dichlorophenol	ND	---	33.2	ug/kg	1	---	---	---	---	---	---	
2,4-Dimethylphenol	ND	---	33.2	ug/kg	1	---	---	---	---	---	---	
2,4-Dinitrophenol	ND	---	167	ug/kg	1	---	---	---	---	---	---	
4,6-Dinitro-2-methylphenol	ND	---	167	ug/kg	1	---	---	---	---	---	---	
2-Methylphenol	ND	---	16.7	ug/kg	1	---	---	---	---	---	---	B-02
3+4-Methylphenol(s)	ND	---	16.7	ug/kg	1	---	---	---	---	---	---	B-02
2-Nitrophenol	ND	---	66.8	ug/kg	1	---	---	---	---	---	---	
4-Nitrophenol	ND	---	66.8	ug/kg	1	---	---	---	---	---	---	
Pentachlorophenol (PCP)	ND	---	66.8	ug/kg	1	---	---	---	---	---	---	
Phenol	23.4	---	13.3	ug/kg	1	---	---	---	---	---	---	B
2,3,4,6-Tetrachlorophenol	ND	---	33.2	ug/kg	1	---	---	---	---	---	---	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051065 - EPA 3546						Solid						
Blank (9051065-BLK1)			Prepared: 05/20/19 16:13 Analyzed: 05/21/19 09:51									
2,3,5,6-Tetrachlorophenol	ND	---	33.2	ug/kg	1	---	---	---	---	---	---	
2,4,5-Trichlorophenol	ND	---	33.2	ug/kg	1	---	---	---	---	---	---	
2,4,6-Trichlorophenol	ND	---	33.2	ug/kg	1	---	---	---	---	---	---	
Bis(2-ethylhexyl)phthalate	ND	---	100	ug/kg	1	---	---	---	---	---	---	
Butyl benzyl phthalate	ND	---	66.8	ug/kg	1	---	---	---	---	---	---	
Diethylphthalate	ND	---	66.8	ug/kg	1	---	---	---	---	---	---	
Dimethylphthalate	ND	---	66.8	ug/kg	1	---	---	---	---	---	---	
Di-n-butylphthalate	ND	---	66.8	ug/kg	1	---	---	---	---	---	---	
Di-n-octyl phthalate	ND	---	66.8	ug/kg	1	---	---	---	---	---	---	
N-Nitrosodimethylamine	ND	---	16.7	ug/kg	1	---	---	---	---	---	---	
N-Nitroso-di-n-propylamine	ND	---	16.7	ug/kg	1	---	---	---	---	---	---	
N-Nitrosodiphenylamine	ND	---	16.7	ug/kg	1	---	---	---	---	---	---	
Bis(2-Chloroethoxy) methane	ND	---	16.7	ug/kg	1	---	---	---	---	---	---	
Bis(2-Chloroethyl) ether	ND	---	16.7	ug/kg	1	---	---	---	---	---	---	
2,2'-Oxybis(1-Chloropropane)	ND	---	16.7	ug/kg	1	---	---	---	---	---	---	
Hexachlorobenzene	ND	---	6.68	ug/kg	1	---	---	---	---	---	---	
Hexachlorobutadiene	ND	---	16.7	ug/kg	1	---	---	---	---	---	---	
Hexachlorocyclopentadiene	ND	---	33.2	ug/kg	1	---	---	---	---	---	---	
Hexachloroethane	ND	---	16.7	ug/kg	1	---	---	---	---	---	---	
2-Chloronaphthalene	ND	---	6.68	ug/kg	1	---	---	---	---	---	---	
1,2-Dichlorobenzene	ND	---	16.7	ug/kg	1	---	---	---	---	---	---	
1,3-Dichlorobenzene	ND	---	16.7	ug/kg	1	---	---	---	---	---	---	
1,4-Dichlorobenzene	ND	---	16.7	ug/kg	1	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	---	16.7	ug/kg	1	---	---	---	---	---	---	
4-Bromophenyl phenyl ether	ND	---	16.7	ug/kg	1	---	---	---	---	---	---	
4-Chlorophenyl phenyl ether	ND	---	16.7	ug/kg	1	---	---	---	---	---	---	
Aniline	ND	---	33.2	ug/kg	1	---	---	---	---	---	---	
4-Chloroaniline	ND	---	16.7	ug/kg	1	---	---	---	---	---	---	
2-Nitroaniline	ND	---	133	ug/kg	1	---	---	---	---	---	---	
3-Nitroaniline	ND	---	133	ug/kg	1	---	---	---	---	---	---	
4-Nitroaniline	ND	---	133	ug/kg	1	---	---	---	---	---	---	
Nitrobenzene	ND	---	66.8	ug/kg	1	---	---	---	---	---	---	
2,4-Dinitrotoluene	ND	---	66.8	ug/kg	1	---	---	---	---	---	---	
2,6-Dinitrotoluene	ND	---	66.8	ug/kg	1	---	---	---	---	---	---	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051065 - EPA 3546						Solid						
Blank (9051065-BLK1)			Prepared: 05/20/19 16:13 Analyzed: 05/21/19 09:51									
Benzoic acid	ND	---	832	ug/kg	1	---	---	---	---	---	---	
Benzyl alcohol	ND	---	33.2	ug/kg	1	---	---	---	---	---	---	
Isophorone	ND	---	16.7	ug/kg	1	---	---	---	---	---	---	
Azobenzene (1,2-DPH)	ND	---	16.7	ug/kg	1	---	---	---	---	---	---	
Bis(2-Ethylhexyl) adipate	ND	---	167	ug/kg	1	---	---	---	---	---	---	
3,3'-Dichlorobenzidine	ND	---	134	ug/kg	1	---	---	---	---	---	---	Q-52
1,2-Dinitrobenzene	ND	---	167	ug/kg	1	---	---	---	---	---	---	
1,3-Dinitrobenzene	ND	---	167	ug/kg	1	---	---	---	---	---	---	
1,4-Dinitrobenzene	ND	---	167	ug/kg	1	---	---	---	---	---	---	
Pyridine	ND	---	33.2	ug/kg	1	---	---	---	---	---	---	
<i>Surr: Nitrobenzene-d5 (Surr)</i>		<i>Recovery: 87 %</i>		<i>Limits: 37-122 %</i>		<i>Dilution: 1x</i>						
<i>2-Fluorobiphenyl (Surr)</i>		<i>89 %</i>		<i>44-115 %</i>		<i>"</i>						
<i>Phenol-d6 (Surr)</i>		<i>79 %</i>		<i>33-122 %</i>		<i>"</i>						
<i>p-Terphenyl-d14 (Surr)</i>		<i>94 %</i>		<i>54-127 %</i>		<i>"</i>						
<i>2-Fluorophenol (Surr)</i>		<i>81 %</i>		<i>35-115 %</i>		<i>"</i>						
<i>2,4,6-Tribromophenol (Surr)</i>		<i>87 %</i>		<i>39-132 %</i>		<i>"</i>						
LCS (9051065-BS1)						Prepared: 05/20/19 16:13 Analyzed: 05/21/19 10:28						Q-18
EPA 8270D												
Acenaphthene	682	---	6.68	ug/kg	1	533	---	128	40-122%	---	---	B, Q-29
Acenaphthylene	567	---	6.68	ug/kg	1	533	---	106	32-132%	---	---	
Anthracene	550	---	6.68	ug/kg	1	533	---	103	47-123%	---	---	B-02
Benz(a)anthracene	557	---	6.68	ug/kg	1	533	---	104	49-126%	---	---	
Benzo(a)pyrene	592	---	10.0	ug/kg	1	533	---	111	45-129%	---	---	
Benzo(b)fluoranthene	545	---	10.0	ug/kg	1	533	---	102	45-132%	---	---	
Benzo(k)fluoranthene	539	---	10.0	ug/kg	1	533	---	101	47-132%	---	---	
Benzo(g,h,i)perylene	565	---	6.68	ug/kg	1	533	---	106	43-134%	---	---	
Chrysene	542	---	6.68	ug/kg	1	533	---	102	50-124%	---	---	
Dibenz(a,h)anthracene	558	---	6.68	ug/kg	1	533	---	105	45-134%	---	---	
Fluoranthene	554	---	6.68	ug/kg	1	533	---	104	50-127%	---	---	B-02
Fluorene	546	---	6.68	ug/kg	1	533	---	102	43-125%	---	---	B
Indeno(1,2,3-cd)pyrene	538	---	6.68	ug/kg	1	533	---	101	45-133%	---	---	
1-Methylnaphthalene	617	---	13.3	ug/kg	1	533	---	116	40-120%	---	---	B
2-Methylnaphthalene	740	---	13.3	ug/kg	1	533	---	139	38-122%	---	---	B, Q-29

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QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051065 - EPA 3546						Solid						
LCS (9051065-BS1)						Prepared: 05/20/19 16:13 Analyzed: 05/21/19 10:28						Q-18
Naphthalene	1450	---	13.3	ug/kg	1	533	---	273	35-123%	---	---	Q-29, B
Phenanthrene	561	---	6.68	ug/kg	1	533	---	105	50-121%	---	---	B
Pyrene	546	---	6.68	ug/kg	1	533	---	102	47-127%	---	---	B-02
Carbazole	557	---	10.0	ug/kg	1	533	---	104	50-122%	---	---	
Dibenzofuran	606	---	6.68	ug/kg	1	533	---	114	44-120%	---	---	B
4-Chloro-3-methylphenol	521	---	66.8	ug/kg	1	533	---	98	45-122%	---	---	
2-Chlorophenol	537	---	33.2	ug/kg	1	533	---	101	34-121%	---	---	
2,4-Dichlorophenol	560	---	33.2	ug/kg	1	533	---	105	40-122%	---	---	
2,4-Dimethylphenol	584	---	33.2	ug/kg	1	533	---	109	30-127%	---	---	
2,4-Dinitrophenol	534	---	167	ug/kg	1	533	---	100	5-137%	---	---	
4,6-Dinitro-2-methylphenol	645	---	167	ug/kg	1	533	---	121	29-132%	---	---	
2-Methylphenol	550	---	16.7	ug/kg	1	533	---	103	32-122%	---	---	B-02
3+4-Methylphenol(s)	577	---	16.7	ug/kg	1	533	---	108	34-120%	---	---	B-02
2-Nitrophenol	563	---	66.8	ug/kg	1	533	---	106	36-123%	---	---	
4-Nitrophenol	520	---	66.8	ug/kg	1	533	---	97	30-132%	---	---	
Pentachlorophenol (PCP)	560	---	66.8	ug/kg	1	533	---	105	25-133%	---	---	
Phenol	547	---	13.3	ug/kg	1	533	---	103	34-120%	---	---	B
2,3,4,6-Tetrachlorophenol	545	---	33.2	ug/kg	1	533	---	102	44-125%	---	---	
2,3,5,6-Tetrachlorophenol	555	---	33.2	ug/kg	1	533	---	104	40-120%	---	---	
2,4,5-Trichlorophenol	566	---	33.2	ug/kg	1	533	---	106	41-124%	---	---	
2,4,6-Trichlorophenol	548	---	33.2	ug/kg	1	533	---	103	39-126%	---	---	
Bis(2-ethylhexyl)phthalate	596	---	100	ug/kg	1	533	---	112	51-133%	---	---	
Butyl benzyl phthalate	590	---	66.8	ug/kg	1	533	---	111	48-132%	---	---	
Diethylphthalate	573	---	66.8	ug/kg	1	533	---	107	50-124%	---	---	
Dimethylphthalate	571	---	66.8	ug/kg	1	533	---	107	48-124%	---	---	
Di-n-butylphthalate	576	---	66.8	ug/kg	1	533	---	108	51-128%	---	---	
Di-n-octyl phthalate	570	---	66.8	ug/kg	1	533	---	107	44-140%	---	---	
N-Nitrosodimethylamine	470	---	16.7	ug/kg	1	533	---	88	23-120%	---	---	
N-Nitroso-di-n-propylamine	507	---	16.7	ug/kg	1	533	---	95	36-120%	---	---	
N-Nitrosodiphenylamine	549	---	16.7	ug/kg	1	533	---	103	38-127%	---	---	
Bis(2-Chloroethoxy) methane	510	---	16.7	ug/kg	1	533	---	96	36-121%	---	---	
Bis(2-Chloroethyl) ether	489	---	16.7	ug/kg	1	533	---	92	31-120%	---	---	
2,2'-Oxybis(1-Chloropropane)	456	---	16.7	ug/kg	1	533	---	86	33-131%	---	---	
Hexachlorobenzene	539	---	6.68	ug/kg	1	533	---	101	44-122%	---	---	



Hahn and Associates
434 NW 6th Ave. Suite 203
Portland, OR 97209

Project: **Mult 802 Decommissioning**
Project Number: **2708-60F**
Project Manager: **Rob Ede**

Report ID:
A9E0508 - 05 29 19 1543

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051065 - EPA 3546						Solid						
LCS (9051065-BS1)						Prepared: 05/20/19 16:13 Analyzed: 05/21/19 10:28						Q-18
Hexachlorobutadiene	520	---	16.7	ug/kg	1	533	---	98	32-123%	---	---	
Hexachlorocyclopentadiene	622	---	33.2	ug/kg	1	533	---	117	5-140%	---	---	
Hexachloroethane	521	---	16.7	ug/kg	1	533	---	98	28-120%	---	---	
2-Chloronaphthalene	580	---	6.68	ug/kg	1	533	---	109	41-120%	---	---	
1,2-Dichlorobenzene	523	---	16.7	ug/kg	1	533	---	98	33-120%	---	---	
1,3-Dichlorobenzene	495	---	16.7	ug/kg	1	533	---	93	30-120%	---	---	
1,4-Dichlorobenzene	523	---	16.7	ug/kg	1	533	---	98	31-120%	---	---	
1,2,4-Trichlorobenzene	517	---	16.7	ug/kg	1	533	---	97	34-120%	---	---	
4-Bromophenyl phenyl ether	552	---	16.7	ug/kg	1	533	---	104	46-124%	---	---	
4-Chlorophenyl phenyl ether	543	---	16.7	ug/kg	1	533	---	102	45-121%	---	---	
Aniline	378	---	33.2	ug/kg	1	533	---	71	7-120%	---	---	Q-31
4-Chloroaniline	307	---	16.7	ug/kg	1	533	---	58	16-120%	---	---	Q-31
2-Nitroaniline	591	---	133	ug/kg	1	533	---	111	44-127%	---	---	
3-Nitroaniline	638	---	133	ug/kg	1	533	---	120	33-120%	---	---	Q-41
4-Nitroaniline	589	---	133	ug/kg	1	533	---	110	35-120%	---	---	
Nitrobenzene	507	---	66.8	ug/kg	1	533	---	95	34-122%	---	---	
2,4-Dinitrotoluene	571	---	66.8	ug/kg	1	533	---	107	48-126%	---	---	
2,6-Dinitrotoluene	603	---	66.8	ug/kg	1	533	---	113	46-124%	---	---	
Benzoic acid	612	---	418	ug/kg	1	1070	---	57	5-140%	---	---	
Benzyl alcohol	525	---	33.2	ug/kg	1	533	---	98	29-122%	---	---	
Isophorone	516	---	16.7	ug/kg	1	533	---	97	30-122%	---	---	
Azobenzene (1,2-DPH)	545	---	16.7	ug/kg	1	533	---	102	39-125%	---	---	
Bis(2-Ethylhexyl) adipate	559	---	167	ug/kg	1	533	---	105	60-121%	---	---	
3,3'-Dichlorobenzidine	2960	---	134	ug/kg	1	1070	---	277	22-121%	---	---	Q-29, Q-41
1,2-Dinitrobenzene	559	---	167	ug/kg	1	533	---	105	44-120%	---	---	
1,3-Dinitrobenzene	591	---	167	ug/kg	1	533	---	111	42-127%	---	---	
1,4-Dinitrobenzene	594	---	167	ug/kg	1	533	---	111	37-132%	---	---	
Pyridine	375	---	33.2	ug/kg	1	533	---	70	5-120%	---	---	
<i>Surr: Nitrobenzene-d5 (Surr)</i>		<i>Recovery: 83 %</i>		<i>Limits: 37-122 %</i>		<i>Dilution: 1x</i>						
<i>2-Fluorobiphenyl (Surr)</i>		<i>93 %</i>		<i>44-115 %</i>		<i>"</i>						
<i>Phenol-d6 (Surr)</i>		<i>89 %</i>		<i>33-122 %</i>		<i>"</i>						
<i>p-Terphenyl-d14 (Surr)</i>		<i>97 %</i>		<i>54-127 %</i>		<i>"</i>						
<i>2-Fluorophenol (Surr)</i>		<i>89 %</i>		<i>35-115 %</i>		<i>"</i>						
<i>2,4,6-Tribromophenol (Surr)</i>		<i>105 %</i>		<i>39-132 %</i>		<i>"</i>						



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QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051065 - EPA 3546							Solid					
Duplicate (9051065-DUP1)			Prepared: 05/20/19 16:13 Analyzed: 05/21/19 11:40									
QC Source Sample: COMP1 (A9E0508-05)												
EPA 8270D												
Acenaphthene	ND	---	807000	ug/kg	10000	---	880000	---	---	***	30%	B
Acenaphthylene	ND	---	807000	ug/kg	10000	---	ND	---	---	---	30%	
Anthracene	1970000	---	807000	ug/kg	10000	---	2050000	---	---	4	30%	B-02
Benz(a)anthracene	6290000	---	807000	ug/kg	10000	---	7230000	---	---	14	30%	
Benzo(a)pyrene	8270000	---	1210000	ug/kg	10000	---	9030000	---	---	9	30%	
Benzo(b)fluoranthene	9400000	---	1210000	ug/kg	10000	---	10100000	---	---	7	30%	M-05
Benzo(k)fluoranthene	3200000	---	1210000	ug/kg	10000	---	3740000	---	---	15	30%	M-05
Benzo(g,h,i)perylene	6320000	---	807000	ug/kg	10000	---	6990000	---	---	10	30%	
Chrysene	7370000	---	807000	ug/kg	10000	---	7850000	---	---	6	30%	
Dibenz(a,h)anthracene	961000	---	807000	ug/kg	10000	---	973000	---	---	1	30%	
Fluoranthene	17700000	---	807000	ug/kg	10000	---	18700000	---	---	6	30%	B-02
Fluorene	ND	---	807000	ug/kg	10000	---	445000	---	---	***	30%	B
Indeno(1,2,3-cd)pyrene	6140000	---	807000	ug/kg	10000	---	6560000	---	---	7	30%	
1-Methylnaphthalene	ND	---	1610000	ug/kg	10000	---	ND	---	---	---	30%	
2-Methylnaphthalene	ND	---	1610000	ug/kg	10000	---	ND	---	---	---	30%	
Naphthalene	ND	---	1610000	ug/kg	10000	---	970000	---	---	***	30%	Q-17
Phenanthrene	8650000	---	807000	ug/kg	10000	---	8820000	---	---	2	30%	B
Pyrene	17400000	---	807000	ug/kg	10000	---	18500000	---	---	6	30%	B-02
Carbazole	2170000	---	1210000	ug/kg	10000	---	2280000	---	---	5	30%	
Dibenzofuran	ND	---	807000	ug/kg	10000	---	ND	---	---	---	30%	
4-Chloro-3-methylphenol	ND	---	8070000	ug/kg	10000	---	ND	---	---	---	30%	
2-Chlorophenol	ND	---	4020000	ug/kg	10000	---	ND	---	---	---	30%	
2,4-Dichlorophenol	ND	---	4020000	ug/kg	10000	---	ND	---	---	---	30%	
2,4-Dimethylphenol	ND	---	4020000	ug/kg	10000	---	ND	---	---	---	30%	
2,4-Dinitrophenol	ND	---	20200000	ug/kg	10000	---	ND	---	---	---	30%	
4,6-Dinitro-2-methylphenol	ND	---	20200000	ug/kg	10000	---	ND	---	---	---	30%	
2-Methylphenol	ND	---	2020000	ug/kg	10000	---	ND	---	---	---	30%	
3+4-Methylphenol(s)	ND	---	2020000	ug/kg	10000	---	ND	---	---	---	30%	
2-Nitrophenol	ND	---	8070000	ug/kg	10000	---	ND	---	---	---	30%	
4-Nitrophenol	ND	---	8070000	ug/kg	10000	---	ND	---	---	---	30%	
Pentachlorophenol (PCP)	ND	---	8070000	ug/kg	10000	---	ND	---	---	---	30%	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051065 - EPA 3546						Solid						
Duplicate (9051065-DUP1)			Prepared: 05/20/19 16:13 Analyzed: 05/21/19 11:40									
QC Source Sample: COMP1 (A9E0508-05)												
Phenol	ND	---	1610000	ug/kg	10000	---	ND	---	---	---	30%	
2,3,4,6-Tetrachlorophenol	ND	---	4020000	ug/kg	10000	---	ND	---	---	---	30%	
2,3,5,6-Tetrachlorophenol	ND	---	4020000	ug/kg	10000	---	ND	---	---	---	30%	
2,4,5-Trichlorophenol	ND	---	4020000	ug/kg	10000	---	ND	---	---	---	30%	
2,4,6-Trichlorophenol	ND	---	4020000	ug/kg	10000	---	ND	---	---	---	30%	
Bis(2-ethylhexyl)phthalate	ND	---	12100000	ug/kg	10000	---	ND	---	---	---	30%	
Butyl benzyl phthalate	ND	---	8070000	ug/kg	10000	---	ND	---	---	---	30%	
Diethylphthalate	ND	---	8070000	ug/kg	10000	---	ND	---	---	---	30%	
Dimethylphthalate	ND	---	8070000	ug/kg	10000	---	ND	---	---	---	30%	
Di-n-butylphthalate	ND	---	8070000	ug/kg	10000	---	ND	---	---	---	30%	
Di-n-octyl phthalate	ND	---	8070000	ug/kg	10000	---	ND	---	---	---	30%	
N-Nitrosodimethylamine	ND	---	2020000	ug/kg	10000	---	ND	---	---	---	30%	
N-Nitroso-di-n-propylamine	ND	---	2020000	ug/kg	10000	---	ND	---	---	---	30%	
N-Nitrosodiphenylamine	ND	---	2020000	ug/kg	10000	---	ND	---	---	---	30%	
Bis(2-Chloroethoxy) methane	ND	---	2020000	ug/kg	10000	---	ND	---	---	---	30%	
Bis(2-Chloroethyl) ether	ND	---	2020000	ug/kg	10000	---	ND	---	---	---	30%	
2,2'-Oxybis(1-Chloropropane)	ND	---	2020000	ug/kg	10000	---	ND	---	---	---	30%	
Hexachlorobenzene	ND	---	807000	ug/kg	10000	---	ND	---	---	---	30%	
Hexachlorobutadiene	ND	---	2020000	ug/kg	10000	---	ND	---	---	---	30%	
Hexachlorocyclopentadiene	ND	---	4020000	ug/kg	10000	---	ND	---	---	---	30%	
Hexachloroethane	ND	---	2020000	ug/kg	10000	---	ND	---	---	---	30%	
2-Chloronaphthalene	ND	---	807000	ug/kg	10000	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	---	2020000	ug/kg	10000	---	ND	---	---	---	30%	
1,3-Dichlorobenzene	ND	---	2020000	ug/kg	10000	---	ND	---	---	---	30%	
1,4-Dichlorobenzene	ND	---	2020000	ug/kg	10000	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	---	2020000	ug/kg	10000	---	ND	---	---	---	30%	
4-Bromophenyl phenyl ether	ND	---	2020000	ug/kg	10000	---	ND	---	---	---	30%	
4-Chlorophenyl phenyl ether	ND	---	2020000	ug/kg	10000	---	ND	---	---	---	30%	
Aniline	ND	---	4020000	ug/kg	10000	---	ND	---	---	---	30%	
4-Chloroaniline	ND	---	2020000	ug/kg	10000	---	ND	---	---	---	30%	
2-Nitroaniline	ND	---	16100000	ug/kg	10000	---	ND	---	---	---	30%	
3-Nitroaniline	ND	---	16100000	ug/kg	10000	---	ND	---	---	---	30%	
4-Nitroaniline	ND	---	16100000	ug/kg	10000	---	ND	---	---	---	30%	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051065 - EPA 3546						Solid						
Duplicate (9051065-DUP1)			Prepared: 05/20/19 16:13 Analyzed: 05/21/19 11:40									
QC Source Sample: COMP1 (A9E0508-05)												
Nitrobenzene	ND	---	8070000	ug/kg	10000	---	ND	---	---	---	30%	
2,4-Dinitrotoluene	ND	---	8070000	ug/kg	10000	---	ND	---	---	---	30%	
2,6-Dinitrotoluene	ND	---	8070000	ug/kg	10000	---	ND	---	---	---	30%	
Benzoic acid	ND	---	101000000	ug/kg	10000	---	ND	---	---	---	30%	
Benzyl alcohol	ND	---	4020000	ug/kg	10000	---	ND	---	---	---	30%	
Isophorone	ND	---	2020000	ug/kg	10000	---	ND	---	---	---	30%	
Azobenzene (1,2-DPH)	ND	---	2020000	ug/kg	10000	---	ND	---	---	---	30%	
Bis(2-Ethylhexyl) adipate	ND	---	20200000	ug/kg	10000	---	ND	---	---	---	30%	
3,3'-Dichlorobenzidine	ND	---	16100000	ug/kg	10000	---	ND	---	---	---	30%	Q-52
1,2-Dinitrobenzene	ND	---	20200000	ug/kg	10000	---	ND	---	---	---	30%	
1,3-Dinitrobenzene	ND	---	20200000	ug/kg	10000	---	ND	---	---	---	30%	
1,4-Dinitrobenzene	ND	---	20200000	ug/kg	10000	---	ND	---	---	---	30%	
Pyridine	ND	---	4020000	ug/kg	10000	---	ND	---	---	---	30%	
<i>Surr: Nitrobenzene-d5 (Surr)</i>		<i>Recovery: 865 %</i>		<i>Limits: 37-122 %</i>		<i>Dilution: 10000x</i>						
<i>2-Fluorobiphenyl (Surr)</i>		<i>%</i>		<i>44-115 %</i>		<i>"</i>						
<i>Phenol-d6 (Surr)</i>		<i>%</i>		<i>33-122 %</i>		<i>"</i>						
<i>p-Terphenyl-d14 (Surr)</i>		<i>%</i>		<i>54-127 %</i>		<i>"</i>						
<i>2-Fluorophenol (Surr)</i>		<i>%</i>		<i>35-115 %</i>		<i>"</i>						
<i>2,4,6-Tribromophenol (Surr)</i>		<i>%</i>		<i>39-132 %</i>		<i>"</i>						



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QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020A (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051011 - EPA 3051A												
Solid												
Blank (9051011-BLK1)												
Prepared: 05/17/19 12:15 Analyzed: 05/20/19 20:55												
<u>EPA 6020A</u>												
Antimony	ND	---	0.962	mg/kg	10	---	---	---	---	---	---	
Arsenic	ND	---	0.962	mg/kg	10	---	---	---	---	---	---	
Barium	ND	---	0.962	mg/kg	10	---	---	---	---	---	---	
Beryllium	ND	---	0.192	mg/kg	10	---	---	---	---	---	---	
Cadmium	ND	---	0.192	mg/kg	10	---	---	---	---	---	---	
Chromium	ND	---	0.962	mg/kg	10	---	---	---	---	---	---	
Copper	ND	---	0.962	mg/kg	10	---	---	---	---	---	---	
Iron	ND	---	48.1	mg/kg	10	---	---	---	---	---	---	
Lead	ND	---	0.192	mg/kg	10	---	---	---	---	---	---	
Manganese	ND	---	0.962	mg/kg	10	---	---	---	---	---	---	
Mercury	ND	---	0.0769	mg/kg	10	---	---	---	---	---	---	
Nickel	ND	---	0.962	mg/kg	10	---	---	---	---	---	---	
Selenium	ND	---	0.962	mg/kg	10	---	---	---	---	---	---	
Silver	ND	---	0.192	mg/kg	10	---	---	---	---	---	---	
Thallium	ND	---	0.192	mg/kg	10	---	---	---	---	---	---	
Vanadium	ND	---	0.962	mg/kg	10	---	---	---	---	---	---	
Zinc	ND	---	3.85	mg/kg	10	---	---	---	---	---	---	

Blank (9051011-BLK2)												
Prepared: 05/17/19 12:15 Analyzed: 05/21/19 19:25												
<u>EPA 6020A</u>												
Aluminum	ND	---	48.1	mg/kg	10	---	---	---	---	---	---	
Calcium	ND	---	96.2	mg/kg	10	---	---	---	---	---	---	
Magnesium	ND	---	48.1	mg/kg	10	---	---	---	---	---	---	
Potassium	ND	---	96.2	mg/kg	10	---	---	---	---	---	---	
Sodium	ND	---	96.2	mg/kg	10	---	---	---	---	---	---	Q-16

LCS (9051011-BS1)												
Prepared: 05/17/19 12:15 Analyzed: 05/20/19 20:59												
<u>EPA 6020A</u>												
Antimony	24.2	---	1.00	mg/kg	10	25.0	---	97	80-120%	---	---	
Arsenic	50.5	---	1.00	mg/kg	10	50.0	---	101	80-120%	---	---	
Barium	51.9	---	1.00	mg/kg	10	50.0	---	104	80-120%	---	---	
Beryllium	23.9	---	0.200	mg/kg	10	25.0	---	96	80-120%	---	---	
Cadmium	50.2	---	0.200	mg/kg	10	50.0	---	100	80-120%	---	---	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020A (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051011 - EPA 3051A												
Solid												
LCS (9051011-BS1)												
Prepared: 05/17/19 12:15 Analyzed: 05/20/19 20:59												
Chromium	51.7	---	1.00	mg/kg	10	50.0	---	103	80-120%	---	---	
Copper	50.6	---	1.00	mg/kg	10	50.0	---	101	80-120%	---	---	
Iron	2550	---	50.0	mg/kg	10	2500	---	102	80-120%	---	---	
Lead	48.6	---	0.200	mg/kg	10	50.0	---	97	80-120%	---	---	
Manganese	51.7	---	1.00	mg/kg	10	50.0	---	103	80-120%	---	---	
Mercury	0.969	---	0.0800	mg/kg	10	1.00	---	97	80-120%	---	---	
Nickel	52.3	---	1.00	mg/kg	10	50.0	---	105	80-120%	---	---	
Selenium	22.4	---	1.00	mg/kg	10	25.0	---	90	80-120%	---	---	
Silver	24.8	---	0.200	mg/kg	10	25.0	---	99	80-120%	---	---	
Thallium	24.6	---	0.200	mg/kg	10	25.0	---	99	80-120%	---	---	
Vanadium	50.5	---	1.00	mg/kg	10	50.0	---	101	80-120%	---	---	
Zinc	52.8	---	4.00	mg/kg	10	50.0	---	106	80-120%	---	---	

LCS (9051011-BS2)												
Prepared: 05/17/19 12:15 Analyzed: 05/21/19 19:29												
<u>EPA 6020A</u>												
Aluminum	2420	---	50.0	mg/kg	10	2500	---	97	80-120%	---	---	
Calcium	2550	---	100	mg/kg	10	2500	---	102	80-120%	---	---	
Magnesium	2410	---	50.0	mg/kg	10	2500	---	96	80-120%	---	---	
Potassium	2600	---	100	mg/kg	10	2500	---	104	80-120%	---	---	
Sodium	2580	---	100	mg/kg	10	2500	---	103	80-120%	---	---	Q-16

Duplicate (9051011-DUP1)												
Prepared: 05/17/19 12:15 Analyzed: 05/20/19 21:21												
<u>QC Source Sample: COMP1 (A9E0508-05)</u>												
<u>EPA 6020A</u>												
Aluminum	1710	---	49.9	mg/kg	10	---	1690	---	---	0.8	40%	
Antimony	ND	---	0.998	mg/kg	10	---	ND	---	---	---	40%	
Arsenic	1.33	---	0.998	mg/kg	10	---	1.66	---	---	22	40%	
Barium	15.6	---	0.998	mg/kg	10	---	20.5	---	---	27	40%	
Beryllium	ND	---	0.200	mg/kg	10	---	0.211	---	---	***	40%	
Cadmium	0.557	---	0.200	mg/kg	10	---	0.349	---	---	46	40%	Q-05
Calcium	509	---	99.8	mg/kg	10	---	559	---	---	9	40%	
Chromium	2.38	---	0.998	mg/kg	10	---	2.83	---	---	18	40%	
Copper	7.83	---	0.998	mg/kg	10	---	10.9	---	---	33	40%	
Iron	33800	---	49.9	mg/kg	10	---	30800	---	---	9	40%	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020A (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051011 - EPA 3051A												
Solid												
Duplicate (9051011-DUP1) Prepared: 05/17/19 12:15 Analyzed: 05/20/19 21:21												
<u>QC Source Sample: COMP1 (A9E0508-05)</u>												
Lead	22.8	---	0.200	mg/kg	10	---	26.8	---	---	16	40%	
Magnesium	106	---	49.9	mg/kg	10	---	82.2	---	---	25	40%	
Manganese	362	---	0.998	mg/kg	10	---	363	---	---	0.3	40%	
Mercury	ND	---	0.0798	mg/kg	10	---	ND	---	---	---	40%	
Nickel	9.17	---	0.998	mg/kg	10	---	7.86	---	---	15	40%	
Potassium	ND	---	99.8	mg/kg	10	---	ND	---	---	---	40%	
Selenium	ND	---	0.998	mg/kg	10	---	ND	---	---	---	40%	
Silver	ND	---	0.200	mg/kg	10	---	ND	---	---	---	40%	
Thallium	ND	---	0.200	mg/kg	10	---	ND	---	---	---	40%	
Vanadium	11.9	---	0.998	mg/kg	10	---	16.3	---	---	32	40%	
Zinc	74.0	---	3.99	mg/kg	10	---	71.3	---	---	4	40%	
Duplicate (9051011-DUP2) Prepared: 05/17/19 12:15 Analyzed: 05/21/19 19:37												
<u>QC Source Sample: COMP1 (A9E0508-05RE1)</u>												
<u>EPA 6020A</u>												
Sodium	ND	---	99.8	mg/kg	10	---	95.6	---	---	***	40%	Q-16
Matrix Spike (9051011-MS1) Prepared: 05/17/19 12:15 Analyzed: 05/20/19 21:25												
<u>QC Source Sample: COMP1 (A9E0508-05)</u>												
<u>EPA 6020A</u>												
Aluminum	3640	---	52.4	mg/kg	10	2620	1690	74	75-125%	---	---	Q-04
Antimony	23.7	---	1.05	mg/kg	10	26.2	ND	90	75-125%	---	---	
Arsenic	50.4	---	1.05	mg/kg	10	52.4	1.66	93	75-125%	---	---	
Barium	64.0	---	1.05	mg/kg	10	52.4	20.5	83	75-125%	---	---	
Beryllium	23.4	---	0.210	mg/kg	10	26.2	0.211	88	75-125%	---	---	
Cadmium	50.3	---	0.210	mg/kg	10	52.4	0.349	95	75-125%	---	---	
Calcium	2810	---	105	mg/kg	10	2620	559	86	75-125%	---	---	
Chromium	61.6	---	1.05	mg/kg	10	52.4	2.83	112	75-125%	---	---	
Copper	77.0	---	1.05	mg/kg	10	52.4	10.9	126	75-125%	---	---	Q-04
Iron	32000	---	52.4	mg/kg	10	2620	30800	47	75-125%	---	---	Q-03, Q-04
Lead	66.9	---	0.210	mg/kg	10	52.4	26.8	77	75-125%	---	---	
Magnesium	2530	---	52.4	mg/kg	10	2620	82.2	93	75-125%	---	---	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020A (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051011 - EPA 3051A						Solid						
Matrix Spike (9051011-MS1)			Prepared: 05/17/19 12:15 Analyzed: 05/20/19 21:25									
QC Source Sample: COMP1 (A9E0508-05)												
Manganese	181	---	1.05	mg/kg	10	52.4	363	-346	75-125%	---	---	Q-04
Mercury	0.960	---	0.0839	mg/kg	10	1.05	ND	92	75-125%	---	---	
Nickel	76.5	---	1.05	mg/kg	10	52.4	7.86	131	75-125%	---	---	Q-04
Potassium	2540	---	105	mg/kg	10	2620	ND	97	75-125%	---	---	
Selenium	21.7	---	1.05	mg/kg	10	26.2	ND	83	75-125%	---	---	
Silver	25.2	---	0.210	mg/kg	10	26.2	ND	96	75-125%	---	---	
Thallium	23.2	---	0.210	mg/kg	10	26.2	ND	89	75-125%	---	---	
Vanadium	60.5	---	1.05	mg/kg	10	52.4	16.3	84	75-125%	---	---	
Zinc	97.8	---	4.19	mg/kg	10	52.4	71.3	51	75-125%	---	---	Q-04
Matrix Spike (9051011-MS2)			Prepared: 05/17/19 12:15 Analyzed: 05/21/19 19:50									
QC Source Sample: COMP1 (A9E0508-05RE1)												
EPA 6020A												
Sodium	2620	---	105	mg/kg	10	2620	95.6	96	75-125%	---	---	Q-16



Hahn and Associates 434 NW 6th Ave. Suite 203 Portland, OR 97209	Project: Mult 802 Decommissioning Project Number: 2708-60F Project Manager: Rob Ede	Report ID: A9E0508 - 05 29 19 1543
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QUALITY CONTROL (QC) SAMPLE RESULTS

Total Cyanide by UV Digestion/Gas Diffusion/Amperometric Detection

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051027 - ASTM D7511-12mod (S)						Solid						
Blank (9051027-BLK1)			Prepared: 05/20/19 07:51 Analyzed: 05/20/19 13:50									
<u>D7511-12</u>												
Cyanide, Total	ND	---	0.100	mg/kg	1	---	---	---	---	---	---	
LCS (9051027-BS1)			Prepared: 05/20/19 07:51 Analyzed: 05/20/19 13:52									
<u>D7511-12</u>												
Cyanide, Total	0.422	---	0.100	mg/kg	1	0.400	---	105	84-116%	---	---	
LCS (9051027-BS2)			Prepared: 05/20/19 07:51 Analyzed: 05/20/19 13:48									
<u>D7511-12</u>												
Cyanide, Total	0.108	---	0.100	mg/kg	1	0.200	---	54	84-116%	---	---	CN_I
Matrix Spike (9051027-MS1)			Prepared: 05/20/19 07:51 Analyzed: 05/20/19 14:00									
<u>QC Source Sample: COMP1 (A9E0508-05)</u>												
<u>D7511-12</u>												
Cyanide, Total	14.1	---	2.00	mg/kg	20	0.399	14.5	-95	64-136%	---	---	Q-03
Matrix Spike Dup (9051027-MSD1)			Prepared: 05/20/19 07:51 Analyzed: 05/20/19 14:04									
<u>QC Source Sample: COMP1 (A9E0508-05)</u>												
<u>D7511-12</u>												
Cyanide, Total	13.5	---	1.97	mg/kg	20	0.395	14.5	-266	64-136%	5	47%	Q-03



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SAMPLE PREPARATION INFORMATION

Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Prep: EPA 3546 (Fuels)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 9051067							
A9E0508-05	Solid	NWTPH-Dx	05/13/19 15:15	05/20/19 16:21	1.18g/5mL	10g/5mL	8.47

Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

Prep: EPA 5035A

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 9051006							
A9E0508-05	Solid	NWTPH-Gx (MS)	05/13/19 15:15	05/13/19 15:15	10.15g/15mL	5g/5mL	1.48

Volatile Organic Compounds by EPA 5035A/8260C

Prep: EPA 5035A

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 9051006							
A9E0508-05	Solid	5035A/8260C	05/13/19 15:15	05/13/19 15:15	10.15g/15mL	5g/5mL	1.48

TCLP Volatile Organic Compounds by EPA 1311/8260C

Prep: EPA 1311/5030B TCLP Volatiles

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 9051246							
A9E0508-05	Solid	1311/8260C	05/13/19 15:15	05/24/19 10:48	5mL/5mL	5mL/5mL	1.00

Semivolatile Organic Compounds by EPA 8270D

Prep: EPA 3546

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 9051065							
A9E0508-05	Solid	EPA 8270D	05/13/19 15:15	05/20/19 16:13	1.16g/5mL	15g/2mL	32.30

Total Metals by EPA 6020A (ICPMS)

Prep: EPA 3051A

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 9051011							
A9E0508-05	Solid	EPA 6020A	05/13/19 15:15	05/17/19 12:15	0.482g/50mL	0.5g/50mL	1.04

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Philip Nerenberg, Lab Director



Hahn and Associates 434 NW 6th Ave. Suite 203 Portland, OR 97209	Project: Mult 802 Decommissioning Project Number: 2708-60F Project Manager: Rob Ede	Report ID: A9E0508 - 05 29 19 1543
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SAMPLE PREPARATION INFORMATION

Total Metals by EPA 6020A (ICPMS)

Prep: EPA 3051A					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
A9E0508-05RE1	Solid	EPA 6020A	05/13/19 15:15	05/17/19 12:15	0.482g/50mL	0.5g/50mL	1.04

Total Cyanide by UV Digestion/Gas Diffusion/Amperometric Detection

Prep: ASTM D7511-12mod (S)					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
<u>Batch: 9051027</u>							
A9E0508-05	Solid	D7511-12	05/13/19 15:15	05/20/19 07:51	2.5342g/50mL	2.5g/50mL	0.99

TCLP Extraction by EPA 1311 (ZHE)

Prep: EPA 1311 TCLP/ZHE					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
<u>Batch: 9051218</u>							
A9E0508-05	Solid	EPA 1311 ZHE	05/13/19 15:15	05/23/19 15:35	25.06g/500mL	25g/500mL	NA



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Portland, OR 97209

Project: **Mult 802 Decommissioning**

Project Number: **2708-60F**

Project Manager: **Rob Ede**

Report ID:

A9E0508 - 05 29 19 1543

QUALIFIER DEFINITIONS

Client Sample and Quality Control (QC) Sample Qualifier Definitions:

Apex Laboratories

- A-01** Reporting limit raised due to possible lab contamination.
- B** Analyte detected in an associated blank at a level above the MRL. (See Notes and Conventions below.)
- B-02** Analyte detected in an associated blank at a level between one-half the MRL and the MRL. (See Notes and Conventions below.)
- CN_I** Cyanide Interference Challenge Solution. No Cyanide is present in spike solution. Results are valid if Non Detect (No Cyanide detected.)
- COMP** Sample is a composite of discrete samples. See prep information for details.
- E-05** Estimated Result. Initial Calibration Verification (ICV) failed high. No affect on non-detect results.
- F-17** No fuel pattern detected. The Diesel result represents carbon range C12 to C24, and the Oil result represents >C24 to C40.
- M-05** Estimated results. Peak separation for structural isomers is insufficient for accurate quantification.
- Q-01** Spike recovery and/or RPD is outside acceptance limits.
- Q-03** Spike recovery and/or RPD is outside control limits due to the high concentration of analyte present in the sample.
- Q-04** Spike recovery and/or RPD is outside control limits due to a non-homogeneous sample matrix.
- Q-05** Analyses are not controlled on RPD values from sample and duplicate concentrations that are below 5 times the reporting level.
- Q-16** Reanalysis of an original Batch QC sample.
- Q-17** RPD between original and duplicate sample is outside of established control limits.
- Q-18** Matrix Spike results for this extraction batch are not reported due to the high dilution necessary for analysis of the source sample.
- Q-29** Recovery for Lab Control Spike (LCS) is above the upper control limit. Data may be biased high.
- Q-31** Estimated Results. Recovery of Continuing Calibration Verification sample below lower control limit for this analyte. Results are likely biased low.
- Q-41** Estimated Results. Recovery of Continuing Calibration Verification sample above upper control limit for this analyte. Results are likely biased high.
- Q-42** Matrix Spike and/or Duplicate analysis was performed on this sample. % Recovery or RPD for this analyte is outside laboratory control limits. (Refer to the QC Section of Analytical Report.)
- Q-52** Due to erratic or low blank spike recoveries, results for this analyte are considered Estimated Values.
- Q-54** Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +12%. The results are reported as Estimated Values.
- Q-54a** Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +13%. The results are reported as Estimated Values.
- Q-54b** Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +3.3%. The results are reported as Estimated Values.

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Philip Nerenberg, Lab Director



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- Q-54c** Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +3.5%. The results are reported as Estimated Values.
- Q-54d** Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +3.6%. The results are reported as Estimated Values.
- Q-54e** Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +42%. The results are reported as Estimated Values.
- Q-54f** Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +6%. The results are reported as Estimated Values.
- Q-54g** Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +8%. The results are reported as Estimated Values.
- Q-54h** Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +9.1%. The results are reported as Estimated Values.
- Q-54i** Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by -5.9%. The results are reported as Estimated Values.
- Q-55** Daily CCV/LCS recovery for this analyte was below the +/-20% criteria listed in EPA 8260C, however there is adequate sensitivity to ensure detection at the reporting level.
- Q-56** Daily CCV/LCS recovery for this analyte was above the +/-20% criteria listed in EPA 8260C
- S-01** Surrogate recovery for this sample is not available due to sample dilution required from high analyte concentration and/or matrix interference.
- S-05** Surrogate recovery is estimated due to sample dilution required for high analyte concentration and/or matrix interference.
- TCLP** This batch QC sample was prepared with TCLP or SPLP fluid from preparation batch 9051218.



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Project: Mult 802 Decommissioning

Project Number: 2708-60F

Project Manager: Rob Ede

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REPORTING NOTES AND CONVENTIONS:

Abbreviations:

- DET Analyte DETECTED at or above the detection or reporting limit.
- ND Analyte NOT DETECTED at or above the detection or reporting limit.
- NR Result Not Reported
- RPD Relative Percent Difference. RPDs for Matrix Spikes and Matrix Spike Duplicates are based on concentration, not recovery.

Detection Limits: Limit of Detection (LOD)

Limits of Detection (LODs) are normally set at a level of one half the validated Limit of Quantitation (LOQ).
If no value is listed ('-----'), then the data has not been evaluated below the Reporting Limit.

Reporting Limits: Limit of Quantitation (LOQ)

Validated Limits of Quantitation (LOQs) are reported as the Reporting Limits for all analyses where the LOQ, MRL, PQL or CRL are requested. The LOQ represents a level at or above the low point of the calibration curve, that has been validated according to Apex Laboratories' comprehensive LOQ policies and procedures.

Reporting Conventions:

- Basis: Results for soil samples are generally reported on a 100% dry weight basis.
The Result Basis is listed following the units as "dry", "wet", or " " (blank) designation.
- "dry" Sample results and Reporting Limits are reported on a dry weight basis. (i.e. "ug/kg dry")
See Percent Solids section for details of dry weight analysis.
- "wet" Sample results and Reporting Limits for this analysis are normally dry weight corrected, but have not been modified in this case.
- " " Results without 'wet' or 'dry' designation are not normally dry weight corrected. These results are considered 'As Received'.

QC Source:

In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) may be analyzed to demonstrate accuracy and precision of the extraction batch.

Non-Client Batch QC Samples (Duplicates and Matrix Spike/Duplicates) may not be included in this report. Please request a Full QC report if this data is required.

Miscellaneous Notes:

- " --- " QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.
- " *** " Used to indicate a possible discrepancy with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).

Blanks:

Standard practice is to evaluate the results from Blank QC Samples down to a level equal to 1/2 the Reporting Limit (RL).
-For Blank hits falling between 1/2 the RL and the RL (J flagged hits), the associated sample and QC data will receive a 'B-02' qualifier.
-For Blank hits above the RL, the associated sample and QC data will receive a 'B' qualifier, per Apex Laboratories' Blank Policy.
For further details, please request a copy of this document.



Hahn and Associates

434 NW 6th Ave. Suite 203
Portland, OR 97209

Project: **Mult 802 Decommissioning**

Project Number: **2708-60F**
Project Manager: **Rob Ede**

Report ID:
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REPORTING NOTES AND CONVENTIONS (Cont.):

Blanks (Cont.):

Sample results flagged with a 'B' or 'B-02' qualifier are potentially biased high if the sample results are less than ten times the level found in the blank for inorganic analyses, or less than five times the level found in the blank for organic analyses.

'B' and 'B-02' qualifications are only applied to sample results detected above the Reporting Level.

Preparation Notes:

Mixed Matrix Samples:

Water Samples:

Water samples containing significant amounts of sediment are decanted or separated prior to extraction, and only the water portion analyzed, unless otherwise directed by the client.

Soil and Sediment Samples:

Soil and Sediment samples containing significant amounts of water are decanted prior to extraction, and only the solid portion analyzed, unless otherwise directed by the client.

Sampling and Preservation Notes:

Certain regulatory programs, such as National Pollutant Discharge Elimination System (NPDES), require that activities such as sample filtration (for dissolved metals, orthophosphate, hexavalent chromium, etc.) and testing of short hold analytes (pH, Dissolved Oxygen, etc.) be performed in the field (on-site) within a short time window. In addition, sample matrix spikes are required for some analyses, and sufficient volume must be provided, and billable site specific QC requested, if this is required. All regulatory permits should be reviewed to ensure that these requirements are being met.

Data users should be aware of which regulations pertain to the samples they submit for testing. If related sample collection activities are not approved for a particular regulatory program, results should be considered estimates. Apex Laboratories will qualify these analytes according to the most stringent requirements, however results for samples that are for non-regulatory purposes may be acceptable.

Samples that have been filtered and preserved at Apex Laboratories per client request are listed in the preparation section of the report with the date and time of filtration listed.

Apex Laboratories maintains detailed records on sample receipt, including client label verification, cooler temperature, sample preservation, hold time compliance and field filtration. Data is qualified as necessary, and the lack of qualification indicates compliance with required parameters.



Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Hahn and Associates 434 NW 6th Ave. Suite 203 Portland, OR 97209	Project: Mult 802 Decommissioning Project Number: 2708-60F Project Manager: Rob Ede	Report ID: A9E0508 - 05 29 19 1543
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LABORATORY ACCREDITATION INFORMATION

TNI Certification ID: OR100062 (Primary Accreditation) - EPA ID: OR01039

All methods and analytes reported from work performed at Apex Laboratories are included on Apex Laboratories' ORELAP Scope of Certification, with the exception of any analyte(s) listed below:

Apex Laboratories

Matrix	Analysis	TNI_ID	Analyte	TNI_ID	Accreditation
<u>All reported analytes are included in Apex Laboratories' current ORELAP scope.</u>					

Secondary Accreditations

Apex Laboratories also maintains reciprocal accreditation with non-TNI states (Washington DOE), as well as other state specific accreditations not listed here.

Subcontract Laboratory Accreditations

Subcontracted data falls outside of Apex Laboratories' Scope of Accreditation. Please see the Subcontract Laboratory report for full details, or contact your Project Manager for more information.

Field Testing Parameters

Results for Field Tested data are provided by the client or sampler, and fall outside of Apex Laboratories' Scope of Accreditation.

Apex Laboratories

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Philip Nerenberg, Lab Director

Hahn and Associates

434 NW 6th Ave. Suite 203
Portland, OR 97209

Project: **Mult 802 Decommissioning**

Project Number: **2708-60F**

Project Manager: **Rob Ede**

Report ID:

A9E0508 - 05 29 19 1543

APE0508

Revised

CHAIN OF CUSTODY

Chain of Custody No. 1

Hahn and Associates, Inc.
Environmental Consultants
434 NW 6th Avenue, Suite 203 • Portland OR 97209
(503) 796-0717 • Fax: (503) 227-2209

Project Manager: Rob Ede
Project No: 2708-60F
Project Name: Mult 802 Decommissioning
Collected by: Ben Uhl

Laboratory: Apex Labs
Liquid with Sediment Sample
Lab Project No: _____
Test Parameters: _____
Test Separability: _____
Test One (ml/h): _____

Matrix: _____
Number of Containers: _____
Matrix: _____
Other: _____
Air: _____
Water: _____
Soil: _____

Analysis to be Performed:
VOCs by EPA Method 8260C
SVOCs by EPA Method 8270D
Fill List
NWTF-HX
NWTF-GX
Gaseous Metals by EPA 5000/7000 Series
Total Cyanide by EPA Method 225.4

Remarks: RUSH

Lab ID | Sample # | Date | Time | Sample Description

001	13-May-19	15:15	47 feet bgs	X
002	13-May-19	16:00	86 feet bgs	X
003	13-May-19	16:05	rich frags: 136 feet JRP	X
*004	14-May-19	15:00	136 feet bgs	X
COMP1				

Comments:
Sample Number Prefix: 2708-190513- and 2708-190514.
PLEASE FREEZE and HOLD all but VOAs.
Composite VOAs (5035) and soil jars from samples - 001, *002, and *004 to prepare sample COMP1 for testing as selected.

Revised by: Ben Uhl
Date: 5/15/19
Company: Hahn and Associates, Inc.

Received by: [Signature] Date: 5/15/19 Company: Hahn and Associates, Inc.

Received by: [Signature] Date: 5/15/19 Company: Hahn and Associates, Inc.

Philip Nerenberg

Hahn and Associates

434 NW 6th Ave. Suite 203
 Portland, OR 97209

Project: **Mult 802 Decommissioning**

Project Number: **2708-60F**

Project Manager: **Rob Ede**

Report ID:

A9E0508 - 05 29 19 1543

A9E0508

HAHN AND ASSOCIATES, INC. Environmental Consultants 434 NW Sixth Avenue, Suite 203 • Portland OR 97209 (503) 786-0717 • Fax (503) 227-2209		Apex Labs Tigard, Oregon	CHAIN OF CUSTODY Chain of Custody No. 1								
Project Manager: Rob Ede Project No: 2708-60F Project Name: Mult 802 Decommissioning Collected by: Rob Ede	Laboratory: Apex Labs Lab Project No:	Liquid with Sediment Sample Test Phase: Test Sediment Multi-Phase Sample Test One (which): Test Separately Test Two (which): Test Three:	Samples Received at AC (Y or N) Appropriate Containers Used (Y or N) Provide Verbal Results (Y or N) Provide Preliminary Fax Results Yes _____ No _____								
Comments: Sample Number Prefix: 2708-190513- and -2708-190514. PLEASE FREEZE and HOLD all but VOAs. Composite VOA (5035) from samples -001, -002, and -004 to prepare sample COMP1 for VOC testing.											
Analyses to be Performed											
Matrix											
Number of Containers											
VOCs (EPA 8260)											
Other											
Soil											
Water											
Air											
Remarks											
Lab ID	Sample #	Date	Time	Sample Description	Matrix	Number of Containers	Other	Soil	Water	Air	Remarks
	001	13-May-19	15:15	47 feet bgs	X	3					
	002	13-May-19	16:00	96 feet bgs	X	3					
	003	13-May-19	16:05	pitch traps, 130 feet bgs	X	1					
	* 004	14-May-19	15:00	136 feet bgs	X	3					
	COMP1										Lab Prepared
				Requested by: <i>Philip Nerenberg</i> Date: 5/15/19 Time: 5:15/19 Company: Hahn and Associates, Inc.		Received by: <i>Rob Ede</i> Date: 5/15/19 Time: 5:15/19 Company: Apex Labs		Received by: _____ Date: _____ Time: _____ Company: _____		Received by: _____ Date: _____ Time: _____ Company: _____	

Philip Nerenberg



Hahn and Associates
434 NW 6th Ave. Suite 203
Portland, OR 97209

Project: **Mult 802 Decommissioning**
Project Number: **2708-60F**
Project Manager: **Rob Ede**

Report ID:
A9E0508 - 05 29 19 1543

APEX LABS COOLER RECEIPT FORM

Client: Hahn Element WO#: A9 E0508
Project/Project #: Mult 802 Decommissioning 2708-60F

Delivery Info:

Date/time received: 5/15/19 @ 1235 By: CFH
Delivered by: Apex Client ESS FedEx UPS Swift Senvoy SDS Other

Cooler Inspection Date/time inspected: 5/15/19 @ 1348 By: CFH

Chain of Custody included? Yes No Custody seals? Yes No

Signed/dated by client? Yes No

Signed/dated by Apex? Yes No

	Cooler #1	Cooler #2	Cooler #3	Cooler #4	Cooler #5	Cooler #6	Cooler #7
Temperature (°C)	<u>4.9</u>						
Received on ice? (Y/N)	<u>Y</u>						
Temp. blanks? (Y/N)	<u>Y</u>						
Ice type: (Gel/Real/Other)	<u>Gel</u>						
Condition:	<u>Good</u>						

Cooler out of temp? (Y/N) Possible reason why: (N)
If some coolers are in temp and some out, were green dots applied to out of temperature samples? Yes/No/NA (NA)
Out of temperature samples form initiated? Yes/No/NA (NA)

Samples Inspection Date/time inspected: 5/15/19 @ 1730 By: AB

All samples intact? Yes No Comments: _____

Bottle labels/COCs agree? Yes No Comments: 2708-190513-001 time on conts. read 15:50

COC/container discrepancies form initiated? Yes No NA

Containers/volumes received appropriate for analysis? Yes No Comments: _____

Do VOA vials have visible headspace? Yes No NA

Comments: _____

Water samples: pH checked: Yes No NA pH appropriate? Yes No

Comments: _____

Additional information:

Labeled by: _____ Witness: _____ Cooler Inspected by: _____ See Project Contact Form: Y

AB

ABE

CFH

Philip Nerenberg



Tuesday, May 28, 2019

Rob Ede
Hahn and Associates
434 NW 6th Ave. Suite 203
Portland, OR 97209

RE: A9E0677 - Mult 802 Decommissioning - 2708-60F

Thank you for using Apex Laboratories. We greatly appreciate your business and strive to provide the highest quality services to the environmental industry.

Enclosed are the results of analyses for work order A9E0677, which was received by the laboratory on 5/21/2019 at 12:09:00PM.

If you have any questions concerning this report or the services we offer, please feel free to contact me by email at: pnerenberg@apex-labs.com, or by phone at 503-718-2323.

Please note: All samples will be disposed of within 30 days of final reporting, unless prior arrangements have been made.

Cooler Receipt Information

(See Cooler Receipt Form for details)

Cooler #1 1.5 degC

This Final Report is the official version of the data results for this sample submission, unless superseded by a subsequent, labeled amended report.
All other deliverables derived from this data, including Electronic Data Deliverables (EDDs), CLP-like forms, client requested summary sheets, and all other products are considered secondary to this report.



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Philip Nerenberg, Lab Director



Apex Laboratories, LLC

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EPA ID: OR01039

Hahn and Associates

434 NW 6th Ave. Suite 203
Portland, OR 97209

Project: **Mult 802 Decommissioning**

Project Number: **2708-60F**

Project Manager: **Rob Ede**

Report ID:

A9E0677 - 05 28 19 1635

ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
2708-190520-006	A9E0677-01	Solid	05/20/19 15:00	05/21/19 12:09

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Portland, OR 97209

Project: **Mult 802 Decommissioning**

Project Number: **2708-60F**

Project Manager: **Rob Ede**

Report ID:

A9E0677 - 05 28 19 1635

ANALYTICAL SAMPLE RESULTS

Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes	
2708-190520-006 (A9E0677-01)				Matrix: Solid		Batch: 9051229			
Diesel	305000	---	34500	mg/kg	100	05/24/19	NWTPH-Dx	F-17	
Oil	132000	---	69000	mg/kg	100	05/24/19	NWTPH-Dx	F-17	
<i>Surrogate: o-Terphenyl (Surr)</i>		<i>Recovery: %</i>		<i>Limits: 50-150 %</i>		<i>100</i>	<i>05/24/19</i>	<i>NWTPH-Dx</i>	<i>S-01</i>

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Philip Nerenberg, Lab Director



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503-718-2323

EPA ID: OR01039

Hahn and Associates

434 NW 6th Ave. Suite 203

Portland, OR 97209

Project: **Mult 802 Decommissioning**

Project Number: **2708-60F**

Project Manager: **Rob Ede**

Report ID:

A9E0677 - 05 28 19 1635

ANALYTICAL SAMPLE RESULTS

Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
2708-190520-006 (A9E0677-01)				Matrix: Solid		Batch: 9051092		V-15
Gasoline Range Organics	39200	---	16000	mg/kg	100000	05/21/19	NWTPH-Gx (MS)	
<i>Surrogate: 4-Bromofluorobenzene (Sur)</i>		<i>Recovery: 133 %</i>		<i>Limits: 50-150 %</i>		<i>1</i>	<i>05/21/19</i>	<i>NWTPH-Gx (MS)</i>
<i>1,4-Difluorobenzene (Sur)</i>		<i>101 %</i>		<i>50-150 %</i>		<i>1</i>	<i>05/21/19</i>	<i>NWTPH-Gx (MS)</i>

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Hahn and Associates
 434 NW 6th Ave. Suite 203
 Portland, OR 97209

Project: **Mult 802 Decommissioning**
 Project Number: **2708-60F**
 Project Manager: **Rob Ede**

Report ID:
A9E0677 - 05 28 19 1635

ANALYTICAL SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
2708-190520-006 (A9E0677-01)				Matrix: Solid		Batch: 9051092		V-15
Acetone	ND	---	3190000	ug/kg	100000	05/21/19	5035A/8260C	
Acrylonitrile	ND	---	319000	ug/kg	100000	05/21/19	5035A/8260C	
Benzene	114000	---	31900	ug/kg	100000	05/21/19	5035A/8260C	
Bromobenzene	ND	---	79900	ug/kg	100000	05/21/19	5035A/8260C	
Bromochloromethane	ND	---	160000	ug/kg	100000	05/21/19	5035A/8260C	
Bromodichloromethane	ND	---	319000	ug/kg	100000	05/21/19	5035A/8260C	
Bromoform	ND	---	639000	ug/kg	100000	05/21/19	5035A/8260C	
Bromomethane	ND	---	1600000	ug/kg	100000	05/21/19	5035A/8260C	
2-Butanone (MEK)	ND	---	1600000	ug/kg	100000	05/21/19	5035A/8260C	
n-Butylbenzene	ND	---	160000	ug/kg	100000	05/21/19	5035A/8260C	
sec-Butylbenzene	ND	---	160000	ug/kg	100000	05/21/19	5035A/8260C	
tert-Butylbenzene	ND	---	160000	ug/kg	100000	05/21/19	5035A/8260C	
Carbon disulfide	ND	---	1600000	ug/kg	100000	05/21/19	5035A/8260C	
Carbon tetrachloride	ND	---	319000	ug/kg	100000	05/21/19	5035A/8260C	
Chlorobenzene	ND	---	79900	ug/kg	100000	05/21/19	5035A/8260C	
Chloroethane	ND	---	1600000	ug/kg	100000	05/21/19	5035A/8260C	
Chloroform	ND	---	160000	ug/kg	100000	05/21/19	5035A/8260C	
Chloromethane	ND	---	799000	ug/kg	100000	05/21/19	5035A/8260C	
2-Chlorotoluene	ND	---	160000	ug/kg	100000	05/21/19	5035A/8260C	
4-Chlorotoluene	ND	---	160000	ug/kg	100000	05/21/19	5035A/8260C	
Dibromochloromethane	ND	---	319000	ug/kg	100000	05/21/19	5035A/8260C	
1,2-Dibromo-3-chloropropane	ND	---	799000	ug/kg	100000	05/21/19	5035A/8260C	
1,2-Dibromoethane (EDB)	ND	---	160000	ug/kg	100000	05/21/19	5035A/8260C	
Dibromomethane	ND	---	160000	ug/kg	100000	05/21/19	5035A/8260C	
1,2-Dichlorobenzene	ND	---	79900	ug/kg	100000	05/21/19	5035A/8260C	
1,3-Dichlorobenzene	ND	---	79900	ug/kg	100000	05/21/19	5035A/8260C	
1,4-Dichlorobenzene	ND	---	79900	ug/kg	100000	05/21/19	5035A/8260C	
Dichlorodifluoromethane	ND	---	319000	ug/kg	100000	05/21/19	5035A/8260C	
1,1-Dichloroethane	ND	---	79900	ug/kg	100000	05/21/19	5035A/8260C	
1,2-Dichloroethane (EDC)	ND	---	79900	ug/kg	100000	05/21/19	5035A/8260C	
1,1-Dichloroethene	ND	---	79900	ug/kg	100000	05/21/19	5035A/8260C	
cis-1,2-Dichloroethene	ND	---	79900	ug/kg	100000	05/21/19	5035A/8260C	
trans-1,2-Dichloroethene	ND	---	79900	ug/kg	100000	05/21/19	5035A/8260C	

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Philip Nerenberg, Lab Director



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434 NW 6th Ave. Suite 203
 Portland, OR 97209

Project: **Mult 802 Decommissioning**

Project Number: **2708-60F**

Project Manager: **Rob Ede**

Report ID:

A9E0677 - 05 28 19 1635

ANALYTICAL SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
2708-190520-006 (A9E0677-01)				Matrix: Solid		Batch: 9051092		V-15
1,2-Dichloropropane	ND	---	79900	ug/kg	100000	05/21/19	5035A/8260C	
1,3-Dichloropropane	ND	---	160000	ug/kg	100000	05/21/19	5035A/8260C	
2,2-Dichloropropane	ND	---	160000	ug/kg	100000	05/21/19	5035A/8260C	
1,1-Dichloropropene	ND	---	160000	ug/kg	100000	05/21/19	5035A/8260C	
cis-1,3-Dichloropropene	ND	---	160000	ug/kg	100000	05/21/19	5035A/8260C	
trans-1,3-Dichloropropene	ND	---	160000	ug/kg	100000	05/21/19	5035A/8260C	
Ethylbenzene	95500	---	79900	ug/kg	100000	05/21/19	5035A/8260C	
Hexachlorobutadiene	ND	---	319000	ug/kg	100000	05/21/19	5035A/8260C	
2-Hexanone	ND	---	1600000	ug/kg	100000	05/21/19	5035A/8260C	
Isopropylbenzene	ND	---	160000	ug/kg	100000	05/21/19	5035A/8260C	
4-Isopropyltoluene	ND	---	160000	ug/kg	100000	05/21/19	5035A/8260C	
Methylene chloride	ND	---	799000	ug/kg	100000	05/21/19	5035A/8260C	
4-Methyl-2-pentanone (MIBK)	ND	---	1600000	ug/kg	100000	05/21/19	5035A/8260C	
Methyl tert-butyl ether (MTBE)	ND	---	160000	ug/kg	100000	05/21/19	5035A/8260C	
Naphthalene	10300000	---	319000	ug/kg	100000	05/21/19	5035A/8260C	
n-Propylbenzene	ND	---	79900	ug/kg	100000	05/21/19	5035A/8260C	
Styrene	ND	---	160000	ug/kg	100000	05/21/19	5035A/8260C	
1,1,1,2-Tetrachloroethane	ND	---	319000	ug/kg	100000	05/21/19	5035A/8260C	
1,1,2,2-Tetrachloroethane	ND	---	160000	ug/kg	100000	05/21/19	5035A/8260C	
Tetrachloroethene (PCE)	ND	---	79900	ug/kg	100000	05/21/19	5035A/8260C	
Toluene	ND	---	160000	ug/kg	100000	05/21/19	5035A/8260C	
1,2,3-Trichlorobenzene	ND	---	799000	ug/kg	100000	05/21/19	5035A/8260C	
1,2,4-Trichlorobenzene	ND	---	799000	ug/kg	100000	05/21/19	5035A/8260C	
1,1,1-Trichloroethane	ND	---	79900	ug/kg	100000	05/21/19	5035A/8260C	
1,1,2-Trichloroethane	ND	---	79900	ug/kg	100000	05/21/19	5035A/8260C	
Trichloroethene (TCE)	ND	---	79900	ug/kg	100000	05/21/19	5035A/8260C	
Trichlorofluoromethane	ND	---	319000	ug/kg	100000	05/21/19	5035A/8260C	
1,2,3-Trichloropropane	ND	---	160000	ug/kg	100000	05/21/19	5035A/8260C	
1,2,4-Trimethylbenzene	ND	---	160000	ug/kg	100000	05/21/19	5035A/8260C	
1,3,5-Trimethylbenzene	ND	---	160000	ug/kg	100000	05/21/19	5035A/8260C	
Vinyl chloride	ND	---	79900	ug/kg	100000	05/21/19	5035A/8260C	
m,p-Xylene	ND	---	160000	ug/kg	100000	05/21/19	5035A/8260C	
o-Xylene	ND	---	79900	ug/kg	100000	05/21/19	5035A/8260C	

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Philip Nerenberg, Lab Director



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Portland, OR 97209

Project: **Mult 802 Decommissioning**

Project Number: **2708-60F**

Project Manager: **Rob Ede**

Report ID:

A9E0677 - 05 28 19 1635

ANALYTICAL SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
2708-190520-006 (A9E0677-01)				Matrix: Solid		Batch: 9051092		V-15
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 110 %</i>	<i>Limits: 80-120 %</i>	80-120 %	1	05/21/19	5035A/8260C	
<i>Toluene-d8 (Surr)</i>		<i>91 %</i>	<i>80-120 %</i>	80-120 %	1	05/21/19	5035A/8260C	
<i>4-Bromofluorobenzene (Surr)</i>		<i>104 %</i>	<i>80-120 %</i>	80-120 %	1	05/21/19	5035A/8260C	

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ANALYTICAL SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
2708-190520-006 (A9E0677-01)				Matrix: Solid		Batch: 9051172		
Acenaphthene	2260000	---	785000	ug/kg	10000	05/23/19	EPA 8270D	
Acenaphthylene	ND	---	785000	ug/kg	10000	05/23/19	EPA 8270D	
Anthracene	11700000	---	785000	ug/kg	10000	05/23/19	EPA 8270D	
Benz(a)anthracene	6200000	---	785000	ug/kg	10000	05/23/19	EPA 8270D	
Benzo(a)pyrene	6980000	---	1180000	ug/kg	10000	05/23/19	EPA 8270D	
Benzo(b)fluoranthene	7190000	---	1180000	ug/kg	10000	05/23/19	EPA 8270D	M-05
Benzo(k)fluoranthene	2850000	---	1180000	ug/kg	10000	05/23/19	EPA 8270D	M-05
Benzo(g,h,i)perylene	4560000	---	785000	ug/kg	10000	05/23/19	EPA 8270D	
Chrysene	6140000	---	785000	ug/kg	10000	05/23/19	EPA 8270D	
Dibenz(a,h)anthracene	ND	---	785000	ug/kg	10000	05/23/19	EPA 8270D	
Fluoranthene	27500000	---	785000	ug/kg	10000	05/23/19	EPA 8270D	
Fluorene	11600000	---	785000	ug/kg	10000	05/23/19	EPA 8270D	
Indeno(1,2,3-cd)pyrene	4470000	---	785000	ug/kg	10000	05/23/19	EPA 8270D	
1-Methylnaphthalene	6420000	---	1570000	ug/kg	10000	05/23/19	EPA 8270D	
2-Methylnaphthalene	13300000	---	1570000	ug/kg	10000	05/23/19	EPA 8270D	
Naphthalene	36900000	---	1570000	ug/kg	10000	05/23/19	EPA 8270D	
Phenanthrene	42000000	---	785000	ug/kg	10000	05/23/19	EPA 8270D	
Pyrene	23400000	---	785000	ug/kg	10000	05/23/19	EPA 8270D	
Carbazole	5590000	---	1180000	ug/kg	10000	05/23/19	EPA 8270D	
Dibenzofuran	12500000	---	785000	ug/kg	10000	05/23/19	EPA 8270D	
4-Chloro-3-methylphenol	ND	---	7850000	ug/kg	10000	05/23/19	EPA 8270D	
2-Chlorophenol	ND	---	3910000	ug/kg	10000	05/23/19	EPA 8270D	
2,4-Dichlorophenol	ND	---	3910000	ug/kg	10000	05/23/19	EPA 8270D	
2,4-Dimethylphenol	ND	---	3910000	ug/kg	10000	05/23/19	EPA 8270D	
2,4-Dinitrophenol	ND	---	19600000	ug/kg	10000	05/23/19	EPA 8270D	
4,6-Dinitro-2-methylphenol	ND	---	19600000	ug/kg	10000	05/23/19	EPA 8270D	
2-Methylphenol	ND	---	1960000	ug/kg	10000	05/23/19	EPA 8270D	
3+4-Methylphenol(s)	ND	---	1960000	ug/kg	10000	05/23/19	EPA 8270D	Q-42
2-Nitrophenol	ND	---	7850000	ug/kg	10000	05/23/19	EPA 8270D	
4-Nitrophenol	ND	---	7850000	ug/kg	10000	05/23/19	EPA 8270D	
Pentachlorophenol (PCP)	ND	---	7850000	ug/kg	10000	05/23/19	EPA 8270D	
Phenol	ND	---	1570000	ug/kg	10000	05/23/19	EPA 8270D	
2,3,4,6-Tetrachlorophenol	ND	---	3910000	ug/kg	10000	05/23/19	EPA 8270D	

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Philip Nerenberg, Lab Director



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ANALYTICAL SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
2708-190520-006 (A9E0677-01)				Matrix: Solid		Batch: 9051172		
2,3,5,6-Tetrachlorophenol	ND	---	3910000	ug/kg	10000	05/23/19	EPA 8270D	
2,4,5-Trichlorophenol	ND	---	3910000	ug/kg	10000	05/23/19	EPA 8270D	
2,4,6-Trichlorophenol	ND	---	3910000	ug/kg	10000	05/23/19	EPA 8270D	
Bis(2-ethylhexyl)phthalate	ND	---	11800000	ug/kg	10000	05/23/19	EPA 8270D	
Butyl benzyl phthalate	ND	---	7850000	ug/kg	10000	05/23/19	EPA 8270D	
Diethylphthalate	ND	---	7850000	ug/kg	10000	05/23/19	EPA 8270D	
Dimethylphthalate	ND	---	7850000	ug/kg	10000	05/23/19	EPA 8270D	
Di-n-butylphthalate	ND	---	7850000	ug/kg	10000	05/23/19	EPA 8270D	
Di-n-octyl phthalate	ND	---	7850000	ug/kg	10000	05/23/19	EPA 8270D	
N-Nitrosodimethylamine	ND	---	1960000	ug/kg	10000	05/23/19	EPA 8270D	
N-Nitroso-di-n-propylamine	ND	---	1960000	ug/kg	10000	05/23/19	EPA 8270D	
N-Nitrosodiphenylamine	ND	---	1960000	ug/kg	10000	05/23/19	EPA 8270D	
Bis(2-Chloroethoxy) methane	ND	---	1960000	ug/kg	10000	05/23/19	EPA 8270D	
Bis(2-Chloroethyl) ether	ND	---	1960000	ug/kg	10000	05/23/19	EPA 8270D	
2,2'-Oxybis(1-Chloropropane)	ND	---	1960000	ug/kg	10000	05/23/19	EPA 8270D	
Hexachlorobenzene	ND	---	785000	ug/kg	10000	05/23/19	EPA 8270D	
Hexachlorobutadiene	ND	---	1960000	ug/kg	10000	05/23/19	EPA 8270D	
Hexachlorocyclopentadiene	ND	---	3910000	ug/kg	10000	05/23/19	EPA 8270D	
Hexachloroethane	ND	---	1960000	ug/kg	10000	05/23/19	EPA 8270D	
2-Chloronaphthalene	ND	---	785000	ug/kg	10000	05/23/19	EPA 8270D	
1,2-Dichlorobenzene	ND	---	1960000	ug/kg	10000	05/23/19	EPA 8270D	
1,3-Dichlorobenzene	ND	---	1960000	ug/kg	10000	05/23/19	EPA 8270D	
1,4-Dichlorobenzene	ND	---	1960000	ug/kg	10000	05/23/19	EPA 8270D	
1,2,4-Trichlorobenzene	ND	---	1960000	ug/kg	10000	05/23/19	EPA 8270D	
4-Bromophenyl phenyl ether	ND	---	1960000	ug/kg	10000	05/23/19	EPA 8270D	
4-Chlorophenyl phenyl ether	ND	---	1960000	ug/kg	10000	05/23/19	EPA 8270D	
Aniline	ND	---	3910000	ug/kg	10000	05/23/19	EPA 8270D	
4-Chloroaniline	ND	---	1960000	ug/kg	10000	05/23/19	EPA 8270D	
2-Nitroaniline	ND	---	15700000	ug/kg	10000	05/23/19	EPA 8270D	
3-Nitroaniline	ND	---	15700000	ug/kg	10000	05/23/19	EPA 8270D	
4-Nitroaniline	ND	---	15700000	ug/kg	10000	05/23/19	EPA 8270D	
Nitrobenzene	ND	---	7850000	ug/kg	10000	05/23/19	EPA 8270D	
2,4-Dinitrotoluene	ND	---	7850000	ug/kg	10000	05/23/19	EPA 8270D	



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Project: **Mult 802 Decommissioning**

Project Number: **2708-60F**

Project Manager: **Rob Ede**

Report ID:

A9E0677 - 05 28 19 1635

ANALYTICAL SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes	
2708-190520-006 (A9E0677-01)				Matrix: Solid		Batch: 9051172			
2,6-Dinitrotoluene	ND	---	7850000	ug/kg	10000	05/23/19	EPA 8270D		
Benzoic acid	ND	---	97900000	ug/kg	10000	05/23/19	EPA 8270D		
Benzyl alcohol	ND	---	3910000	ug/kg	10000	05/23/19	EPA 8270D		
Isophorone	ND	---	1960000	ug/kg	10000	05/23/19	EPA 8270D		
Azobenzene (1,2-DPH)	ND	---	1960000	ug/kg	10000	05/23/19	EPA 8270D		
Bis(2-Ethylhexyl) adipate	ND	---	19600000	ug/kg	10000	05/23/19	EPA 8270D		
3,3'-Dichlorobenzidine	ND	---	15700000	ug/kg	10000	05/23/19	EPA 8270D	Q-52	
1,2-Dinitrobenzene	ND	---	19600000	ug/kg	10000	05/23/19	EPA 8270D		
1,3-Dinitrobenzene	ND	---	19600000	ug/kg	10000	05/23/19	EPA 8270D		
1,4-Dinitrobenzene	ND	---	19600000	ug/kg	10000	05/23/19	EPA 8270D		
Pyridine	ND	---	3910000	ug/kg	10000	05/23/19	EPA 8270D		
<i>Surrogate: Nitrobenzene-d5 (Surr)</i>			<i>Recovery: %</i>	<i>Limits:</i>	<i>37-122 %</i>	<i>10000</i>	<i>05/23/19</i>	<i>EPA 8270D</i>	<i>S-01</i>
<i>2-Fluorobiphenyl (Surr)</i>			<i>%</i>	<i>44-115 %</i>	<i>10000</i>	<i>05/23/19</i>	<i>EPA 8270D</i>	<i>S-01</i>	
<i>Phenol-d6 (Surr)</i>			<i>%</i>	<i>33-122 %</i>	<i>10000</i>	<i>05/23/19</i>	<i>EPA 8270D</i>	<i>S-01</i>	
<i>p-Terphenyl-d14 (Surr)</i>			<i>136 %</i>	<i>54-127 %</i>	<i>10000</i>	<i>05/23/19</i>	<i>EPA 8270D</i>	<i>S-05</i>	
<i>2-Fluorophenol (Surr)</i>			<i>%</i>	<i>35-115 %</i>	<i>10000</i>	<i>05/23/19</i>	<i>EPA 8270D</i>	<i>S-01</i>	
<i>2,4,6-Tribromophenol (Surr)</i>			<i>%</i>	<i>39-132 %</i>	<i>10000</i>	<i>05/23/19</i>	<i>EPA 8270D</i>	<i>S-01</i>	



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ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020A (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
2708-190520-006 (A9E0677-01)		Matrix: Solid						
Batch: 9051152								
Aluminum	ND	---	55.6	mg/kg	10	05/23/19	EPA 6020A	
Antimony	ND	---	1.11	mg/kg	10	05/23/19	EPA 6020A	
Arsenic	ND	---	1.11	mg/kg	10	05/23/19	EPA 6020A	
Barium	2.27	---	1.11	mg/kg	10	05/23/19	EPA 6020A	
Cadmium	0.372	---	0.222	mg/kg	10	05/23/19	EPA 6020A	
Calcium	ND	---	111	mg/kg	10	05/23/19	EPA 6020A	
Chromium	ND	---	1.11	mg/kg	10	05/23/19	EPA 6020A	
Copper	1.78	---	1.11	mg/kg	10	05/23/19	EPA 6020A	
Iron	1250	---	55.6	mg/kg	10	05/23/19	EPA 6020A	
Lead	27.9	---	0.222	mg/kg	10	05/23/19	EPA 6020A	
Magnesium	ND	---	55.6	mg/kg	10	05/23/19	EPA 6020A	
Manganese	8.74	---	1.11	mg/kg	10	05/23/19	EPA 6020A	
Mercury	ND	---	0.0889	mg/kg	10	05/23/19	EPA 6020A	
Nickel	ND	---	1.11	mg/kg	10	05/23/19	EPA 6020A	
Potassium	ND	---	111	mg/kg	10	05/23/19	EPA 6020A	
Selenium	ND	---	1.11	mg/kg	10	05/23/19	EPA 6020A	
Silver	ND	---	0.222	mg/kg	10	05/23/19	EPA 6020A	
Sodium	160	---	111	mg/kg	10	05/23/19	EPA 6020A	
Thallium	ND	---	0.222	mg/kg	10	05/23/19	EPA 6020A	
Vanadium	1.16	---	1.11	mg/kg	10	05/23/19	EPA 6020A	
Zinc	35.0	---	4.44	mg/kg	10	05/23/19	EPA 6020A	

2708-190520-006 (A9E0677-01RE1)		Matrix: Solid						
Batch: 9051152								
Beryllium	ND	---	0.222	mg/kg	10	05/24/19	EPA 6020A	



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ANALYTICAL SAMPLE RESULTS

Total Cyanide by UV Digestion/Gas Diffusion/Amperometric Detection

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
2708-190520-006 (A9E0677-01RE2)				Matrix: Solid		Batch: 9051240		
Cyanide, Total	0.846	---	0.492	mg/kg	5	05/24/19	D7511-12	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051229 - EPA 3546 (Fuels)						Solid						
Blank (9051229-BLK1)			Prepared: 05/23/19 16:37 Analyzed: 05/24/19 01:14									
<u>NWTPH-Dx</u>												
Diesel	ND	---	25.0	mg/kg	1	---	---	---	---	---	---	
Oil	ND	---	50.0	mg/kg	1	---	---	---	---	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 90 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
LCS (9051229-BS1)			Prepared: 05/23/19 16:37 Analyzed: 05/24/19 01:36									
<u>NWTPH-Dx</u>												
Diesel	120	---	25.0	mg/kg	1	125	---	96	70-130%	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 95 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
Duplicate (9051229-DUP1)			Prepared: 05/23/19 16:37 Analyzed: 05/24/19 02:18									
<u>QC Source Sample: Non-SDG (A9E0672-01)</u>												
Diesel	634	---	25.0	mg/kg	1	---	706	---	---	11	30%	F-13, F-20
Oil	ND	---	50.0	mg/kg	1	---	ND	---	---	---	30%	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 91 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						



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QUALITY CONTROL (QC) SAMPLE RESULTS

Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051092 - EPA 5035A												
Soil												
Blank (9051092-BLK1) Prepared: 05/21/19 11:00 Analyzed: 05/21/19 12:43												
<u>NWTPH-Gx (MS)</u>												
Gasoline Range Organics	ND	---	3.33	mg/kg	50	---	---	---	---	---	---	
Surr: 4-Bromofluorobenzene (Sur)		Recovery:	116 %	Limits:	50-150 %	Dilution:	1x					
1,4-Difluorobenzene (Sur)			96 %		50-150 %		"					
LCS (9051092-BS2) Prepared: 05/21/19 11:00 Analyzed: 05/21/19 12:16												
<u>NWTPH-Gx (MS)</u>												
Gasoline Range Organics	27.2	---	5.00	mg/kg	50	25.0	---	109	80-120%	---	---	
Surr: 4-Bromofluorobenzene (Sur)		Recovery:	115 %	Limits:	50-150 %	Dilution:	1x					
1,4-Difluorobenzene (Sur)			98 %		50-150 %		"					
Duplicate (9051092-DUP1) Prepared: 05/15/19 10:30 Analyzed: 05/21/19 16:25												
<u>QC Source Sample: Non-SDG (A9E0515-01)</u>												
Gasoline Range Organics	ND	---	5.87	mg/kg	50	---	ND	---	---	---	30%	
Surr: 4-Bromofluorobenzene (Sur)		Recovery:	96 %	Limits:	50-150 %	Dilution:	1x					
1,4-Difluorobenzene (Sur)			90 %		50-150 %		"					



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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051092 - EPA 5035A						Soil						
Blank (9051092-BLK1)			Prepared: 05/21/19 11:00 Analyzed: 05/21/19 12:43									
<u>5035A/8260C</u>												
Acetone	ND	---	667	ug/kg	50	---	---	---	---	---	---	---
Acrylonitrile	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	---
Benzene	ND	---	6.67	ug/kg	50	---	---	---	---	---	---	---
Bromobenzene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	---
Bromochloromethane	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	---
Bromodichloromethane	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	---
Bromoform	ND	---	133	ug/kg	50	---	---	---	---	---	---	---
Bromomethane	ND	---	333	ug/kg	50	---	---	---	---	---	---	---
2-Butanone (MEK)	ND	---	333	ug/kg	50	---	---	---	---	---	---	---
n-Butylbenzene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	---
sec-Butylbenzene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	---
tert-Butylbenzene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	---
Carbon disulfide	ND	---	333	ug/kg	50	---	---	---	---	---	---	---
Carbon tetrachloride	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	---
Chlorobenzene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	---
Chloroethane	ND	---	333	ug/kg	50	---	---	---	---	---	---	---
Chloroform	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	---
Chloromethane	ND	---	167	ug/kg	50	---	---	---	---	---	---	---
2-Chlorotoluene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	---
4-Chlorotoluene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	---
Dibromochloromethane	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	---
1,2-Dibromo-3-chloropropane	ND	---	167	ug/kg	50	---	---	---	---	---	---	---
1,2-Dibromoethane (EDB)	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	---
Dibromomethane	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	---
1,2-Dichlorobenzene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	---
1,3-Dichlorobenzene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	---
1,4-Dichlorobenzene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	---
Dichlorodifluoromethane	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	---
1,1-Dichloroethane	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	---
1,2-Dichloroethane (EDC)	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	---
1,1-Dichloroethene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	---
cis-1,2-Dichloroethene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	---
trans-1,2-Dichloroethene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	---

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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051092 - EPA 5035A						Soil						
Blank (9051092-BLK1)			Prepared: 05/21/19 11:00 Analyzed: 05/21/19 12:43									
1,2-Dichloropropane	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
1,3-Dichloropropane	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
2,2-Dichloropropane	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
1,1-Dichloropropene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
cis-1,3-Dichloropropene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
trans-1,3-Dichloropropene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Ethylbenzene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Hexachlorobutadiene	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	
2-Hexanone	ND	---	333	ug/kg	50	---	---	---	---	---	---	
Isopropylbenzene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
4-Isopropyltoluene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Methylene chloride	ND	---	167	ug/kg	50	---	---	---	---	---	---	
4-Methyl-2-pentanone (MiBK)	ND	---	333	ug/kg	50	---	---	---	---	---	---	
Methyl tert-butyl ether (MTBE)	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Naphthalene	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	
n-Propylbenzene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Styrene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
1,1,1,2-Tetrachloroethane	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	
1,1,2,2-Tetrachloroethane	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Tetrachloroethene (PCE)	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Toluene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
1,2,3-Trichlorobenzene	ND	---	167	ug/kg	50	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	---	167	ug/kg	50	---	---	---	---	---	---	
1,1,1-Trichloroethane	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
1,1,2-Trichloroethane	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Trichloroethene (TCE)	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Trichlorofluoromethane	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	
1,2,3-Trichloropropane	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
1,2,4-Trimethylbenzene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
1,3,5-Trimethylbenzene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Vinyl chloride	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
m,p-Xylene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
o-Xylene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	

Surr: 1,4-Difluorobenzene (Surr) Recovery: 105 % Limits: 80-120 % Dilution: 1x

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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051092 - EPA 5035A												
Soil												
Blank (9051092-BLK1)												
Prepared: 05/21/19 11:00 Analyzed: 05/21/19 12:43												
Surr: Toluene-d8 (Surr) Recovery: 94 % Limits: 80-120 % Dilution: 1x												
4-Bromofluorobenzene (Surr) 107 % 80-120 % "												
LCS (9051092-BS1)												
Prepared: 05/21/19 11:00 Analyzed: 05/21/19 11:49												
5035A/8260C												
Acetone	1800	---	1000	ug/kg	50	2000	---	90	80-120%	---	---	
Acrylonitrile	1010	---	100	ug/kg	50	1000	---	101	80-120%	---	---	
Benzene	978	---	10.0	ug/kg	50	1000	---	98	80-120%	---	---	
Bromobenzene	1060	---	25.0	ug/kg	50	1000	---	106	80-120%	---	---	
Bromochloromethane	1020	---	50.0	ug/kg	50	1000	---	102	80-120%	---	---	
Bromodichloromethane	1050	---	100	ug/kg	50	1000	---	105	80-120%	---	---	
Bromoform	1290	---	200	ug/kg	50	1000	---	129	80-120%	---	---	Q-56
Bromomethane	1120	---	500	ug/kg	50	1000	---	112	80-120%	---	---	
2-Butanone (MEK)	1930	---	500	ug/kg	50	2000	---	97	80-120%	---	---	
n-Butylbenzene	1130	---	50.0	ug/kg	50	1000	---	113	80-120%	---	---	
sec-Butylbenzene	1140	---	50.0	ug/kg	50	1000	---	114	80-120%	---	---	
tert-Butylbenzene	1120	---	50.0	ug/kg	50	1000	---	112	80-120%	---	---	
Carbon disulfide	966	---	500	ug/kg	50	1000	---	97	80-120%	---	---	
Carbon tetrachloride	1230	---	100	ug/kg	50	1000	---	123	80-120%	---	---	Q-56
Chlorobenzene	957	---	25.0	ug/kg	50	1000	---	96	80-120%	---	---	
Chloroethane	836	---	500	ug/kg	50	1000	---	84	80-120%	---	---	
Chloroform	999	---	50.0	ug/kg	50	1000	---	100	80-120%	---	---	
Chloromethane	1020	---	250	ug/kg	50	1000	---	102	80-120%	---	---	
2-Chlorotoluene	1100	---	50.0	ug/kg	50	1000	---	110	80-120%	---	---	
4-Chlorotoluene	1120	---	50.0	ug/kg	50	1000	---	112	80-120%	---	---	
Dibromochloromethane	1080	---	100	ug/kg	50	1000	---	108	80-120%	---	---	
1,2-Dibromo-3-chloropropane	1060	---	250	ug/kg	50	1000	---	106	80-120%	---	---	
1,2-Dibromoethane (EDB)	976	---	50.0	ug/kg	50	1000	---	98	80-120%	---	---	
Dibromomethane	1020	---	50.0	ug/kg	50	1000	---	102	80-120%	---	---	
1,2-Dichlorobenzene	1030	---	25.0	ug/kg	50	1000	---	103	80-120%	---	---	
1,3-Dichlorobenzene	1040	---	25.0	ug/kg	50	1000	---	104	80-120%	---	---	
1,4-Dichlorobenzene	978	---	25.0	ug/kg	50	1000	---	98	80-120%	---	---	
Dichlorodifluoromethane	1220	---	100	ug/kg	50	1000	---	122	80-120%	---	---	Q-56
1,1-Dichloroethane	899	---	25.0	ug/kg	50	1000	---	90	80-120%	---	---	

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Project: **Mult 802 Decommissioning**
Project Number: **2708-60F**
Project Manager: **Rob Ede**

Report ID:
A9E0677 - 05 28 19 1635

QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051092 - EPA 5035A												
Soil												
LCS (9051092-BS1)												
Prepared: 05/21/19 11:00 Analyzed: 05/21/19 11:49												
1,2-Dichloroethane (EDC)	927	---	25.0	ug/kg	50	1000	---	93	80-120%	---	---	
1,1-Dichloroethene	810	---	25.0	ug/kg	50	1000	---	81	80-120%	---	---	
cis-1,2-Dichloroethene	999	---	25.0	ug/kg	50	1000	---	100	80-120%	---	---	
trans-1,2-Dichloroethene	885	---	25.0	ug/kg	50	1000	---	89	80-120%	---	---	
1,2-Dichloropropane	1000	---	25.0	ug/kg	50	1000	---	100	80-120%	---	---	
1,3-Dichloropropane	995	---	50.0	ug/kg	50	1000	---	99	80-120%	---	---	
2,2-Dichloropropane	1250	---	50.0	ug/kg	50	1000	---	125	80-120%	---	---	Q-56
1,1-Dichloropropene	1010	---	50.0	ug/kg	50	1000	---	101	80-120%	---	---	
cis-1,3-Dichloropropene	966	---	50.0	ug/kg	50	1000	---	97	80-120%	---	---	
trans-1,3-Dichloropropene	1010	---	50.0	ug/kg	50	1000	---	101	80-120%	---	---	
Ethylbenzene	990	---	25.0	ug/kg	50	1000	---	99	80-120%	---	---	
Hexachlorobutadiene	1020	---	100	ug/kg	50	1000	---	102	80-120%	---	---	
2-Hexanone	1890	---	500	ug/kg	50	2000	---	94	80-120%	---	---	
Isopropylbenzene	1120	---	50.0	ug/kg	50	1000	---	112	80-120%	---	---	
4-Isopropyltoluene	1100	---	50.0	ug/kg	50	1000	---	110	80-120%	---	---	
Methylene chloride	715	---	250	ug/kg	50	1000	---	71	80-120%	---	---	Q-55
4-Methyl-2-pentanone (MiBK)	1980	---	500	ug/kg	50	2000	---	99	80-120%	---	---	
Methyl tert-butyl ether (MTBE)	984	---	50.0	ug/kg	50	1000	---	98	80-120%	---	---	
Naphthalene	917	---	100	ug/kg	50	1000	---	92	80-120%	---	---	
n-Propylbenzene	1120	---	25.0	ug/kg	50	1000	---	112	80-120%	---	---	
Styrene	995	---	50.0	ug/kg	50	1000	---	100	80-120%	---	---	
1,1,1,2-Tetrachloroethane	1160	---	100	ug/kg	50	1000	---	116	80-120%	---	---	
1,1,2,2-Tetrachloroethane	1180	---	50.0	ug/kg	50	1000	---	118	80-120%	---	---	
Tetrachloroethene (PCE)	973	---	25.0	ug/kg	50	1000	---	97	80-120%	---	---	
Toluene	911	---	50.0	ug/kg	50	1000	---	91	80-120%	---	---	
1,2,3-Trichlorobenzene	1040	---	250	ug/kg	50	1000	---	104	80-120%	---	---	
1,2,4-Trichlorobenzene	1060	---	250	ug/kg	50	1000	---	106	80-120%	---	---	
1,1,1-Trichloroethane	1160	---	25.0	ug/kg	50	1000	---	116	80-120%	---	---	
1,1,2-Trichloroethane	1030	---	25.0	ug/kg	50	1000	---	103	80-120%	---	---	
Trichloroethene (TCE)	972	---	25.0	ug/kg	50	1000	---	97	80-120%	---	---	
Trichlorofluoromethane	947	---	100	ug/kg	50	1000	---	95	80-120%	---	---	
1,2,3-Trichloropropane	1060	---	50.0	ug/kg	50	1000	---	106	80-120%	---	---	
1,2,4-Trimethylbenzene	1140	---	50.0	ug/kg	50	1000	---	114	80-120%	---	---	
1,3,5-Trimethylbenzene	1150	---	50.0	ug/kg	50	1000	---	115	80-120%	---	---	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051092 - EPA 5035A												
Soil												
LCS (9051092-BS1)												
Prepared: 05/21/19 11:00						Analyzed: 05/21/19 11:49						
Vinyl chloride	1040	---	25.0	ug/kg	50	1000	---	104	80-120%	---	---	
m,p-Xylene	2120	---	50.0	ug/kg	50	2000	---	106	80-120%	---	---	
o-Xylene	1070	---	25.0	ug/kg	50	1000	---	107	80-120%	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 100 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>95 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>104 %</i>		<i>80-120 %</i>		<i>"</i>						

Duplicate (9051092-DUP1)												
Prepared: 05/15/19 10:30						Analyzed: 05/21/19 16:25						
QC Source Sample: Non-SDG (A9E0515-01)												
Acetone	ND	---	1170	ug/kg	50	---	ND	---	---	---	30%	
Acrylonitrile	ND	---	117	ug/kg	50	---	ND	---	---	---	30%	
Benzene	ND	---	11.7	ug/kg	50	---	ND	---	---	---	30%	
Bromobenzene	ND	---	29.4	ug/kg	50	---	ND	---	---	---	30%	
Bromochloromethane	ND	---	58.7	ug/kg	50	---	ND	---	---	---	30%	
Bromodichloromethane	ND	---	117	ug/kg	50	---	ND	---	---	---	30%	
Bromoform	ND	---	235	ug/kg	50	---	ND	---	---	---	30%	
Bromomethane	ND	---	587	ug/kg	50	---	ND	---	---	---	30%	
2-Butanone (MEK)	ND	---	587	ug/kg	50	---	ND	---	---	---	30%	
n-Butylbenzene	ND	---	58.7	ug/kg	50	---	ND	---	---	---	30%	
sec-Butylbenzene	ND	---	58.7	ug/kg	50	---	ND	---	---	---	30%	
tert-Butylbenzene	ND	---	58.7	ug/kg	50	---	ND	---	---	---	30%	
Carbon disulfide	ND	---	587	ug/kg	50	---	ND	---	---	---	30%	
Carbon tetrachloride	ND	---	117	ug/kg	50	---	ND	---	---	---	30%	
Chlorobenzene	ND	---	29.4	ug/kg	50	---	ND	---	---	---	30%	
Chloroethane	ND	---	587	ug/kg	50	---	ND	---	---	---	30%	
Chloroform	ND	---	58.7	ug/kg	50	---	ND	---	---	---	30%	
Chloromethane	ND	---	294	ug/kg	50	---	ND	---	---	---	30%	
2-Chlorotoluene	ND	---	58.7	ug/kg	50	---	ND	---	---	---	30%	
4-Chlorotoluene	ND	---	58.7	ug/kg	50	---	ND	---	---	---	30%	
Dibromochloromethane	ND	---	117	ug/kg	50	---	ND	---	---	---	30%	
1,2-Dibromo-3-chloropropane	ND	---	294	ug/kg	50	---	ND	---	---	---	30%	
1,2-Dibromoethane (EDB)	ND	---	58.7	ug/kg	50	---	ND	---	---	---	30%	
Dibromomethane	ND	---	58.7	ug/kg	50	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	---	29.4	ug/kg	50	---	ND	---	---	---	30%	

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Philip Nerenberg, Lab Director



Hahn and Associates
 434 NW 6th Ave. Suite 203
 Portland, OR 97209

Project: **Mult 802 Decommissioning**
 Project Number: **2708-60F**
 Project Manager: **Rob Ede**

Report ID:
A9E0677 - 05 28 19 1635

QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051092 - EPA 5035A												
Soil												
Duplicate (9051092-DUP1)			Prepared: 05/15/19 10:30 Analyzed: 05/21/19 16:25									
QC Source Sample: Non-SDG (A9E0515-01)												
1,3-Dichlorobenzene	ND	---	29.4	ug/kg	50	---	ND	---	---	---	30%	
1,4-Dichlorobenzene	ND	---	29.4	ug/kg	50	---	ND	---	---	---	30%	
Dichlorodifluoromethane	ND	---	117	ug/kg	50	---	ND	---	---	---	30%	
1,1-Dichloroethane	ND	---	29.4	ug/kg	50	---	ND	---	---	---	30%	
1,2-Dichloroethane (EDC)	ND	---	29.4	ug/kg	50	---	ND	---	---	---	30%	
1,1-Dichloroethene	ND	---	29.4	ug/kg	50	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	ND	---	29.4	ug/kg	50	---	ND	---	---	---	30%	
trans-1,2-Dichloroethene	ND	---	29.4	ug/kg	50	---	ND	---	---	---	30%	
1,2-Dichloropropane	ND	---	29.4	ug/kg	50	---	ND	---	---	---	30%	
1,3-Dichloropropane	ND	---	58.7	ug/kg	50	---	ND	---	---	---	30%	
2,2-Dichloropropane	ND	---	58.7	ug/kg	50	---	ND	---	---	---	30%	
1,1-Dichloropropene	ND	---	58.7	ug/kg	50	---	ND	---	---	---	30%	
cis-1,3-Dichloropropene	ND	---	58.7	ug/kg	50	---	ND	---	---	---	30%	
trans-1,3-Dichloropropene	ND	---	58.7	ug/kg	50	---	ND	---	---	---	30%	
Ethylbenzene	ND	---	29.4	ug/kg	50	---	ND	---	---	---	30%	
Hexachlorobutadiene	ND	---	117	ug/kg	50	---	ND	---	---	---	30%	
2-Hexanone	ND	---	58.7	ug/kg	50	---	ND	---	---	---	30%	
Isopropylbenzene	ND	---	58.7	ug/kg	50	---	ND	---	---	---	30%	
4-Isopropyltoluene	ND	---	58.7	ug/kg	50	---	ND	---	---	---	30%	
Methylene chloride	ND	---	29.4	ug/kg	50	---	ND	---	---	---	30%	
4-Methyl-2-pentanone (MIBK)	ND	---	58.7	ug/kg	50	---	ND	---	---	---	30%	
Methyl tert-butyl ether (MTBE)	ND	---	58.7	ug/kg	50	---	ND	---	---	---	30%	
Naphthalene	ND	---	117	ug/kg	50	---	ND	---	---	---	30%	
n-Propylbenzene	ND	---	29.4	ug/kg	50	---	ND	---	---	---	30%	
Styrene	ND	---	58.7	ug/kg	50	---	ND	---	---	---	30%	
1,1,1,2-Tetrachloroethane	ND	---	117	ug/kg	50	---	ND	---	---	---	30%	
1,1,2,2-Tetrachloroethane	ND	---	58.7	ug/kg	50	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	ND	---	29.4	ug/kg	50	---	ND	---	---	---	30%	
Toluene	ND	---	58.7	ug/kg	50	---	ND	---	---	---	30%	
1,2,3-Trichlorobenzene	ND	---	29.4	ug/kg	50	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	---	29.4	ug/kg	50	---	ND	---	---	---	30%	
1,1,1-Trichloroethane	ND	---	29.4	ug/kg	50	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	---	29.4	ug/kg	50	---	ND	---	---	---	30%	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051092 - EPA 5035A												
Soil												
Duplicate (9051092-DUP1)			Prepared: 05/15/19 10:30 Analyzed: 05/21/19 16:25									
QC Source Sample: Non-SDG (A9E0515-01)												
Trichloroethene (TCE)	ND	---	29.4	ug/kg	50	---	ND	---	---	---	30%	
Trichlorofluoromethane	ND	---	117	ug/kg	50	---	ND	---	---	---	30%	
1,2,3-Trichloropropane	ND	---	58.7	ug/kg	50	---	ND	---	---	---	30%	
1,2,4-Trimethylbenzene	ND	---	58.7	ug/kg	50	---	ND	---	---	---	30%	
1,3,5-Trimethylbenzene	ND	---	58.7	ug/kg	50	---	ND	---	---	---	30%	
Vinyl chloride	ND	---	29.4	ug/kg	50	---	ND	---	---	---	30%	
m,p-Xylene	ND	---	58.7	ug/kg	50	---	ND	---	---	---	30%	
o-Xylene	ND	---	29.4	ug/kg	50	---	ND	---	---	---	30%	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 100 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>100 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>104 %</i>		<i>80-120 %</i>		<i>"</i>						

Matrix Spike (9051092-MS1)			Prepared: 05/15/19 14:15 Analyzed: 05/21/19 18:13									
QC Source Sample: Non-SDG (A9E0515-07)												
5035A/8260C												
Acetone	2490	---	1180	ug/kg	50	2360	ND	105	36-164%	---	---	
Acrylonitrile	1240	---	118	ug/kg	50	1180	ND	105	65-134%	---	---	
Benzene	1170	---	11.8	ug/kg	50	1180	ND	99	77-121%	---	---	
Bromobenzene	1230	---	29.6	ug/kg	50	1180	ND	104	78-121%	---	---	
Bromochloromethane	1310	---	59.1	ug/kg	50	1180	ND	111	78-125%	---	---	
Bromodichloromethane	1250	---	118	ug/kg	50	1180	ND	105	75-127%	---	---	
Bromoform	1480	---	237	ug/kg	50	1180	ND	125	67-132%	---	---	Q-54c
Bromomethane	1370	---	591	ug/kg	50	1180	ND	116	53-143%	---	---	
2-Butanone (MEK)	2320	---	591	ug/kg	50	2360	ND	98	51-148%	---	---	
n-Butylbenzene	1240	---	59.1	ug/kg	50	1180	ND	105	70-128%	---	---	
sec-Butylbenzene	1280	---	59.1	ug/kg	50	1180	ND	108	73-126%	---	---	
tert-Butylbenzene	1260	---	59.1	ug/kg	50	1180	ND	107	73-125%	---	---	
Carbon disulfide	1140	---	591	ug/kg	50	1180	ND	96	63-132%	---	---	
Carbon tetrachloride	1420	---	118	ug/kg	50	1180	ND	120	70-135%	---	---	Q-54a
Chlorobenzene	1120	---	29.6	ug/kg	50	1180	ND	95	79-120%	---	---	
Chloroethane	1170	---	591	ug/kg	50	1180	ND	99	59-139%	---	---	
Chloroform	1190	---	59.1	ug/kg	50	1180	ND	101	78-123%	---	---	
Chloromethane	1290	---	296	ug/kg	50	1180	ND	109	50-136%	---	---	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051092 - EPA 5035A												
Soil												
Matrix Spike (9051092-MS1)												
Prepared: 05/15/19 14:15 Analyzed: 05/21/19 18:13												
QC Source Sample: Non-SDG (A9E0515-07)												
2-Chlorotoluene	1240	---	59.1	ug/kg	50	1180	ND	105	75-122%	---	---	
4-Chlorotoluene	1270	---	59.1	ug/kg	50	1180	ND	108	72-124%	---	---	
Dibromochloromethane	1280	---	118	ug/kg	50	1180	ND	108	74-126%	---	---	
1,2-Dibromo-3-chloropropane	1270	---	296	ug/kg	50	1180	ND	107	61-132%	---	---	
1,2-Dibromoethane (EDB)	1180	---	59.1	ug/kg	50	1180	ND	100	78-122%	---	---	
Dibromomethane	1250	---	59.1	ug/kg	50	1180	ND	106	78-125%	---	---	
1,2-Dichlorobenzene	1210	---	29.6	ug/kg	50	1180	ND	102	78-121%	---	---	
1,3-Dichlorobenzene	1190	---	29.6	ug/kg	50	1180	ND	101	77-121%	---	---	
1,4-Dichlorobenzene	1130	---	29.6	ug/kg	50	1180	ND	96	75-120%	---	---	
Dichlorodifluoromethane	1460	---	118	ug/kg	50	1180	ND	124	29-149%	---	---	Q-54
1,1-Dichloroethane	1100	---	29.6	ug/kg	50	1180	ND	93	76-125%	---	---	
1,2-Dichloroethane (EDC)	1140	---	29.6	ug/kg	50	1180	ND	96	73-128%	---	---	
1,1-Dichloroethene	979	---	29.6	ug/kg	50	1180	ND	83	70-131%	---	---	
cis-1,2-Dichloroethene	1210	---	29.6	ug/kg	50	1180	ND	102	77-123%	---	---	
trans-1,2-Dichloroethene	1060	---	29.6	ug/kg	50	1180	ND	90	74-125%	---	---	
1,2-Dichloropropane	1200	---	29.6	ug/kg	50	1180	ND	102	76-123%	---	---	
1,3-Dichloropropane	1230	---	59.1	ug/kg	50	1180	ND	104	77-121%	---	---	
2,2-Dichloropropane	1310	---	59.1	ug/kg	50	1180	ND	111	67-133%	---	---	Q-54b
1,1-Dichloropropene	1190	---	59.1	ug/kg	50	1180	ND	101	76-125%	---	---	
cis-1,3-Dichloropropene	1150	---	59.1	ug/kg	50	1180	ND	97	74-126%	---	---	
trans-1,3-Dichloropropene	1200	---	59.1	ug/kg	50	1180	ND	102	71-130%	---	---	
Ethylbenzene	1160	---	29.6	ug/kg	50	1180	ND	98	76-122%	---	---	
Hexachlorobutadiene	1120	---	118	ug/kg	50	1180	ND	95	61-135%	---	---	
2-Hexanone	2300	---	591	ug/kg	50	2360	ND	97	53-145%	---	---	
Isopropylbenzene	1270	---	59.1	ug/kg	50	1180	ND	107	68-134%	---	---	
4-Isopropyltoluene	1230	---	59.1	ug/kg	50	1180	ND	104	73-127%	---	---	
Methylene chloride	894	---	296	ug/kg	50	1180	ND	76	70-128%	---	---	Q-54d
4-Methyl-2-pentanone (MiBK)	2460	---	591	ug/kg	50	2360	ND	104	65-135%	---	---	
Methyl tert-butyl ether (MTBE)	1180	---	59.1	ug/kg	50	1180	ND	100	73-125%	---	---	
Naphthalene	1100	---	118	ug/kg	50	1180	ND	93	62-129%	---	---	
n-Propylbenzene	1260	---	29.6	ug/kg	50	1180	ND	107	73-125%	---	---	
Styrene	1120	---	59.1	ug/kg	50	1180	ND	94	76-124%	---	---	
1,1,1,2-Tetrachloroethane	1340	---	118	ug/kg	50	1180	ND	113	78-125%	---	---	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051092 - EPA 5035A												
Soil												
Matrix Spike (9051092-MS1)												
Prepared: 05/15/19 14:15 Analyzed: 05/21/19 18:13												
QC Source Sample: Non-SDG (A9E0515-07)												
1,1,2,2-Tetrachloroethane	1390	---	59.1	ug/kg	50	1180	ND	118	70-124%	---	---	
Tetrachloroethene (PCE)	1160	---	29.6	ug/kg	50	1180	ND	98	73-128%	---	---	
Toluene	1110	---	59.1	ug/kg	50	1180	ND	94	77-121%	---	---	
1,2,3-Trichlorobenzene	1200	---	296	ug/kg	50	1180	ND	102	66-130%	---	---	
1,2,4-Trichlorobenzene	1220	---	296	ug/kg	50	1180	ND	103	67-129%	---	---	
1,1,1-Trichloroethane	1350	---	29.6	ug/kg	50	1180	ND	114	73-130%	---	---	
1,1,2-Trichloroethane	1250	---	29.6	ug/kg	50	1180	ND	106	78-121%	---	---	
Trichloroethene (TCE)	1160	---	29.6	ug/kg	50	1180	ND	98	77-123%	---	---	
Trichlorofluoromethane	1140	---	118	ug/kg	50	1180	ND	96	62-140%	---	---	
1,2,3-Trichloropropane	1270	---	59.1	ug/kg	50	1180	ND	107	73-125%	---	---	
1,2,4-Trimethylbenzene	1300	---	59.1	ug/kg	50	1180	ND	110	75-123%	---	---	
1,3,5-Trimethylbenzene	1300	---	59.1	ug/kg	50	1180	ND	110	73-124%	---	---	
Vinyl chloride	1270	---	29.6	ug/kg	50	1180	ND	107	56-135%	---	---	
m,p-Xylene	2450	---	59.1	ug/kg	50	2360	ND	104	77-124%	---	---	
o-Xylene	1210	---	29.6	ug/kg	50	1180	ND	103	77-123%	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 100 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>98 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>101 %</i>		<i>80-120 %</i>		<i>"</i>						



Hahn and Associates
 434 NW 6th Ave. Suite 203
 Portland, OR 97209

Project: **Mult 802 Decommissioning**
 Project Number: **2708-60F**
 Project Manager: **Rob Ede**

Report ID:
A9E0677 - 05 28 19 1635

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051172 - EPA 3546						Solid						
Blank (9051172-BLK1)			Prepared: 05/22/19 16:25 Analyzed: 05/23/19 12:43									
EPA 8270D												
Acenaphthene	ND	---	2.67	ug/kg	1	---	---	---	---	---	---	
Acenaphthylene	ND	---	2.67	ug/kg	1	---	---	---	---	---	---	
Anthracene	ND	---	2.67	ug/kg	1	---	---	---	---	---	---	
Benz(a)anthracene	ND	---	2.67	ug/kg	1	---	---	---	---	---	---	
Benzo(a)pyrene	ND	---	4.00	ug/kg	1	---	---	---	---	---	---	
Benzo(b)fluoranthene	ND	---	4.00	ug/kg	1	---	---	---	---	---	---	
Benzo(k)fluoranthene	ND	---	4.00	ug/kg	1	---	---	---	---	---	---	
Benzo(g,h,i)perylene	ND	---	2.67	ug/kg	1	---	---	---	---	---	---	
Chrysene	ND	---	2.67	ug/kg	1	---	---	---	---	---	---	
Dibenz(a,h)anthracene	ND	---	2.67	ug/kg	1	---	---	---	---	---	---	
Fluoranthene	ND	---	2.67	ug/kg	1	---	---	---	---	---	---	
Fluorene	ND	---	2.67	ug/kg	1	---	---	---	---	---	---	
Indeno(1,2,3-cd)pyrene	ND	---	2.67	ug/kg	1	---	---	---	---	---	---	
1-Methylnaphthalene	ND	---	5.33	ug/kg	1	---	---	---	---	---	---	
2-Methylnaphthalene	ND	---	5.33	ug/kg	1	---	---	---	---	---	---	
Naphthalene	ND	---	5.33	ug/kg	1	---	---	---	---	---	---	
Phenanthrene	ND	---	2.67	ug/kg	1	---	---	---	---	---	---	
Pyrene	ND	---	2.67	ug/kg	1	---	---	---	---	---	---	
Carbazole	ND	---	4.00	ug/kg	1	---	---	---	---	---	---	
Dibenzofuran	ND	---	2.67	ug/kg	1	---	---	---	---	---	---	
4-Chloro-3-methylphenol	ND	---	26.7	ug/kg	1	---	---	---	---	---	---	
2-Chlorophenol	ND	---	13.3	ug/kg	1	---	---	---	---	---	---	
2,4-Dichlorophenol	ND	---	13.3	ug/kg	1	---	---	---	---	---	---	
2,4-Dimethylphenol	ND	---	13.3	ug/kg	1	---	---	---	---	---	---	
2,4-Dinitrophenol	ND	---	66.7	ug/kg	1	---	---	---	---	---	---	
4,6-Dinitro-2-methylphenol	ND	---	66.7	ug/kg	1	---	---	---	---	---	---	
2-Methylphenol	ND	---	6.67	ug/kg	1	---	---	---	---	---	---	
3+4-Methylphenol(s)	ND	---	6.67	ug/kg	1	---	---	---	---	---	---	
2-Nitrophenol	ND	---	26.7	ug/kg	1	---	---	---	---	---	---	
4-Nitrophenol	ND	---	26.7	ug/kg	1	---	---	---	---	---	---	
Pentachlorophenol (PCP)	ND	---	26.7	ug/kg	1	---	---	---	---	---	---	
Phenol	ND	---	5.33	ug/kg	1	---	---	---	---	---	---	
2,3,4,6-Tetrachlorophenol	ND	---	13.3	ug/kg	1	---	---	---	---	---	---	

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Philip Nerenberg, Lab Director



Hahn and Associates 434 NW 6th Ave. Suite 203 Portland, OR 97209	Project: Mult 802 Decommissioning Project Number: 2708-60F Project Manager: Rob Ede	Report ID: A9E0677 - 05 28 19 1635
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QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051172 - EPA 3546						Solid						
Blank (9051172-BLK1)			Prepared: 05/22/19 16:25 Analyzed: 05/23/19 12:43									
2,3,5,6-Tetrachlorophenol	ND	---	13.3	ug/kg	1	---	---	---	---	---	---	
2,4,5-Trichlorophenol	ND	---	13.3	ug/kg	1	---	---	---	---	---	---	
2,4,6-Trichlorophenol	ND	---	13.3	ug/kg	1	---	---	---	---	---	---	
Bis(2-ethylhexyl)phthalate	ND	---	40.0	ug/kg	1	---	---	---	---	---	---	
Butyl benzyl phthalate	ND	---	26.7	ug/kg	1	---	---	---	---	---	---	
Diethylphthalate	ND	---	26.7	ug/kg	1	---	---	---	---	---	---	
Dimethylphthalate	ND	---	26.7	ug/kg	1	---	---	---	---	---	---	
Di-n-butylphthalate	ND	---	26.7	ug/kg	1	---	---	---	---	---	---	
Di-n-octyl phthalate	ND	---	26.7	ug/kg	1	---	---	---	---	---	---	
N-Nitrosodimethylamine	ND	---	6.67	ug/kg	1	---	---	---	---	---	---	
N-Nitroso-di-n-propylamine	ND	---	6.67	ug/kg	1	---	---	---	---	---	---	
N-Nitrosodiphenylamine	ND	---	6.67	ug/kg	1	---	---	---	---	---	---	
Bis(2-Chloroethoxy) methane	ND	---	6.67	ug/kg	1	---	---	---	---	---	---	
Bis(2-Chloroethyl) ether	ND	---	6.67	ug/kg	1	---	---	---	---	---	---	
2,2'-Oxybis(1-Chloropropane)	ND	---	6.67	ug/kg	1	---	---	---	---	---	---	
Hexachlorobenzene	ND	---	2.67	ug/kg	1	---	---	---	---	---	---	
Hexachlorobutadiene	ND	---	6.67	ug/kg	1	---	---	---	---	---	---	
Hexachlorocyclopentadiene	ND	---	13.3	ug/kg	1	---	---	---	---	---	---	
Hexachloroethane	ND	---	6.67	ug/kg	1	---	---	---	---	---	---	
2-Chloronaphthalene	ND	---	2.67	ug/kg	1	---	---	---	---	---	---	
1,2-Dichlorobenzene	ND	---	6.67	ug/kg	1	---	---	---	---	---	---	
1,3-Dichlorobenzene	ND	---	6.67	ug/kg	1	---	---	---	---	---	---	
1,4-Dichlorobenzene	ND	---	6.67	ug/kg	1	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	---	6.67	ug/kg	1	---	---	---	---	---	---	
4-Bromophenyl phenyl ether	ND	---	6.67	ug/kg	1	---	---	---	---	---	---	
4-Chlorophenyl phenyl ether	ND	---	6.67	ug/kg	1	---	---	---	---	---	---	
Aniline	ND	---	13.3	ug/kg	1	---	---	---	---	---	---	
4-Chloroaniline	ND	---	6.67	ug/kg	1	---	---	---	---	---	---	
2-Nitroaniline	ND	---	53.3	ug/kg	1	---	---	---	---	---	---	
3-Nitroaniline	ND	---	53.3	ug/kg	1	---	---	---	---	---	---	
4-Nitroaniline	ND	---	53.3	ug/kg	1	---	---	---	---	---	---	
Nitrobenzene	ND	---	26.7	ug/kg	1	---	---	---	---	---	---	
2,4-Dinitrotoluene	ND	---	26.7	ug/kg	1	---	---	---	---	---	---	
2,6-Dinitrotoluene	ND	---	26.7	ug/kg	1	---	---	---	---	---	---	

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Philip Nerenberg, Lab Director



Hahn and Associates
434 NW 6th Ave. Suite 203
Portland, OR 97209

Project: **Mult 802 Decommissioning**
Project Number: **2708-60F**
Project Manager: **Rob Ede**

Report ID:
A9E0677 - 05 28 19 1635

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051172 - EPA 3546						Solid						
Blank (9051172-BLK1)			Prepared: 05/22/19 16:25 Analyzed: 05/23/19 12:43									
Benzoic acid	ND	---	333	ug/kg	1	---	---	---	---	---	---	
Benzyl alcohol	ND	---	13.3	ug/kg	1	---	---	---	---	---	---	
Isophorone	ND	---	6.67	ug/kg	1	---	---	---	---	---	---	
Azobenzene (1,2-DPH)	ND	---	6.67	ug/kg	1	---	---	---	---	---	---	
Bis(2-Ethylhexyl) adipate	ND	---	66.7	ug/kg	1	---	---	---	---	---	---	
3,3'-Dichlorobenzidine	ND	---	53.3	ug/kg	1	---	---	---	---	---	---	Q-52
1,2-Dinitrobenzene	ND	---	66.7	ug/kg	1	---	---	---	---	---	---	
1,3-Dinitrobenzene	ND	---	66.7	ug/kg	1	---	---	---	---	---	---	
1,4-Dinitrobenzene	ND	---	66.7	ug/kg	1	---	---	---	---	---	---	
Pyridine	ND	---	13.3	ug/kg	1	---	---	---	---	---	---	
<i>Surr: Nitrobenzene-d5 (Surr)</i>		<i>Recovery: 80 %</i>		<i>Limits: 37-122 %</i>		<i>Dilution: 1x</i>						
<i>2-Fluorobiphenyl (Surr)</i>		<i>76 %</i>		<i>44-115 %</i>		<i>"</i>						
<i>Phenol-d6 (Surr)</i>		<i>78 %</i>		<i>33-122 %</i>		<i>"</i>						
<i>p-Terphenyl-d14 (Surr)</i>		<i>91 %</i>		<i>54-127 %</i>		<i>"</i>						
<i>2-Fluorophenol (Surr)</i>		<i>75 %</i>		<i>35-115 %</i>		<i>"</i>						
<i>2,4,6-Tribromophenol (Surr)</i>		<i>71 %</i>		<i>39-132 %</i>		<i>"</i>						
LCS (9051172-BS1)						Prepared: 05/22/19 16:25 Analyzed: 05/23/19 13:19						Q-18
EPA 8270D												
Acenaphthene	477	---	10.7	ug/kg	4	533	---	90	40-122%	---	---	
Acenaphthylene	496	---	10.7	ug/kg	4	533	---	93	32-132%	---	---	
Anthracene	495	---	10.7	ug/kg	4	533	---	93	47-123%	---	---	
Benz(a)anthracene	510	---	10.7	ug/kg	4	533	---	96	49-126%	---	---	
Benzo(a)pyrene	530	---	16.0	ug/kg	4	533	---	99	45-129%	---	---	
Benzo(b)fluoranthene	514	---	16.0	ug/kg	4	533	---	96	45-132%	---	---	
Benzo(k)fluoranthene	516	---	16.0	ug/kg	4	533	---	97	47-132%	---	---	
Benzo(g,h,i)perylene	492	---	10.7	ug/kg	4	533	---	92	43-134%	---	---	
Chrysene	506	---	10.7	ug/kg	4	533	---	95	50-124%	---	---	
Dibenz(a,h)anthracene	505	---	10.7	ug/kg	4	533	---	95	45-134%	---	---	
Fluoranthene	511	---	10.7	ug/kg	4	533	---	96	50-127%	---	---	
Fluorene	471	---	10.7	ug/kg	4	533	---	88	43-125%	---	---	
Indeno(1,2,3-cd)pyrene	466	---	10.7	ug/kg	4	533	---	87	45-133%	---	---	
1-Methylnaphthalene	443	---	21.3	ug/kg	4	533	---	83	40-120%	---	---	
2-Methylnaphthalene	458	---	21.3	ug/kg	4	533	---	86	38-122%	---	---	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051172 - EPA 3546						Solid						
LCS (9051172-BS1)						Prepared: 05/22/19 16:25 Analyzed: 05/23/19 13:19						Q-18
Naphthalene	465	---	21.3	ug/kg	4	533	---	87	35-123%	---	---	
Phenanthrene	488	---	10.7	ug/kg	4	533	---	92	50-121%	---	---	
Pyrene	515	---	10.7	ug/kg	4	533	---	97	47-127%	---	---	
Carbazole	510	---	16.0	ug/kg	4	533	---	96	50-122%	---	---	
Dibenzofuran	470	---	10.7	ug/kg	4	533	---	88	44-120%	---	---	
4-Chloro-3-methylphenol	469	---	107	ug/kg	4	533	---	88	45-122%	---	---	
2-Chlorophenol	484	---	53.2	ug/kg	4	533	---	91	34-121%	---	---	
2,4-Dichlorophenol	495	---	53.2	ug/kg	4	533	---	93	40-122%	---	---	
2,4-Dimethylphenol	416	---	53.2	ug/kg	4	533	---	78	30-127%	---	---	
2,4-Dinitrophenol	753	---	267	ug/kg	4	533	---	141	5-137%	---	---	Q-29, Q-41
4,6-Dinitro-2-methylphenol	751	---	267	ug/kg	4	533	---	141	29-132%	---	---	Q-41, Q-29
2-Methylphenol	498	---	26.7	ug/kg	4	533	---	93	32-122%	---	---	Q-41
3+4-Methylphenol(s)	498	---	26.7	ug/kg	4	533	---	93	34-120%	---	---	
2-Nitrophenol	624	---	107	ug/kg	4	533	---	117	36-123%	---	---	Q-41
4-Nitrophenol	434	---	107	ug/kg	4	533	---	81	30-132%	---	---	
Pentachlorophenol (PCP)	422	---	107	ug/kg	4	533	---	79	25-133%	---	---	
Phenol	470	---	21.3	ug/kg	4	533	---	88	34-120%	---	---	
2,3,4,6-Tetrachlorophenol	473	---	53.2	ug/kg	4	533	---	89	44-125%	---	---	
2,3,5,6-Tetrachlorophenol	474	---	53.2	ug/kg	4	533	---	89	40-120%	---	---	
2,4,5-Trichlorophenol	519	---	53.2	ug/kg	4	533	---	97	41-124%	---	---	
2,4,6-Trichlorophenol	485	---	53.2	ug/kg	4	533	---	91	39-126%	---	---	
Bis(2-ethylhexyl)phthalate	513	---	160	ug/kg	4	533	---	96	51-133%	---	---	
Butyl benzyl phthalate	533	---	107	ug/kg	4	533	---	100	48-132%	---	---	
Diethylphthalate	510	---	107	ug/kg	4	533	---	96	50-124%	---	---	
Dimethylphthalate	477	---	107	ug/kg	4	533	---	89	48-124%	---	---	
Di-n-butylphthalate	551	---	107	ug/kg	4	533	---	103	51-128%	---	---	
Di-n-octyl phthalate	544	---	107	ug/kg	4	533	---	102	44-140%	---	---	
N-Nitrosodimethylamine	446	---	26.7	ug/kg	4	533	---	84	23-120%	---	---	
N-Nitroso-di-n-propylamine	451	---	26.7	ug/kg	4	533	---	85	36-120%	---	---	
N-Nitrosodiphenylamine	515	---	26.7	ug/kg	4	533	---	97	38-127%	---	---	
Bis(2-Chloroethoxy) methane	478	---	26.7	ug/kg	4	533	---	90	36-121%	---	---	
Bis(2-Chloroethyl) ether	465	---	26.7	ug/kg	4	533	---	87	31-120%	---	---	Q-41
2,2'-Oxybis(1-Chloropropane)	436	---	26.7	ug/kg	4	533	---	82	33-131%	---	---	
Hexachlorobenzene	467	---	10.7	ug/kg	4	533	---	88	44-122%	---	---	



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QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051172 - EPA 3546						Solid						
LCS (9051172-BS1)						Prepared: 05/22/19 16:25 Analyzed: 05/23/19 13:19						Q-18
Hexachlorobutadiene	471	---	26.7	ug/kg	4	533	---	88	32-123%	---	---	
Hexachlorocyclopentadiene	592	---	53.2	ug/kg	4	533	---	111	5-140%	---	---	Q-41
Hexachloroethane	514	---	26.7	ug/kg	4	533	---	96	28-120%	---	---	
2-Chloronaphthalene	516	---	10.7	ug/kg	4	533	---	97	41-120%	---	---	
1,2-Dichlorobenzene	456	---	26.7	ug/kg	4	533	---	86	33-120%	---	---	
1,3-Dichlorobenzene	450	---	26.7	ug/kg	4	533	---	84	30-120%	---	---	
1,4-Dichlorobenzene	451	---	26.7	ug/kg	4	533	---	85	31-120%	---	---	
1,2,4-Trichlorobenzene	486	---	26.7	ug/kg	4	533	---	91	34-120%	---	---	
4-Bromophenyl phenyl ether	482	---	26.7	ug/kg	4	533	---	90	46-124%	---	---	
4-Chlorophenyl phenyl ether	453	---	26.7	ug/kg	4	533	---	85	45-121%	---	---	
Aniline	274	---	53.2	ug/kg	4	533	---	51	7-120%	---	---	Q-31
4-Chloroaniline	325	---	26.7	ug/kg	4	533	---	61	16-120%	---	---	
2-Nitroaniline	513	---	213	ug/kg	4	533	---	96	44-127%	---	---	
3-Nitroaniline	417	---	213	ug/kg	4	533	---	78	33-120%	---	---	
4-Nitroaniline	489	---	213	ug/kg	4	533	---	92	35-120%	---	---	
Nitrobenzene	499	---	107	ug/kg	4	533	---	94	34-122%	---	---	Q-41
2,4-Dinitrotoluene	511	---	107	ug/kg	4	533	---	96	48-126%	---	---	
2,6-Dinitrotoluene	533	---	107	ug/kg	4	533	---	100	46-124%	---	---	
Benzoic acid	805	---	668	ug/kg	4	1070	---	75	5-140%	---	---	
Benzyl alcohol	473	---	53.2	ug/kg	4	533	---	89	29-122%	---	---	
Isophorone	458	---	26.7	ug/kg	4	533	---	86	30-122%	---	---	
Azobenzene (1,2-DPH)	510	---	26.7	ug/kg	4	533	---	96	39-125%	---	---	
Bis(2-Ethylhexyl) adipate	587	---	267	ug/kg	4	533	---	110	60-121%	---	---	Q-41
3,3'-Dichlorobenzidine	1960	---	213	ug/kg	4	1070	---	184	22-121%	---	---	Q-29, Q-41
1,2-Dinitrobenzene	488	---	267	ug/kg	4	533	---	92	44-120%	---	---	
1,3-Dinitrobenzene	570	---	267	ug/kg	4	533	---	107	42-127%	---	---	Q-41
1,4-Dinitrobenzene	617	---	267	ug/kg	4	533	---	116	37-132%	---	---	Q-41
Pyridine	371	---	53.2	ug/kg	4	533	---	70	5-120%	---	---	
<i>Surr: Nitrobenzene-d5 (Surr)</i>		<i>Recovery: 86 %</i>		<i>Limits: 37-122 %</i>		<i>Dilution: 4x</i>						
<i>2-Fluorobiphenyl (Surr)</i>		<i>90 %</i>		<i>44-115 %</i>		<i>"</i>						
<i>Phenol-d6 (Surr)</i>		<i>86 %</i>		<i>33-122 %</i>		<i>"</i>						
<i>p-Terphenyl-d14 (Surr)</i>		<i>94 %</i>		<i>54-127 %</i>		<i>"</i>						
<i>2-Fluorophenol (Surr)</i>		<i>86 %</i>		<i>35-115 %</i>		<i>"</i>						
<i>2,4,6-Tribromophenol (Surr)</i>		<i>92 %</i>		<i>39-132 %</i>		<i>"</i>						



Hahn and Associates 434 NW 6th Ave. Suite 203 Portland, OR 97209	Project: Mult 802 Decommissioning Project Number: 2708-60F Project Manager: Rob Ede	Report ID: A9E0677 - 05 28 19 1635
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QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051172 - EPA 3546							Solid					
Duplicate (9051172-DUP1)			Prepared: 05/22/19 16:25 Analyzed: 05/23/19 14:34									
QC Source Sample: 2708-190520-006 (A9E0677-01)												
EPA 8270D												
Acenaphthene	24100000	---	801000	ug/kg	10000	---	22600000	---	---	6	30%	
Acenaphthylene	ND	---	801000	ug/kg	10000	---	ND	---	---	---	30%	
Anthracene	12800000	---	801000	ug/kg	10000	---	11700000	---	---	9	30%	
Benz(a)anthracene	6410000	---	801000	ug/kg	10000	---	6200000	---	---	3	30%	
Benzo(a)pyrene	7340000	---	1200000	ug/kg	10000	---	6980000	---	---	5	30%	
Benzo(b)fluoranthene	7530000	---	1200000	ug/kg	10000	---	7190000	---	---	5	30%	M-05
Benzo(k)fluoranthene	3440000	---	1200000	ug/kg	10000	---	2850000	---	---	18	30%	M-05
Benzo(g,h,i)perylene	4820000	---	801000	ug/kg	10000	---	4560000	---	---	6	30%	
Chrysene	6450000	---	801000	ug/kg	10000	---	6140000	---	---	5	30%	
Dibenz(a,h)anthracene	ND	---	801000	ug/kg	10000	---	575000	---	---	***	30%	
Fluoranthene	29600000	---	801000	ug/kg	10000	---	27500000	---	---	7	30%	
Fluorene	13000000	---	801000	ug/kg	10000	---	11600000	---	---	12	30%	
Indeno(1,2,3-cd)pyrene	4790000	---	801000	ug/kg	10000	---	4470000	---	---	7	30%	
1-Methylnaphthalene	6880000	---	1600000	ug/kg	10000	---	6420000	---	---	7	30%	
2-Methylnaphthalene	14300000	---	1600000	ug/kg	10000	---	13300000	---	---	7	30%	
Naphthalene	37900000	---	1600000	ug/kg	10000	---	36900000	---	---	3	30%	
Phenanthrene	44700000	---	801000	ug/kg	10000	---	42000000	---	---	6	30%	
Pyrene	25000000	---	801000	ug/kg	10000	---	23400000	---	---	7	30%	
Carbazole	6190000	---	1200000	ug/kg	10000	---	5590000	---	---	10	30%	
Dibenzofuran	13500000	---	801000	ug/kg	10000	---	12500000	---	---	8	30%	
4-Chloro-3-methylphenol	ND	---	8010000	ug/kg	10000	---	ND	---	---	---	30%	
2-Chlorophenol	ND	---	3990000	ug/kg	10000	---	ND	---	---	---	30%	
2,4-Dichlorophenol	ND	---	3990000	ug/kg	10000	---	ND	---	---	---	30%	
2,4-Dimethylphenol	ND	---	3990000	ug/kg	10000	---	ND	---	---	---	30%	
2,4-Dinitrophenol	ND	---	20000000	ug/kg	10000	---	ND	---	---	---	30%	
4,6-Dinitro-2-methylphenol	ND	---	20000000	ug/kg	10000	---	ND	---	---	---	30%	
2-Methylphenol	ND	---	2000000	ug/kg	10000	---	ND	---	---	---	30%	
3+4-Methylphenol(s)	ND	---	2000000	ug/kg	10000	---	ND	---	---	---	30%	Q-17
2-Nitrophenol	ND	---	8010000	ug/kg	10000	---	ND	---	---	---	30%	
4-Nitrophenol	ND	---	8010000	ug/kg	10000	---	ND	---	---	---	30%	
Pentachlorophenol (PCP)	ND	---	8010000	ug/kg	10000	---	ND	---	---	---	30%	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051172 - EPA 3546							Solid					
Duplicate (9051172-DUP1)			Prepared: 05/22/19 16:25 Analyzed: 05/23/19 14:34									
QC Source Sample: 2708-190520-006 (A9E0677-01)												
Phenol	ND	---	1600000	ug/kg	10000	---	1150000	---	---	***	30%	
2,3,4,6-Tetrachlorophenol	ND	---	3990000	ug/kg	10000	---	ND	---	---	---	30%	
2,3,5,6-Tetrachlorophenol	ND	---	3990000	ug/kg	10000	---	ND	---	---	---	30%	
2,4,5-Trichlorophenol	ND	---	3990000	ug/kg	10000	---	ND	---	---	---	30%	
2,4,6-Trichlorophenol	ND	---	3990000	ug/kg	10000	---	ND	---	---	---	30%	
Bis(2-ethylhexyl)phthalate	ND	---	12000000	ug/kg	10000	---	ND	---	---	---	30%	
Butyl benzyl phthalate	ND	---	8010000	ug/kg	10000	---	ND	---	---	---	30%	
Diethylphthalate	ND	---	8010000	ug/kg	10000	---	ND	---	---	---	30%	
Dimethylphthalate	ND	---	8010000	ug/kg	10000	---	ND	---	---	---	30%	
Di-n-butylphthalate	ND	---	8010000	ug/kg	10000	---	ND	---	---	---	30%	
Di-n-octyl phthalate	ND	---	8010000	ug/kg	10000	---	ND	---	---	---	30%	
N-Nitrosodimethylamine	ND	---	2000000	ug/kg	10000	---	ND	---	---	---	30%	
N-Nitroso-di-n-propylamine	ND	---	2000000	ug/kg	10000	---	ND	---	---	---	30%	
N-Nitrosodiphenylamine	ND	---	2000000	ug/kg	10000	---	ND	---	---	---	30%	
Bis(2-Chloroethoxy) methane	ND	---	2000000	ug/kg	10000	---	ND	---	---	---	30%	
Bis(2-Chloroethyl) ether	ND	---	2000000	ug/kg	10000	---	ND	---	---	---	30%	
2,2'-Oxybis(1-Chloropropane)	ND	---	2000000	ug/kg	10000	---	ND	---	---	---	30%	
Hexachlorobenzene	ND	---	801000	ug/kg	10000	---	ND	---	---	---	30%	
Hexachlorobutadiene	ND	---	2000000	ug/kg	10000	---	ND	---	---	---	30%	
Hexachlorocyclopentadiene	ND	---	3990000	ug/kg	10000	---	ND	---	---	---	30%	
Hexachloroethane	ND	---	2000000	ug/kg	10000	---	ND	---	---	---	30%	
2-Chloronaphthalene	ND	---	801000	ug/kg	10000	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	---	2000000	ug/kg	10000	---	ND	---	---	---	30%	
1,3-Dichlorobenzene	ND	---	2000000	ug/kg	10000	---	ND	---	---	---	30%	
1,4-Dichlorobenzene	ND	---	2000000	ug/kg	10000	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	---	2000000	ug/kg	10000	---	ND	---	---	---	30%	
4-Bromophenyl phenyl ether	ND	---	2000000	ug/kg	10000	---	ND	---	---	---	30%	
4-Chlorophenyl phenyl ether	ND	---	2000000	ug/kg	10000	---	ND	---	---	---	30%	
Aniline	ND	---	3990000	ug/kg	10000	---	ND	---	---	---	30%	
4-Chloroaniline	ND	---	2000000	ug/kg	10000	---	ND	---	---	---	30%	
2-Nitroaniline	ND	---	16000000	ug/kg	10000	---	ND	---	---	---	30%	
3-Nitroaniline	ND	---	16000000	ug/kg	10000	---	ND	---	---	---	30%	
4-Nitroaniline	ND	---	16000000	ug/kg	10000	---	ND	---	---	---	30%	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051172 - EPA 3546						Solid						
Duplicate (9051172-DUP1)			Prepared: 05/22/19 16:25 Analyzed: 05/23/19 14:34									
QC Source Sample: 2708-190520-006 (A9E0677-01)												
Nitrobenzene	ND	---	8010000	ug/kg	10000	---	ND	---	---	---	30%	
2,4-Dinitrotoluene	ND	---	8010000	ug/kg	10000	---	ND	---	---	---	30%	
2,6-Dinitrotoluene	ND	---	8010000	ug/kg	10000	---	ND	---	---	---	30%	
Benzoic acid	ND	---	99900000	ug/kg	10000	---	ND	---	---	---	30%	
Benzyl alcohol	ND	---	3990000	ug/kg	10000	---	ND	---	---	---	30%	
Isophorone	ND	---	2000000	ug/kg	10000	---	ND	---	---	---	30%	
Azobenzene (1,2-DPH)	ND	---	2000000	ug/kg	10000	---	ND	---	---	---	30%	
Bis(2-Ethylhexyl) adipate	ND	---	20000000	ug/kg	10000	---	ND	---	---	---	30%	
3,3'-Dichlorobenzidine	ND	---	16000000	ug/kg	10000	---	ND	---	---	---	30%	Q-52
1,2-Dinitrobenzene	ND	---	20000000	ug/kg	10000	---	ND	---	---	---	30%	
1,3-Dinitrobenzene	ND	---	20000000	ug/kg	10000	---	ND	---	---	---	30%	
1,4-Dinitrobenzene	ND	---	20000000	ug/kg	10000	---	ND	---	---	---	30%	
Pyridine	ND	---	3990000	ug/kg	10000	---	ND	---	---	---	30%	
<i>Surr: Nitrobenzene-d5 (Surr)</i>		<i>Recovery: %</i>		<i>Limits: 37-122 %</i>		<i>Dilution: 10000x</i>						
<i>2-Fluorobiphenyl (Surr)</i>		<i>%</i>		<i>44-115 %</i>		<i>"</i>						
<i>Phenol-d6 (Surr)</i>		<i>%</i>		<i>33-122 %</i>		<i>"</i>						
<i>p-Terphenyl-d14 (Surr)</i>		<i>232 %</i>		<i>54-127 %</i>		<i>"</i>						
<i>2-Fluorophenol (Surr)</i>		<i>%</i>		<i>35-115 %</i>		<i>"</i>						
<i>2,4,6-Tribromophenol (Surr)</i>		<i>%</i>		<i>39-132 %</i>		<i>"</i>						



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QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020A (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051152 - EPA 3051A						Solid						
Blank (9051152-BLK1)			Prepared: 05/22/19 11:59 Analyzed: 05/23/19 16:15									
<u>EPA 6020A</u>												
Aluminum	ND	---	50.0	mg/kg	10	---	---	---	---	---	---	
Antimony	ND	---	1.00	mg/kg	10	---	---	---	---	---	---	
Arsenic	ND	---	1.00	mg/kg	10	---	---	---	---	---	---	
Barium	ND	---	1.00	mg/kg	10	---	---	---	---	---	---	
Cadmium	ND	---	0.200	mg/kg	10	---	---	---	---	---	---	
Calcium	ND	---	100	mg/kg	10	---	---	---	---	---	---	
Chromium	ND	---	1.00	mg/kg	10	---	---	---	---	---	---	
Copper	ND	---	1.00	mg/kg	10	---	---	---	---	---	---	
Iron	ND	---	50.0	mg/kg	10	---	---	---	---	---	---	
Lead	ND	---	0.200	mg/kg	10	---	---	---	---	---	---	
Magnesium	ND	---	50.0	mg/kg	10	---	---	---	---	---	---	
Manganese	ND	---	1.00	mg/kg	10	---	---	---	---	---	---	
Mercury	ND	---	0.0800	mg/kg	10	---	---	---	---	---	---	
Nickel	ND	---	1.00	mg/kg	10	---	---	---	---	---	---	
Potassium	ND	---	100	mg/kg	10	---	---	---	---	---	---	
Selenium	ND	---	1.00	mg/kg	10	---	---	---	---	---	---	
Silver	ND	---	0.200	mg/kg	10	---	---	---	---	---	---	
Sodium	ND	---	100	mg/kg	10	---	---	---	---	---	---	
Thallium	ND	---	0.200	mg/kg	10	---	---	---	---	---	---	
Vanadium	ND	---	1.00	mg/kg	10	---	---	---	---	---	---	
Zinc	ND	---	4.00	mg/kg	10	---	---	---	---	---	---	

Blank (9051152-BLK2)			Prepared: 05/22/19 11:59 Analyzed: 05/24/19 11:31									
<u>EPA 6020A</u>												
Beryllium	ND	---	0.200	mg/kg	10	---	---	---	---	---	---	Q-16

LCS (9051152-BS1)			Prepared: 05/22/19 11:59 Analyzed: 05/23/19 16:20									
<u>EPA 6020A</u>												
Aluminum	2410	---	50.0	mg/kg	10	2500	---	96	80-120%	---	---	
Antimony	22.7	---	1.00	mg/kg	10	25.0	---	91	80-120%	---	---	
Arsenic	48.5	---	1.00	mg/kg	10	50.0	---	97	80-120%	---	---	
Barium	52.0	---	1.00	mg/kg	10	50.0	---	104	80-120%	---	---	
Cadmium	46.8	---	0.200	mg/kg	10	50.0	---	94	80-120%	---	---	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020A (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051152 - EPA 3051A												
Solid												
LCS (9051152-BS1)												
Prepared: 05/22/19 11:59 Analyzed: 05/23/19 16:20												
Calcium	2440	---	100	mg/kg	10	2500	---	98	80-120%	---	---	
Chromium	48.5	---	1.00	mg/kg	10	50.0	---	97	80-120%	---	---	
Copper	50.1	---	1.00	mg/kg	10	50.0	---	100	80-120%	---	---	
Iron	2460	---	50.0	mg/kg	10	2500	---	98	80-120%	---	---	
Lead	47.1	---	0.200	mg/kg	10	50.0	---	94	80-120%	---	---	
Magnesium	2370	---	50.0	mg/kg	10	2500	---	95	80-120%	---	---	
Manganese	48.8	---	1.00	mg/kg	10	50.0	---	98	80-120%	---	---	
Mercury	0.909	---	0.0800	mg/kg	10	1.00	---	91	80-120%	---	---	
Nickel	50.6	---	1.00	mg/kg	10	50.0	---	101	80-120%	---	---	
Potassium	2490	---	100	mg/kg	10	2500	---	100	80-120%	---	---	
Selenium	22.7	---	1.00	mg/kg	10	25.0	---	91	80-120%	---	---	
Silver	23.5	---	0.200	mg/kg	10	25.0	---	94	80-120%	---	---	
Sodium	2420	---	100	mg/kg	10	2500	---	97	80-120%	---	---	
Thallium	23.1	---	0.200	mg/kg	10	25.0	---	93	80-120%	---	---	
Vanadium	47.6	---	1.00	mg/kg	10	50.0	---	95	80-120%	---	---	
Zinc	49.2	---	4.00	mg/kg	10	50.0	---	98	80-120%	---	---	

LCS (9051152-BS2)												
Prepared: 05/22/19 11:59 Analyzed: 05/24/19 11:35												
<u>EPA 6020A</u>												
Beryllium	22.5	---	0.200	mg/kg	10	25.0	---	90	80-120%	---	---	Q-16

Duplicate (9051152-DUP1)												
Prepared: 05/22/19 11:59 Analyzed: 05/23/19 16:45												
<u>QC Source Sample: Non-SDG (A9E0672-01)</u>												
Aluminum	361	---	53.3	mg/kg	10	---	519	---	---	36	40%	
Antimony	ND	---	1.07	mg/kg	10	---	ND	---	---	---	40%	
Arsenic	3.73	---	1.07	mg/kg	10	---	4.43	---	---	17	40%	
Barium	39.9	---	1.07	mg/kg	10	---	60.7	---	---	41	40%	Q-04
Cadmium	ND	---	0.213	mg/kg	10	---	ND	---	---	---	40%	
Calcium	3380	---	107	mg/kg	10	---	4170	---	---	21	40%	
Chromium	2.60	---	1.07	mg/kg	10	---	3.85	---	---	39	40%	
Copper	15.9	---	1.07	mg/kg	10	---	16.9	---	---	6	40%	
Iron	6220	---	53.3	mg/kg	10	---	7660	---	---	21	40%	
Lead	1.29	---	0.213	mg/kg	10	---	1.48	---	---	14	40%	
Magnesium	402	---	53.3	mg/kg	10	---	453	---	---	12	40%	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020A (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051152 - EPA 3051A						Solid						
Duplicate (9051152-DUP1)			Prepared: 05/22/19 11:59 Analyzed: 05/23/19 16:45									
<u>QC Source Sample: Non-SDG (A9E0672-01)</u>												
Manganese	684	---	1.07	mg/kg	10	---	788	---	---	14	40%	
Mercury	ND	---	0.0853	mg/kg	10	---	ND	---	---	---	40%	
Nickel	8.64	---	1.07	mg/kg	10	---	19.4	---	---	77	40%	Q-04
Potassium	ND	---	107	mg/kg	10	---	59.1	---	---	***	40%	
Selenium	ND	---	1.07	mg/kg	10	---	ND	---	---	---	40%	
Silver	ND	---	0.213	mg/kg	10	---	ND	---	---	---	40%	
Sodium	141	---	107	mg/kg	10	---	189	---	---	29	40%	
Thallium	ND	---	0.213	mg/kg	10	---	ND	---	---	---	40%	
Vanadium	5.40	---	1.07	mg/kg	10	---	5.78	---	---	7	40%	
Zinc	180	---	4.26	mg/kg	10	---	217	---	---	18	40%	
Duplicate (9051152-DUP2)			Prepared: 05/22/19 11:59 Analyzed: 05/24/19 11:45									
<u>QC Source Sample: Non-SDG (A9E0672-01RE1)</u>												
Beryllium	ND	---	0.213	mg/kg	10	---	ND	---	---	---	40%	Q-05, Q-16
Matrix Spike (9051152-MS1)			Prepared: 05/22/19 11:59 Analyzed: 05/23/19 16:50									
<u>QC Source Sample: Non-SDG (A9E0672-01)</u>												
<u>EPA 6020A</u>												
Aluminum	3060	---	54.1	mg/kg	10	2710	519	94	75-125%	---	---	
Antimony	22.3	---	1.08	mg/kg	10	27.1	ND	82	75-125%	---	---	
Arsenic	56.6	---	1.08	mg/kg	10	54.1	4.43	96	75-125%	---	---	
Barium	98.0	---	1.08	mg/kg	10	54.1	60.7	69	75-125%	---	---	Q-04
Cadmium	52.3	---	0.216	mg/kg	10	54.1	ND	97	75-125%	---	---	
Calcium	6600	---	108	mg/kg	10	2710	4170	90	75-125%	---	---	
Chromium	54.5	---	1.08	mg/kg	10	54.1	3.85	94	75-125%	---	---	
Copper	70.8	---	1.08	mg/kg	10	54.1	16.9	100	75-125%	---	---	
Iron	9360	---	54.1	mg/kg	10	2710	7660	63	75-125%	---	---	Q-04
Lead	52.5	---	0.216	mg/kg	10	54.1	1.48	94	75-125%	---	---	
Magnesium	3020	---	54.1	mg/kg	10	2710	453	95	75-125%	---	---	
Manganese	782	---	1.08	mg/kg	10	54.1	788	-11	75-125%	---	---	Q-03
Mercury	0.995	---	0.0866	mg/kg	10	1.08	ND	92	75-125%	---	---	
Nickel	63.5	---	1.08	mg/kg	10	54.1	19.4	81	75-125%	---	---	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020A (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051152 - EPA 3051A						Solid						
Matrix Spike (9051152-MS1)						Prepared: 05/22/19 11:59 Analyzed: 05/23/19 16:50						
QC Source Sample: Non-SDG (A9E0672-01)												
Potassium	2730	---	108	mg/kg	10	2710	59.1	99	75-125%	---	---	
Selenium	25.8	---	1.08	mg/kg	10	27.1	ND	95	75-125%	---	---	
Silver	25.4	---	0.216	mg/kg	10	27.1	ND	94	75-125%	---	---	
Sodium	2760	---	108	mg/kg	10	2710	189	95	75-125%	---	---	
Thallium	21.8	---	0.216	mg/kg	10	27.1	ND	81	75-125%	---	---	
Vanadium	56.8	---	1.08	mg/kg	10	54.1	5.78	94	75-125%	---	---	
Zinc	248	---	4.33	mg/kg	10	54.1	217	57	75-125%	---	---	Q-04
Matrix Spike (9051152-MS2)						Prepared: 05/22/19 11:59 Analyzed: 05/24/19 11:49						
QC Source Sample: Non-SDG (A9E0672-01RE1)												
EPA 6020A												
Beryllium	24.9	---	0.216	mg/kg	10	27.1	ND	92	75-125%	---	---	Q-16



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QUALITY CONTROL (QC) SAMPLE RESULTS

Total Cyanide by UV Digestion/Gas Diffusion/Amperometric Detection

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051240 - ASTM D7511-12mod (S)						Solid						
Blank (9051240-BLK1)			Prepared: 05/24/19 07:10 Analyzed: 05/24/19 13:07									
<u>D7511-12</u>												
Cyanide, Total	ND	---	0.100	mg/kg	1	---	---	---	---	---	---	
LCS (9051240-BS1)			Prepared: 05/24/19 07:10 Analyzed: 05/24/19 13:09									
<u>D7511-12</u>												
Cyanide, Total	0.388	---	0.100	mg/kg	1	0.400	---	97	84-116%	---	---	
Matrix Spike (9051240-MS3)			Prepared: 05/24/19 07:10 Analyzed: 05/24/19 14:24									
<u>QC Source Sample: 2708-190520-006 (A9E0677-01RE2)</u>												
<u>D7511-12</u>												
Cyanide, Total	1.07	---	0.484	mg/kg	5	0.387	0.846	57	64-136%	---	---	Q-04, Q-16
Matrix Spike Dup (9051240-MSD3)			Prepared: 05/24/19 07:10 Analyzed: 05/24/19 14:28									
<u>QC Source Sample: 2708-190520-006 (A9E0677-01RE2)</u>												
<u>D7511-12</u>												
Cyanide, Total	1.44	---	0.482	mg/kg	5	0.386	0.846	154	64-136%	30	47%	Q-04, Q-16



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SAMPLE PREPARATION INFORMATION

Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Prep: EPA 3546 (Fuels)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 9051229							
A9E0677-01	Solid	NWTPH-Dx	05/20/19 15:00	05/23/19 16:37	0.58g/5mL	10g/5mL	17.20

Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

Prep: EPA 5035A

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 9051092							
A9E0677-01	Solid	NWTPH-Gx (MS)	05/20/19 15:00	05/21/19 13:35	3.13g/5mL	5g/5mL	1.60

Volatile Organic Compounds by EPA 5035A/8260C

Prep: EPA 5035A

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 9051092							
A9E0677-01	Solid	5035A/8260C	05/20/19 15:00	05/21/19 13:35	3.13g/5mL	5g/5mL	1.60

Semivolatile Organic Compounds by EPA 8270D

Prep: EPA 3546

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 9051172							
A9E0677-01	Solid	EPA 8270D	05/20/19 15:00	05/22/19 16:25	0.51g/2mL	15g/2mL	29.40

Total Metals by EPA 6020A (ICPMS)

Prep: EPA 3051A

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 9051152							
A9E0677-01	Solid	EPA 6020A	05/20/19 15:00	05/22/19 11:59	0.45g/50mL	0.5g/50mL	1.11
A9E0677-01RE1	Solid	EPA 6020A	05/20/19 15:00	05/22/19 11:59	0.45g/50mL	0.5g/50mL	1.11

Total Cyanide by UV Digestion/Gas Diffusion/Amperometric Detection

Prep: ASTM D7511-12mod (S)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 9051240							

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Philip Nerenberg, Lab Director



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Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Hahn and Associates

434 NW 6th Ave. Suite 203
Portland, OR 97209

Project: **Mult 802 Decommissioning**

Project Number: **2708-60F**

Project Manager: **Rob Ede**

Report ID:

A9E0677 - 05 28 19 1635

SAMPLE PREPARATION INFORMATION

Total Cyanide by UV Digestion/Gas Diffusion/Amperometric Detection

Prep: ASTM D7511-12mod (S)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
A9E0677-01RE2	Solid	D7511-12	05/20/19 15:00	05/24/19 07:10	2.5415g/50mL	2.5g/50mL	0.98

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A9E0677 - 05 28 19 1635

QUALIFIER DEFINITIONS

Client Sample and Quality Control (QC) Sample Qualifier Definitions:

Apex Laboratories

- F-13** The chromatographic pattern does not resemble the fuel standard used for quantitation
- F-17** No fuel pattern detected. The Diesel result represents carbon range C12 to C24, and the Oil result represents >C24 to C40.
- F-20** Result for Diesel is Estimated due to overlap from Gasoline Range Organics or other VOCs.
- M-05** Estimated results. Peak separation for structural isomers is insufficient for accurate quantification.
- Q-03** Spike recovery and/or RPD is outside control limits due to the high concentration of analyte present in the sample.
- Q-04** Spike recovery and/or RPD is outside control limits due to a non-homogeneous sample matrix.
- Q-05** Analyses are not controlled on RPD values from sample and duplicate concentrations that are below 5 times the reporting level.
- Q-16** Reanalysis of an original Batch QC sample.
- Q-17** RPD between original and duplicate sample is outside of established control limits.
- Q-18** Matrix Spike results for this extraction batch are not reported due to the high dilution necessary for analysis of the source sample.
- Q-29** Recovery for Lab Control Spike (LCS) is above the upper control limit. Data may be biased high.
- Q-31** Estimated Results. Recovery of Continuing Calibration Verification sample below lower control limit for this analyte. Results are likely biased low.
- Q-41** Estimated Results. Recovery of Continuing Calibration Verification sample above upper control limit for this analyte. Results are likely biased high.
- Q-42** Matrix Spike and/or Duplicate analysis was performed on this sample. % Recovery or RPD for this analyte is outside laboratory control limits. (Refer to the QC Section of Analytical Report.)
- Q-52** Due to erratic or low blank spike recoveries, results for this analyte are considered Estimated Values.
- Q-54** Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +1.9%. The results are reported as Estimated Values.
- Q-54a** Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +2.9%. The results are reported as Estimated Values.
- Q-54b** Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +5.1%. The results are reported as Estimated Values.
- Q-54c** Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +9.2%. The results are reported as Estimated Values.
- Q-54d** Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by -8.5%. The results are reported as Estimated Values.
- Q-55** Daily CCV/LCS recovery for this analyte was below the +/-20% criteria listed in EPA 8260C, however there is adequate sensitivity to ensure detection at the reporting level.
- Q-56** Daily CCV/LCS recovery for this analyte was above the +/-20% criteria listed in EPA 8260C

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- S-01 Surrogate recovery for this sample is not available due to sample dilution required from high analyte concentration and/or matrix interference.
- S-05 Surrogate recovery is estimated due to sample dilution required for high analyte concentration and/or matrix interference.
- V-15 Sample aliquot was subsampled from the sample container. The subsampled aliquot was preserved in the laboratory within 48 hours of sampling.

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REPORTING NOTES AND CONVENTIONS:

Abbreviations:

- DET Analyte DETECTED at or above the detection or reporting limit.
- ND Analyte NOT DETECTED at or above the detection or reporting limit.
- NR Result Not Reported
- RPD Relative Percent Difference. RPDs for Matrix Spikes and Matrix Spike Duplicates are based on concentration, not recovery.

Detection Limits: Limit of Detection (LOD)

Limits of Detection (LODs) are normally set at a level of one half the validated Limit of Quantitation (LOQ).
If no value is listed ('-----'), then the data has not been evaluated below the Reporting Limit.

Reporting Limits: Limit of Quantitation (LOQ)

Validated Limits of Quantitation (LOQs) are reported as the Reporting Limits for all analyses where the LOQ, MRL, PQL or CRL are requested. The LOQ represents a level at or above the low point of the calibration curve, that has been validated according to Apex Laboratories' comprehensive LOQ policies and procedures.

Reporting Conventions:

- Basis: Results for soil samples are generally reported on a 100% dry weight basis.
The Result Basis is listed following the units as "dry", "wet", or " " (blank) designation.
 - "dry" Sample results and Reporting Limits are reported on a dry weight basis. (i.e. "ug/kg dry")
See Percent Solids section for details of dry weight analysis.
 - "wet" Sample results and Reporting Limits for this analysis are normally dry weight corrected, but have not been modified in this case.
 - " " Results without 'wet' or 'dry' designation are not normally dry weight corrected. These results are considered 'As Received'.

QC Source:

In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) may be analyzed to demonstrate accuracy and precision of the extraction batch.

Non-Client Batch QC Samples (Duplicates and Matrix Spike/Duplicates) may not be included in this report. Please request a Full QC report if this data is required.

Miscellaneous Notes:

- " --- " QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.
- " *** " Used to indicate a possible discrepancy with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).

Blanks:

Standard practice is to evaluate the results from Blank QC Samples down to a level equal to 1/2 the Reporting Limit (RL).
-For Blank hits falling between 1/2 the RL and the RL (J flagged hits), the associated sample and QC data will receive a 'B-02' qualifier.
-For Blank hits above the RL, the associated sample and QC data will receive a 'B' qualifier, per Apex Laboratories' Blank Policy.
For further details, please request a copy of this document.



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REPORTING NOTES AND CONVENTIONS (Cont.):

Blanks (Cont.):

Sample results flagged with a 'B' or 'B-02' qualifier are potentially biased high if the sample results are less than ten times the level found in the blank for inorganic analyses, or less than five times the level found in the blank for organic analyses.

'B' and 'B-02' qualifications are only applied to sample results detected above the Reporting Level.

Preparation Notes:

Mixed Matrix Samples:

Water Samples:

Water samples containing significant amounts of sediment are decanted or separated prior to extraction, and only the water portion analyzed, unless otherwise directed by the client.

Soil and Sediment Samples:

Soil and Sediment samples containing significant amounts of water are decanted prior to extraction, and only the solid portion analyzed, unless otherwise directed by the client.

Sampling and Preservation Notes:

Certain regulatory programs, such as National Pollutant Discharge Elimination System (NPDES), require that activities such as sample filtration (for dissolved metals, orthophosphate, hexavalent chromium, etc.) and testing of short hold analytes (pH, Dissolved Oxygen, etc.) be performed in the field (on-site) within a short time window. In addition, sample matrix spikes are required for some analyses, and sufficient volume must be provided, and billable site specific QC requested, if this is required. All regulatory permits should be reviewed to ensure that these requirements are being met.

Data users should be aware of which regulations pertain to the samples they submit for testing. If related sample collection activities are not approved for a particular regulatory program, results should be considered estimates. Apex Laboratories will qualify these analytes according to the most stringent requirements, however results for samples that are for non-regulatory purposes may be acceptable.

Samples that have been filtered and preserved at Apex Laboratories per client request are listed in the preparation section of the report with the date and time of filtration listed.

Apex Laboratories maintains detailed records on sample receipt, including client label verification, cooler temperature, sample preservation, hold time compliance and field filtration. Data is qualified as necessary, and the lack of qualification indicates compliance with required parameters.



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<u>Hahn and Associates</u> 434 NW 6th Ave. Suite 203 Portland, OR 97209	Project: <u>Mult 802 Decommissioning</u> Project Number: 2708-60F Project Manager: Rob Ede	Report ID: A9E0677 - 05 28 19 1635
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LABORATORY ACCREDITATION INFORMATION

TNI Certification ID: OR100062 (Primary Accreditation) - EPA ID: OR01039

All methods and analytes reported from work performed at Apex Laboratories are included on Apex Laboratories' ORELAP Scope of Certification, with the exception of any analyte(s) listed below:

Apex Laboratories

Matrix	Analysis	TNI_ID	Analyte	TNI_ID	Accreditation
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All reported analytes are included in Apex Laboratories' current ORELAP scope.

Secondary Accreditations

Apex Laboratories also maintains reciprocal accreditation with non-TNI states (Washington DOE), as well as other state specific accreditations not listed here.

Subcontract Laboratory Accreditations

Subcontracted data falls outside of Apex Laboratories' Scope of Accreditation. Please see the Subcontract Laboratory report for full details, or contact your Project Manager for more information.

Field Testing Parameters

Results for Field Tested data are provided by the client or sampler, and fall outside of Apex Laboratories' Scope of Accreditation.

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Philip Nerenberg, Lab Director

Hahn and Associates

434 NW 6th Ave. Suite 203
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Project: **Mult 802 Decommissioning**

Project Number: **2708-60F**

Project Manager: **Rob Ede**

Report ID:

A9E0677 - 05 28 19 1635

A9E0677

CHAIN OF CUSTODY
Chain of Custody No. 1

<p>Hahn and Associates, Inc. Environmental Consultants 434 NW 6th Avenue, Suite 203 - Portland OR 97209 (503) 736-0717 - Fax (503) 227-2209</p> <p>Project Manager: <i>Rob Ede</i> Project No: 2708-60F Project Name: Mult 802 Decommissioning Collected by: Ben Uae</p> <p>Comments: Sample Number Prefix: 2708-190520- PLEASE FREEZE and HOLD all but VOAs. Please freeze and hold remaining 8-oz jar. VOCS + SVOCs 48 HR 5 DAY ALL OTHERS</p>		<p>Laboratory: Apex Labs Tigard, Oregon</p> <p>Lab Project No.:</p> <p>Liquid with Sediment Sample Test Phase: Test Sediment Test Bsn Multi-Phase Sample Test One (which): Test Separately Shake</p> <p>Matrix: Soil _____ Water _____ Air _____ Other _____</p> <p>Number of Containers: 4</p> <p>Analyses to be Performed: VOCS by EPA Method 8260C <input checked="" type="checkbox"/> SVOCs by EPA Method 8270D <input checked="" type="checkbox"/> Full List <input checked="" type="checkbox"/> NMTPH-DX <input checked="" type="checkbox"/> NMTPH-GX <input checked="" type="checkbox"/> Gaseo Metals by EPA 5000/7000 Series <input checked="" type="checkbox"/> Total Cyanide by EPA Method 225.4 <input checked="" type="checkbox"/></p> <p>Remarks: RUSH VOCS SVOC</p>	
<p>Project Manager: <i>Ben Uae</i></p>	<p>Date: 5/21/19</p>	<p>Time: 12:07</p>	<p>Company: Hahn and Associates, Inc.</p>
<p>Requisitioned by: <i>Ben Uae</i></p>	<p>Date: 5/21/19</p>	<p>Time: 12:07</p>	<p>Company: Hahn and Associates, Inc.</p>
<p>Requisitioned by:</p>	<p>Date:</p>	<p>Time:</p>	<p>Company:</p>
<p>Requisitioned by:</p>	<p>Date:</p>	<p>Time:</p>	<p>Company:</p>

Philip Nerenberg



Hahn and Associates
434 NW 6th Ave. Suite 203
Portland, OR 97209

Project: **Mult 802 Decommissioning**
Project Number: **2708-60F**
Project Manager: **Rob Ede**

Report ID:
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APEX LABS COOLER RECEIPT FORM

Client: Hahn Element WO#: A9 E0677

Project/Project #: Mult 802 Decommissioning 2708-60F

Delivery Info:

Date/time received: 5/21/19 @ 1209 By: CFH

Delivered by: Apex Client ESS FedEx UPS Swift Senvoy SDS Other

Cooler Inspection Date/time inspected: 5/21/19 @ 1303 By: CFH

Chain of Custody included? Yes No Custody seals? Yes No

Signed/dated by client? Yes No

Signed/dated by Apex? Yes No

	Cooler #1	Cooler #2	Cooler #3	Cooler #4	Cooler #5	Cooler #6	Cooler #7
Temperature (°C)	<u>1.5</u>						
Received on ice? (Y/N)	<u>Y</u>						
Temp. blanks? (Y/N)	<u>N</u>						
Ice type: (Gel/Real/Other)	<u>Real</u>						
Condition:	<u>Good</u>						

Cooler out of temp? (Y/N) Possible reason why: (N)

If some coolers are in temp and some out, were green dots applied to out of temperature samples? Yes/No/NA (NA)

Out of temperature samples form initiated? Yes/No/NA (NA)

Samples Inspection: Date/time inspected: 5/21/19 @ 1308 By: W

All samples intact? Yes No Comments: _____

Bottle labels/COCs agree? Yes No Comments: _____

COC/container discrepancies form initiated? Yes No NA

Containers/volumes received appropriate for analysis? Yes No Comments: _____

Do VOA vials have visible headspace? Yes No NA

Comments: _____

Water samples: pH checked: Yes No NA pH appropriate? Yes No NA

Comments: _____

Additional information: _____

Labeled by: WS Witness: CFH Cooler Inspected by: W See Project Contact Form: Y

Philip Nerenberg



Monday, June 24, 2019

Rob Ede
Hahn and Associates
434 NW 6th Ave. Suite 203
Portland, OR 97209

RE: A9E0723 - Mult 802 Decommissioning - 2708-60F

Thank you for using Apex Laboratories. We greatly appreciate your business and strive to provide the highest quality services to the environmental industry.

Enclosed are the results of analyses for work order A9E0723, which was received by the laboratory on 5/22/2019 at 12:41:00PM.

If you have any questions concerning this report or the services we offer, please feel free to contact me by email at: pnerenberg@apex-labs.com, or by phone at 503-718-2323.

Please note: All samples will be disposed of within 30 days of final reporting, unless prior arrangements have been made.

Cooler Receipt Information

(See Cooler Receipt Form for details)

Cooler #1 0.9 degC

This Final Report is the official version of the data results for this sample submission, unless superseded by a subsequent, labeled amended report.

All other deliverables derived from this data, including Electronic Data Deliverables (EDDs), CLP-like forms, client requested summary sheets, and all other products are considered secondary to this report.



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Philip Nerenberg, Lab Director



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Project Number: **2708-60F**

Project Manager: **Rob Ede**

Report ID:

A9E0723 - 06 24 19 1133

ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
2708-190521-007	A9E0723-01	Solid	05/21/19 10:55	05/22/19 12:41
2708-190521-008	A9E0723-02	Solid	05/21/19 11:00	05/22/19 12:41
2708-190521-009	A9E0723-03	Solid	05/21/19 11:55	05/22/19 12:41
2708-190521-010	A9E0723-04	Solid	05/21/19 15:30	05/22/19 12:41

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A9E0723 - 06 24 19 1133

ANALYTICAL CASE NARRATIVE

Work Order: A9E0723

Preservation Nonconformance

A temperature excursion occurred during sample storage. Sample 2708-190521-009 (A9E0723-03) analyzed for EPA Method 8260 and NWTPH-Gx was stored out of EPA recommended storage temp (>6C) reaching 17C for a period of approximately 48 hours. No other analysis was affected.

Mark Zehr
Organics Manager
6/5/2019

Amended Report Revision 1:

This report supersedes all previous reports.

Analyses, except for full list 8260 VOCs, were added after the previous report version had been completed.

Philip Nerenberg
Lab Director
6/24/19

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ANALYTICAL SAMPLE RESULTS

Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes	
2708-190521-009 (A9E0723-03)				Matrix: Solid		Batch: 9060517			
Diesel	116000	---	35700	mg/kg	100	06/04/19 06:13	NWTPH-Dx	F-17	
Oil	ND	---	71400	mg/kg	100	06/04/19 06:13	NWTPH-Dx		
<i>Surrogate: o-Terphenyl (Surr)</i>		<i>Recovery: %</i>		<i>Limits: 50-150 %</i>		<i>100</i>	<i>06/04/19 06:13</i>	<i>NWTPH-Dx</i>	<i>S-01</i>

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ANALYTICAL SAMPLE RESULTS

Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
2708-190521-009 (A9E0723-03)				Matrix: Solid		Batch: 9060533		V-16, X
Gasoline Range Organics	35000	---	4270	mg/kg	10000	06/04/19 18:42	NWTPH-Gx (MS)	
<i>Surrogate: 4-Bromofluorobenzene (Sur)</i>		<i>Recovery: 90 %</i>		<i>Limits: 50-150 %</i>		<i>1</i>	<i>06/04/19 18:42</i>	<i>NWTPH-Gx (MS)</i>
<i>1,4-Difluorobenzene (Sur)</i>		<i>83 %</i>		<i>50-150 %</i>		<i>1</i>	<i>06/04/19 18:42</i>	<i>NWTPH-Gx (MS)</i>

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ANALYTICAL SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
2708-190521-007 (A9E0723-01)				Matrix: Solid		Batch: 9051139		V-15
Acetone	ND	---	5650000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
Acrylonitrile	ND	---	565000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
Benzene	164000	---	56500	ug/kg	100000	05/22/19 19:27	5035A/8260C	
Bromobenzene	ND	---	141000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
Bromochloromethane	ND	---	282000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
Bromodichloromethane	ND	---	565000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
Bromoform	ND	---	1130000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
Bromomethane	ND	---	2820000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
2-Butanone (MEK)	ND	---	2820000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
n-Butylbenzene	ND	---	282000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
sec-Butylbenzene	ND	---	282000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
tert-Butylbenzene	ND	---	282000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
Carbon disulfide	ND	---	2820000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
Carbon tetrachloride	ND	---	565000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
Chlorobenzene	ND	---	141000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
Chloroethane	ND	---	2820000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
Chloroform	ND	---	282000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
Chloromethane	ND	---	1410000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
2-Chlorotoluene	ND	---	282000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
4-Chlorotoluene	ND	---	282000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
Dibromochloromethane	ND	---	565000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
1,2-Dibromo-3-chloropropane	ND	---	1410000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
1,2-Dibromoethane (EDB)	ND	---	282000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
Dibromomethane	ND	---	282000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
1,2-Dichlorobenzene	ND	---	141000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
1,3-Dichlorobenzene	ND	---	141000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
1,4-Dichlorobenzene	ND	---	141000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
Dichlorodifluoromethane	ND	---	565000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
1,1-Dichloroethane	ND	---	141000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
1,2-Dichloroethane (EDC)	ND	---	141000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
1,1-Dichloroethene	ND	---	141000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
cis-1,2-Dichloroethene	ND	---	141000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
trans-1,2-Dichloroethene	ND	---	141000	ug/kg	100000	05/22/19 19:27	5035A/8260C	

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Philip Nerenberg, Lab Director



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ANALYTICAL SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
2708-190521-007 (A9E0723-01)				Matrix: Solid		Batch: 9051139		V-15
1,2-Dichloropropane	ND	---	141000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
1,3-Dichloropropane	ND	---	282000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
2,2-Dichloropropane	ND	---	282000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
1,1-Dichloropropene	ND	---	282000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
cis-1,3-Dichloropropene	ND	---	282000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
trans-1,3-Dichloropropene	ND	---	282000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
Ethylbenzene	ND	---	141000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
Hexachlorobutadiene	ND	---	565000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
2-Hexanone	ND	---	2820000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
Isopropylbenzene	ND	---	282000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
4-Isopropyltoluene	ND	---	282000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
Methylene chloride	ND	---	1410000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
4-Methyl-2-pentanone (MIBK)	ND	---	2820000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
Methyl tert-butyl ether (MTBE)	ND	---	282000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
Naphthalene	10500000	---	565000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
n-Propylbenzene	ND	---	141000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
Styrene	ND	---	282000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
1,1,1,2-Tetrachloroethane	ND	---	565000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
1,1,2,2-Tetrachloroethane	ND	---	282000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
Tetrachloroethene (PCE)	ND	---	141000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
Toluene	ND	---	282000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
1,2,3-Trichlorobenzene	ND	---	1410000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
1,2,4-Trichlorobenzene	ND	---	1410000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
1,1,1-Trichloroethane	ND	---	141000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
1,1,2-Trichloroethane	ND	---	141000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
Trichloroethene (TCE)	ND	---	141000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
Trichlorofluoromethane	ND	---	565000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
1,2,3-Trichloropropane	ND	---	282000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
1,2,4-Trimethylbenzene	ND	---	282000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
1,3,5-Trimethylbenzene	ND	---	282000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
Vinyl chloride	ND	---	141000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
m,p-Xylene	ND	---	282000	ug/kg	100000	05/22/19 19:27	5035A/8260C	
o-Xylene	ND	---	141000	ug/kg	100000	05/22/19 19:27	5035A/8260C	



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ANALYTICAL SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
2708-190521-007 (A9E0723-01)				Matrix: Solid		Batch: 9051139		V-15
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 103 %</i>		<i>Limits: 80-120 %</i>	<i>1</i>	<i>05/22/19 19:27</i>	<i>5035A/8260C</i>	
<i>Toluene-d8 (Surr)</i>				<i>95 %</i>	<i>80-120 %</i>	<i>1</i>	<i>05/22/19 19:27</i>	<i>5035A/8260C</i>
<i>4-Bromofluorobenzene (Surr)</i>				<i>104 %</i>	<i>80-120 %</i>	<i>1</i>	<i>05/22/19 19:27</i>	<i>5035A/8260C</i>
2708-190521-008 (A9E0723-02)				Matrix: Solid		Batch: 9051139		V-15
Acetone	ND	---	8260000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
Acrylonitrile	ND	---	826000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
Benzene	111000	---	82600	ug/kg	100000	05/22/19 19:54	5035A/8260C	
Bromobenzene	ND	---	207000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
Bromochloromethane	ND	---	413000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
Bromodichloromethane	ND	---	826000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
Bromoform	ND	---	1650000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
Bromomethane	ND	---	4130000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
2-Butanone (MEK)	ND	---	4130000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
n-Butylbenzene	ND	---	413000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
sec-Butylbenzene	ND	---	413000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
tert-Butylbenzene	ND	---	413000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
Carbon disulfide	ND	---	4130000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
Carbon tetrachloride	ND	---	826000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
Chlorobenzene	ND	---	207000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
Chloroethane	ND	---	4130000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
Chloroform	ND	---	413000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
Chloromethane	ND	---	2070000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
2-Chlorotoluene	ND	---	413000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
4-Chlorotoluene	ND	---	413000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
Dibromochloromethane	ND	---	826000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
1,2-Dibromo-3-chloropropane	ND	---	2070000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
1,2-Dibromoethane (EDB)	ND	---	413000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
Dibromomethane	ND	---	413000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
1,2-Dichlorobenzene	ND	---	207000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
1,3-Dichlorobenzene	ND	---	207000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
1,4-Dichlorobenzene	ND	---	207000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
Dichlorodifluoromethane	ND	---	826000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
1,1-Dichloroethane	ND	---	207000	ug/kg	100000	05/22/19 19:54	5035A/8260C	

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ANALYTICAL SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
2708-190521-008 (A9E0723-02)				Matrix: Solid		Batch: 9051139		V-15
1,2-Dichloroethane (EDC)	ND	---	207000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
1,1-Dichloroethene	ND	---	207000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
cis-1,2-Dichloroethene	ND	---	207000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
trans-1,2-Dichloroethene	ND	---	207000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
1,2-Dichloropropane	ND	---	207000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
1,3-Dichloropropane	ND	---	413000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
2,2-Dichloropropane	ND	---	413000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
1,1-Dichloropropene	ND	---	413000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
cis-1,3-Dichloropropene	ND	---	413000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
trans-1,3-Dichloropropene	ND	---	413000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
Ethylbenzene	ND	---	207000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
Hexachlorobutadiene	ND	---	826000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
2-Hexanone	ND	---	4130000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
Isopropylbenzene	ND	---	413000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
4-Isopropyltoluene	ND	---	413000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
Methylene chloride	ND	---	2070000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
4-Methyl-2-pentanone (MIBK)	ND	---	4130000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
Methyl tert-butyl ether (MTBE)	ND	---	413000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
Naphthalene	6640000	---	826000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
n-Propylbenzene	ND	---	207000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
Styrene	ND	---	413000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
1,1,1,2-Tetrachloroethane	ND	---	826000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
1,1,2,2-Tetrachloroethane	ND	---	413000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
Tetrachloroethene (PCE)	ND	---	207000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
Toluene	ND	---	413000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
1,2,3-Trichlorobenzene	ND	---	2070000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
1,2,4-Trichlorobenzene	ND	---	2070000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
1,1,1-Trichloroethane	ND	---	207000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
1,1,2-Trichloroethane	ND	---	207000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
Trichloroethene (TCE)	ND	---	207000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
Trichlorofluoromethane	ND	---	826000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
1,2,3-Trichloropropane	ND	---	413000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
1,2,4-Trimethylbenzene	ND	---	413000	ug/kg	100000	05/22/19 19:54	5035A/8260C	



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ANALYTICAL SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
2708-190521-008 (A9E0723-02)			Matrix: Solid		Batch: 9051139		V-15	
1,3,5-Trimethylbenzene	ND	---	413000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
Vinyl chloride	ND	---	207000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
m,p-Xylene	ND	---	413000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
o-Xylene	ND	---	207000	ug/kg	100000	05/22/19 19:54	5035A/8260C	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 100 %</i>		<i>Limits: 80-120 %</i>		<i>1</i>	<i>05/22/19 19:54</i>	<i>5035A/8260C</i>
<i>Toluene-d8 (Surr)</i>		<i>97 %</i>		<i>80-120 %</i>		<i>1</i>	<i>05/22/19 19:54</i>	<i>5035A/8260C</i>
<i>4-Bromofluorobenzene (Surr)</i>		<i>104 %</i>		<i>80-120 %</i>		<i>1</i>	<i>05/22/19 19:54</i>	<i>5035A/8260C</i>

2708-190521-009 (A9E0723-03)			Matrix: Solid		Batch: 9060533		V-16, X	
Acetone	ND	---	855000	ug/kg	10000	06/04/19 18:42	5035A/8260C	
Acrylonitrile	ND	---	85500	ug/kg	10000	06/04/19 18:42	5035A/8260C	
Benzene	128000	---	8550	ug/kg	10000	06/04/19 18:42	5035A/8260C	
Bromobenzene	ND	---	21400	ug/kg	10000	06/04/19 18:42	5035A/8260C	
Bromochloromethane	ND	---	42700	ug/kg	10000	06/04/19 18:42	5035A/8260C	
Bromodichloromethane	ND	---	42700	ug/kg	10000	06/04/19 18:42	5035A/8260C	
Bromoform	ND	---	85500	ug/kg	10000	06/04/19 18:42	5035A/8260C	
Bromomethane	ND	---	427000	ug/kg	10000	06/04/19 18:42	5035A/8260C	
2-Butanone (MEK)	ND	---	427000	ug/kg	10000	06/04/19 18:42	5035A/8260C	
n-Butylbenzene	ND	---	42700	ug/kg	10000	06/04/19 18:42	5035A/8260C	
sec-Butylbenzene	ND	---	42700	ug/kg	10000	06/04/19 18:42	5035A/8260C	
tert-Butylbenzene	ND	---	42700	ug/kg	10000	06/04/19 18:42	5035A/8260C	
Carbon disulfide	ND	---	427000	ug/kg	10000	06/04/19 18:42	5035A/8260C	
Carbon tetrachloride	ND	---	42700	ug/kg	10000	06/04/19 18:42	5035A/8260C	
Chlorobenzene	ND	---	21400	ug/kg	10000	06/04/19 18:42	5035A/8260C	
Chloroethane	ND	---	427000	ug/kg	10000	06/04/19 18:42	5035A/8260C	
Chloroform	ND	---	42700	ug/kg	10000	06/04/19 18:42	5035A/8260C	
Chloromethane	ND	---	214000	ug/kg	10000	06/04/19 18:42	5035A/8260C	
2-Chlorotoluene	ND	---	42700	ug/kg	10000	06/04/19 18:42	5035A/8260C	
4-Chlorotoluene	ND	---	42700	ug/kg	10000	06/04/19 18:42	5035A/8260C	
Dibromochloromethane	ND	---	85500	ug/kg	10000	06/04/19 18:42	5035A/8260C	
1,2-Dibromo-3-chloropropane	ND	---	214000	ug/kg	10000	06/04/19 18:42	5035A/8260C	
1,2-Dibromoethane (EDB)	ND	---	42700	ug/kg	10000	06/04/19 18:42	5035A/8260C	
Dibromomethane	ND	---	42700	ug/kg	10000	06/04/19 18:42	5035A/8260C	
1,2-Dichlorobenzene	ND	---	21400	ug/kg	10000	06/04/19 18:42	5035A/8260C	

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ANALYTICAL SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
2708-190521-009 (A9E0723-03)				Matrix: Solid		Batch: 9060533		V-16, X
1,3-Dichlorobenzene	ND	---	21400	ug/kg	10000	06/04/19 18:42	5035A/8260C	
1,4-Dichlorobenzene	ND	---	21400	ug/kg	10000	06/04/19 18:42	5035A/8260C	
Dichlorodifluoromethane	ND	---	85500	ug/kg	10000	06/04/19 18:42	5035A/8260C	
1,1-Dichloroethane	ND	---	21400	ug/kg	10000	06/04/19 18:42	5035A/8260C	
1,2-Dichloroethane (EDC)	ND	---	21400	ug/kg	10000	06/04/19 18:42	5035A/8260C	
1,1-Dichloroethene	ND	---	21400	ug/kg	10000	06/04/19 18:42	5035A/8260C	
cis-1,2-Dichloroethene	ND	---	21400	ug/kg	10000	06/04/19 18:42	5035A/8260C	
trans-1,2-Dichloroethene	ND	---	21400	ug/kg	10000	06/04/19 18:42	5035A/8260C	
1,2-Dichloropropane	ND	---	21400	ug/kg	10000	06/04/19 18:42	5035A/8260C	
1,3-Dichloropropane	ND	---	42700	ug/kg	10000	06/04/19 18:42	5035A/8260C	
2,2-Dichloropropane	ND	---	42700	ug/kg	10000	06/04/19 18:42	5035A/8260C	
1,1-Dichloropropene	ND	---	42700	ug/kg	10000	06/04/19 18:42	5035A/8260C	
cis-1,3-Dichloropropene	ND	---	42700	ug/kg	10000	06/04/19 18:42	5035A/8260C	
trans-1,3-Dichloropropene	ND	---	42700	ug/kg	10000	06/04/19 18:42	5035A/8260C	
Ethylbenzene	144000	---	21400	ug/kg	10000	06/04/19 18:42	5035A/8260C	
Hexachlorobutadiene	ND	---	85500	ug/kg	10000	06/04/19 18:42	5035A/8260C	
2-Hexanone	ND	---	427000	ug/kg	10000	06/04/19 18:42	5035A/8260C	
Isopropylbenzene	ND	---	42700	ug/kg	10000	06/04/19 18:42	5035A/8260C	
4-Isopropyltoluene	ND	---	42700	ug/kg	10000	06/04/19 18:42	5035A/8260C	
Methylene chloride	ND	---	214000	ug/kg	10000	06/04/19 18:42	5035A/8260C	
4-Methyl-2-pentanone (MiBK)	ND	---	427000	ug/kg	10000	06/04/19 18:42	5035A/8260C	
Methyl tert-butyl ether (MTBE)	ND	---	42700	ug/kg	10000	06/04/19 18:42	5035A/8260C	
n-Propylbenzene	ND	---	21400	ug/kg	10000	06/04/19 18:42	5035A/8260C	
Styrene	53800	---	42700	ug/kg	10000	06/04/19 18:42	5035A/8260C	
1,1,1,2-Tetrachloroethane	ND	---	21400	ug/kg	10000	06/04/19 18:42	5035A/8260C	
1,1,2,2-Tetrachloroethane	ND	---	42700	ug/kg	10000	06/04/19 18:42	5035A/8260C	
Tetrachloroethene (PCE)	ND	---	21400	ug/kg	10000	06/04/19 18:42	5035A/8260C	
Toluene	185000	---	42700	ug/kg	10000	06/04/19 18:42	5035A/8260C	
1,2,3-Trichlorobenzene	ND	---	214000	ug/kg	10000	06/04/19 18:42	5035A/8260C	
1,2,4-Trichlorobenzene	ND	---	214000	ug/kg	10000	06/04/19 18:42	5035A/8260C	
1,1,1-Trichloroethane	ND	---	21400	ug/kg	10000	06/04/19 18:42	5035A/8260C	
1,1,2-Trichloroethane	ND	---	21400	ug/kg	10000	06/04/19 18:42	5035A/8260C	
Trichloroethene (TCE)	ND	---	21400	ug/kg	10000	06/04/19 18:42	5035A/8260C	

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ANALYTICAL SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
2708-190521-009 (A9E0723-03)			Matrix: Solid		Batch: 9060533		V-16, X	
Trichlorofluoromethane	ND	---	85500	ug/kg	10000	06/04/19 18:42	5035A/8260C	
1,2,3-Trichloropropane	ND	---	42700	ug/kg	10000	06/04/19 18:42	5035A/8260C	
1,2,4-Trimethylbenzene	80800	---	42700	ug/kg	10000	06/04/19 18:42	5035A/8260C	
1,3,5-Trimethylbenzene	54700	---	42700	ug/kg	10000	06/04/19 18:42	5035A/8260C	
Vinyl chloride	ND	---	21400	ug/kg	10000	06/04/19 18:42	5035A/8260C	
m,p-Xylene	220000	---	42700	ug/kg	10000	06/04/19 18:42	5035A/8260C	
o-Xylene	74800	---	21400	ug/kg	10000	06/04/19 18:42	5035A/8260C	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 91 %</i>		<i>Limits: 80-120 %</i>		<i>1</i>	<i>06/04/19 18:42</i>	<i>5035A/8260C</i>
<i>Toluene-d8 (Surr)</i>		<i>98 %</i>		<i>80-120 %</i>		<i>1</i>	<i>06/04/19 18:42</i>	<i>5035A/8260C</i>
<i>4-Bromofluorobenzene (Surr)</i>		<i>103 %</i>		<i>80-120 %</i>		<i>1</i>	<i>06/04/19 18:42</i>	<i>5035A/8260C</i>
2708-190521-009 (A9E0723-03RE1)			Matrix: Solid		Batch: 9060582		H-01, V-16, X	
Naphthalene	15400000	---	855000	ug/kg	100000	06/05/19 18:01	5035A/8260C	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 89 %</i>		<i>Limits: 80-120 %</i>		<i>1</i>	<i>06/05/19 18:01</i>	<i>5035A/8260C</i>
<i>Toluene-d8 (Surr)</i>		<i>101 %</i>		<i>80-120 %</i>		<i>1</i>	<i>06/05/19 18:01</i>	<i>5035A/8260C</i>
<i>4-Bromofluorobenzene (Surr)</i>		<i>102 %</i>		<i>80-120 %</i>		<i>1</i>	<i>06/05/19 18:01</i>	<i>5035A/8260C</i>
2708-190521-010 (A9E0723-04RE1)			Matrix: Solid		Batch: 9051198		V-15	
Acetone	ND	---	1800000	ug/kg	20000	05/23/19 12:55	5035A/8260C	
Acrylonitrile	ND	---	180000	ug/kg	20000	05/23/19 12:55	5035A/8260C	
Benzene	48400	---	18000	ug/kg	20000	05/23/19 12:55	5035A/8260C	
Bromobenzene	ND	---	45000	ug/kg	20000	05/23/19 12:55	5035A/8260C	
Bromochloromethane	ND	---	90100	ug/kg	20000	05/23/19 12:55	5035A/8260C	
Bromodichloromethane	ND	---	180000	ug/kg	20000	05/23/19 12:55	5035A/8260C	
Bromoform	ND	---	360000	ug/kg	20000	05/23/19 12:55	5035A/8260C	
Bromomethane	ND	---	901000	ug/kg	20000	05/23/19 12:55	5035A/8260C	
2-Butanone (MEK)	ND	---	901000	ug/kg	20000	05/23/19 12:55	5035A/8260C	
n-Butylbenzene	ND	---	90100	ug/kg	20000	05/23/19 12:55	5035A/8260C	
sec-Butylbenzene	ND	---	90100	ug/kg	20000	05/23/19 12:55	5035A/8260C	
tert-Butylbenzene	ND	---	90100	ug/kg	20000	05/23/19 12:55	5035A/8260C	
Carbon disulfide	ND	---	901000	ug/kg	20000	05/23/19 12:55	5035A/8260C	
Carbon tetrachloride	ND	---	180000	ug/kg	20000	05/23/19 12:55	5035A/8260C	
Chlorobenzene	ND	---	45000	ug/kg	20000	05/23/19 12:55	5035A/8260C	
Chloroethane	ND	---	901000	ug/kg	20000	05/23/19 12:55	5035A/8260C	

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ANALYTICAL SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
2708-190521-010 (A9E0723-04RE1)				Matrix: Solid		Batch: 9051198		V-15
Chloroform	ND	---	90100	ug/kg	20000	05/23/19 12:55	5035A/8260C	
Chloromethane	ND	---	450000	ug/kg	20000	05/23/19 12:55	5035A/8260C	
2-Chlorotoluene	ND	---	90100	ug/kg	20000	05/23/19 12:55	5035A/8260C	
4-Chlorotoluene	ND	---	90100	ug/kg	20000	05/23/19 12:55	5035A/8260C	
Dibromochloromethane	ND	---	180000	ug/kg	20000	05/23/19 12:55	5035A/8260C	
1,2-Dibromo-3-chloropropane	ND	---	450000	ug/kg	20000	05/23/19 12:55	5035A/8260C	
1,2-Dibromoethane (EDB)	ND	---	90100	ug/kg	20000	05/23/19 12:55	5035A/8260C	
Dibromomethane	ND	---	90100	ug/kg	20000	05/23/19 12:55	5035A/8260C	
1,2-Dichlorobenzene	ND	---	45000	ug/kg	20000	05/23/19 12:55	5035A/8260C	
1,3-Dichlorobenzene	ND	---	45000	ug/kg	20000	05/23/19 12:55	5035A/8260C	
1,4-Dichlorobenzene	ND	---	45000	ug/kg	20000	05/23/19 12:55	5035A/8260C	
Dichlorodifluoromethane	ND	---	180000	ug/kg	20000	05/23/19 12:55	5035A/8260C	
1,1-Dichloroethane	ND	---	45000	ug/kg	20000	05/23/19 12:55	5035A/8260C	
1,2-Dichloroethane (EDC)	ND	---	45000	ug/kg	20000	05/23/19 12:55	5035A/8260C	
1,1-Dichloroethene	ND	---	45000	ug/kg	20000	05/23/19 12:55	5035A/8260C	
cis-1,2-Dichloroethene	ND	---	45000	ug/kg	20000	05/23/19 12:55	5035A/8260C	
trans-1,2-Dichloroethene	ND	---	45000	ug/kg	20000	05/23/19 12:55	5035A/8260C	
1,2-Dichloropropane	ND	---	45000	ug/kg	20000	05/23/19 12:55	5035A/8260C	
1,3-Dichloropropane	ND	---	90100	ug/kg	20000	05/23/19 12:55	5035A/8260C	
2,2-Dichloropropane	ND	---	90100	ug/kg	20000	05/23/19 12:55	5035A/8260C	
1,1-Dichloropropene	ND	---	90100	ug/kg	20000	05/23/19 12:55	5035A/8260C	
cis-1,3-Dichloropropene	ND	---	90100	ug/kg	20000	05/23/19 12:55	5035A/8260C	
trans-1,3-Dichloropropene	ND	---	90100	ug/kg	20000	05/23/19 12:55	5035A/8260C	
Ethylbenzene	56900	---	45000	ug/kg	20000	05/23/19 12:55	5035A/8260C	
Hexachlorobutadiene	ND	---	180000	ug/kg	20000	05/23/19 12:55	5035A/8260C	
2-Hexanone	ND	---	901000	ug/kg	20000	05/23/19 12:55	5035A/8260C	
Isopropylbenzene	ND	---	90100	ug/kg	20000	05/23/19 12:55	5035A/8260C	
4-Isopropyltoluene	ND	---	90100	ug/kg	20000	05/23/19 12:55	5035A/8260C	
Methylene chloride	ND	---	450000	ug/kg	20000	05/23/19 12:55	5035A/8260C	
4-Methyl-2-pentanone (MIBK)	ND	---	901000	ug/kg	20000	05/23/19 12:55	5035A/8260C	
Methyl tert-butyl ether (MTBE)	ND	---	90100	ug/kg	20000	05/23/19 12:55	5035A/8260C	
Naphthalene	7940000	---	180000	ug/kg	20000	05/23/19 12:55	5035A/8260C	
n-Propylbenzene	ND	---	45000	ug/kg	20000	05/23/19 12:55	5035A/8260C	



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ANALYTICAL SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
2708-190521-010 (A9E0723-04RE1)			Matrix: Solid		Batch: 9051198		V-15	
Styrene	ND	---	90100	ug/kg	20000	05/23/19 12:55	5035A/8260C	
1,1,1,2-Tetrachloroethane	ND	---	180000	ug/kg	20000	05/23/19 12:55	5035A/8260C	
1,1,2,2-Tetrachloroethane	ND	---	90100	ug/kg	20000	05/23/19 12:55	5035A/8260C	
Tetrachloroethene (PCE)	ND	---	45000	ug/kg	20000	05/23/19 12:55	5035A/8260C	
Toluene	ND	---	90100	ug/kg	20000	05/23/19 12:55	5035A/8260C	
1,2,3-Trichlorobenzene	ND	---	450000	ug/kg	20000	05/23/19 12:55	5035A/8260C	
1,2,4-Trichlorobenzene	ND	---	450000	ug/kg	20000	05/23/19 12:55	5035A/8260C	
1,1,1-Trichloroethane	ND	---	45000	ug/kg	20000	05/23/19 12:55	5035A/8260C	
1,1,2-Trichloroethane	ND	---	45000	ug/kg	20000	05/23/19 12:55	5035A/8260C	
Trichloroethene (TCE)	ND	---	45000	ug/kg	20000	05/23/19 12:55	5035A/8260C	
Trichlorofluoromethane	ND	---	180000	ug/kg	20000	05/23/19 12:55	5035A/8260C	
1,2,3-Trichloropropane	ND	---	90100	ug/kg	20000	05/23/19 12:55	5035A/8260C	
1,2,4-Trimethylbenzene	ND	---	90100	ug/kg	20000	05/23/19 12:55	5035A/8260C	
1,3,5-Trimethylbenzene	ND	---	90100	ug/kg	20000	05/23/19 12:55	5035A/8260C	
Vinyl chloride	ND	---	45000	ug/kg	20000	05/23/19 12:55	5035A/8260C	
m,p-Xylene	ND	---	90100	ug/kg	20000	05/23/19 12:55	5035A/8260C	
o-Xylene	ND	---	45000	ug/kg	20000	05/23/19 12:55	5035A/8260C	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 100 %</i>		<i>Limits: 80-120 %</i>		<i>1</i>	<i>05/23/19 12:55</i>	<i>5035A/8260C</i>
<i>Toluene-d8 (Surr)</i>		<i>101 %</i>		<i>80-120 %</i>		<i>1</i>	<i>05/23/19 12:55</i>	<i>5035A/8260C</i>
<i>4-Bromofluorobenzene (Surr)</i>		<i>103 %</i>		<i>80-120 %</i>		<i>1</i>	<i>05/23/19 12:55</i>	<i>5035A/8260C</i>



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ANALYTICAL SAMPLE RESULTS

TCLP Volatile Organic Compounds by EPA 1311/8260C

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
2708-190521-007 (A9E0723-01)				Matrix: Solid		Batch: 9051445		
Acetone	ND	---	1.00	mg/L	50	06/05/19 11:37	1311/8260C	
Benzene	3.15	---	0.0125	mg/L	50	06/05/19 11:37	1311/8260C	
Bromobenzene	ND	---	0.0250	mg/L	50	06/05/19 11:37	1311/8260C	
Bromochloromethane	ND	---	0.0500	mg/L	50	06/05/19 11:37	1311/8260C	
Bromodichloromethane	ND	---	0.0500	mg/L	50	06/05/19 11:37	1311/8260C	
Bromoform	ND	---	0.0500	mg/L	50	06/05/19 11:37	1311/8260C	
Bromomethane	ND	---	0.250	mg/L	50	06/05/19 11:37	1311/8260C	
2-Butanone (MEK)	ND	---	0.500	mg/L	50	06/05/19 11:37	1311/8260C	
n-Butylbenzene	ND	---	0.0500	mg/L	50	06/05/19 11:37	1311/8260C	
sec-Butylbenzene	ND	---	0.0500	mg/L	50	06/05/19 11:37	1311/8260C	
tert-Butylbenzene	ND	---	0.0500	mg/L	50	06/05/19 11:37	1311/8260C	
Carbon tetrachloride	ND	---	0.0500	mg/L	50	06/05/19 11:37	1311/8260C	
Chlorobenzene	ND	---	0.0250	mg/L	50	06/05/19 11:37	1311/8260C	
Chloroethane	ND	---	0.250	mg/L	50	06/05/19 11:37	1311/8260C	
Chloroform	ND	---	0.0500	mg/L	50	06/05/19 11:37	1311/8260C	
Chloromethane	ND	---	0.250	mg/L	50	06/05/19 11:37	1311/8260C	
2-Chlorotoluene	ND	---	0.0500	mg/L	50	06/05/19 11:37	1311/8260C	
4-Chlorotoluene	ND	---	0.0500	mg/L	50	06/05/19 11:37	1311/8260C	
1,2-Dibromo-3-chloropropane	ND	---	0.250	mg/L	50	06/05/19 11:37	1311/8260C	
Dibromochloromethane	ND	---	0.0500	mg/L	50	06/05/19 11:37	1311/8260C	
1,2-Dibromoethane (EDB)	ND	---	0.0250	mg/L	50	06/05/19 11:37	1311/8260C	
Dibromomethane	ND	---	0.0500	mg/L	50	06/05/19 11:37	1311/8260C	
1,2-Dichlorobenzene	ND	---	0.0250	mg/L	50	06/05/19 11:37	1311/8260C	
1,3-Dichlorobenzene	ND	---	0.0250	mg/L	50	06/05/19 11:37	1311/8260C	
1,4-Dichlorobenzene	ND	---	0.0250	mg/L	50	06/05/19 11:37	1311/8260C	
Dichlorodifluoromethane	ND	---	0.0500	mg/L	50	06/05/19 11:37	1311/8260C	
1,1-Dichloroethane	ND	---	0.0250	mg/L	50	06/05/19 11:37	1311/8260C	
1,1-Dichloroethene	ND	---	0.0250	mg/L	50	06/05/19 11:37	1311/8260C	
1,2-Dichloroethane (EDC)	ND	---	0.0250	mg/L	50	06/05/19 11:37	1311/8260C	
cis-1,2-Dichloroethene	ND	---	0.0500	mg/L	50	06/05/19 11:37	1311/8260C	
trans-1,2-Dichloroethene	ND	---	0.0250	mg/L	50	06/05/19 11:37	1311/8260C	
1,2-Dichloropropane	ND	---	0.0250	mg/L	50	06/05/19 11:37	1311/8260C	
1,3-Dichloropropane	ND	---	0.0500	mg/L	50	06/05/19 11:37	1311/8260C	

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ANALYTICAL SAMPLE RESULTS

TCLP Volatile Organic Compounds by EPA 1311/8260C

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
2708-190521-007 (A9E0723-01)			Matrix: Solid		Batch: 9051445			
2,2-Dichloropropane	ND	---	0.0500	mg/L	50	06/05/19 11:37	1311/8260C	
1,1-Dichloropropene	ND	---	0.0500	mg/L	50	06/05/19 11:37	1311/8260C	
cis-1,3-Dichloropropene	ND	---	0.0500	mg/L	50	06/05/19 11:37	1311/8260C	
trans-1,3-Dichloropropene	ND	---	0.0500	mg/L	50	06/05/19 11:37	1311/8260C	
Ethylbenzene	0.383	---	0.0250	mg/L	50	06/05/19 11:37	1311/8260C	
Hexachlorobutadiene	ND	---	0.250	mg/L	50	06/05/19 11:37	1311/8260C	
2-Hexanone	ND	---	0.500	mg/L	50	06/05/19 11:37	1311/8260C	
Isopropylbenzene	ND	---	0.0500	mg/L	50	06/05/19 11:37	1311/8260C	
4-Isopropyltoluene	ND	---	0.0500	mg/L	50	06/05/19 11:37	1311/8260C	
4-Methyl-2-pentanone (MiBK)	ND	---	0.500	mg/L	50	06/05/19 11:37	1311/8260C	
Methyl tert-butyl ether (MTBE)	ND	---	0.0500	mg/L	50	06/05/19 11:37	1311/8260C	
Methylene chloride	ND	---	0.250	mg/L	50	06/05/19 11:37	1311/8260C	
n-Propylbenzene	ND	---	0.0250	mg/L	50	06/05/19 11:37	1311/8260C	
Styrene	0.183	---	0.0500	mg/L	50	06/05/19 11:37	1311/8260C	
1,1,1,2-Tetrachloroethane	ND	---	0.0250	mg/L	50	06/05/19 11:37	1311/8260C	
1,1,2,2-Tetrachloroethane	ND	---	0.0250	mg/L	50	06/05/19 11:37	1311/8260C	
Tetrachloroethene (PCE)	ND	---	0.0250	mg/L	50	06/05/19 11:37	1311/8260C	
Toluene	1.56	---	0.0500	mg/L	50	06/05/19 11:37	1311/8260C	
1,2,3-Trichlorobenzene	ND	---	0.0500	mg/L	50	06/05/19 11:37	1311/8260C	
1,2,4-Trichlorobenzene	ND	---	0.100	mg/L	50	06/05/19 11:37	1311/8260C	
1,1,1-Trichloroethane	ND	---	0.0250	mg/L	50	06/05/19 11:37	1311/8260C	
1,1,2-Trichloroethane	ND	---	0.0250	mg/L	50	06/05/19 11:37	1311/8260C	
Trichloroethene (TCE)	ND	---	0.0250	mg/L	50	06/05/19 11:37	1311/8260C	
Trichlorofluoromethane	ND	---	0.100	mg/L	50	06/05/19 11:37	1311/8260C	
1,2,3-Trichloropropane	ND	---	0.0500	mg/L	50	06/05/19 11:37	1311/8260C	
1,2,4-Trimethylbenzene	0.0570	---	0.0500	mg/L	50	06/05/19 11:37	1311/8260C	
1,3,5-Trimethylbenzene	ND	---	0.0500	mg/L	50	06/05/19 11:37	1311/8260C	
Vinyl chloride	ND	---	0.0250	mg/L	50	06/05/19 11:37	1311/8260C	
m,p-Xylene	0.524	---	0.0500	mg/L	50	06/05/19 11:37	1311/8260C	
o-Xylene	0.175	---	0.0250	mg/L	50	06/05/19 11:37	1311/8260C	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 101 %</i>		<i>Limits: 80-120 %</i>		<i>1</i>	<i>06/05/19 11:37</i>	<i>1311/8260C</i>
<i>Toluene-d8 (Surr)</i>		<i>101 %</i>		<i>80-120 %</i>		<i>1</i>	<i>06/05/19 11:37</i>	<i>1311/8260C</i>
<i>4-Bromofluorobenzene (Surr)</i>		<i>96 %</i>		<i>80-120 %</i>		<i>1</i>	<i>06/05/19 11:37</i>	<i>1311/8260C</i>

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 503-718-2323
 EPA ID: OR01039

Hahn and Associates 434 NW 6th Ave. Suite 203 Portland, OR 97209	Project: Mult 802 Decommissioning Project Number: 2708-60F Project Manager: Rob Ede	Report ID: A9E0723 - 06 24 19 1133
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ANALYTICAL SAMPLE RESULTS

TCLP Volatile Organic Compounds by EPA 1311/8260C

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
2708-190521-007 (A9E0723-01RE1)				Matrix: Solid		Batch: 9051445		
Naphthalene	11.2	---	1.00	mg/L	500	06/05/19 15:24	1311/8260C	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>			<i>Recovery: 104 %</i>	<i>Limits: 80-120 %</i>	<i>1</i>	<i>06/05/19 15:24</i>	<i>1311/8260C</i>	
<i>Toluene-d8 (Surr)</i>			<i>102 %</i>	<i>80-120 %</i>	<i>1</i>	<i>06/05/19 15:24</i>	<i>1311/8260C</i>	
<i>4-Bromofluorobenzene (Surr)</i>			<i>100 %</i>	<i>80-120 %</i>	<i>1</i>	<i>06/05/19 15:24</i>	<i>1311/8260C</i>	

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Philip Nerenberg, Lab Director



Hahn and Associates
 434 NW 6th Ave. Suite 203
 Portland, OR 97209

Project: **Mult 802 Decommissioning**
 Project Number: **2708-60F**
 Project Manager: **Rob Ede**

Report ID:
A9E0723 - 06 24 19 1133

ANALYTICAL SAMPLE RESULTS

SPLP Volatile Organic Compounds by EPA 1312/8260C

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
2708-190521-007 (A9E0723-01)				Matrix: Solid		Batch: 9060589		
Acetone	ND	---	2.00	mg/L	100	06/05/19 13:33	1312/8260C	
Benzene	3.40	---	0.0250	mg/L	100	06/05/19 13:33	1312/8260C	
Bromobenzene	ND	---	0.0500	mg/L	100	06/05/19 13:33	1312/8260C	
Bromochloromethane	ND	---	0.100	mg/L	100	06/05/19 13:33	1312/8260C	
Bromodichloromethane	ND	---	0.100	mg/L	100	06/05/19 13:33	1312/8260C	
Bromoform	ND	---	0.100	mg/L	100	06/05/19 13:33	1312/8260C	
Bromomethane	ND	---	0.500	mg/L	100	06/05/19 13:33	1312/8260C	
2-Butanone (MEK)	ND	---	1.00	mg/L	100	06/05/19 13:33	1312/8260C	
n-Butylbenzene	ND	---	0.100	mg/L	100	06/05/19 13:33	1312/8260C	
sec-Butylbenzene	ND	---	0.100	mg/L	100	06/05/19 13:33	1312/8260C	
tert-Butylbenzene	ND	---	0.100	mg/L	100	06/05/19 13:33	1312/8260C	
Carbon tetrachloride	ND	---	0.100	mg/L	100	06/05/19 13:33	1312/8260C	
Chlorobenzene	ND	---	0.0500	mg/L	100	06/05/19 13:33	1312/8260C	
Chloroethane	ND	---	0.500	mg/L	100	06/05/19 13:33	1312/8260C	
Chloroform	ND	---	0.100	mg/L	100	06/05/19 13:33	1312/8260C	
Chloromethane	ND	---	0.500	mg/L	100	06/05/19 13:33	1312/8260C	
2-Chlorotoluene	ND	---	0.100	mg/L	100	06/05/19 13:33	1312/8260C	
4-Chlorotoluene	ND	---	0.100	mg/L	100	06/05/19 13:33	1312/8260C	
1,2-Dibromo-3-chloropropane	ND	---	0.500	mg/L	100	06/05/19 13:33	1312/8260C	
Dibromochloromethane	ND	---	0.100	mg/L	100	06/05/19 13:33	1312/8260C	
1,2-Dibromoethane (EDB)	ND	---	0.0500	mg/L	100	06/05/19 13:33	1312/8260C	
Dibromomethane	ND	---	0.100	mg/L	100	06/05/19 13:33	1312/8260C	
1,2-Dichlorobenzene	ND	---	0.0500	mg/L	100	06/05/19 13:33	1312/8260C	
1,3-Dichlorobenzene	ND	---	0.0500	mg/L	100	06/05/19 13:33	1312/8260C	
1,4-Dichlorobenzene	ND	---	0.0500	mg/L	100	06/05/19 13:33	1312/8260C	
Dichlorodifluoromethane	ND	---	0.100	mg/L	100	06/05/19 13:33	1312/8260C	
1,1-Dichloroethane	ND	---	0.0500	mg/L	100	06/05/19 13:33	1312/8260C	
1,2-Dichloroethane (EDC)	ND	---	0.0500	mg/L	100	06/05/19 13:33	1312/8260C	
1,1-Dichloroethene	ND	---	0.0500	mg/L	100	06/05/19 13:33	1312/8260C	
cis-1,2-Dichloroethene	ND	---	0.0500	mg/L	100	06/05/19 13:33	1312/8260C	
trans-1,2-Dichloroethene	ND	---	0.0500	mg/L	100	06/05/19 13:33	1312/8260C	
1,2-Dichloropropane	ND	---	0.0500	mg/L	100	06/05/19 13:33	1312/8260C	
1,3-Dichloropropane	ND	---	0.100	mg/L	100	06/05/19 13:33	1312/8260C	

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Philip Nerenberg, Lab Director



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434 NW 6th Ave. Suite 203
Portland, OR 97209

Project: **Mult 802 Decommissioning**
Project Number: **2708-60F**
Project Manager: **Rob Ede**

Report ID:
A9E0723 - 06 24 19 1133

ANALYTICAL SAMPLE RESULTS

SPLP Volatile Organic Compounds by EPA 1312/8260C

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
2708-190521-007 (A9E0723-01)			Matrix: Solid		Batch: 9060589			
2,2-Dichloropropane	ND	---	0.100	mg/L	100	06/05/19 13:33	1312/8260C	
1,1-Dichloropropene	ND	---	0.100	mg/L	100	06/05/19 13:33	1312/8260C	
cis-1,3-Dichloropropene	ND	---	0.100	mg/L	100	06/05/19 13:33	1312/8260C	
trans-1,3-Dichloropropene	ND	---	0.100	mg/L	100	06/05/19 13:33	1312/8260C	
Ethylbenzene	0.310	---	0.0500	mg/L	100	06/05/19 13:33	1312/8260C	
Hexachlorobutadiene	ND	---	0.500	mg/L	100	06/05/19 13:33	1312/8260C	
2-Hexanone	ND	---	1.00	mg/L	100	06/05/19 13:33	1312/8260C	
Isopropylbenzene	ND	---	0.100	mg/L	100	06/05/19 13:33	1312/8260C	
4-Isopropyltoluene	ND	---	0.100	mg/L	100	06/05/19 13:33	1312/8260C	
4-Methyl-2-pentanone (MiBK)	ND	---	1.00	mg/L	100	06/05/19 13:33	1312/8260C	
Methyl tert-butyl ether (MTBE)	ND	---	0.100	mg/L	100	06/05/19 13:33	1312/8260C	
Methylene chloride	ND	---	0.500	mg/L	100	06/05/19 13:33	1312/8260C	
Naphthalene	13.9	---	0.200	mg/L	100	06/05/19 13:33	1312/8260C	
n-Propylbenzene	ND	---	0.0500	mg/L	100	06/05/19 13:33	1312/8260C	
Styrene	0.136	---	0.100	mg/L	100	06/05/19 13:33	1312/8260C	
1,1,1,2-Tetrachloroethane	ND	---	0.0500	mg/L	100	06/05/19 13:33	1312/8260C	
1,1,2,2-Tetrachloroethane	ND	---	0.0500	mg/L	100	06/05/19 13:33	1312/8260C	
Tetrachloroethene (PCE)	ND	---	0.0500	mg/L	100	06/05/19 13:33	1312/8260C	
Toluene	1.46	---	0.100	mg/L	100	06/05/19 13:33	1312/8260C	
1,2,3-Trichlorobenzene	ND	---	0.200	mg/L	100	06/05/19 13:33	1312/8260C	
1,2,4-Trichlorobenzene	ND	---	0.200	mg/L	100	06/05/19 13:33	1312/8260C	
1,1,1-Trichloroethane	ND	---	0.0500	mg/L	100	06/05/19 13:33	1312/8260C	
1,1,2-Trichloroethane	ND	---	0.0500	mg/L	100	06/05/19 13:33	1312/8260C	
Trichloroethene (TCE)	ND	---	0.0500	mg/L	100	06/05/19 13:33	1312/8260C	
Trichlorofluoromethane	ND	---	0.200	mg/L	100	06/05/19 13:33	1312/8260C	
1,2,3-Trichloropropane	ND	---	0.100	mg/L	100	06/05/19 13:33	1312/8260C	
1,2,4-Trimethylbenzene	ND	---	0.100	mg/L	100	06/05/19 13:33	1312/8260C	
1,3,5-Trimethylbenzene	ND	---	0.100	mg/L	100	06/05/19 13:33	1312/8260C	
Vinyl chloride	ND	---	0.0500	mg/L	100	06/05/19 13:33	1312/8260C	
m,p-Xylene	0.419	---	0.100	mg/L	100	06/05/19 13:33	1312/8260C	
o-Xylene	0.135	---	0.0500	mg/L	100	06/05/19 13:33	1312/8260C	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 103 %</i>		<i>Limits: 80-120 %</i>		<i>1</i>	<i>06/05/19 13:33</i>	<i>1312/8260C</i>
<i>Toluene-d8 (Surr)</i>		<i>102 %</i>		<i>80-120 %</i>		<i>1</i>	<i>06/05/19 13:33</i>	<i>1312/8260C</i>

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Philip Nerenberg, Lab Director



Apex Laboratories, LLC

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EPA ID: OR01039

Hahn and Associates 434 NW 6th Ave. Suite 203 Portland, OR 97209	Project: Mult 802 Decommissioning Project Number: 2708-60F Project Manager: Rob Ede	Report ID: A9E0723 - 06 24 19 1133
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ANALYTICAL SAMPLE RESULTS

SPLP Volatile Organic Compounds by EPA 1312/8260C

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
2708-190521-007 (A9E0723-01)				Matrix: Solid		Batch: 9060589		
<i>Surrogate: 4-Bromofluorobenzene (Surr)</i>		<i>Recovery: 96 %</i>		<i>Limits: 80-120 %</i>		<i>1</i>	<i>06/05/19 13:33</i>	<i>1312/8260C</i>

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Philip Nerenberg, Lab Director



Hahn and Associates
434 NW 6th Ave. Suite 203
Portland, OR 97209

Project: **Mult 802 Decommissioning**
Project Number: **2708-60F**
Project Manager: **Rob Ede**

Report ID:
A9E0723 - 06 24 19 1133

ANALYTICAL SAMPLE RESULTS

SPLP Semivolatile Organic Compounds by EPA 1312/8270D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
2708-190521-007 (A9E0723-01)				Matrix: Solid		Batch: 9060759		
Acenaphthene	0.856	---	0.200	mg/L	1000	06/11/19 13:43	1312/8270D	B-02
Acenaphthylene	ND	---	0.200	mg/L	1000	06/11/19 13:43	1312/8270D	
Anthracene	ND	---	0.200	mg/L	1000	06/11/19 13:43	1312/8270D	
Azobenzene (1,2-DPH)	ND	---	0.500	mg/L	1000	06/11/19 13:43	1312/8270D	
Benz(a)anthracene	ND	---	0.200	mg/L	1000	06/11/19 13:43	1312/8270D	
Benzo(a)pyrene	ND	---	0.300	mg/L	1000	06/11/19 13:43	1312/8270D	
Benzo(b)fluoranthene	ND	---	0.300	mg/L	1000	06/11/19 13:43	1312/8270D	
Benzo(k)fluoranthene	ND	---	0.300	mg/L	1000	06/11/19 13:43	1312/8270D	
Benzo(g,h,i)perylene	ND	---	0.200	mg/L	1000	06/11/19 13:43	1312/8270D	
Benzoic acid	ND	---	20.0	mg/L	1000	06/11/19 13:43	1312/8270D	
Benzyl alcohol	ND	---	2.00	mg/L	1000	06/11/19 13:43	1312/8270D	
Bis(2-Chloroethoxy) methane	ND	---	0.500	mg/L	1000	06/11/19 13:43	1312/8270D	
Bis(2-Chloroethyl) ether	ND	---	0.500	mg/L	1000	06/11/19 13:43	1312/8270D	
2,2'-Oxybis(1-Chloropropane)	ND	---	0.500	mg/L	1000	06/11/19 13:43	1312/8270D	
Bis(2-Ethylhexyl) adipate	ND	---	5.00	mg/L	1000	06/11/19 13:43	1312/8270D	
Bis(2-ethylhexyl)phthalate	ND	---	4.00	mg/L	1000	06/11/19 13:43	1312/8270D	
4-Bromophenyl phenyl ether	ND	---	0.500	mg/L	1000	06/11/19 13:43	1312/8270D	
Butyl benzyl phthalate	ND	---	4.00	mg/L	1000	06/11/19 13:43	1312/8270D	
Carbazole	0.739	---	0.300	mg/L	1000	06/11/19 13:43	1312/8270D	
4-Chloroaniline	ND	---	0.500	mg/L	1000	06/11/19 13:43	1312/8270D	
4-Chloro-3-methylphenol	ND	---	2.00	mg/L	1000	06/11/19 13:43	1312/8270D	
2-Chloronaphthalene	ND	---	0.200	mg/L	1000	06/11/19 13:43	1312/8270D	
2-Chlorophenol	ND	---	1.00	mg/L	1000	06/11/19 13:43	1312/8270D	
4-Chlorophenyl phenyl ether	ND	---	0.500	mg/L	1000	06/11/19 13:43	1312/8270D	
Chrysene	ND	---	0.200	mg/L	1000	06/11/19 13:43	1312/8270D	
Dibenz(a,h)anthracene	ND	---	0.200	mg/L	1000	06/11/19 13:43	1312/8270D	
Dibenzofuran	0.385	---	0.200	mg/L	1000	06/11/19 13:43	1312/8270D	
1,2-Dichlorobenzene	ND	---	0.500	mg/L	1000	06/11/19 13:43	1312/8270D	
1,3-Dichlorobenzene	ND	---	0.500	mg/L	1000	06/11/19 13:43	1312/8270D	
1,4-Dichlorobenzene	ND	---	0.500	mg/L	1000	06/11/19 13:43	1312/8270D	
2,4-Dichlorophenol	ND	---	1.00	mg/L	1000	06/11/19 13:43	1312/8270D	
Di-n-butylphthalate	ND	---	4.00	mg/L	1000	06/11/19 13:43	1312/8270D	
Diethylphthalate	ND	---	4.00	mg/L	1000	06/11/19 13:43	1312/8270D	

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Philip Nerenberg, Lab Director



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434 NW 6th Ave. Suite 203
Portland, OR 97209

Project: **Mult 802 Decommissioning**
Project Number: **2708-60F**
Project Manager: **Rob Ede**

Report ID:
A9E0723 - 06 24 19 1133

ANALYTICAL SAMPLE RESULTS

SPLP Semivolatile Organic Compounds by EPA 1312/8270D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
2708-190521-007 (A9E0723-01)				Matrix: Solid		Batch: 9060759		
Dimethylphthalate	ND	---	4.00	mg/L	1000	06/11/19 13:43	1312/8270D	
2,4-Dimethylphenol	2.93	---	1.00	mg/L	1000	06/11/19 13:43	1312/8270D	
1,2-Dinitrobenzene	ND	---	5.00	mg/L	1000	06/11/19 13:43	1312/8270D	
1,3-Dinitrobenzene	ND	---	5.00	mg/L	1000	06/11/19 13:43	1312/8270D	
1,4-Dinitrobenzene	ND	---	5.00	mg/L	1000	06/11/19 13:43	1312/8270D	
4,6-Dinitro-2-methylphenol	ND	---	5.00	mg/L	1000	06/11/19 13:43	1312/8270D	
2,4-Dinitrophenol	ND	---	5.00	mg/L	1000	06/11/19 13:43	1312/8270D	
2,4-Dinitrotoluene	ND	---	2.00	mg/L	1000	06/11/19 13:43	1312/8270D	
2,6-Dinitrotoluene	ND	---	2.00	mg/L	1000	06/11/19 13:43	1312/8270D	
Di-n-octyl phthalate	ND	---	4.00	mg/L	1000	06/11/19 13:43	1312/8270D	
Fluoranthene	ND	---	0.200	mg/L	1000	06/11/19 13:43	1312/8270D	
Fluorene	0.211	---	0.200	mg/L	1000	06/11/19 13:43	1312/8270D	
Hexachlorobenzene	ND	---	0.200	mg/L	1000	06/11/19 13:43	1312/8270D	
Hexachlorobutadiene	ND	---	0.500	mg/L	1000	06/11/19 13:43	1312/8270D	
Hexachlorocyclopentadiene	ND	---	1.00	mg/L	1000	06/11/19 13:43	1312/8270D	
Hexachloroethane	ND	---	0.500	mg/L	1000	06/11/19 13:43	1312/8270D	
Indeno(1,2,3-cd)pyrene	ND	---	0.200	mg/L	1000	06/11/19 13:43	1312/8270D	
Isophorone	ND	---	0.500	mg/L	1000	06/11/19 13:43	1312/8270D	
1-Methylnaphthalene	0.577	---	0.400	mg/L	1000	06/11/19 13:43	1312/8270D	
2-Methylnaphthalene	0.805	---	0.400	mg/L	1000	06/11/19 13:43	1312/8270D	B-02
2-Methylphenol	8.84	---	0.500	mg/L	1000	06/11/19 13:43	1312/8270D	B
3+4-Methylphenol(s)	23.9	---	0.500	mg/L	1000	06/11/19 13:43	1312/8270D	B
Naphthalene	9.36	---	0.400	mg/L	1000	06/11/19 13:43	1312/8270D	B
2-Nitroaniline	ND	---	4.00	mg/L	1000	06/11/19 13:43	1312/8270D	
3-Nitroaniline	ND	---	4.00	mg/L	1000	06/11/19 13:43	1312/8270D	
4-Nitroaniline	ND	---	4.00	mg/L	1000	06/11/19 13:43	1312/8270D	
Nitrobenzene	ND	---	2.00	mg/L	1000	06/11/19 13:43	1312/8270D	
2-Nitrophenol	ND	---	2.00	mg/L	1000	06/11/19 13:43	1312/8270D	
4-Nitrophenol	ND	---	2.00	mg/L	1000	06/11/19 13:43	1312/8270D	
N-Nitrosodimethylamine	ND	---	0.500	mg/L	1000	06/11/19 13:43	1312/8270D	
N-Nitroso-di-n-propylamine	ND	---	0.500	mg/L	1000	06/11/19 13:43	1312/8270D	
N-Nitrosodiphenylamine	ND	---	0.500	mg/L	1000	06/11/19 13:43	1312/8270D	
Pentachlorophenol (PCP)	ND	---	2.00	mg/L	1000	06/11/19 13:43	1312/8270D	

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ANALYTICAL SAMPLE RESULTS

SPLP Semivolatile Organic Compounds by EPA 1312/8270D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes	
2708-190521-007 (A9E0723-01)				Matrix: Solid		Batch: 9060759			
Phenanthrene	0.273	---	0.200	mg/L	1000	06/11/19 13:43	1312/8270D	B-02	
Phenol	16.4	---	4.00	mg/L	1000	06/11/19 13:43	1312/8270D	B	
Pyrene	ND	---	0.200	mg/L	1000	06/11/19 13:43	1312/8270D		
Pyridine	2.31	---	2.00	mg/L	1000	06/11/19 13:43	1312/8270D	B-02	
2,3,4,6-Tetrachlorophenol	ND	---	1.00	mg/L	1000	06/11/19 13:43	1312/8270D		
2,3,5,6-Tetrachlorophenol	ND	---	1.00	mg/L	1000	06/11/19 13:43	1312/8270D		
1,2,4-Trichlorobenzene	ND	---	0.500	mg/L	1000	06/11/19 13:43	1312/8270D		
2,4,5-Trichlorophenol	ND	---	1.00	mg/L	1000	06/11/19 13:43	1312/8270D		
2,4,6-Trichlorophenol	ND	---	1.00	mg/L	1000	06/11/19 13:43	1312/8270D		
<i>Surrogate: Nitrobenzene-d5 (Surr)</i>		<i>Recovery: 173 %</i>		<i>Limits: 44-120 %</i>		<i>1000</i>	<i>06/11/19 13:43</i>	<i>1312/8270D</i>	<i>S-05</i>
<i>2-Fluorobiphenyl (Surr)</i>		<i>81 %</i>		<i>44-120 %</i>		<i>1000</i>	<i>06/11/19 13:43</i>	<i>1312/8270D</i>	<i>S-05</i>
<i>Phenol-d6 (Surr)</i>		<i>%</i>		<i>10-120 %</i>		<i>1000</i>	<i>06/11/19 13:43</i>	<i>1312/8270D</i>	<i>S-01</i>
<i>p-Terphenyl-d14 (Surr)</i>		<i>91 %</i>		<i>50-133 %</i>		<i>1000</i>	<i>06/11/19 13:43</i>	<i>1312/8270D</i>	<i>S-05</i>
<i>2-Fluorophenol (Surr)</i>		<i>%</i>		<i>19-120 %</i>		<i>1000</i>	<i>06/11/19 13:43</i>	<i>1312/8270D</i>	<i>S-01</i>
<i>2,4,6-Tribromophenol (Surr)</i>		<i>%</i>		<i>43-140 %</i>		<i>1000</i>	<i>06/11/19 13:43</i>	<i>1312/8270D</i>	<i>S-01</i>
2708-190521-007 (A9E0723-01RE1)				Matrix: Solid		Batch: 9060759			
Aniline	7.23	---	1.00	mg/L	1000	06/12/19 14:24	1312/8270D	M-04	



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ANALYTICAL SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
2708-190521-007 (A9E0723-01RE1)				Matrix: Solid		Batch: 9060490		
Acenaphthene	1730000	---	945000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
Acenaphthylene	ND	---	945000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
Anthracene	8870000	---	945000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
Benz(a)anthracene	4390000	---	945000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
Benzo(a)pyrene	4700000	---	1420000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
Benzo(b)fluoranthene	5100000	---	1420000	ug/kg	10000	06/04/19 12:14	EPA 8270D	M-05
Benzo(k)fluoranthene	2120000	---	1420000	ug/kg	10000	06/04/19 12:14	EPA 8270D	M-05
Benzo(g,h,i)perylene	3150000	---	945000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
Chrysene	4520000	---	945000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
Dibenz(a,h)anthracene	ND	---	945000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
Fluoranthene	21300000	---	945000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
Fluorene	9280000	---	945000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
Indeno(1,2,3-cd)pyrene	3540000	---	945000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
1-Methylnaphthalene	4900000	---	1890000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
2-Methylnaphthalene	10400000	---	1890000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
Naphthalene	27600000	---	1890000	ug/kg	10000	06/04/19 12:14	EPA 8270D	Q-29
Phenanthrene	33600000	---	945000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
Pyrene	18500000	---	945000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
Carbazole	4200000	---	1420000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
Dibenzofuran	10400000	---	945000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
4-Chloro-3-methylphenol	ND	---	9450000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
2-Chlorophenol	ND	---	4710000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
2,4-Dichlorophenol	ND	---	4710000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
2,4-Dimethylphenol	ND	---	4710000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
2,4-Dinitrophenol	ND	---	23600000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
4,6-Dinitro-2-methylphenol	ND	---	23600000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
2-Methylphenol	ND	---	2360000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
3+4-Methylphenol(s)	ND	---	2360000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
2-Nitrophenol	ND	---	9450000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
4-Nitrophenol	ND	---	9450000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
Pentachlorophenol (PCP)	ND	---	9450000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
Phenol	ND	---	1890000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
2,3,4,6-Tetrachlorophenol	ND	---	4710000	ug/kg	10000	06/04/19 12:14	EPA 8270D	

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Project: **Mult 802 Decommissioning**
 Project Number: **2708-60F**
 Project Manager: **Rob Ede**

Report ID:
A9E0723 - 06 24 19 1133

ANALYTICAL SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
2708-190521-007 (A9E0723-01RE1)				Matrix: Solid		Batch: 9060490		
2,3,5,6-Tetrachlorophenol	ND	---	4710000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
2,4,5-Trichlorophenol	ND	---	4710000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
2,4,6-Trichlorophenol	ND	---	4710000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
Bis(2-ethylhexyl)phthalate	ND	---	14200000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
Butyl benzyl phthalate	ND	---	9450000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
Diethylphthalate	ND	---	9450000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
Dimethylphthalate	ND	---	9450000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
Di-n-butylphthalate	ND	---	9450000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
Di-n-octyl phthalate	ND	---	9450000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
N-Nitrosodimethylamine	ND	---	2360000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
N-Nitroso-di-n-propylamine	ND	---	2360000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
N-Nitrosodiphenylamine	ND	---	2360000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
Bis(2-Chloroethoxy) methane	ND	---	2360000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
Bis(2-Chloroethyl) ether	ND	---	2360000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
2,2'-Oxybis(1-Chloropropane)	ND	---	2360000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
Hexachlorobenzene	ND	---	945000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
Hexachlorobutadiene	ND	---	2360000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
Hexachlorocyclopentadiene	ND	---	4710000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
Hexachloroethane	ND	---	2360000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
2-Chloronaphthalene	ND	---	945000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
1,2-Dichlorobenzene	ND	---	2360000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
1,3-Dichlorobenzene	ND	---	2360000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
1,4-Dichlorobenzene	ND	---	2360000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
1,2,4-Trichlorobenzene	ND	---	2360000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
4-Bromophenyl phenyl ether	ND	---	2360000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
4-Chlorophenyl phenyl ether	ND	---	2360000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
Aniline	ND	---	4710000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
4-Chloroaniline	ND	---	2360000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
2-Nitroaniline	ND	---	18900000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
3-Nitroaniline	ND	---	18900000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
4-Nitroaniline	ND	---	18900000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
Nitrobenzene	ND	---	9450000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
2,4-Dinitrotoluene	ND	---	9450000	ug/kg	10000	06/04/19 12:14	EPA 8270D	

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ANALYTICAL SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
2708-190521-007 (A9E0723-01RE1)			Matrix: Solid		Batch: 9060490			
2,6-Dinitrotoluene	ND	---	9450000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
Benzoic acid	ND	---	118000000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
Benzyl alcohol	ND	---	4710000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
Isophorone	ND	---	2360000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
Azobenzene (1,2-DPH)	ND	---	2360000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
Bis(2-Ethylhexyl) adipate	ND	---	23600000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
3,3'-Dichlorobenzidine	ND	---	9450000	ug/kg	10000	06/04/19 12:14	EPA 8270D	Q-52
1,2-Dinitrobenzene	ND	---	23600000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
1,3-Dinitrobenzene	ND	---	23600000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
1,4-Dinitrobenzene	ND	---	23600000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
Pyridine	ND	---	4710000	ug/kg	10000	06/04/19 12:14	EPA 8270D	
<i>Surrogate: Nitrobenzene-d5 (Surr)</i>			<i>Recovery: 345 %</i>	<i>Limits: 37-122 %</i>	<i>10000</i>	<i>06/04/19 12:14</i>	<i>EPA 8270D</i>	<i>S-05</i>
<i>2-Fluorobiphenyl (Surr)</i>			<i>%</i>	<i>44-115 %</i>	<i>10000</i>	<i>06/04/19 12:14</i>	<i>EPA 8270D</i>	<i>S-01</i>
<i>Phenol-d6 (Surr)</i>			<i>%</i>	<i>33-122 %</i>	<i>10000</i>	<i>06/04/19 12:14</i>	<i>EPA 8270D</i>	<i>S-01</i>
<i>p-Terphenyl-d14 (Surr)</i>			<i>147 %</i>	<i>54-127 %</i>	<i>10000</i>	<i>06/04/19 12:14</i>	<i>EPA 8270D</i>	<i>S-05</i>
<i>2-Fluorophenol (Surr)</i>			<i>621 %</i>	<i>35-115 %</i>	<i>10000</i>	<i>06/04/19 12:14</i>	<i>EPA 8270D</i>	<i>S-05</i>
<i>2,4,6-Tribromophenol (Surr)</i>			<i>%</i>	<i>39-132 %</i>	<i>10000</i>	<i>06/04/19 12:14</i>	<i>EPA 8270D</i>	<i>S-01</i>



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ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020A (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
2708-190521-007 (A9E0723-01)		Matrix: Solid						
Batch: 9060676								
Aluminum	ND	---	238	mg/kg	10	06/07/19 14:17	EPA 6020A	R-04
Antimony	ND	---	4.76	mg/kg	10	06/07/19 14:17	EPA 6020A	R-04
Arsenic	ND	---	4.76	mg/kg	10	06/07/19 14:17	EPA 6020A	R-04
Barium	ND	---	4.76	mg/kg	10	06/07/19 14:17	EPA 6020A	Q-17, R-04
Beryllium	ND	---	0.952	mg/kg	10	06/07/19 14:17	EPA 6020A	R-04
Cadmium	ND	---	0.952	mg/kg	10	06/07/19 14:17	EPA 6020A	R-04
Calcium	ND	---	476	mg/kg	10	06/07/19 14:17	EPA 6020A	R-04
Chromium	ND	---	4.76	mg/kg	10	06/07/19 14:17	EPA 6020A	R-04
Copper	ND	---	4.76	mg/kg	10	06/07/19 14:17	EPA 6020A	R-04
Iron	1130	---	238	mg/kg	10	06/07/19 14:17	EPA 6020A	Q-39, Q-42
Lead	13.1	---	0.952	mg/kg	10	06/07/19 14:17	EPA 6020A	Q-17, Q-39
Magnesium	ND	---	238	mg/kg	10	06/07/19 14:17	EPA 6020A	R-04
Manganese	16.7	---	4.76	mg/kg	10	06/07/19 14:17	EPA 6020A	
Mercury	ND	---	0.381	mg/kg	10	06/07/19 14:17	EPA 6020A	R-04
Nickel	ND	---	4.76	mg/kg	10	06/07/19 14:17	EPA 6020A	R-04
Potassium	ND	---	476	mg/kg	10	06/07/19 14:17	EPA 6020A	R-04
Selenium	ND	---	4.76	mg/kg	10	06/07/19 14:17	EPA 6020A	R-04
Silver	ND	---	0.952	mg/kg	10	06/07/19 14:17	EPA 6020A	R-04
Sodium	ND	---	476	mg/kg	10	06/07/19 14:17	EPA 6020A	R-04
Thallium	ND	---	0.952	mg/kg	10	06/07/19 14:17	EPA 6020A	R-04
Vanadium	ND	---	4.76	mg/kg	10	06/07/19 14:17	EPA 6020A	R-04
Zinc	ND	---	19.0	mg/kg	10	06/07/19 14:17	EPA 6020A	Q-39, Q-42, R-04



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ANALYTICAL SAMPLE RESULTS

SPLP Extraction by EPA 1312 (ZHE)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
2708-190521-007 (A9E0723-01)				Matrix: Solid		Batch: 9060554		
TCLP ZHE Extraction	PREP	---		N/A	1	06/04/19 15:58	EPA 1312 ZHE	
TCLP ZHE Extraction	PREP	---		N/A	1	06/04/19 15:58	EPA 1311 ZHE	
SPLP Extraction	PREP	---		N/A	1	06/05/19 17:15	EPA 1312	H-08

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QUALITY CONTROL (QC) SAMPLE RESULTS

Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060517 - EPA 3546 (Fuels)						Solid						
Blank (9060517-BLK1)			Prepared: 06/03/19 16:03 Analyzed: 06/04/19 05:28									
<u>NWTPH-Dx</u>												
Diesel	ND	---	25.0	mg/kg	1	---	---	---	---	---	---	
Oil	ND	---	50.0	mg/kg	1	---	---	---	---	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 95 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
LCS (9060517-BS1)			Prepared: 06/03/19 16:03 Analyzed: 06/04/19 05:50									
<u>NWTPH-Dx</u>												
Diesel	116	---	25.0	mg/kg	1	125	---	93	70-130%	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 93 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
Duplicate (9060517-DUP1)			Prepared: 06/03/19 16:03 Analyzed: 06/04/19 06:36									
<u>QC Source Sample: 2708-190521-009 (A9E0723-03)</u>												
<u>NWTPH-Dx</u>												
Diesel	114000	---	37700	mg/kg	100	---	116000	---	---	2	30%	F-17
Oil	ND	---	75500	mg/kg	100	---	51400	---	---	***	30%	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 100x</i>						S-01



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QUALITY CONTROL (QC) SAMPLE RESULTS

Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060533 - EPA 5035A												
Soil												
Blank (9060533-BLK1)												
Prepared: 06/04/19 09:03 Analyzed: 06/04/19 11:23												
<u>NWTPH-Gx (MS)</u>												
Gasoline Range Organics	ND	---	3.33	mg/kg	50	---	---	---	---	---	---	
Surr: 4-Bromofluorobenzene (Sur)			Recovery: 95 %	Limits: 50-150 %		Dilution: 1x						
1,4-Difluorobenzene (Sur)			89 %	50-150 %		"						
LCS (9060533-BS2)												
Prepared: 06/04/19 09:03 Analyzed: 06/04/19 10:56												
<u>NWTPH-Gx (MS)</u>												
Gasoline Range Organics	23.4	---	5.00	mg/kg	50	25.0	---	94	80-120%	---	---	
Surr: 4-Bromofluorobenzene (Sur)			Recovery: 95 %	Limits: 50-150 %		Dilution: 1x						
1,4-Difluorobenzene (Sur)			93 %	50-150 %		"						
Duplicate (9060533-DUP1)												
Prepared: 05/29/19 11:20 Analyzed: 06/04/19 20:32												
<u>QC Source Sample: Non-SDG (A9F0057-03)</u>												
Gasoline Range Organics	581	---	17.8	mg/kg	200	---	ND	---	---		30%	Q-04
Surr: 4-Bromofluorobenzene (Sur)			Recovery: 93 %	Limits: 50-150 %		Dilution: 1x						
1,4-Difluorobenzene (Sur)			98 %	50-150 %		"						
Duplicate (9060533-DUP2)												
Prepared: 05/29/19 11:00 Analyzed: 06/04/19 21:27												
<u>QC Source Sample: Non-SDG (A9F0057-02)</u>												
Gasoline Range Organics	12900	---	192	mg/kg	2000	---	9940	---	---	26	30%	
Surr: 4-Bromofluorobenzene (Sur)			Recovery: 80 %	Limits: 50-150 %		Dilution: 1x						
1,4-Difluorobenzene (Sur)			112 %	50-150 %		"						



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Portland, OR 97209

Project: **Mult 802 Decommissioning**
Project Number: **2708-60F**
Project Manager: **Rob Ede**

Report ID:
A9E0723 - 06 24 19 1133

QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051139 - EPA 5035A						Soil						
Blank (9051139-BLK1)			Prepared: 05/22/19 10:00 Analyzed: 05/22/19 11:40									
<u>5035A/8260C</u>												
Acetone	ND	---	667	ug/kg	50	---	---	---	---	---	---	
Acrylonitrile	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	
Benzene	ND	---	6.67	ug/kg	50	---	---	---	---	---	---	
Bromobenzene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Bromochloromethane	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Bromodichloromethane	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	
Bromoform	ND	---	133	ug/kg	50	---	---	---	---	---	---	
Bromomethane	ND	---	333	ug/kg	50	---	---	---	---	---	---	
2-Butanone (MEK)	ND	---	333	ug/kg	50	---	---	---	---	---	---	
n-Butylbenzene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
sec-Butylbenzene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
tert-Butylbenzene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Carbon disulfide	ND	---	333	ug/kg	50	---	---	---	---	---	---	
Carbon tetrachloride	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	
Chlorobenzene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Chloroethane	ND	---	333	ug/kg	50	---	---	---	---	---	---	
Chloroform	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Chloromethane	ND	---	167	ug/kg	50	---	---	---	---	---	---	
2-Chlorotoluene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
4-Chlorotoluene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Dibromochloromethane	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	
1,2-Dibromo-3-chloropropane	ND	---	167	ug/kg	50	---	---	---	---	---	---	
1,2-Dibromoethane (EDB)	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Dibromomethane	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
1,2-Dichlorobenzene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
1,3-Dichlorobenzene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
1,4-Dichlorobenzene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Dichlorodifluoromethane	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	
1,1-Dichloroethane	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
1,2-Dichloroethane (EDC)	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
1,1-Dichloroethene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
cis-1,2-Dichloroethene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
trans-1,2-Dichloroethene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	

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Philip Nerenberg, Lab Director



Hahn and Associates 434 NW 6th Ave. Suite 203 Portland, OR 97209	Project: Mult 802 Decommissioning Project Number: 2708-60F Project Manager: Rob Ede	Report ID: A9E0723 - 06 24 19 1133
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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051139 - EPA 5035A												
Soil												
Blank (9051139-BLK1)												
Prepared: 05/22/19 10:00 Analyzed: 05/22/19 11:40												
1,2-Dichloropropane	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
1,3-Dichloropropane	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
2,2-Dichloropropane	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
1,1-Dichloropropene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
cis-1,3-Dichloropropene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
trans-1,3-Dichloropropene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Ethylbenzene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Hexachlorobutadiene	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	
2-Hexanone	ND	---	333	ug/kg	50	---	---	---	---	---	---	
Isopropylbenzene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
4-Isopropyltoluene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Methylene chloride	ND	---	167	ug/kg	50	---	---	---	---	---	---	
4-Methyl-2-pentanone (MiBK)	ND	---	333	ug/kg	50	---	---	---	---	---	---	
Methyl tert-butyl ether (MTBE)	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Naphthalene	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	
n-Propylbenzene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Styrene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
1,1,1,2-Tetrachloroethane	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	
1,1,2,2-Tetrachloroethane	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Tetrachloroethene (PCE)	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Toluene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
1,2,3-Trichlorobenzene	ND	---	167	ug/kg	50	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	---	167	ug/kg	50	---	---	---	---	---	---	
1,1,1-Trichloroethane	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
1,1,2-Trichloroethane	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Trichloroethene (TCE)	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Trichlorofluoromethane	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	
1,2,3-Trichloropropane	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
1,2,4-Trimethylbenzene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
1,3,5-Trimethylbenzene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Vinyl chloride	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
m,p-Xylene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
o-Xylene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	

Surr: 1,4-Difluorobenzene (Surr) Recovery: 103 % Limits: 80-120 % Dilution: 1x

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Philip Nerenberg, Lab Director



Hahn and Associates 434 NW 6th Ave. Suite 203 Portland, OR 97209	Project: Mult 802 Decommissioning Project Number: 2708-60F Project Manager: Rob Ede	Report ID: A9E0723 - 06 24 19 1133
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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051139 - EPA 5035A												
Soil												
Blank (9051139-BLK1)												
Prepared: 05/22/19 10:00 Analyzed: 05/22/19 11:40												
<i>Surr: Toluene-d8 (Surr)</i>												
<i>Recovery: 103 % Limits: 80-120 % Dilution: 1x</i>												
<i>4-Bromofluorobenzene (Surr)</i>												
<i>101 % 80-120 % "</i>												
LCS (9051139-BS1)												
Prepared: 05/22/19 10:00 Analyzed: 05/22/19 10:46												
5035A/8260C												
Acetone	1870	---	1000	ug/kg	50	2000	---	94	80-120%	---	---	
Acrylonitrile	1050	---	100	ug/kg	50	1000	---	105	80-120%	---	---	
Benzene	980	---	10.0	ug/kg	50	1000	---	98	80-120%	---	---	
Bromobenzene	1040	---	25.0	ug/kg	50	1000	---	104	80-120%	---	---	
Bromochloromethane	1080	---	50.0	ug/kg	50	1000	---	108	80-120%	---	---	
Bromodichloromethane	1060	---	100	ug/kg	50	1000	---	106	80-120%	---	---	
Bromoform	1290	---	200	ug/kg	50	1000	---	129	80-120%	---	---	Q-56
Bromomethane	1080	---	500	ug/kg	50	1000	---	108	80-120%	---	---	
2-Butanone (MEK)	1990	---	500	ug/kg	50	2000	---	100	80-120%	---	---	
n-Butylbenzene	1070	---	50.0	ug/kg	50	1000	---	107	80-120%	---	---	
sec-Butylbenzene	1100	---	50.0	ug/kg	50	1000	---	110	80-120%	---	---	
tert-Butylbenzene	1080	---	50.0	ug/kg	50	1000	---	108	80-120%	---	---	
Carbon disulfide	947	---	500	ug/kg	50	1000	---	95	80-120%	---	---	
Carbon tetrachloride	1190	---	100	ug/kg	50	1000	---	119	80-120%	---	---	
Chlorobenzene	939	---	25.0	ug/kg	50	1000	---	94	80-120%	---	---	
Chloroethane	862	---	500	ug/kg	50	1000	---	86	80-120%	---	---	
Chloroform	1010	---	50.0	ug/kg	50	1000	---	101	80-120%	---	---	
Chloromethane	1100	---	250	ug/kg	50	1000	---	110	80-120%	---	---	
2-Chlorotoluene	1070	---	50.0	ug/kg	50	1000	---	107	80-120%	---	---	
4-Chlorotoluene	1080	---	50.0	ug/kg	50	1000	---	108	80-120%	---	---	
Dibromochloromethane	1090	---	100	ug/kg	50	1000	---	109	80-120%	---	---	
1,2-Dibromo-3-chloropropane	1060	---	250	ug/kg	50	1000	---	106	80-120%	---	---	
1,2-Dibromoethane (EDB)	984	---	50.0	ug/kg	50	1000	---	98	80-120%	---	---	
Dibromomethane	1050	---	50.0	ug/kg	50	1000	---	105	80-120%	---	---	
1,2-Dichlorobenzene	1020	---	25.0	ug/kg	50	1000	---	102	80-120%	---	---	
1,3-Dichlorobenzene	1030	---	25.0	ug/kg	50	1000	---	103	80-120%	---	---	
1,4-Dichlorobenzene	968	---	25.0	ug/kg	50	1000	---	97	80-120%	---	---	
Dichlorodifluoromethane	1180	---	100	ug/kg	50	1000	---	118	80-120%	---	---	
1,1-Dichloroethane	915	---	25.0	ug/kg	50	1000	---	91	80-120%	---	---	



Hahn and Associates

434 NW 6th Ave. Suite 203
Portland, OR 97209

Project: **Mult 802 Decommissioning**

Project Number: **2708-60F**

Project Manager: **Rob Ede**

Report ID:

A9E0723 - 06 24 19 1133

QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051139 - EPA 5035A												
Soil												
LCS (9051139-BS1)												
Prepared: 05/22/19 10:00 Analyzed: 05/22/19 10:46												
1,2-Dichloroethane (EDC)	952	---	25.0	ug/kg	50	1000	---	95	80-120%	---	---	
1,1-Dichloroethene	800	---	25.0	ug/kg	50	1000	---	80	80-120%	---	---	
cis-1,2-Dichloroethene	1010	---	25.0	ug/kg	50	1000	---	101	80-120%	---	---	
trans-1,2-Dichloroethene	887	---	25.0	ug/kg	50	1000	---	89	80-120%	---	---	
1,2-Dichloropropane	1020	---	25.0	ug/kg	50	1000	---	102	80-120%	---	---	
1,3-Dichloropropane	1020	---	50.0	ug/kg	50	1000	---	102	80-120%	---	---	
2,2-Dichloropropane	1240	---	50.0	ug/kg	50	1000	---	124	80-120%	---	---	Q-56
1,1-Dichloropropene	997	---	50.0	ug/kg	50	1000	---	100	80-120%	---	---	
cis-1,3-Dichloropropene	947	---	50.0	ug/kg	50	1000	---	95	80-120%	---	---	
trans-1,3-Dichloropropene	1010	---	50.0	ug/kg	50	1000	---	101	80-120%	---	---	
Ethylbenzene	978	---	25.0	ug/kg	50	1000	---	98	80-120%	---	---	
Hexachlorobutadiene	1020	---	100	ug/kg	50	1000	---	102	80-120%	---	---	
2-Hexanone	1910	---	500	ug/kg	50	2000	---	95	80-120%	---	---	
Isopropylbenzene	1070	---	50.0	ug/kg	50	1000	---	107	80-120%	---	---	
4-Isopropyltoluene	1060	---	50.0	ug/kg	50	1000	---	106	80-120%	---	---	
Methylene chloride	742	---	250	ug/kg	50	1000	---	74	80-120%	---	---	Q-55
4-Methyl-2-pentanone (MiBK)	2030	---	500	ug/kg	50	2000	---	102	80-120%	---	---	
Methyl tert-butyl ether (MTBE)	987	---	50.0	ug/kg	50	1000	---	99	80-120%	---	---	
Naphthalene	930	---	100	ug/kg	50	1000	---	93	80-120%	---	---	
n-Propylbenzene	1090	---	25.0	ug/kg	50	1000	---	109	80-120%	---	---	
Styrene	930	---	50.0	ug/kg	50	1000	---	93	80-120%	---	---	
1,1,1,2-Tetrachloroethane	1150	---	100	ug/kg	50	1000	---	115	80-120%	---	---	
1,1,2,2-Tetrachloroethane	1220	---	50.0	ug/kg	50	1000	---	122	80-120%	---	---	Q-56
Tetrachloroethene (PCE)	972	---	25.0	ug/kg	50	1000	---	97	80-120%	---	---	
Toluene	924	---	50.0	ug/kg	50	1000	---	92	80-120%	---	---	
1,2,3-Trichlorobenzene	1040	---	250	ug/kg	50	1000	---	104	80-120%	---	---	
1,2,4-Trichlorobenzene	1060	---	250	ug/kg	50	1000	---	106	80-120%	---	---	
1,1,1-Trichloroethane	1140	---	25.0	ug/kg	50	1000	---	114	80-120%	---	---	
1,1,2-Trichloroethane	1030	---	25.0	ug/kg	50	1000	---	103	80-120%	---	---	
Trichloroethene (TCE)	957	---	25.0	ug/kg	50	1000	---	96	80-120%	---	---	
Trichlorofluoromethane	932	---	100	ug/kg	50	1000	---	93	80-120%	---	---	
1,2,3-Trichloropropane	1100	---	50.0	ug/kg	50	1000	---	110	80-120%	---	---	
1,2,4-Trimethylbenzene	1100	---	50.0	ug/kg	50	1000	---	110	80-120%	---	---	
1,3,5-Trimethylbenzene	1110	---	50.0	ug/kg	50	1000	---	111	80-120%	---	---	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051139 - EPA 5035A												
Soil												
LCS (9051139-BS1)												
Prepared: 05/22/19 10:00 Analyzed: 05/22/19 10:46												
Vinyl chloride	1020	---	25.0	ug/kg	50	1000	---	102	80-120%	---	---	
m,p-Xylene	2030	---	50.0	ug/kg	50	2000	---	101	80-120%	---	---	
o-Xylene	1010	---	25.0	ug/kg	50	1000	---	101	80-120%	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 101 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>97 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>101 %</i>		<i>80-120 %</i>		<i>"</i>						
Duplicate (9051139-DUP1)												
Prepared: 05/20/19 12:50 Analyzed: 05/22/19 13:34												
QC Source Sample: Non-SDG (A9E0680-09)												
Acetone	ND	---	982	ug/kg	50	---	ND	---	---	---	30%	
Acrylonitrile	ND	---	344	ug/kg	50	---	ND	---	---	---	30%	R-02
Benzene	ND	---	9.82	ug/kg	50	---	ND	---	---	---	30%	
Bromobenzene	ND	---	24.6	ug/kg	50	---	ND	---	---	---	30%	
Bromochloromethane	ND	---	49.1	ug/kg	50	---	ND	---	---	---	30%	
Bromodichloromethane	ND	---	98.2	ug/kg	50	---	ND	---	---	---	30%	
Bromoform	ND	---	196	ug/kg	50	---	ND	---	---	---	30%	
Bromomethane	ND	---	491	ug/kg	50	---	ND	---	---	---	30%	
2-Butanone (MEK)	ND	---	2950	ug/kg	50	---	ND	---	---	---	30%	R-02
n-Butylbenzene	449	---	49.1	ug/kg	50	---	179	---	---	86	30%	Q-04, M-02
sec-Butylbenzene	541	---	49.1	ug/kg	50	---	265	---	---	68	30%	Q-04
tert-Butylbenzene	ND	---	49.1	ug/kg	50	---	ND	---	---	---	30%	Q-05
Carbon disulfide	ND	---	491	ug/kg	50	---	ND	---	---	---	30%	
Carbon tetrachloride	ND	---	98.2	ug/kg	50	---	ND	---	---	---	30%	
Chlorobenzene	ND	---	24.6	ug/kg	50	---	ND	---	---	---	30%	
Chloroethane	ND	---	491	ug/kg	50	---	ND	---	---	---	30%	
Chloroform	ND	---	49.1	ug/kg	50	---	ND	---	---	---	30%	
Chloromethane	ND	---	246	ug/kg	50	---	ND	---	---	---	30%	
2-Chlorotoluene	ND	---	49.1	ug/kg	50	---	ND	---	---	---	30%	
4-Chlorotoluene	ND	---	49.1	ug/kg	50	---	ND	---	---	---	30%	
Dibromochloromethane	ND	---	98.2	ug/kg	50	---	ND	---	---	---	30%	
1,2-Dibromo-3-chloropropane	ND	---	246	ug/kg	50	---	ND	---	---	---	30%	
1,2-Dibromoethane (EDB)	ND	---	49.1	ug/kg	50	---	ND	---	---	---	30%	
Dibromomethane	ND	---	49.1	ug/kg	50	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	---	24.6	ug/kg	50	---	ND	---	---	---	30%	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051139 - EPA 5035A												
Soil												
Duplicate (9051139-DUP1)												
Prepared: 05/20/19 12:50 Analyzed: 05/22/19 13:34												
QC Source Sample: Non-SDG (A9E0680-09)												
1,3-Dichlorobenzene	ND	---	24.6	ug/kg	50	---	ND	---	---	---	30%	
1,4-Dichlorobenzene	ND	---	24.6	ug/kg	50	---	ND	---	---	---	30%	
Dichlorodifluoromethane	ND	---	98.2	ug/kg	50	---	ND	---	---	---	30%	
1,1-Dichloroethane	ND	---	24.6	ug/kg	50	---	ND	---	---	---	30%	
1,2-Dichloroethane (EDC)	ND	---	24.6	ug/kg	50	---	ND	---	---	---	30%	
1,1-Dichloroethene	ND	---	24.6	ug/kg	50	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	ND	---	24.6	ug/kg	50	---	ND	---	---	---	30%	
trans-1,2-Dichloroethene	ND	---	24.6	ug/kg	50	---	ND	---	---	---	30%	
1,2-Dichloropropane	ND	---	24.6	ug/kg	50	---	ND	---	---	---	30%	
1,3-Dichloropropane	ND	---	49.1	ug/kg	50	---	ND	---	---	---	30%	
2,2-Dichloropropane	ND	---	49.1	ug/kg	50	---	ND	---	---	---	30%	
1,1-Dichloropropene	ND	---	49.1	ug/kg	50	---	ND	---	---	---	30%	
cis-1,3-Dichloropropene	ND	---	49.1	ug/kg	50	---	ND	---	---	---	30%	
trans-1,3-Dichloropropene	ND	---	49.1	ug/kg	50	---	ND	---	---	---	30%	
Ethylbenzene	ND	---	24.6	ug/kg	50	---	13.1	---	---	***	30%	
Hexachlorobutadiene	ND	---	98.2	ug/kg	50	---	ND	---	---	---	30%	
2-Hexanone	ND	---	49.1	ug/kg	50	---	ND	---	---	---	30%	
Isopropylbenzene	162	---	49.1	ug/kg	50	---	73.5	---	---	75	30%	Q-05
4-Isopropyltoluene	143	---	49.1	ug/kg	50	---	66.8	---	---	73	30%	M-02, Q-05
Methylene chloride	ND	---	24.6	ug/kg	50	---	ND	---	---	---	30%	
4-Methyl-2-pentanone (MiBK)	ND	---	49.1	ug/kg	50	---	ND	---	---	---	30%	
Methyl tert-butyl ether (MTBE)	ND	---	49.1	ug/kg	50	---	ND	---	---	---	30%	
Naphthalene	ND	---	98.2	ug/kg	50	---	ND	---	---	---	30%	
n-Propylbenzene	686	---	24.6	ug/kg	50	---	294	---	---	80	30%	Q-04
Styrene	ND	---	49.1	ug/kg	50	---	ND	---	---	---	30%	
1,1,1,2-Tetrachloroethane	ND	---	98.2	ug/kg	50	---	ND	---	---	---	30%	
1,1,2,2-Tetrachloroethane	ND	---	49.1	ug/kg	50	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	ND	---	24.6	ug/kg	50	---	ND	---	---	---	30%	
Toluene	ND	---	49.1	ug/kg	50	---	ND	---	---	---	30%	
1,2,3-Trichlorobenzene	ND	---	24.6	ug/kg	50	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	---	24.6	ug/kg	50	---	ND	---	---	---	30%	
1,1,1-Trichloroethane	ND	---	24.6	ug/kg	50	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	---	24.6	ug/kg	50	---	ND	---	---	---	30%	



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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051139 - EPA 5035A												
Soil												
Duplicate (9051139-DUP1)												
Prepared: 05/20/19 12:50 Analyzed: 05/22/19 13:34												
QC Source Sample: Non-SDG (A9E0680-09)												
Trichloroethene (TCE)	ND	---	24.6	ug/kg	50	---	ND	---	---	---	30%	
Trichlorofluoromethane	ND	---	98.2	ug/kg	50	---	ND	---	---	---	30%	
1,2,3-Trichloropropane	ND	---	49.1	ug/kg	50	---	ND	---	---	---	30%	
1,2,4-Trimethylbenzene	ND	---	49.1	ug/kg	50	---	ND	---	---	---	30%	
1,3,5-Trimethylbenzene	56.7	---	49.1	ug/kg	50	---	26.0	---	---	74	30%	Q-05
Vinyl chloride	ND	---	24.6	ug/kg	50	---	ND	---	---	---	30%	
m,p-Xylene	ND	---	49.1	ug/kg	50	---	ND	---	---	---	30%	
o-Xylene	ND	---	24.6	ug/kg	50	---	16.1	---	---	***	30%	
<i>Surr: 1,4-Difluorobenzene (Surr) Recovery: 107 % Limits: 80-120 % Dilution: 1x</i>												
<i>Toluene-d8 (Surr) 97 % 80-120 % "</i>												
<i>4-Bromofluorobenzene (Surr) 102 % 80-120 % "</i>												

Matrix Spike (9051139-MS1)												
Prepared: 05/20/19 12:50 Analyzed: 05/22/19 14:01												
QC Source Sample: Non-SDG (A9E0680-09)												
5035A/8260C												
Acetone	2060	---	1030	ug/kg	50	2070	ND	100	36-164%	---	---	
Acrylonitrile	1310	---	103	ug/kg	50	1030	ND	109	65-134%	---	---	
Benzene	1030	---	10.3	ug/kg	50	1030	ND	100	77-121%	---	---	
Bromobenzene	1070	---	25.7	ug/kg	50	1030	ND	103	78-121%	---	---	
Bromochloromethane	1150	---	51.4	ug/kg	50	1030	ND	111	78-125%	---	---	
Bromodichloromethane	1160	---	103	ug/kg	50	1030	ND	113	75-127%	---	---	
Bromoform	1240	---	206	ug/kg	50	1030	ND	120	67-132%	---	---	Q-541
Bromomethane	1180	---	51.4	ug/kg	50	1030	ND	114	53-143%	---	---	
2-Butanone (MEK)	3420	---	51.4	ug/kg	50	2070	ND	100	51-148%	---	---	
n-Butylbenzene	1370	---	51.4	ug/kg	50	1030	179	115	70-128%	---	---	
sec-Butylbenzene	1430	---	51.4	ug/kg	50	1030	265	112	73-126%	---	---	
tert-Butylbenzene	1140	---	51.4	ug/kg	50	1030	ND	110	73-125%	---	---	
Carbon disulfide	1010	---	51.4	ug/kg	50	1030	ND	98	63-132%	---	---	
Carbon tetrachloride	1260	---	103	ug/kg	50	1030	ND	122	70-135%	---	---	
Chlorobenzene	947	---	25.7	ug/kg	50	1030	ND	92	79-120%	---	---	
Chloroethane	1020	---	51.4	ug/kg	50	1030	ND	98	59-139%	---	---	
Chloroform	1080	---	51.4	ug/kg	50	1030	ND	104	78-123%	---	---	
Chloromethane	1170	---	257	ug/kg	50	1030	ND	113	50-136%	---	---	

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Philip Nerenberg, Lab Director



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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051139 - EPA 5035A												
Soil												
Matrix Spike (9051139-MS1)												
Prepared: 05/20/19 12:50 Analyzed: 05/22/19 14:01												
QC Source Sample: Non-SDG (A9E0680-09)												
2-Chlorotoluene	1100	---	51.4	ug/kg	50	1030	ND	107	75-122%	---	---	
4-Chlorotoluene	1130	---	51.4	ug/kg	50	1030	ND	109	72-124%	---	---	
Dibromochloromethane	1090	---	103	ug/kg	50	1030	ND	105	74-126%	---	---	
1,2-Dibromo-3-chloropropane	1170	---	257	ug/kg	50	1030	ND	113	61-132%	---	---	
1,2-Dibromoethane (EDB)	1010	---	51.4	ug/kg	50	1030	ND	97	78-122%	---	---	
Dibromomethane	1140	---	51.4	ug/kg	50	1030	ND	111	78-125%	---	---	
1,2-Dichlorobenzene	1050	---	25.7	ug/kg	50	1030	ND	102	78-121%	---	---	
1,3-Dichlorobenzene	1040	---	25.7	ug/kg	50	1030	ND	101	77-121%	---	---	
1,4-Dichlorobenzene	981	---	25.7	ug/kg	50	1030	ND	95	75-120%	---	---	
Dichlorodifluoromethane	1270	---	103	ug/kg	50	1030	ND	123	29-149%	---	---	
1,1-Dichloroethane	977	---	25.7	ug/kg	50	1030	ND	95	76-125%	---	---	
1,2-Dichloroethane (EDC)	1010	---	25.7	ug/kg	50	1030	ND	98	73-128%	---	---	
1,1-Dichloroethene	845	---	25.7	ug/kg	50	1030	ND	82	70-131%	---	---	
cis-1,2-Dichloroethene	1060	---	25.7	ug/kg	50	1030	ND	102	77-123%	---	---	
trans-1,2-Dichloroethene	925	---	25.7	ug/kg	50	1030	ND	90	74-125%	---	---	
1,2-Dichloropropane	1090	---	25.7	ug/kg	50	1030	ND	106	76-123%	---	---	
1,3-Dichloropropane	1030	---	51.4	ug/kg	50	1030	ND	100	77-121%	---	---	
2,2-Dichloropropane	1260	---	51.4	ug/kg	50	1030	ND	122	67-133%	---	---	Q-54f
1,1-Dichloropropene	1080	---	51.4	ug/kg	50	1030	ND	104	76-125%	---	---	
cis-1,3-Dichloropropene	1020	---	51.4	ug/kg	50	1030	ND	99	74-126%	---	---	
trans-1,3-Dichloropropene	1020	---	51.4	ug/kg	50	1030	ND	99	71-130%	---	---	
Ethylbenzene	1010	---	25.7	ug/kg	50	1030	13.1	97	76-122%	---	---	
Hexachlorobutadiene	1050	---	103	ug/kg	50	1030	ND	101	61-135%	---	---	
2-Hexanone	2120	---	51.4	ug/kg	50	2070	ND	103	53-145%	---	---	
Isopropylbenzene	1220	---	51.4	ug/kg	50	1030	73.5	111	68-134%	---	---	
4-Isopropyltoluene	1200	---	51.4	ug/kg	50	1030	66.8	110	73-127%	---	---	
Methylene chloride	881	---	257	ug/kg	50	1030	ND	85	70-128%	---	---	Q-54r
4-Methyl-2-pentanone (MiBK)	2460	---	51.4	ug/kg	50	2070	ND	119	65-135%	---	---	
Methyl tert-butyl ether (MTBE)	1080	---	51.4	ug/kg	50	1030	ND	105	73-125%	---	---	
Naphthalene	1070	---	103	ug/kg	50	1030	ND	104	62-129%	---	---	
n-Propylbenzene	1430	---	25.7	ug/kg	50	1030	294	110	73-125%	---	---	
Styrene	1030	---	51.4	ug/kg	50	1030	ND	99	76-124%	---	---	
1,1,1,2-Tetrachloroethane	1120	---	103	ug/kg	50	1030	ND	109	78-125%	---	---	



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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051139 - EPA 5035A						Soil						
Matrix Spike (9051139-MS1)			Prepared: 05/20/19 12:50 Analyzed: 05/22/19 14:01									
QC Source Sample: Non-SDG (A9E0680-09)												
1,1,2,2-Tetrachloroethane	1170	---	51.4	ug/kg	50	1030	ND	113	70-124%	---	---	Q-54a
Tetrachloroethene (PCE)	944	---	25.7	ug/kg	50	1030	ND	91	73-128%	---	---	
Toluene	914	---	51.4	ug/kg	50	1030	ND	88	77-121%	---	---	
1,2,3-Trichlorobenzene	1060	---	257	ug/kg	50	1030	ND	103	66-130%	---	---	
1,2,4-Trichlorobenzene	1140	---	257	ug/kg	50	1030	ND	110	67-129%	---	---	
1,1,1-Trichloroethane	1200	---	25.7	ug/kg	50	1030	ND	116	73-130%	---	---	
1,1,2-Trichloroethane	1160	---	25.7	ug/kg	50	1030	ND	112	78-121%	---	---	
Trichloroethene (TCE)	1040	---	25.7	ug/kg	50	1030	ND	100	77-123%	---	---	
Trichlorofluoromethane	1080	---	103	ug/kg	50	1030	ND	105	62-140%	---	---	
1,2,3-Trichloropropane	1080	---	51.4	ug/kg	50	1030	ND	105	73-125%	---	---	
1,2,4-Trimethylbenzene	1140	---	51.4	ug/kg	50	1030	ND	110	75-123%	---	---	
1,3,5-Trimethylbenzene	1170	---	51.4	ug/kg	50	1030	26.0	111	73-124%	---	---	
Vinyl chloride	1110	---	25.7	ug/kg	50	1030	ND	108	56-135%	---	---	
m,p-Xylene	2120	---	51.4	ug/kg	50	2070	ND	103	77-124%	---	---	
o-Xylene	1110	---	25.7	ug/kg	50	1030	16.1	106	77-123%	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 104 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>96 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>103 %</i>		<i>80-120 %</i>		<i>"</i>						



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 Portland, OR 97209

Project: **Mult 802 Decommissioning**
 Project Number: **2708-60F**
 Project Manager: **Rob Ede**

Report ID:
A9E0723 - 06 24 19 1133

QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051198 - EPA 5035A						Soil						
Blank (9051198-BLK1)			Prepared: 05/23/19 09:32 Analyzed: 05/23/19 12:18									
<u>5035A/8260C</u>												
Acetone	ND	---	667	ug/kg	50	---	---	---	---	---	---	
Acrylonitrile	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	
Benzene	ND	---	6.67	ug/kg	50	---	---	---	---	---	---	
Bromobenzene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Bromochloromethane	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Bromodichloromethane	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	
Bromoform	ND	---	133	ug/kg	50	---	---	---	---	---	---	
Bromomethane	ND	---	333	ug/kg	50	---	---	---	---	---	---	
2-Butanone (MEK)	ND	---	333	ug/kg	50	---	---	---	---	---	---	
n-Butylbenzene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
sec-Butylbenzene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
tert-Butylbenzene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Carbon disulfide	ND	---	333	ug/kg	50	---	---	---	---	---	---	
Carbon tetrachloride	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	
Chlorobenzene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Chloroethane	ND	---	333	ug/kg	50	---	---	---	---	---	---	
Chloroform	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Chloromethane	ND	---	167	ug/kg	50	---	---	---	---	---	---	
2-Chlorotoluene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
4-Chlorotoluene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Dibromochloromethane	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	
1,2-Dibromo-3-chloropropane	ND	---	167	ug/kg	50	---	---	---	---	---	---	
1,2-Dibromoethane (EDB)	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Dibromomethane	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
1,2-Dichlorobenzene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
1,3-Dichlorobenzene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
1,4-Dichlorobenzene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Dichlorodifluoromethane	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	
1,1-Dichloroethane	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
1,2-Dichloroethane (EDC)	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
1,1-Dichloroethene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
cis-1,2-Dichloroethene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
trans-1,2-Dichloroethene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051198 - EPA 5035A						Soil						
Blank (9051198-BLK1)			Prepared: 05/23/19 09:32 Analyzed: 05/23/19 12:18									
1,2-Dichloropropane	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
1,3-Dichloropropane	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
2,2-Dichloropropane	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
1,1-Dichloropropene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
cis-1,3-Dichloropropene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
trans-1,3-Dichloropropene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Ethylbenzene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Hexachlorobutadiene	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	
2-Hexanone	ND	---	333	ug/kg	50	---	---	---	---	---	---	
Isopropylbenzene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
4-Isopropyltoluene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Methylene chloride	ND	---	167	ug/kg	50	---	---	---	---	---	---	
4-Methyl-2-pentanone (MiBK)	ND	---	333	ug/kg	50	---	---	---	---	---	---	
Methyl tert-butyl ether (MTBE)	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Naphthalene	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	
n-Propylbenzene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Styrene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
1,1,1,2-Tetrachloroethane	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	
1,1,2,2-Tetrachloroethane	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Tetrachloroethene (PCE)	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Toluene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
1,2,3-Trichlorobenzene	ND	---	167	ug/kg	50	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	---	167	ug/kg	50	---	---	---	---	---	---	
1,1,1-Trichloroethane	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
1,1,2-Trichloroethane	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Trichloroethene (TCE)	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Trichlorofluoromethane	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	
1,2,3-Trichloropropane	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
1,2,4-Trimethylbenzene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
1,3,5-Trimethylbenzene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Vinyl chloride	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
m,p-Xylene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
o-Xylene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	

Surr: 1,4-Difluorobenzene (Surr)

Recovery: 100 % Limits: 80-120 %

Dilution: 1x

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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051198 - EPA 5035A												
Soil												
Blank (9051198-BLK1)												
Prepared: 05/23/19 09:32 Analyzed: 05/23/19 12:18												
Surr: Toluene-d8 (Surr) Recovery: 99 % Limits: 80-120 % Dilution: 1x												
4-Bromofluorobenzene (Surr) 106 % 80-120 % "												
LCS (9051198-BS1)												
Prepared: 05/23/19 09:32 Analyzed: 05/23/19 11:24												
5035A/8260C												
Acetone	1880	---	1000	ug/kg	50	2000	---	94	80-120%	---	---	
Acrylonitrile	1060	---	100	ug/kg	50	1000	---	106	80-120%	---	---	
Benzene	974	---	10.0	ug/kg	50	1000	---	97	80-120%	---	---	
Bromobenzene	1030	---	25.0	ug/kg	50	1000	---	103	80-120%	---	---	
Bromochloromethane	1020	---	50.0	ug/kg	50	1000	---	102	80-120%	---	---	
Bromodichloromethane	1060	---	100	ug/kg	50	1000	---	106	80-120%	---	---	
Bromoform	1330	---	200	ug/kg	50	1000	---	133	80-120%	---	---	Q-56
Bromomethane	978	---	500	ug/kg	50	1000	---	98	80-120%	---	---	
2-Butanone (MEK)	2050	---	500	ug/kg	50	2000	---	103	80-120%	---	---	
n-Butylbenzene	1090	---	50.0	ug/kg	50	1000	---	109	80-120%	---	---	
sec-Butylbenzene	1090	---	50.0	ug/kg	50	1000	---	109	80-120%	---	---	
tert-Butylbenzene	1060	---	50.0	ug/kg	50	1000	---	106	80-120%	---	---	
Carbon disulfide	959	---	500	ug/kg	50	1000	---	96	80-120%	---	---	
Carbon tetrachloride	1230	---	100	ug/kg	50	1000	---	123	80-120%	---	---	Q-56
Chlorobenzene	933	---	25.0	ug/kg	50	1000	---	93	80-120%	---	---	
Chloroethane	717	---	500	ug/kg	50	1000	---	72	80-120%	---	---	Q-55
Chloroform	1010	---	50.0	ug/kg	50	1000	---	101	80-120%	---	---	
Chloromethane	1020	---	250	ug/kg	50	1000	---	102	80-120%	---	---	
2-Chlorotoluene	1030	---	50.0	ug/kg	50	1000	---	103	80-120%	---	---	
4-Chlorotoluene	1060	---	50.0	ug/kg	50	1000	---	106	80-120%	---	---	
Dibromochloromethane	1150	---	100	ug/kg	50	1000	---	115	80-120%	---	---	
1,2-Dibromo-3-chloropropane	1130	---	250	ug/kg	50	1000	---	113	80-120%	---	---	
1,2-Dibromoethane (EDB)	1050	---	50.0	ug/kg	50	1000	---	105	80-120%	---	---	
Dibromomethane	1060	---	50.0	ug/kg	50	1000	---	106	80-120%	---	---	
1,2-Dichlorobenzene	1030	---	25.0	ug/kg	50	1000	---	103	80-120%	---	---	
1,3-Dichlorobenzene	1020	---	25.0	ug/kg	50	1000	---	102	80-120%	---	---	
1,4-Dichlorobenzene	964	---	25.0	ug/kg	50	1000	---	96	80-120%	---	---	
Dichlorodifluoromethane	1130	---	100	ug/kg	50	1000	---	113	80-120%	---	---	
1,1-Dichloroethane	889	---	25.0	ug/kg	50	1000	---	89	80-120%	---	---	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051198 - EPA 5035A						Soil						
LCS (9051198-BS1)			Prepared: 05/23/19 09:32 Analyzed: 05/23/19 11:24									
1,2-Dichloroethane (EDC)	938	---	25.0	ug/kg	50	1000	---	94	80-120%	---	---	
1,1-Dichloroethene	789	---	25.0	ug/kg	50	1000	---	79	80-120%	---	---	Q-55
cis-1,2-Dichloroethene	1000	---	25.0	ug/kg	50	1000	---	100	80-120%	---	---	
trans-1,2-Dichloroethene	871	---	25.0	ug/kg	50	1000	---	87	80-120%	---	---	
1,2-Dichloropropane	1010	---	25.0	ug/kg	50	1000	---	101	80-120%	---	---	
1,3-Dichloropropane	1080	---	50.0	ug/kg	50	1000	---	108	80-120%	---	---	
2,2-Dichloropropane	1250	---	50.0	ug/kg	50	1000	---	125	80-120%	---	---	Q-56
1,1-Dichloropropene	997	---	50.0	ug/kg	50	1000	---	100	80-120%	---	---	
cis-1,3-Dichloropropene	1040	---	50.0	ug/kg	50	1000	---	104	80-120%	---	---	
trans-1,3-Dichloropropene	1070	---	50.0	ug/kg	50	1000	---	107	80-120%	---	---	
Ethylbenzene	971	---	25.0	ug/kg	50	1000	---	97	80-120%	---	---	
Hexachlorobutadiene	996	---	100	ug/kg	50	1000	---	100	80-120%	---	---	
2-Hexanone	2040	---	500	ug/kg	50	2000	---	102	80-120%	---	---	
Isopropylbenzene	1080	---	50.0	ug/kg	50	1000	---	108	80-120%	---	---	
4-Isopropyltoluene	1050	---	50.0	ug/kg	50	1000	---	105	80-120%	---	---	
Methylene chloride	789	---	250	ug/kg	50	1000	---	79	80-120%	---	---	Q-55
4-Methyl-2-pentanone (MiBK)	2120	---	500	ug/kg	50	2000	---	106	80-120%	---	---	
Methyl tert-butyl ether (MTBE)	1020	---	50.0	ug/kg	50	1000	---	102	80-120%	---	---	
Naphthalene	1010	---	100	ug/kg	50	1000	---	101	80-120%	---	---	
n-Propylbenzene	1060	---	25.0	ug/kg	50	1000	---	106	80-120%	---	---	
Styrene	944	---	50.0	ug/kg	50	1000	---	94	80-120%	---	---	
1,1,1,2-Tetrachloroethane	1180	---	100	ug/kg	50	1000	---	118	80-120%	---	---	
1,1,2,2-Tetrachloroethane	1220	---	50.0	ug/kg	50	1000	---	122	80-120%	---	---	Q-56
Tetrachloroethene (PCE)	1010	---	25.0	ug/kg	50	1000	---	101	80-120%	---	---	
Toluene	941	---	50.0	ug/kg	50	1000	---	94	80-120%	---	---	
1,2,3-Trichlorobenzene	1070	---	250	ug/kg	50	1000	---	107	80-120%	---	---	
1,2,4-Trichlorobenzene	1100	---	250	ug/kg	50	1000	---	110	80-120%	---	---	
1,1,1-Trichloroethane	1140	---	25.0	ug/kg	50	1000	---	114	80-120%	---	---	
1,1,2-Trichloroethane	1090	---	25.0	ug/kg	50	1000	---	109	80-120%	---	---	
Trichloroethene (TCE)	979	---	25.0	ug/kg	50	1000	---	98	80-120%	---	---	
Trichlorofluoromethane	832	---	100	ug/kg	50	1000	---	83	80-120%	---	---	
1,2,3-Trichloropropane	1080	---	50.0	ug/kg	50	1000	---	108	80-120%	---	---	
1,2,4-Trimethylbenzene	1090	---	50.0	ug/kg	50	1000	---	109	80-120%	---	---	
1,3,5-Trimethylbenzene	1080	---	50.0	ug/kg	50	1000	---	108	80-120%	---	---	



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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051198 - EPA 5035A												
Soil												
LCS (9051198-BS1)												
Prepared: 05/23/19 09:32 Analyzed: 05/23/19 11:24												
Vinyl chloride	926	---	25.0	ug/kg	50	1000	---	93	80-120%	---	---	
m,p-Xylene	2010	---	50.0	ug/kg	50	2000	---	100	80-120%	---	---	
o-Xylene	1010	---	25.0	ug/kg	50	1000	---	101	80-120%	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 100 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>100 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>101 %</i>		<i>80-120 %</i>		<i>"</i>						

Duplicate (9051198-DUP1) Prepared: 05/22/19 22:00 Analyzed: 05/23/19 17:54 **V-16**

QC Source Sample: Non-SDG (A9E0747-01)

Acetone	ND	---	1020	ug/kg	50	---	ND	---	---	---	30%	
Acrylonitrile	ND	---	102	ug/kg	50	---	ND	---	---	---	30%	
Benzene	ND	---	10.2	ug/kg	50	---	ND	---	---	---	30%	
Bromobenzene	ND	---	25.5	ug/kg	50	---	ND	---	---	---	30%	
Bromochloromethane	ND	---	51.0	ug/kg	50	---	ND	---	---	---	30%	
Bromodichloromethane	ND	---	102	ug/kg	50	---	ND	---	---	---	30%	
Bromoform	ND	---	204	ug/kg	50	---	ND	---	---	---	30%	
Bromomethane	ND	---	510	ug/kg	50	---	ND	---	---	---	30%	
2-Butanone (MEK)	ND	---	510	ug/kg	50	---	ND	---	---	---	30%	
n-Butylbenzene	ND	---	51.0	ug/kg	50	---	ND	---	---	---	30%	
sec-Butylbenzene	ND	---	51.0	ug/kg	50	---	ND	---	---	---	30%	
tert-Butylbenzene	ND	---	51.0	ug/kg	50	---	ND	---	---	---	30%	
Carbon disulfide	ND	---	510	ug/kg	50	---	ND	---	---	---	30%	
Carbon tetrachloride	ND	---	102	ug/kg	50	---	ND	---	---	---	30%	
Chlorobenzene	ND	---	25.5	ug/kg	50	---	ND	---	---	---	30%	
Chloroethane	ND	---	510	ug/kg	50	---	ND	---	---	---	30%	
Chloroform	ND	---	51.0	ug/kg	50	---	ND	---	---	---	30%	
Chloromethane	ND	---	255	ug/kg	50	---	ND	---	---	---	30%	
2-Chlorotoluene	ND	---	51.0	ug/kg	50	---	ND	---	---	---	30%	
4-Chlorotoluene	ND	---	51.0	ug/kg	50	---	ND	---	---	---	30%	
Dibromochloromethane	ND	---	102	ug/kg	50	---	ND	---	---	---	30%	
1,2-Dibromo-3-chloropropane	ND	---	255	ug/kg	50	---	ND	---	---	---	30%	
1,2-Dibromoethane (EDB)	ND	---	51.0	ug/kg	50	---	ND	---	---	---	30%	
Dibromomethane	ND	---	51.0	ug/kg	50	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	---	25.5	ug/kg	50	---	ND	---	---	---	30%	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes	
Batch 9051198 - EPA 5035A							Soil						
Duplicate (9051198-DUP1)			Prepared: 05/22/19 22:00 Analyzed: 05/23/19 17:54						V-16				
QC Source Sample: Non-SDG (A9E0747-01)													
1,3-Dichlorobenzene	ND	---	25.5	ug/kg	50	---	ND	---	---	---	30%		
1,4-Dichlorobenzene	ND	---	25.5	ug/kg	50	---	ND	---	---	---	30%		
Dichlorodifluoromethane	ND	---	102	ug/kg	50	---	ND	---	---	---	30%		
1,1-Dichloroethane	ND	---	25.5	ug/kg	50	---	ND	---	---	---	30%		
1,2-Dichloroethane (EDC)	ND	---	25.5	ug/kg	50	---	ND	---	---	---	30%		
1,1-Dichloroethene	ND	---	25.5	ug/kg	50	---	ND	---	---	---	30%		
cis-1,2-Dichloroethene	ND	---	25.5	ug/kg	50	---	ND	---	---	---	30%		
trans-1,2-Dichloroethene	ND	---	25.5	ug/kg	50	---	ND	---	---	---	30%		
1,2-Dichloropropane	ND	---	25.5	ug/kg	50	---	ND	---	---	---	30%		
1,3-Dichloropropane	ND	---	51.0	ug/kg	50	---	ND	---	---	---	30%		
2,2-Dichloropropane	ND	---	51.0	ug/kg	50	---	ND	---	---	---	30%		
1,1-Dichloropropene	ND	---	51.0	ug/kg	50	---	ND	---	---	---	30%		
cis-1,3-Dichloropropene	ND	---	51.0	ug/kg	50	---	ND	---	---	---	30%		
trans-1,3-Dichloropropene	ND	---	51.0	ug/kg	50	---	ND	---	---	---	30%		
Ethylbenzene	ND	---	25.5	ug/kg	50	---	ND	---	---	---	30%		
Hexachlorobutadiene	ND	---	102	ug/kg	50	---	ND	---	---	---	30%		
2-Hexanone	ND	---	51.0	ug/kg	50	---	ND	---	---	---	30%		
Isopropylbenzene	ND	---	51.0	ug/kg	50	---	ND	---	---	---	30%		
4-Isopropyltoluene	ND	---	51.0	ug/kg	50	---	ND	---	---	---	30%		
Methylene chloride	ND	---	255	ug/kg	50	---	ND	---	---	---	30%		
4-Methyl-2-pentanone (MIBK)	ND	---	51.0	ug/kg	50	---	ND	---	---	---	30%		
Methyl tert-butyl ether (MTBE)	ND	---	51.0	ug/kg	50	---	ND	---	---	---	30%		
Naphthalene	ND	---	102	ug/kg	50	---	ND	---	---	---	30%		
n-Propylbenzene	ND	---	25.5	ug/kg	50	---	ND	---	---	---	30%		
Styrene	ND	---	51.0	ug/kg	50	---	ND	---	---	---	30%		
1,1,1,2-Tetrachloroethane	ND	---	102	ug/kg	50	---	ND	---	---	---	30%		
1,1,2,2-Tetrachloroethane	ND	---	51.0	ug/kg	50	---	ND	---	---	---	30%		
Tetrachloroethene (PCE)	ND	---	25.5	ug/kg	50	---	ND	---	---	---	30%		
Toluene	ND	---	51.0	ug/kg	50	---	ND	---	---	---	30%		
1,2,3-Trichlorobenzene	ND	---	255	ug/kg	50	---	ND	---	---	---	30%		
1,2,4-Trichlorobenzene	ND	---	255	ug/kg	50	---	ND	---	---	---	30%		
1,1,1-Trichloroethane	ND	---	25.5	ug/kg	50	---	ND	---	---	---	30%		
1,1,2-Trichloroethane	ND	---	25.5	ug/kg	50	---	ND	---	---	---	30%		



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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051198 - EPA 5035A												
Soil												
Duplicate (9051198-DUP1)												
Prepared: 05/22/19 22:00 Analyzed: 05/23/19 17:54												
QC Source Sample: Non-SDG (A9E0747-01)												
Trichloroethene (TCE)	ND	---	25.5	ug/kg	50	---	ND	---	---	---	30%	
Trichlorofluoromethane	ND	---	102	ug/kg	50	---	ND	---	---	---	30%	
1,2,3-Trichloropropane	ND	---	51.0	ug/kg	50	---	ND	---	---	---	30%	
1,2,4-Trimethylbenzene	ND	---	51.0	ug/kg	50	---	ND	---	---	---	30%	
1,3,5-Trimethylbenzene	ND	---	51.0	ug/kg	50	---	ND	---	---	---	30%	
Vinyl chloride	ND	---	25.5	ug/kg	50	---	ND	---	---	---	30%	
m,p-Xylene	ND	---	51.0	ug/kg	50	---	ND	---	---	---	30%	
o-Xylene	ND	---	25.5	ug/kg	50	---	ND	---	---	---	30%	
Surr: 1,4-Difluorobenzene (Surr) Recovery: 101 % Limits: 80-120 % Dilution: 1x												
Toluene-d8 (Surr) 97 % 80-120 % "												
4-Bromofluorobenzene (Surr) 105 % 80-120 % "												

Matrix Spike (9051198-MS1)												
Prepared: 05/22/19 22:00 Analyzed: 05/23/19 20:36												
QC Source Sample: Non-SDG (A9E0747-06)												
5035A/8260C												
Acetone	101000	---	44100	ug/kg	2000	88200	ND	115	36-164%	---	---	
Acrylonitrile	56100	---	4410	ug/kg	2000	44100	ND	127	65-134%	---	---	
Benzene	46300	---	441	ug/kg	2000	44100	ND	105	77-121%	---	---	
Bromobenzene	50200	---	1100	ug/kg	2000	44100	ND	114	78-121%	---	---	
Bromochloromethane	49300	---	2210	ug/kg	2000	44100	ND	112	78-125%	---	---	
Bromodichloromethane	53100	---	4410	ug/kg	2000	44100	ND	120	75-127%	---	---	
Bromoform	57700	---	8830	ug/kg	2000	44100	ND	131	67-132%	---	---	Q-54b
Bromomethane	53800	---	22100	ug/kg	2000	44100	ND	122	53-143%	---	---	
2-Butanone (MEK)	106000	---	22100	ug/kg	2000	88200	ND	120	51-148%	---	---	
n-Butylbenzene	61700	---	2210	ug/kg	2000	44100	7400	123	70-128%	---	---	
sec-Butylbenzene	55200	---	2210	ug/kg	2000	44100	4160	116	73-126%	---	---	
tert-Butylbenzene	50800	---	2210	ug/kg	2000	44100	ND	115	73-125%	---	---	
Carbon disulfide	41200	---	22100	ug/kg	2000	44100	ND	93	63-132%	---	---	
Carbon tetrachloride	54400	---	4410	ug/kg	2000	44100	ND	123	70-135%	---	---	Q-54e
Chlorobenzene	41800	---	1100	ug/kg	2000	44100	ND	95	79-120%	---	---	
Chloroethane	40400	---	22100	ug/kg	2000	44100	ND	92	59-139%	---	---	Q-54s
Chloroform	48200	---	2210	ug/kg	2000	44100	ND	109	78-123%	---	---	
Chloromethane	46900	---	11000	ug/kg	2000	44100	ND	106	50-136%	---	---	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051198 - EPA 5035A						Soil						
Matrix Spike (9051198-MS1)						Prepared: 05/22/19 22:00 Analyzed: 05/23/19 20:36						V-16
QC Source Sample: Non-SDG (A9E0747-06)												
2-Chlorotoluene	50500	---	2210	ug/kg	2000	44100	ND	114	75-122%	---	---	
4-Chlorotoluene	49800	---	2210	ug/kg	2000	44100	ND	113	72-124%	---	---	
Dibromochloromethane	51900	---	4410	ug/kg	2000	44100	ND	118	74-126%	---	---	
1,2-Dibromo-3-chloropropane	48500	---	11000	ug/kg	2000	44100	ND	110	61-132%	---	---	
1,2-Dibromoethane (EDB)	48000	---	2210	ug/kg	2000	44100	ND	109	78-122%	---	---	
Dibromomethane	54000	---	2210	ug/kg	2000	44100	ND	122	78-125%	---	---	
1,2-Dichlorobenzene	45200	---	1100	ug/kg	2000	44100	ND	102	78-121%	---	---	
1,3-Dichlorobenzene	46400	---	1100	ug/kg	2000	44100	ND	105	77-121%	---	---	
1,4-Dichlorobenzene	43400	---	1100	ug/kg	2000	44100	ND	98	75-120%	---	---	
Dichlorodifluoromethane	53300	---	4410	ug/kg	2000	44100	ND	121	29-149%	---	---	
1,1-Dichloroethane	42600	---	1100	ug/kg	2000	44100	ND	97	76-125%	---	---	
1,2-Dichloroethane (EDC)	47300	---	1100	ug/kg	2000	44100	ND	107	73-128%	---	---	
1,1-Dichloroethene	35000	---	1100	ug/kg	2000	44100	ND	79	70-131%	---	---	Q-54m
cis-1,2-Dichloroethene	48000	---	1100	ug/kg	2000	44100	ND	109	77-123%	---	---	
trans-1,2-Dichloroethene	39700	---	1100	ug/kg	2000	44100	ND	90	74-125%	---	---	
1,2-Dichloropropane	50200	---	1100	ug/kg	2000	44100	ND	114	76-123%	---	---	
1,3-Dichloropropane	48400	---	2210	ug/kg	2000	44100	ND	110	77-121%	---	---	
2,2-Dichloropropane	48400	---	2210	ug/kg	2000	44100	ND	110	67-133%	---	---	Q-54g
1,1-Dichloropropene	45300	---	2210	ug/kg	2000	44100	ND	103	76-125%	---	---	
cis-1,3-Dichloropropene	44400	---	2210	ug/kg	2000	44100	ND	101	74-126%	---	---	
trans-1,3-Dichloropropene	46900	---	2210	ug/kg	2000	44100	ND	106	71-130%	---	---	
Ethylbenzene	43500	---	1100	ug/kg	2000	44100	1160	96	76-122%	---	---	
Hexachlorobutadiene	44700	---	4410	ug/kg	2000	44100	ND	101	61-135%	---	---	
2-Hexanone	80200	---	22100	ug/kg	2000	88200	ND	91	53-145%	---	---	
Isopropylbenzene	49200	---	2210	ug/kg	2000	44100	1430	108	68-134%	---	---	
4-Isopropyltoluene	58600	---	2210	ug/kg	2000	44100	2790	127	73-127%	---	---	
Methylene chloride	34600	---	11000	ug/kg	2000	44100	ND	79	70-128%	---	---	Q-54m
4-Methyl-2-pentanone (MiBK)	91100	---	22100	ug/kg	2000	88200	ND	103	65-135%	---	---	
Methyl tert-butyl ether (MTBE)	51700	---	2210	ug/kg	2000	44100	ND	117	73-125%	---	---	
Naphthalene	51900	---	4410	ug/kg	2000	44100	4870	107	62-129%	---	---	
n-Propylbenzene	55600	---	1100	ug/kg	2000	44100	5360	114	73-125%	---	---	
Styrene	43400	---	2210	ug/kg	2000	44100	ND	98	76-124%	---	---	
1,1,1,2-Tetrachloroethane	52800	---	4410	ug/kg	2000	44100	ND	120	78-125%	---	---	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051198 - EPA 5035A						Soil						
Matrix Spike (9051198-MS1)						Prepared: 05/22/19 22:00 Analyzed: 05/23/19 20:36						V-16
QC Source Sample: Non-SDG (A9E0747-06)												
1,1,2,2-Tetrachloroethane	52300	---	2210	ug/kg	2000	44100	ND	119	70-124%	---	---	Q-54
Tetrachloroethene (PCE)	40000	---	1100	ug/kg	2000	44100	ND	91	73-128%	---	---	
Toluene	39600	---	2210	ug/kg	2000	44100	ND	90	77-121%	---	---	
1,2,3-Trichlorobenzene	47300	---	11000	ug/kg	2000	44100	ND	107	66-130%	---	---	
1,2,4-Trichlorobenzene	48400	---	11000	ug/kg	2000	44100	ND	110	67-129%	---	---	
1,1,1-Trichloroethane	51700	---	1100	ug/kg	2000	44100	ND	117	73-130%	---	---	
1,1,2-Trichloroethane	50100	---	1100	ug/kg	2000	44100	ND	113	78-121%	---	---	
Trichloroethene (TCE)	45300	---	1100	ug/kg	2000	44100	ND	103	77-123%	---	---	
Trichlorofluoromethane	43200	---	4410	ug/kg	2000	44100	ND	98	62-140%	---	---	
1,2,3-Trichloropropane	48900	---	2210	ug/kg	2000	44100	ND	107	73-125%	---	---	
1,2,4-Trimethylbenzene	93400	---	2210	ug/kg	2000	44100	40500	120	75-123%	---	---	
1,3,5-Trimethylbenzene	61800	---	2210	ug/kg	2000	44100	10100	117	73-124%	---	---	
Vinyl chloride	46300	---	1100	ug/kg	2000	44100	ND	105	56-135%	---	---	
m,p-Xylene	94000	---	2210	ug/kg	2000	88200	4840	101	77-124%	---	---	
o-Xylene	50200	---	1100	ug/kg	2000	44100	3510	106	77-123%	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 106 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>93 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>108 %</i>		<i>80-120 %</i>		<i>"</i>						



Hahn and Associates
 434 NW 6th Ave. Suite 203
 Portland, OR 97209

Project: **Mult 802 Decommissioning**
 Project Number: **2708-60F**
 Project Manager: **Rob Ede**

Report ID:
A9E0723 - 06 24 19 1133

QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060533 - EPA 5035A						Soil						
Blank (9060533-BLK1)			Prepared: 06/04/19 09:03 Analyzed: 06/04/19 11:23									
<u>5035A/8260C</u>												
Acetone	ND	---	667	ug/kg	50	---	---	---	---	---	---	
Acrylonitrile	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	
Benzene	ND	---	6.67	ug/kg	50	---	---	---	---	---	---	
Bromobenzene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Bromochloromethane	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Bromodichloromethane	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Bromoform	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	
Bromomethane	ND	---	333	ug/kg	50	---	---	---	---	---	---	
2-Butanone (MEK)	ND	---	333	ug/kg	50	---	---	---	---	---	---	
n-Butylbenzene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
sec-Butylbenzene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
tert-Butylbenzene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Carbon disulfide	ND	---	333	ug/kg	50	---	---	---	---	---	---	
Carbon tetrachloride	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Chlorobenzene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Chloroethane	ND	---	333	ug/kg	50	---	---	---	---	---	---	
Chloroform	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Chloromethane	ND	---	167	ug/kg	50	---	---	---	---	---	---	
2-Chlorotoluene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
4-Chlorotoluene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Dibromochloromethane	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	
1,2-Dibromo-3-chloropropane	ND	---	167	ug/kg	50	---	---	---	---	---	---	
1,2-Dibromoethane (EDB)	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Dibromomethane	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
1,2-Dichlorobenzene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
1,3-Dichlorobenzene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
1,4-Dichlorobenzene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Dichlorodifluoromethane	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	
1,1-Dichloroethane	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
1,2-Dichloroethane (EDC)	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
1,1-Dichloroethene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
cis-1,2-Dichloroethene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
trans-1,2-Dichloroethene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	

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Philip Nerenberg, Lab Director



Hahn and Associates 434 NW 6th Ave. Suite 203 Portland, OR 97209	Project: Mult 802 Decommissioning Project Number: 2708-60F Project Manager: Rob Ede	Report ID: A9E0723 - 06 24 19 1133
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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060533 - EPA 5035A						Soil						
Blank (9060533-BLK1)			Prepared: 06/04/19 09:03 Analyzed: 06/04/19 11:23									
1,2-Dichloropropane	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
1,3-Dichloropropane	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
2,2-Dichloropropane	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
1,1-Dichloropropene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
cis-1,3-Dichloropropene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
trans-1,3-Dichloropropene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Ethylbenzene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Hexachlorobutadiene	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	
2-Hexanone	ND	---	333	ug/kg	50	---	---	---	---	---	---	
Isopropylbenzene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
4-Isopropyltoluene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Methylene chloride	ND	---	167	ug/kg	50	---	---	---	---	---	---	
4-Methyl-2-pentanone (MiBK)	ND	---	333	ug/kg	50	---	---	---	---	---	---	
Methyl tert-butyl ether (MTBE)	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Naphthalene	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	
n-Propylbenzene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Styrene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
1,1,1,2-Tetrachloroethane	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
1,1,2,2-Tetrachloroethane	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Tetrachloroethene (PCE)	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Toluene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
1,2,3-Trichlorobenzene	ND	---	167	ug/kg	50	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	---	167	ug/kg	50	---	---	---	---	---	---	
1,1,1-Trichloroethane	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
1,1,2-Trichloroethane	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Trichloroethene (TCE)	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Trichlorofluoromethane	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	
1,2,3-Trichloropropane	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
1,2,4-Trimethylbenzene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
1,3,5-Trimethylbenzene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Vinyl chloride	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
m,p-Xylene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
o-Xylene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	

Surr: 1,4-Difluorobenzene (Surr)

Recovery: 94 % Limits: 80-120 %

Dilution: 1x

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Philip Nerenberg, Lab Director



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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060533 - EPA 5035A												
Soil												
Blank (9060533-BLK1)												
Prepared: 06/04/19 09:03 Analyzed: 06/04/19 11:23												
<i>Surr: Toluene-d8 (Surr)</i>												
<i>Recovery: 99 % Limits: 80-120 % Dilution: 1x</i>												
<i>4-Bromofluorobenzene (Surr)</i>												
<i>101 % 80-120 % "</i>												
LCS (9060533-BS1)												
Prepared: 06/04/19 09:03 Analyzed: 06/04/19 10:28												
<u>5035A/8260C</u>												
Acetone	1860	---	1000	ug/kg	50	2000	---	93	80-120%	---	---	
Acrylonitrile	998	---	100	ug/kg	50	1000	---	100	80-120%	---	---	
Benzene	962	---	10.0	ug/kg	50	1000	---	96	80-120%	---	---	
Bromobenzene	1120	---	25.0	ug/kg	50	1000	---	112	80-120%	---	---	
Bromochloromethane	1040	---	50.0	ug/kg	50	1000	---	104	80-120%	---	---	
Bromodichloromethane	1040	---	50.0	ug/kg	50	1000	---	104	80-120%	---	---	
Bromoform	902	---	100	ug/kg	50	1000	---	90	80-120%	---	---	
Bromomethane	955	---	500	ug/kg	50	1000	---	96	80-120%	---	---	
2-Butanone (MEK)	1860	---	500	ug/kg	50	2000	---	93	80-120%	---	---	
n-Butylbenzene	1110	---	50.0	ug/kg	50	1000	---	111	80-120%	---	---	
sec-Butylbenzene	1120	---	50.0	ug/kg	50	1000	---	112	80-120%	---	---	
tert-Butylbenzene	1100	---	50.0	ug/kg	50	1000	---	110	80-120%	---	---	
Carbon disulfide	980	---	500	ug/kg	50	1000	---	98	80-120%	---	---	
Carbon tetrachloride	1050	---	50.0	ug/kg	50	1000	---	105	80-120%	---	---	
Chlorobenzene	1030	---	25.0	ug/kg	50	1000	---	103	80-120%	---	---	
Chloroethane	858	---	500	ug/kg	50	1000	---	86	80-120%	---	---	
Chloroform	966	---	50.0	ug/kg	50	1000	---	97	80-120%	---	---	
Chloromethane	902	---	250	ug/kg	50	1000	---	90	80-120%	---	---	
2-Chlorotoluene	1090	---	50.0	ug/kg	50	1000	---	109	80-120%	---	---	
4-Chlorotoluene	1080	---	50.0	ug/kg	50	1000	---	108	80-120%	---	---	
Dibromochloromethane	922	---	100	ug/kg	50	1000	---	92	80-120%	---	---	
1,2-Dibromo-3-chloropropane	975	---	250	ug/kg	50	1000	---	98	80-120%	---	---	
1,2-Dibromoethane (EDB)	1120	---	50.0	ug/kg	50	1000	---	112	80-120%	---	---	
Dibromomethane	986	---	50.0	ug/kg	50	1000	---	99	80-120%	---	---	
1,2-Dichlorobenzene	1030	---	25.0	ug/kg	50	1000	---	103	80-120%	---	---	
1,3-Dichlorobenzene	1030	---	25.0	ug/kg	50	1000	---	103	80-120%	---	---	
1,4-Dichlorobenzene	1030	---	25.0	ug/kg	50	1000	---	103	80-120%	---	---	
Dichlorodifluoromethane	984	---	100	ug/kg	50	1000	---	98	80-120%	---	---	
1,1-Dichloroethane	1030	---	25.0	ug/kg	50	1000	---	103	80-120%	---	---	

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Philip Nerenberg, Lab Director



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434 NW 6th Ave. Suite 203
Portland, OR 97209

Project: **Mult 802 Decommissioning**

Project Number: **2708-60F**

Project Manager: **Rob Ede**

Report ID:

A9E0723 - 06 24 19 1133

QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060533 - EPA 5035A												
Soil												
LCS (9060533-BS1)												
Prepared: 06/04/19 09:03 Analyzed: 06/04/19 10:28												
1,2-Dichloroethane (EDC)	988	---	25.0	ug/kg	50	1000	---	99	80-120%	---	---	
1,1-Dichloroethene	1040	---	25.0	ug/kg	50	1000	---	104	80-120%	---	---	
cis-1,2-Dichloroethene	988	---	25.0	ug/kg	50	1000	---	99	80-120%	---	---	
trans-1,2-Dichloroethene	1020	---	25.0	ug/kg	50	1000	---	102	80-120%	---	---	
1,2-Dichloropropane	992	---	25.0	ug/kg	50	1000	---	99	80-120%	---	---	
1,3-Dichloropropane	1060	---	50.0	ug/kg	50	1000	---	106	80-120%	---	---	
2,2-Dichloropropane	1140	---	50.0	ug/kg	50	1000	---	114	80-120%	---	---	
1,1-Dichloropropene	970	---	50.0	ug/kg	50	1000	---	97	80-120%	---	---	
cis-1,3-Dichloropropene	1120	---	50.0	ug/kg	50	1000	---	112	80-120%	---	---	
trans-1,3-Dichloropropene	1110	---	50.0	ug/kg	50	1000	---	111	80-120%	---	---	
Ethylbenzene	1050	---	25.0	ug/kg	50	1000	---	105	80-120%	---	---	
Hexachlorobutadiene	1200	---	100	ug/kg	50	1000	---	120	80-120%	---	---	
2-Hexanone	1980	---	500	ug/kg	50	2000	---	99	80-120%	---	---	
Isopropylbenzene	1070	---	50.0	ug/kg	50	1000	---	107	80-120%	---	---	
4-Isopropyltoluene	1120	---	50.0	ug/kg	50	1000	---	112	80-120%	---	---	
Methylene chloride	712	---	250	ug/kg	50	1000	---	71	80-120%	---	---	Q-55
4-Methyl-2-pentanone (MiBK)	1900	---	500	ug/kg	50	2000	---	95	80-120%	---	---	
Methyl tert-butyl ether (MTBE)	947	---	50.0	ug/kg	50	1000	---	95	80-120%	---	---	
Naphthalene	1070	---	100	ug/kg	50	1000	---	107	80-120%	---	---	
n-Propylbenzene	1090	---	25.0	ug/kg	50	1000	---	109	80-120%	---	---	
Styrene	1100	---	50.0	ug/kg	50	1000	---	110	80-120%	---	---	
1,1,1,2-Tetrachloroethane	1130	---	25.0	ug/kg	50	1000	---	113	80-120%	---	---	
1,1,2,2-Tetrachloroethane	1050	---	50.0	ug/kg	50	1000	---	105	80-120%	---	---	
Tetrachloroethene (PCE)	1000	---	25.0	ug/kg	50	1000	---	100	80-120%	---	---	
Toluene	1020	---	50.0	ug/kg	50	1000	---	102	80-120%	---	---	
1,2,3-Trichlorobenzene	1120	---	250	ug/kg	50	1000	---	112	80-120%	---	---	
1,2,4-Trichlorobenzene	1080	---	250	ug/kg	50	1000	---	108	80-120%	---	---	
1,1,1-Trichloroethane	1030	---	25.0	ug/kg	50	1000	---	103	80-120%	---	---	
1,1,2-Trichloroethane	1100	---	25.0	ug/kg	50	1000	---	110	80-120%	---	---	
Trichloroethene (TCE)	930	---	25.0	ug/kg	50	1000	---	93	80-120%	---	---	
Trichlorofluoromethane	982	---	100	ug/kg	50	1000	---	98	80-120%	---	---	
1,2,3-Trichloropropane	1050	---	50.0	ug/kg	50	1000	---	105	80-120%	---	---	
1,2,4-Trimethylbenzene	1110	---	50.0	ug/kg	50	1000	---	111	80-120%	---	---	
1,3,5-Trimethylbenzene	1120	---	50.0	ug/kg	50	1000	---	112	80-120%	---	---	

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Hahn and Associates 434 NW 6th Ave. Suite 203 Portland, OR 97209	Project: Mult 802 Decommissioning Project Number: 2708-60F Project Manager: Rob Ede	Report ID: A9E0723 - 06 24 19 1133
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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060533 - EPA 5035A						Soil						
LCS (9060533-BS1)			Prepared: 06/04/19 09:03 Analyzed: 06/04/19 10:28									
Vinyl chloride	910	---	25.0	ug/kg	50	1000	---	91	80-120%	---	---	
m,p-Xylene	2160	---	50.0	ug/kg	50	2000	---	108	80-120%	---	---	
o-Xylene	1070	---	25.0	ug/kg	50	1000	---	107	80-120%	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 95 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>100 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>100 %</i>		<i>80-120 %</i>		<i>"</i>						

Duplicate (9060533-DUP1)			Prepared: 05/29/19 11:20 Analyzed: 06/04/19 20:32									
QC Source Sample: Non-SDG (A9F0057-03)												
Acetone	ND	---	3560	ug/kg	200	---	ND	---	---	---	30%	
Acrylonitrile	ND	---	1070	ug/kg	200	---	ND	---	---	---	30%	R-02
Benzene	ND	---	35.6	ug/kg	200	---	ND	---	---	---	30%	
Bromobenzene	ND	---	88.9	ug/kg	200	---	ND	---	---	---	30%	
Bromochloromethane	ND	---	178	ug/kg	200	---	ND	---	---	---	30%	
Bromodichloromethane	ND	---	178	ug/kg	200	---	ND	---	---	---	30%	
Bromoform	ND	---	356	ug/kg	200	---	ND	---	---	---	30%	
Bromomethane	ND	---	1780	ug/kg	200	---	ND	---	---	---	30%	
2-Butanone (MEK)	ND	---	2670	ug/kg	200	---	ND	---	---	---	30%	R-02
n-Butylbenzene	1210	---	178	ug/kg	200	---	ND	---	---	---	30%	M-02, Q-04
sec-Butylbenzene	407	---	178	ug/kg	200	---	ND	---	---	---	30%	Q-04
tert-Butylbenzene	ND	---	178	ug/kg	200	---	ND	---	---	---	30%	
Carbon disulfide	ND	---	1780	ug/kg	200	---	ND	---	---	---	30%	
Carbon tetrachloride	ND	---	178	ug/kg	200	---	ND	---	---	---	30%	
Chlorobenzene	ND	---	88.9	ug/kg	200	---	ND	---	---	---	30%	
Chloroethane	ND	---	1780	ug/kg	200	---	ND	---	---	---	30%	
Chloroform	ND	---	178	ug/kg	200	---	ND	---	---	---	30%	
Chloromethane	ND	---	889	ug/kg	200	---	ND	---	---	---	30%	
2-Chlorotoluene	ND	---	178	ug/kg	200	---	ND	---	---	---	30%	
4-Chlorotoluene	ND	---	178	ug/kg	200	---	ND	---	---	---	30%	
Dibromochloromethane	ND	---	356	ug/kg	200	---	ND	---	---	---	30%	
1,2-Dibromo-3-chloropropane	ND	---	889	ug/kg	200	---	ND	---	---	---	30%	
1,2-Dibromoethane (EDB)	ND	---	178	ug/kg	200	---	ND	---	---	---	30%	
Dibromomethane	ND	---	178	ug/kg	200	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	---	88.9	ug/kg	200	---	ND	---	---	---	30%	

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Philip Nerenberg, Lab Director



Hahn and Associates
434 NW 6th Ave. Suite 203
Portland, OR 97209

Project: **Mult 802 Decommissioning**
Project Number: **2708-60F**
Project Manager: **Rob Ede**

Report ID:
A9E0723 - 06 24 19 1133

QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060533 - EPA 5035A												
Soil												
Duplicate (9060533-DUP1)												
Prepared: 05/29/19 11:20 Analyzed: 06/04/19 20:32												
QC Source Sample: Non-SDG (A9F0057-03)												
1,3-Dichlorobenzene	ND	---	88.9	ug/kg	200	---	ND	---	---	---	30%	
1,4-Dichlorobenzene	ND	---	88.9	ug/kg	200	---	ND	---	---	---	30%	
Dichlorodifluoromethane	ND	---	356	ug/kg	200	---	ND	---	---	---	30%	
1,1-Dichloroethane	ND	---	88.9	ug/kg	200	---	ND	---	---	---	30%	
1,2-Dichloroethane (EDC)	ND	---	88.9	ug/kg	200	---	ND	---	---	---	30%	
1,1-Dichloroethene	ND	---	88.9	ug/kg	200	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	ND	---	88.9	ug/kg	200	---	ND	---	---	---	30%	
trans-1,2-Dichloroethene	ND	---	88.9	ug/kg	200	---	ND	---	---	---	30%	
1,2-Dichloropropane	ND	---	88.9	ug/kg	200	---	ND	---	---	---	30%	
1,3-Dichloropropane	ND	---	178	ug/kg	200	---	ND	---	---	---	30%	
2,2-Dichloropropane	ND	---	178	ug/kg	200	---	ND	---	---	---	30%	
1,1-Dichloropropene	ND	---	178	ug/kg	200	---	ND	---	---	---	30%	
cis-1,3-Dichloropropene	ND	---	178	ug/kg	200	---	ND	---	---	---	30%	
trans-1,3-Dichloropropene	ND	---	178	ug/kg	200	---	ND	---	---	---	30%	
Ethylbenzene	1440	---	88.9	ug/kg	200	---	ND	---	---	---	30%	Q-04
Hexachlorobutadiene	ND	---	356	ug/kg	200	---	ND	---	---	---	30%	
2-Hexanone	ND	---	1780	ug/kg	200	---	ND	---	---	---	30%	
Isopropylbenzene	919	---	178	ug/kg	200	---	ND	---	---	---	30%	Q-04
4-Isopropyltoluene	181	---	178	ug/kg	200	---	ND	---	---	---	30%	M-02, Q-04
Methylene chloride	ND	---	889	ug/kg	200	---	ND	---	---	---	30%	
4-Methyl-2-pentanone (MiBK)	ND	---	1780	ug/kg	200	---	ND	---	---	---	30%	
Methyl tert-butyl ether (MTBE)	ND	---	178	ug/kg	200	---	ND	---	---	---	30%	
Naphthalene	1370	---	356	ug/kg	200	---	ND	---	---	---	30%	Q-04
n-Propylbenzene	4220	---	88.9	ug/kg	200	---	ND	---	---	---	30%	Q-04
Styrene	ND	---	178	ug/kg	200	---	ND	---	---	---	30%	
1,1,1,2-Tetrachloroethane	ND	---	88.9	ug/kg	200	---	ND	---	---	---	30%	
1,1,2,2-Tetrachloroethane	ND	---	178	ug/kg	200	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	ND	---	88.9	ug/kg	200	---	ND	---	---	---	30%	
Toluene	ND	---	178	ug/kg	200	---	ND	---	---	---	30%	
1,2,3-Trichlorobenzene	ND	---	889	ug/kg	200	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	---	889	ug/kg	200	---	ND	---	---	---	30%	
1,1,1-Trichloroethane	ND	---	88.9	ug/kg	200	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	---	88.9	ug/kg	200	---	ND	---	---	---	30%	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060533 - EPA 5035A												
Soil												
Duplicate (9060533-DUP1)			Prepared: 05/29/19 11:20 Analyzed: 06/04/19 20:32									
QC Source Sample: Non-SDG (A9F0057-03)												
Trichloroethene (TCE)	ND	---	88.9	ug/kg	200	---	ND	---	---	---	30%	
Trichlorofluoromethane	ND	---	356	ug/kg	200	---	ND	---	---	---	30%	
1,2,3-Trichloropropane	ND	---	178	ug/kg	200	---	ND	---	---	---	30%	
1,2,4-Trimethylbenzene	11600	---	178	ug/kg	200	---	ND	---	---	---	30%	Q-04
1,3,5-Trimethylbenzene	6560	---	178	ug/kg	200	---	ND	---	---	---	30%	Q-04
Vinyl chloride	ND	---	88.9	ug/kg	200	---	ND	---	---	---	30%	
m,p-Xylene	3010	---	178	ug/kg	200	---	ND	---	---	---	30%	Q-04
o-Xylene	197	---	88.9	ug/kg	200	---	ND	---	---	---	30%	Q-04
<i>Surr: 1,4-Difluorobenzene (Surr)</i>			<i>Recovery: 91 %</i>	<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>			<i>99 %</i>	<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>			<i>102 %</i>	<i>80-120 %</i>		<i>"</i>						

Duplicate (9060533-DUP2)			Prepared: 05/29/19 11:00 Analyzed: 06/04/19 21:27									
QC Source Sample: Non-SDG (A9F0057-02)												
Acetone	ND	---	38500	ug/kg	2000	---	ND	---	---	---	30%	
Acrylonitrile	ND	---	15400	ug/kg	2000	---	ND	---	---	---	30%	R-02
Benzene	ND	---	385	ug/kg	2000	---	ND	---	---	---	30%	
Bromobenzene	ND	---	962	ug/kg	2000	---	ND	---	---	---	30%	
Bromochloromethane	ND	---	1920	ug/kg	2000	---	ND	---	---	---	30%	
Bromodichloromethane	ND	---	1920	ug/kg	2000	---	ND	---	---	---	30%	
Bromoform	ND	---	3850	ug/kg	2000	---	ND	---	---	---	30%	
Bromomethane	ND	---	19200	ug/kg	2000	---	ND	---	---	---	30%	
2-Butanone (MEK)	ND	---	44200	ug/kg	2000	---	ND	---	---	---	30%	R-02
n-Butylbenzene	24000	---	1920	ug/kg	2000	---	18700	---	---	25	30%	M-02
sec-Butylbenzene	7980	---	1920	ug/kg	2000	---	6190	---	---	25	30%	
tert-Butylbenzene	ND	---	1920	ug/kg	2000	---	ND	---	---	---	30%	
Carbon disulfide	ND	---	19200	ug/kg	2000	---	ND	---	---	---	30%	
Carbon tetrachloride	ND	---	1920	ug/kg	2000	---	ND	---	---	---	30%	
Chlorobenzene	ND	---	962	ug/kg	2000	---	ND	---	---	---	30%	
Chloroethane	ND	---	19200	ug/kg	2000	---	ND	---	---	---	30%	
Chloroform	ND	---	1920	ug/kg	2000	---	ND	---	---	---	30%	
Chloromethane	ND	---	9620	ug/kg	2000	---	ND	---	---	---	30%	
2-Chlorotoluene	ND	---	1920	ug/kg	2000	---	ND	---	---	---	30%	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060533 - EPA 5035A							Soil					
Duplicate (9060533-DUP2)			Prepared: 05/29/19 11:00 Analyzed: 06/04/19 21:27									
QC Source Sample: Non-SDG (A9F0057-02)												
4-Chlorotoluene	ND	---	1920	ug/kg	2000	---	ND	---	---	---	30%	
Dibromochloromethane	ND	---	3850	ug/kg	2000	---	ND	---	---	---	30%	
1,2-Dibromo-3-chloropropane	ND	---	9620	ug/kg	2000	---	ND	---	---	---	30%	
1,2-Dibromoethane (EDB)	ND	---	1920	ug/kg	2000	---	ND	---	---	---	30%	
Dibromomethane	ND	---	1920	ug/kg	2000	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	---	962	ug/kg	2000	---	ND	---	---	---	30%	
1,3-Dichlorobenzene	ND	---	962	ug/kg	2000	---	ND	---	---	---	30%	
1,4-Dichlorobenzene	ND	---	962	ug/kg	2000	---	ND	---	---	---	30%	
Dichlorodifluoromethane	ND	---	3850	ug/kg	2000	---	ND	---	---	---	30%	
1,1-Dichloroethane	ND	---	962	ug/kg	2000	---	ND	---	---	---	30%	
1,2-Dichloroethane (EDC)	ND	---	962	ug/kg	2000	---	ND	---	---	---	30%	
1,1-Dichloroethene	ND	---	962	ug/kg	2000	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	ND	---	962	ug/kg	2000	---	ND	---	---	---	30%	
trans-1,2-Dichloroethene	ND	---	962	ug/kg	2000	---	ND	---	---	---	30%	
1,2-Dichloropropane	ND	---	962	ug/kg	2000	---	ND	---	---	---	30%	
1,3-Dichloropropane	ND	---	1920	ug/kg	2000	---	ND	---	---	---	30%	
2,2-Dichloropropane	ND	---	1920	ug/kg	2000	---	ND	---	---	---	30%	
1,1-Dichloropropene	ND	---	1920	ug/kg	2000	---	ND	---	---	---	30%	
cis-1,3-Dichloropropene	ND	---	1920	ug/kg	2000	---	ND	---	---	---	30%	
trans-1,3-Dichloropropene	ND	---	1920	ug/kg	2000	---	ND	---	---	---	30%	
Ethylbenzene	78100	---	962	ug/kg	2000	---	62300	---	---	22	30%	
Hexachlorobutadiene	ND	---	3850	ug/kg	2000	---	ND	---	---	---	30%	
2-Hexanone	ND	---	19200	ug/kg	2000	---	ND	---	---	---	30%	
Isopropylbenzene	19100	---	1920	ug/kg	2000	---	15100	---	---	23	30%	
4-Isopropyltoluene	2900	---	1920	ug/kg	2000	---	2080	---	---	33	30%	M-02, Q-04
Methylene chloride	ND	---	9620	ug/kg	2000	---	ND	---	---	---	30%	
4-Methyl-2-pentanone (MiBK)	ND	---	19200	ug/kg	2000	---	ND	---	---	---	30%	
Methyl tert-butyl ether (MTBE)	ND	---	1920	ug/kg	2000	---	ND	---	---	---	30%	
Naphthalene	52000	---	3850	ug/kg	2000	---	43200	---	---	19	30%	
n-Propylbenzene	98100	---	962	ug/kg	2000	---	78300	---	---	22	30%	
Styrene	ND	---	1920	ug/kg	2000	---	ND	---	---	---	30%	
1,1,1,2-Tetrachloroethane	ND	---	962	ug/kg	2000	---	ND	---	---	---	30%	
1,1,2,2-Tetrachloroethane	ND	---	5770	ug/kg	2000	---	ND	---	---	---	30%	R-02

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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060533 - EPA 5035A												
Soil												
Duplicate (9060533-DUP2)			Prepared: 05/29/19 11:00 Analyzed: 06/04/19 21:27									
QC Source Sample: Non-SDG (A9F0057-02)												
Tetrachloroethene (PCE)	ND	---	962	ug/kg	2000	---	ND	---	---	---	30%	
Toluene	ND	---	1920	ug/kg	2000	---	ND	---	---	---	30%	
1,2,3-Trichlorobenzene	ND	---	9620	ug/kg	2000	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	---	9620	ug/kg	2000	---	ND	---	---	---	30%	
1,1,1-Trichloroethane	ND	---	962	ug/kg	2000	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	---	962	ug/kg	2000	---	ND	---	---	---	30%	
Trichloroethene (TCE)	ND	---	962	ug/kg	2000	---	ND	---	---	---	30%	
Trichlorofluoromethane	ND	---	3850	ug/kg	2000	---	ND	---	---	---	30%	
1,2,3-Trichloropropane	ND	---	1920	ug/kg	2000	---	ND	---	---	---	30%	
1,2,4-Trimethylbenzene	348000	---	1920	ug/kg	2000	---	285000	---	---	20	30%	
1,3,5-Trimethylbenzene	160000	---	1920	ug/kg	2000	---	128000	---	---	22	30%	
Vinyl chloride	ND	---	962	ug/kg	2000	---	ND	---	---	---	30%	
m,p-Xylene	141000	---	1920	ug/kg	2000	---	113000	---	---	22	30%	
o-Xylene	8790	---	962	ug/kg	2000	---	7010	---	---	23	30%	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 92 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>102 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>102 %</i>		<i>80-120 %</i>		<i>"</i>						

Matrix Spike (9060533-MS1)			Prepared: 05/29/19 11:00 Analyzed: 06/04/19 14:33									X
QC Source Sample: Non-SDG (A9E0932-01)												
5035A/8260C												
Acetone	1760	---	928	ug/kg	50	1860	ND	95	36-164%	---	---	
Acrylonitrile	918	---	92.8	ug/kg	50	929	ND	99	65-134%	---	---	
Benzene	851	---	9.28	ug/kg	50	929	ND	92	77-121%	---	---	
Bromobenzene	1040	---	23.2	ug/kg	50	929	ND	112	78-121%	---	---	
Bromochloromethane	869	---	46.4	ug/kg	50	929	ND	94	78-125%	---	---	
Bromodichloromethane	855	---	46.4	ug/kg	50	929	ND	92	75-127%	---	---	
Bromoform	832	---	92.8	ug/kg	50	929	ND	90	67-132%	---	---	
Bromomethane	821	---	46.4	ug/kg	50	929	ND	88	53-143%	---	---	
2-Butanone (MEK)	1740	---	46.4	ug/kg	50	1860	ND	94	51-148%	---	---	
n-Butylbenzene	977	---	46.4	ug/kg	50	929	ND	105	70-128%	---	---	
sec-Butylbenzene	990	---	46.4	ug/kg	50	929	ND	107	73-126%	---	---	
tert-Butylbenzene	943	---	46.4	ug/kg	50	929	ND	101	73-125%	---	---	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060533 - EPA 5035A						Soil						
Matrix Spike (9060533-MS1)						Prepared: 05/29/19 11:00 Analyzed: 06/04/19 14:33						X
QC Source Sample: Non-SDG (A9E0932-01)												
Carbon disulfide	821	---	464	ug/kg	50	929	ND	88	63-132%	---	---	
Carbon tetrachloride	847	---	46.4	ug/kg	50	929	ND	91	70-135%	---	---	
Chlorobenzene	947	---	23.2	ug/kg	50	929	ND	102	79-120%	---	---	
Chloroethane	691	---	464	ug/kg	50	929	ND	74	59-139%	---	---	
Chloroform	833	---	46.4	ug/kg	50	929	ND	90	78-123%	---	---	
Chloromethane	759	---	232	ug/kg	50	929	ND	82	50-136%	---	---	
2-Chlorotoluene	982	---	46.4	ug/kg	50	929	ND	106	75-122%	---	---	
4-Chlorotoluene	964	---	46.4	ug/kg	50	929	ND	104	72-124%	---	---	
Dibromochloromethane	869	---	92.8	ug/kg	50	929	ND	94	74-126%	---	---	
1,2-Dibromo-3-chloropropane	934	---	232	ug/kg	50	929	ND	101	61-132%	---	---	
1,2-Dibromoethane (EDB)	1050	---	46.4	ug/kg	50	929	ND	113	78-122%	---	---	
Dibromomethane	901	---	46.4	ug/kg	50	929	ND	97	78-125%	---	---	
1,2-Dichlorobenzene	943	---	23.2	ug/kg	50	929	ND	102	78-121%	---	---	
1,3-Dichlorobenzene	947	---	23.2	ug/kg	50	929	ND	102	77-121%	---	---	
1,4-Dichlorobenzene	945	---	23.2	ug/kg	50	929	ND	102	75-120%	---	---	
Dichlorodifluoromethane	840	---	92.8	ug/kg	50	929	ND	90	29-149%	---	---	
1,1-Dichloroethane	889	---	23.2	ug/kg	50	929	ND	96	76-125%	---	---	
1,2-Dichloroethane (EDC)	818	---	23.2	ug/kg	50	929	ND	88	73-128%	---	---	
1,1-Dichloroethene	873	---	23.2	ug/kg	50	929	ND	94	70-131%	---	---	
cis-1,2-Dichloroethene	850	---	23.2	ug/kg	50	929	ND	92	77-123%	---	---	
trans-1,2-Dichloroethene	878	---	23.2	ug/kg	50	929	ND	94	74-125%	---	---	
1,2-Dichloropropane	864	---	23.2	ug/kg	50	929	ND	93	76-123%	---	---	
1,3-Dichloropropane	988	---	46.4	ug/kg	50	929	ND	106	77-121%	---	---	
2,2-Dichloropropane	915	---	46.4	ug/kg	50	929	ND	99	67-133%	---	---	
1,1-Dichloropropene	842	---	46.4	ug/kg	50	929	ND	91	76-125%	---	---	
cis-1,3-Dichloropropene	1020	---	46.4	ug/kg	50	929	ND	110	74-126%	---	---	
trans-1,3-Dichloropropene	985	---	46.4	ug/kg	50	929	ND	106	71-130%	---	---	
Ethylbenzene	960	---	23.2	ug/kg	50	929	ND	103	76-122%	---	---	
Hexachlorobutadiene	1120	---	92.8	ug/kg	50	929	ND	120	61-135%	---	---	
2-Hexanone	1850	---	464	ug/kg	50	1860	ND	99	53-145%	---	---	
Isopropylbenzene	984	---	46.4	ug/kg	50	929	ND	106	68-134%	---	---	
4-Isopropyltoluene	1010	---	46.4	ug/kg	50	929	ND	109	73-127%	---	---	
Methylene chloride	634	---	232	ug/kg	50	929	ND	68	70-128%	---	---	Q-54t

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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060533 - EPA 5035A												
Soil												
Matrix Spike (9060533-MS1)												
Prepared: 05/29/19 11:00 Analyzed: 06/04/19 14:33												
QC Source Sample: Non-SDG (A9E0932-01)												
4-Methyl-2-pentanone (MiBK)	1790	---	464	ug/kg	50	1860	ND	96	65-135%	---	---	
Methyl tert-butyl ether (MTBE)	847	---	46.4	ug/kg	50	929	ND	91	73-125%	---	---	
Naphthalene	1060	---	92.8	ug/kg	50	929	ND	115	62-129%	---	---	
n-Propylbenzene	968	---	23.2	ug/kg	50	929	ND	104	73-125%	---	---	
Styrene	1050	---	46.4	ug/kg	50	929	ND	113	76-124%	---	---	
1,1,1,2-Tetrachloroethane	1030	---	23.2	ug/kg	50	929	ND	111	78-125%	---	---	
1,1,2,2-Tetrachloroethane	928	---	46.4	ug/kg	50	929	ND	100	70-124%	---	---	
Tetrachloroethene (PCE)	950	---	23.2	ug/kg	50	929	ND	102	73-128%	---	---	
Toluene	936	---	46.4	ug/kg	50	929	ND	101	77-121%	---	---	
1,2,3-Trichlorobenzene	1040	---	232	ug/kg	50	929	ND	112	66-130%	---	---	
1,2,4-Trichlorobenzene	1020	---	232	ug/kg	50	929	ND	109	67-129%	---	---	
1,1,1-Trichloroethane	860	---	23.2	ug/kg	50	929	ND	93	73-130%	---	---	
1,1,2-Trichloroethane	1030	---	23.2	ug/kg	50	929	ND	111	78-121%	---	---	
Trichloroethene (TCE)	888	---	23.2	ug/kg	50	929	ND	96	77-123%	---	---	
Trichlorofluoromethane	628	---	92.8	ug/kg	50	929	ND	68	62-140%	---	---	
1,2,3-Trichloropropane	973	---	46.4	ug/kg	50	929	ND	105	73-125%	---	---	
1,2,4-Trimethylbenzene	988	---	46.4	ug/kg	50	929	ND	106	75-123%	---	---	
1,3,5-Trimethylbenzene	1010	---	46.4	ug/kg	50	929	ND	108	73-124%	---	---	
Vinyl chloride	819	---	23.2	ug/kg	50	929	ND	88	56-135%	---	---	
m,p-Xylene	1940	---	46.4	ug/kg	50	1860	ND	104	77-124%	---	---	
o-Xylene	960	---	23.2	ug/kg	50	929	ND	103	77-123%	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr) Recovery: 92 % Limits: 80-120 % Dilution: 1x</i>												
<i>Toluene-d8 (Surr) 99 % 80-120 % "</i>												
<i>4-Bromofluorobenzene (Surr) 102 % 80-120 % "</i>												



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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060582 - EPA 5035A						Soil						
Blank (9060582-BLK1)			Prepared: 06/05/19 13:00 Analyzed: 06/05/19 14:47									
<u>5035A/8260C</u>												
Acetone	ND	---	667	ug/kg	50	---	---	---	---	---	---	
Acrylonitrile	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	
Benzene	ND	---	6.67	ug/kg	50	---	---	---	---	---	---	
Bromobenzene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Bromochloromethane	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Bromodichloromethane	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Bromoform	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	
Bromomethane	ND	---	333	ug/kg	50	---	---	---	---	---	---	
2-Butanone (MEK)	ND	---	333	ug/kg	50	---	---	---	---	---	---	
n-Butylbenzene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
sec-Butylbenzene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
tert-Butylbenzene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Carbon disulfide	ND	---	333	ug/kg	50	---	---	---	---	---	---	
Carbon tetrachloride	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Chlorobenzene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Chloroethane	ND	---	333	ug/kg	50	---	---	---	---	---	---	
Chloroform	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Chloromethane	ND	---	167	ug/kg	50	---	---	---	---	---	---	
2-Chlorotoluene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
4-Chlorotoluene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Dibromochloromethane	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	
1,2-Dibromo-3-chloropropane	ND	---	167	ug/kg	50	---	---	---	---	---	---	
1,2-Dibromoethane (EDB)	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Dibromomethane	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
1,2-Dichlorobenzene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
1,3-Dichlorobenzene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
1,4-Dichlorobenzene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Dichlorodifluoromethane	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	
1,1-Dichloroethane	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
1,2-Dichloroethane (EDC)	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
1,1-Dichloroethene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
cis-1,2-Dichloroethene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
trans-1,2-Dichloroethene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	

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

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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060582 - EPA 5035A						Soil						
Blank (9060582-BLK1)			Prepared: 06/05/19 13:00 Analyzed: 06/05/19 14:47									
1,2-Dichloropropane	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
1,3-Dichloropropane	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
2,2-Dichloropropane	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
1,1-Dichloropropene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
cis-1,3-Dichloropropene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
trans-1,3-Dichloropropene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Ethylbenzene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Hexachlorobutadiene	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	
2-Hexanone	ND	---	333	ug/kg	50	---	---	---	---	---	---	
Isopropylbenzene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
4-Isopropyltoluene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Methylene chloride	ND	---	167	ug/kg	50	---	---	---	---	---	---	
4-Methyl-2-pentanone (MiBK)	ND	---	333	ug/kg	50	---	---	---	---	---	---	
Methyl tert-butyl ether (MTBE)	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Naphthalene	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	
n-Propylbenzene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Styrene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
1,1,1,2-Tetrachloroethane	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
1,1,2,2-Tetrachloroethane	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Tetrachloroethene (PCE)	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Toluene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
1,2,3-Trichlorobenzene	ND	---	167	ug/kg	50	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	---	167	ug/kg	50	---	---	---	---	---	---	
1,1,1-Trichloroethane	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
1,1,2-Trichloroethane	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Trichloroethene (TCE)	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Trichlorofluoromethane	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	
1,2,3-Trichloropropane	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
1,2,4-Trimethylbenzene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
1,3,5-Trimethylbenzene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Vinyl chloride	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
m,p-Xylene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
o-Xylene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	

Surr: 1,4-Difluorobenzene (Surr) Recovery: 90% Limits: 80-120% Dilution: 1x

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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060582 - EPA 5035A												
Soil												
Blank (9060582-BLK1)												
Prepared: 06/05/19 13:00 Analyzed: 06/05/19 14:47												
<i>Surr: Toluene-d8 (Surr)</i>												
<i>Recovery: 102 % Limits: 80-120 % Dilution: 1x</i>												
<i>4-Bromofluorobenzene (Surr)</i>												
<i>103 % 80-120 % "</i>												
LCS (9060582-BS1)												
Prepared: 06/05/19 13:00 Analyzed: 06/05/19 13:52												
5035A/8260C												
Acetone	1680	---	1000	ug/kg	50	2000	---	84	80-120%	---	---	
Acrylonitrile	893	---	100	ug/kg	50	1000	---	89	80-120%	---	---	
Benzene	867	---	10.0	ug/kg	50	1000	---	87	80-120%	---	---	
Bromobenzene	1060	---	25.0	ug/kg	50	1000	---	106	80-120%	---	---	
Bromochloromethane	894	---	50.0	ug/kg	50	1000	---	89	80-120%	---	---	
Bromodichloromethane	899	---	50.0	ug/kg	50	1000	---	90	80-120%	---	---	
Bromoform	864	---	100	ug/kg	50	1000	---	86	80-120%	---	---	
Bromomethane	884	---	500	ug/kg	50	1000	---	88	80-120%	---	---	
2-Butanone (MEK)	1700	---	500	ug/kg	50	2000	---	85	80-120%	---	---	
n-Butylbenzene	1060	---	50.0	ug/kg	50	1000	---	106	80-120%	---	---	
sec-Butylbenzene	1060	---	50.0	ug/kg	50	1000	---	106	80-120%	---	---	
tert-Butylbenzene	1020	---	50.0	ug/kg	50	1000	---	102	80-120%	---	---	
Carbon disulfide	872	---	500	ug/kg	50	1000	---	87	80-120%	---	---	
Carbon tetrachloride	925	---	50.0	ug/kg	50	1000	---	92	80-120%	---	---	
Chlorobenzene	1010	---	25.0	ug/kg	50	1000	---	101	80-120%	---	---	
Chloroethane	658	---	500	ug/kg	50	1000	---	66	80-120%	---	---	Q-55
Chloroform	830	---	50.0	ug/kg	50	1000	---	83	80-120%	---	---	
Chloromethane	782	---	250	ug/kg	50	1000	---	78	80-120%	---	---	Q-55
2-Chlorotoluene	1040	---	50.0	ug/kg	50	1000	---	104	80-120%	---	---	
4-Chlorotoluene	1000	---	50.0	ug/kg	50	1000	---	100	80-120%	---	---	
Dibromochloromethane	906	---	100	ug/kg	50	1000	---	91	80-120%	---	---	
1,2-Dibromo-3-chloropropane	942	---	250	ug/kg	50	1000	---	94	80-120%	---	---	
1,2-Dibromoethane (EDB)	1060	---	50.0	ug/kg	50	1000	---	106	80-120%	---	---	
Dibromomethane	874	---	50.0	ug/kg	50	1000	---	87	80-120%	---	---	
1,2-Dichlorobenzene	980	---	25.0	ug/kg	50	1000	---	98	80-120%	---	---	
1,3-Dichlorobenzene	996	---	25.0	ug/kg	50	1000	---	100	80-120%	---	---	
1,4-Dichlorobenzene	988	---	25.0	ug/kg	50	1000	---	99	80-120%	---	---	
Dichlorodifluoromethane	843	---	100	ug/kg	50	1000	---	84	80-120%	---	---	
1,1-Dichloroethane	883	---	25.0	ug/kg	50	1000	---	88	80-120%	---	---	



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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060582 - EPA 5035A						Soil						
LCS (9060582-BS1)			Prepared: 06/05/19 13:00 Analyzed: 06/05/19 13:52									
1,2-Dichloroethane (EDC)	862	---	25.0	ug/kg	50	1000	---	86	80-120%	---	---	
1,1-Dichloroethene	924	---	25.0	ug/kg	50	1000	---	92	80-120%	---	---	
cis-1,2-Dichloroethene	886	---	25.0	ug/kg	50	1000	---	89	80-120%	---	---	
trans-1,2-Dichloroethene	913	---	25.0	ug/kg	50	1000	---	91	80-120%	---	---	
1,2-Dichloropropane	886	---	25.0	ug/kg	50	1000	---	89	80-120%	---	---	
1,3-Dichloropropane	1040	---	50.0	ug/kg	50	1000	---	104	80-120%	---	---	
2,2-Dichloropropane	1000	---	50.0	ug/kg	50	1000	---	100	80-120%	---	---	
1,1-Dichloropropene	886	---	50.0	ug/kg	50	1000	---	89	80-120%	---	---	
cis-1,3-Dichloropropene	1100	---	50.0	ug/kg	50	1000	---	110	80-120%	---	---	
trans-1,3-Dichloropropene	1060	---	50.0	ug/kg	50	1000	---	106	80-120%	---	---	
Ethylbenzene	1000	---	25.0	ug/kg	50	1000	---	100	80-120%	---	---	
Hexachlorobutadiene	1120	---	100	ug/kg	50	1000	---	112	80-120%	---	---	
2-Hexanone	1900	---	500	ug/kg	50	2000	---	95	80-120%	---	---	
Isopropylbenzene	1040	---	50.0	ug/kg	50	1000	---	104	80-120%	---	---	
4-Isopropyltoluene	1110	---	50.0	ug/kg	50	1000	---	111	80-120%	---	---	
Methylene chloride	560	---	250	ug/kg	50	1000	---	56	80-120%	---	---	Q-55
4-Methyl-2-pentanone (MiBK)	1830	---	500	ug/kg	50	2000	---	91	80-120%	---	---	
Methyl tert-butyl ether (MTBE)	863	---	50.0	ug/kg	50	1000	---	86	80-120%	---	---	
Naphthalene	1050	---	100	ug/kg	50	1000	---	105	80-120%	---	---	
n-Propylbenzene	1040	---	25.0	ug/kg	50	1000	---	104	80-120%	---	---	
Styrene	1060	---	50.0	ug/kg	50	1000	---	106	80-120%	---	---	
1,1,1,2-Tetrachloroethane	1080	---	25.0	ug/kg	50	1000	---	108	80-120%	---	---	
1,1,2,2-Tetrachloroethane	1000	---	50.0	ug/kg	50	1000	---	100	80-120%	---	---	
Tetrachloroethene (PCE)	1030	---	25.0	ug/kg	50	1000	---	103	80-120%	---	---	
Toluene	981	---	50.0	ug/kg	50	1000	---	98	80-120%	---	---	
1,2,3-Trichlorobenzene	1100	---	25.0	ug/kg	50	1000	---	110	80-120%	---	---	
1,2,4-Trichlorobenzene	1080	---	25.0	ug/kg	50	1000	---	108	80-120%	---	---	
1,1,1-Trichloroethane	904	---	25.0	ug/kg	50	1000	---	90	80-120%	---	---	
1,1,2-Trichloroethane	1050	---	25.0	ug/kg	50	1000	---	105	80-120%	---	---	
Trichloroethene (TCE)	878	---	25.0	ug/kg	50	1000	---	88	80-120%	---	---	
Trichlorofluoromethane	714	---	100	ug/kg	50	1000	---	71	80-120%	---	---	Q-55
1,2,3-Trichloropropane	984	---	50.0	ug/kg	50	1000	---	98	80-120%	---	---	
1,2,4-Trimethylbenzene	1030	---	50.0	ug/kg	50	1000	---	103	80-120%	---	---	
1,3,5-Trimethylbenzene	1080	---	50.0	ug/kg	50	1000	---	108	80-120%	---	---	



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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060582 - EPA 5035A						Soil						
LCS (9060582-BS1)			Prepared: 06/05/19 13:00 Analyzed: 06/05/19 13:52									
Vinyl chloride	821	---	25.0	ug/kg	50	1000	---	82	80-120%	---	---	
m,p-Xylene	2030	---	50.0	ug/kg	50	2000	---	102	80-120%	---	---	
o-Xylene	1010	---	25.0	ug/kg	50	1000	---	101	80-120%	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 90 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>101 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>102 %</i>		<i>80-120 %</i>		<i>"</i>						
Duplicate (9060582-DUP1)						Prepared: 05/29/19 16:30 Analyzed: 06/05/19 21:14						
QC Source Sample: Non-SDG (A9F0057-09)												
Acetone	ND	---	836	ug/kg	50	---	ND	---	---	---	30%	
Acrylonitrile	ND	---	167	ug/kg	50	---	ND	---	---	---	30%	R-02
Benzene	ND	---	8.36	ug/kg	50	---	ND	---	---	---	30%	Q-05
Bromobenzene	ND	---	20.9	ug/kg	50	---	ND	---	---	---	30%	
Bromochloromethane	ND	---	41.8	ug/kg	50	---	ND	---	---	---	30%	
Bromodichloromethane	ND	---	41.8	ug/kg	50	---	ND	---	---	---	30%	
Bromoform	ND	---	83.6	ug/kg	50	---	ND	---	---	---	30%	
Bromomethane	ND	---	418	ug/kg	50	---	ND	---	---	---	30%	
2-Butanone (MEK)	ND	---	418	ug/kg	50	---	ND	---	---	---	30%	
n-Butylbenzene	96.6	---	41.8	ug/kg	50	---	73.9	---	---	27	30%	M-02
sec-Butylbenzene	ND	---	41.8	ug/kg	50	---	28.9	---	---	***	30%	
tert-Butylbenzene	ND	---	41.8	ug/kg	50	---	ND	---	---	---	30%	
Carbon disulfide	ND	---	418	ug/kg	50	---	ND	---	---	---	30%	
Carbon tetrachloride	ND	---	41.8	ug/kg	50	---	ND	---	---	---	30%	
Chlorobenzene	ND	---	20.9	ug/kg	50	---	ND	---	---	---	30%	
Chloroethane	ND	---	418	ug/kg	50	---	ND	---	---	---	30%	
Chloroform	ND	---	41.8	ug/kg	50	---	ND	---	---	---	30%	
Chloromethane	ND	---	209	ug/kg	50	---	ND	---	---	---	30%	
2-Chlorotoluene	ND	---	41.8	ug/kg	50	---	ND	---	---	---	30%	
4-Chlorotoluene	ND	---	41.8	ug/kg	50	---	ND	---	---	---	30%	
Dibromochloromethane	ND	---	83.6	ug/kg	50	---	ND	---	---	---	30%	
1,2-Dibromo-3-chloropropane	ND	---	209	ug/kg	50	---	ND	---	---	---	30%	
1,2-Dibromoethane (EDB)	ND	---	41.8	ug/kg	50	---	ND	---	---	---	30%	
Dibromomethane	ND	---	41.8	ug/kg	50	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	---	20.9	ug/kg	50	---	ND	---	---	---	30%	

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Philip Nerenberg, Lab Director



Hahn and Associates
 434 NW 6th Ave. Suite 203
 Portland, OR 97209

Project: **Mult 802 Decommissioning**
 Project Number: **2708-60F**
 Project Manager: **Rob Ede**

Report ID:
A9E0723 - 06 24 19 1133

QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060582 - EPA 5035A												
Soil												
Duplicate (9060582-DUP1)												
Prepared: 05/29/19 16:30 Analyzed: 06/05/19 21:14												
QC Source Sample: Non-SDG (A9F0057-09)												
1,3-Dichlorobenzene	ND	---	20.9	ug/kg	50	---	ND	---	---	---	30%	
1,4-Dichlorobenzene	ND	---	20.9	ug/kg	50	---	ND	---	---	---	30%	
Dichlorodifluoromethane	ND	---	83.6	ug/kg	50	---	ND	---	---	---	30%	
1,1-Dichloroethane	ND	---	20.9	ug/kg	50	---	ND	---	---	---	30%	
1,2-Dichloroethane (EDC)	ND	---	20.9	ug/kg	50	---	ND	---	---	---	30%	
1,1-Dichloroethene	ND	---	20.9	ug/kg	50	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	ND	---	20.9	ug/kg	50	---	ND	---	---	---	30%	
trans-1,2-Dichloroethene	ND	---	20.9	ug/kg	50	---	ND	---	---	---	30%	
1,2-Dichloropropane	ND	---	20.9	ug/kg	50	---	ND	---	---	---	30%	
1,3-Dichloropropane	ND	---	41.8	ug/kg	50	---	ND	---	---	---	30%	
2,2-Dichloropropane	ND	---	41.8	ug/kg	50	---	ND	---	---	---	30%	
1,1-Dichloropropene	ND	---	41.8	ug/kg	50	---	ND	---	---	---	30%	
cis-1,3-Dichloropropene	ND	---	41.8	ug/kg	50	---	ND	---	---	---	30%	
trans-1,3-Dichloropropene	ND	---	41.8	ug/kg	50	---	ND	---	---	---	30%	
Ethylbenzene	472	---	20.9	ug/kg	50	---	413	---	---	13	30%	
Hexachlorobutadiene	ND	---	83.6	ug/kg	50	---	ND	---	---	---	30%	
2-Hexanone	ND	---	418	ug/kg	50	---	ND	---	---	---	30%	
Isopropylbenzene	99.1	---	41.8	ug/kg	50	---	78.8	---	---	23	30%	
4-Isopropyltoluene	ND	---	41.8	ug/kg	50	---	ND	---	---	---	30%	
Methylene chloride	ND	---	209	ug/kg	50	---	ND	---	---	---	30%	
4-Methyl-2-pentanone (MiBK)	ND	---	418	ug/kg	50	---	ND	---	---	---	30%	
Methyl tert-butyl ether (MTBE)	ND	---	41.8	ug/kg	50	---	ND	---	---	---	30%	
Naphthalene	473	---	83.6	ug/kg	50	---	367	---	---	25	30%	
n-Propylbenzene	490	---	20.9	ug/kg	50	---	378	---	---	26	30%	
Styrene	ND	---	41.8	ug/kg	50	---	ND	---	---	---	30%	
1,1,1,2-Tetrachloroethane	ND	---	20.9	ug/kg	50	---	ND	---	---	---	30%	
1,1,2,2-Tetrachloroethane	ND	---	41.8	ug/kg	50	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	ND	---	20.9	ug/kg	50	---	ND	---	---	---	30%	
Toluene	ND	---	41.8	ug/kg	50	---	ND	---	---	---	30%	
1,2,3-Trichlorobenzene	ND	---	209	ug/kg	50	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	---	209	ug/kg	50	---	ND	---	---	---	30%	
1,1,1-Trichloroethane	ND	---	20.9	ug/kg	50	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	---	20.9	ug/kg	50	---	ND	---	---	---	30%	

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Philip Nerenberg, Lab Director



Hahn and Associates 434 NW 6th Ave. Suite 203 Portland, OR 97209	Project: Mult 802 Decommissioning Project Number: 2708-60F Project Manager: Rob Ede	Report ID: A9E0723 - 06 24 19 1133
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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060582 - EPA 5035A												
Soil												
Duplicate (9060582-DUP1)			Prepared: 05/29/19 16:30 Analyzed: 06/05/19 21:14									
QC Source Sample: Non-SDG (A9F0057-09)												
Trichloroethene (TCE)	ND	---	20.9	ug/kg	50	---	ND	---	---	---	30%	
Trichlorofluoromethane	ND	---	83.6	ug/kg	50	---	ND	---	---	---	30%	
1,2,3-Trichloropropane	ND	---	41.8	ug/kg	50	---	ND	---	---	---	30%	
1,2,4-Trimethylbenzene	2620	---	41.8	ug/kg	50	---	2030	---	---	25	30%	
1,3,5-Trimethylbenzene	898	---	41.8	ug/kg	50	---	685	---	---	27	30%	
Vinyl chloride	ND	---	20.9	ug/kg	50	---	ND	---	---	---	30%	
m,p-Xylene	1350	---	41.8	ug/kg	50	---	1170	---	---	14	30%	
o-Xylene	269	---	20.9	ug/kg	50	---	250	---	---	7	30%	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 90 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>99 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>102 %</i>		<i>80-120 %</i>		<i>"</i>						

Matrix Spike (9060582-MS1)			Prepared: 05/29/19 17:30 Analyzed: 06/05/19 22:09									
QC Source Sample: Non-SDG (A9F0057-10)												
5035A/8260C												
Acetone	1980	---	1050	ug/kg	50	2100	ND	94	36-164%	---	---	
Acrylonitrile	1000	---	105	ug/kg	50	1050	ND	95	65-134%	---	---	
Benzene	937	---	10.5	ug/kg	50	1050	ND	89	77-121%	---	---	
Bromobenzene	1160	---	26.3	ug/kg	50	1050	ND	110	78-121%	---	---	
Bromochloromethane	988	---	52.5	ug/kg	50	1050	ND	94	78-125%	---	---	
Bromodichloromethane	944	---	52.5	ug/kg	50	1050	ND	90	75-127%	---	---	
Bromoform	871	---	105	ug/kg	50	1050	ND	83	67-132%	---	---	
Bromomethane	919	---	525	ug/kg	50	1050	ND	87	53-143%	---	---	
2-Butanone (MEK)	1900	---	525	ug/kg	50	2100	ND	90	51-148%	---	---	
n-Butylbenzene	1110	---	52.5	ug/kg	50	1050	ND	105	70-128%	---	---	
sec-Butylbenzene	1120	---	52.5	ug/kg	50	1050	ND	106	73-126%	---	---	
tert-Butylbenzene	1110	---	52.5	ug/kg	50	1050	ND	105	73-125%	---	---	
Carbon disulfide	906	---	525	ug/kg	50	1050	ND	86	63-132%	---	---	
Carbon tetrachloride	968	---	52.5	ug/kg	50	1050	ND	92	70-135%	---	---	
Chlorobenzene	1090	---	26.3	ug/kg	50	1050	ND	104	79-120%	---	---	
Chloroethane	822	---	525	ug/kg	50	1050	ND	78	59-139%	---	---	Q-54o
Chloroform	941	---	52.5	ug/kg	50	1050	ND	90	78-123%	---	---	
Chloromethane	848	---	263	ug/kg	50	1050	ND	81	50-136%	---	---	Q-54p

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Philip Nerenberg, Lab Director



Hahn and Associates
434 NW 6th Ave. Suite 203
Portland, OR 97209

Project: **Mult 802 Decommissioning**
Project Number: **2708-60F**
Project Manager: **Rob Ede**

Report ID:
A9E0723 - 06 24 19 1133

QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060582 - EPA 5035A												
Soil												
Matrix Spike (9060582-MS1)												
Prepared: 05/29/19 17:30 Analyzed: 06/05/19 22:09												
QC Source Sample: Non-SDG (A9F0057-10)												
2-Chlorotoluene	1100	---	52.5	ug/kg	50	1050	ND	105	75-122%	---	---	
4-Chlorotoluene	1090	---	52.5	ug/kg	50	1050	ND	104	72-124%	---	---	
Dibromochloromethane	950	---	105	ug/kg	50	1050	ND	90	74-126%	---	---	
1,2-Dibromo-3-chloropropane	935	---	263	ug/kg	50	1050	ND	89	61-132%	---	---	
1,2-Dibromoethane (EDB)	1120	---	52.5	ug/kg	50	1050	ND	107	78-122%	---	---	
Dibromomethane	954	---	52.5	ug/kg	50	1050	ND	91	78-125%	---	---	
1,2-Dichlorobenzene	1050	---	26.3	ug/kg	50	1050	ND	100	78-121%	---	---	
1,3-Dichlorobenzene	1060	---	26.3	ug/kg	50	1050	ND	101	77-121%	---	---	
1,4-Dichlorobenzene	1040	---	26.3	ug/kg	50	1050	ND	99	75-120%	---	---	
Dichlorodifluoromethane	966	---	105	ug/kg	50	1050	ND	92	29-149%	---	---	
1,1-Dichloroethane	1030	---	26.3	ug/kg	50	1050	ND	98	76-125%	---	---	
1,2-Dichloroethane (EDC)	974	---	26.3	ug/kg	50	1050	ND	93	73-128%	---	---	
1,1-Dichloroethene	1020	---	26.3	ug/kg	50	1050	ND	97	70-131%	---	---	
cis-1,2-Dichloroethene	988	---	26.3	ug/kg	50	1050	ND	94	77-123%	---	---	
trans-1,2-Dichloroethene	1020	---	26.3	ug/kg	50	1050	ND	97	74-125%	---	---	
1,2-Dichloropropane	958	---	26.3	ug/kg	50	1050	ND	91	76-123%	---	---	
1,3-Dichloropropane	1100	---	52.5	ug/kg	50	1050	ND	105	77-121%	---	---	
2,2-Dichloropropane	954	---	52.5	ug/kg	50	1050	ND	91	67-133%	---	---	
1,1-Dichloropropene	963	---	52.5	ug/kg	50	1050	ND	92	76-125%	---	---	
cis-1,3-Dichloropropene	1140	---	52.5	ug/kg	50	1050	ND	109	74-126%	---	---	
trans-1,3-Dichloropropene	1100	---	52.5	ug/kg	50	1050	ND	105	71-130%	---	---	
Ethylbenzene	1070	---	26.3	ug/kg	50	1050	ND	102	76-122%	---	---	
Hexachlorobutadiene	1130	---	105	ug/kg	50	1050	ND	107	61-135%	---	---	
2-Hexanone	2010	---	525	ug/kg	50	2100	ND	96	53-145%	---	---	
Isopropylbenzene	1110	---	52.5	ug/kg	50	1050	ND	105	68-134%	---	---	
4-Isopropyltoluene	1150	---	52.5	ug/kg	50	1050	ND	109	73-127%	---	---	
Methylene chloride	649	---	263	ug/kg	50	1050	ND	62	70-128%	---	---	Q-54q
4-Methyl-2-pentanone (MiBK)	1970	---	525	ug/kg	50	2100	ND	94	65-135%	---	---	
Methyl tert-butyl ether (MTBE)	923	---	52.5	ug/kg	50	1050	ND	88	73-125%	---	---	
Naphthalene	1070	---	105	ug/kg	50	1050	ND	101	62-129%	---	---	
n-Propylbenzene	1110	---	26.3	ug/kg	50	1050	ND	106	73-125%	---	---	
Styrene	1120	---	52.5	ug/kg	50	1050	ND	107	76-124%	---	---	
1,1,1,2-Tetrachloroethane	1130	---	26.3	ug/kg	50	1050	ND	108	78-125%	---	---	

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Philip Nerenberg, Lab Director



Hahn and Associates 434 NW 6th Ave. Suite 203 Portland, OR 97209	Project: Mult 802 Decommissioning Project Number: 2708-60F Project Manager: Rob Ede	Report ID: A9E0723 - 06 24 19 1133
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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060582 - EPA 5035A						Soil						
Matrix Spike (9060582-MS1)			Prepared: 05/29/19 17:30 Analyzed: 06/05/19 22:09									
QC Source Sample: Non-SDG (A9F0057-10)												
1,1,2,2-Tetrachloroethane	963	---	52.5	ug/kg	50	1050	ND	92	70-124%	---	---	
Tetrachloroethene (PCE)	1090	---	26.3	ug/kg	50	1050	ND	104	73-128%	---	---	
Toluene	1070	---	52.5	ug/kg	50	1050	ND	101	77-121%	---	---	
1,2,3-Trichlorobenzene	1110	---	263	ug/kg	50	1050	ND	106	66-130%	---	---	
1,2,4-Trichlorobenzene	1100	---	263	ug/kg	50	1050	ND	105	67-129%	---	---	
1,1,1-Trichloroethane	984	---	26.3	ug/kg	50	1050	ND	94	73-130%	---	---	
1,1,2-Trichloroethane	1120	---	26.3	ug/kg	50	1050	ND	106	78-121%	---	---	
Trichloroethene (TCE)	988	---	26.3	ug/kg	50	1050	ND	94	77-123%	---	---	
Trichlorofluoromethane	807	---	105	ug/kg	50	1050	ND	77	62-140%	---	---	Q-54t
1,2,3-Trichloropropane	1040	---	52.5	ug/kg	50	1050	ND	99	73-125%	---	---	
1,2,4-Trimethylbenzene	1120	---	52.5	ug/kg	50	1050	ND	106	75-123%	---	---	
1,3,5-Trimethylbenzene	1150	---	52.5	ug/kg	50	1050	ND	109	73-124%	---	---	
Vinyl chloride	919	---	26.3	ug/kg	50	1050	ND	87	56-135%	---	---	
m,p-Xylene	2180	---	52.5	ug/kg	50	2100	ND	104	77-124%	---	---	
o-Xylene	1080	---	26.3	ug/kg	50	1050	ND	103	77-123%	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 90 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>101 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>103 %</i>		<i>80-120 %</i>		<i>"</i>						



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QUALITY CONTROL (QC) SAMPLE RESULTS

TCLP Volatile Organic Compounds by EPA 1311/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051445 - EPA 1311/5030B TCLP Volatiles						Water						
Blank (9051445-BLK1)						Prepared: 06/05/19 08:59 Analyzed: 06/05/19 11:08						TCLP
<u>1311/8260C</u>												
Acetone	ND	---	1.00	mg/L	50	---	---	---	---	---	---	
Benzene	ND	---	0.0125	mg/L	50	---	---	---	---	---	---	
Bromobenzene	ND	---	0.0250	mg/L	50	---	---	---	---	---	---	
Bromochloromethane	ND	---	0.0500	mg/L	50	---	---	---	---	---	---	
Bromodichloromethane	ND	---	0.0500	mg/L	50	---	---	---	---	---	---	
Bromoform	ND	---	0.0500	mg/L	50	---	---	---	---	---	---	
Bromomethane	ND	---	0.250	mg/L	50	---	---	---	---	---	---	
2-Butanone (MEK)	ND	---	0.500	mg/L	50	---	---	---	---	---	---	
n-Butylbenzene	ND	---	0.0500	mg/L	50	---	---	---	---	---	---	
sec-Butylbenzene	ND	---	0.0500	mg/L	50	---	---	---	---	---	---	
tert-Butylbenzene	ND	---	0.0500	mg/L	50	---	---	---	---	---	---	
Carbon tetrachloride	ND	---	0.0500	mg/L	50	---	---	---	---	---	---	
Chlorobenzene	ND	---	0.0250	mg/L	50	---	---	---	---	---	---	
Chloroethane	ND	---	0.250	mg/L	50	---	---	---	---	---	---	
Chloroform	ND	---	0.0500	mg/L	50	---	---	---	---	---	---	
Chloromethane	ND	---	0.250	mg/L	50	---	---	---	---	---	---	
2-Chlorotoluene	ND	---	0.0500	mg/L	50	---	---	---	---	---	---	
4-Chlorotoluene	ND	---	0.0500	mg/L	50	---	---	---	---	---	---	
1,2-Dibromo-3-chloropropane	ND	---	0.250	mg/L	50	---	---	---	---	---	---	
Dibromochloromethane	ND	---	0.0500	mg/L	50	---	---	---	---	---	---	
1,2-Dibromoethane (EDB)	ND	---	0.0250	mg/L	50	---	---	---	---	---	---	
Dibromomethane	ND	---	0.0500	mg/L	50	---	---	---	---	---	---	
1,2-Dichlorobenzene	ND	---	0.0250	mg/L	50	---	---	---	---	---	---	
1,3-Dichlorobenzene	ND	---	0.0250	mg/L	50	---	---	---	---	---	---	
1,4-Dichlorobenzene	ND	---	0.0250	mg/L	50	---	---	---	---	---	---	
Dichlorodifluoromethane	ND	---	0.0500	mg/L	50	---	---	---	---	---	---	
1,1-Dichloroethane	ND	---	0.0250	mg/L	50	---	---	---	---	---	---	
1,1-Dichloroethene	ND	---	0.0250	mg/L	50	---	---	---	---	---	---	
1,2-Dichloroethane (EDC)	ND	---	0.0250	mg/L	50	---	---	---	---	---	---	
cis-1,2-Dichloroethene	ND	---	0.0500	mg/L	50	---	---	---	---	---	---	
trans-1,2-Dichloroethene	ND	---	0.0250	mg/L	50	---	---	---	---	---	---	
1,2-Dichloropropane	ND	---	0.0250	mg/L	50	---	---	---	---	---	---	
1,3-Dichloropropane	ND	---	0.0500	mg/L	50	---	---	---	---	---	---	

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Philip Nerenberg, Lab Director



Hahn and Associates 434 NW 6th Ave. Suite 203 Portland, OR 97209	Project: Mult 802 Decommissioning Project Number: 2708-60F Project Manager: Rob Ede	Report ID: A9E0723 - 06 24 19 1133
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QUALITY CONTROL (QC) SAMPLE RESULTS

TCLP Volatile Organic Compounds by EPA 1311/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051445 - EPA 1311/5030B TCLP Volatiles						Water						
Blank (9051445-BLK1)						Prepared: 06/05/19 08:59 Analyzed: 06/05/19 11:08						TCLP
2,2-Dichloropropane	ND	---	0.0500	mg/L	50	---	---	---	---	---	---	
1,1-Dichloropropene	ND	---	0.0500	mg/L	50	---	---	---	---	---	---	
cis-1,3-Dichloropropene	ND	---	0.0500	mg/L	50	---	---	---	---	---	---	
trans-1,3-Dichloropropene	ND	---	0.0500	mg/L	50	---	---	---	---	---	---	
Ethylbenzene	ND	---	0.0250	mg/L	50	---	---	---	---	---	---	
Hexachlorobutadiene	ND	---	0.250	mg/L	50	---	---	---	---	---	---	
2-Hexanone	ND	---	0.500	mg/L	50	---	---	---	---	---	---	
Isopropylbenzene	ND	---	0.0500	mg/L	50	---	---	---	---	---	---	
4-Isopropyltoluene	ND	---	0.0500	mg/L	50	---	---	---	---	---	---	
4-Methyl-2-pentanone (MiBK)	ND	---	0.500	mg/L	50	---	---	---	---	---	---	
Methyl tert-butyl ether (MTBE)	ND	---	0.0500	mg/L	50	---	---	---	---	---	---	
Methylene chloride	ND	---	0.250	mg/L	50	---	---	---	---	---	---	
Naphthalene	ND	---	0.100	mg/L	50	---	---	---	---	---	---	
n-Propylbenzene	ND	---	0.0250	mg/L	50	---	---	---	---	---	---	
Styrene	ND	---	0.0500	mg/L	50	---	---	---	---	---	---	
1,1,1,2-Tetrachloroethane	ND	---	0.0250	mg/L	50	---	---	---	---	---	---	
1,1,2,2-Tetrachloroethane	ND	---	0.0250	mg/L	50	---	---	---	---	---	---	
Tetrachloroethene (PCE)	ND	---	0.0250	mg/L	50	---	---	---	---	---	---	
Toluene	ND	---	0.0500	mg/L	50	---	---	---	---	---	---	
1,2,3-Trichlorobenzene	ND	---	0.0500	mg/L	50	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	---	0.100	mg/L	50	---	---	---	---	---	---	
1,1,1-Trichloroethane	ND	---	0.0250	mg/L	50	---	---	---	---	---	---	
1,1,2-Trichloroethane	ND	---	0.0250	mg/L	50	---	---	---	---	---	---	
Trichloroethene (TCE)	ND	---	0.0250	mg/L	50	---	---	---	---	---	---	
Trichlorofluoromethane	ND	---	0.100	mg/L	50	---	---	---	---	---	---	
1,2,3-Trichloropropane	ND	---	0.0500	mg/L	50	---	---	---	---	---	---	
1,2,4-Trimethylbenzene	ND	---	0.0500	mg/L	50	---	---	---	---	---	---	
1,3,5-Trimethylbenzene	ND	---	0.0500	mg/L	50	---	---	---	---	---	---	
Vinyl chloride	ND	---	0.0250	mg/L	50	---	---	---	---	---	---	
m,p-Xylene	ND	---	0.0500	mg/L	50	---	---	---	---	---	---	
o-Xylene	ND	---	0.0250	mg/L	50	---	---	---	---	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 106 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>102 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>103 %</i>		<i>80-120 %</i>		<i>"</i>						

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Philip Nerenberg, Lab Director



Hahn and Associates

434 NW 6th Ave. Suite 203
Portland, OR 97209

Project: **Mult 802 Decommissioning**

Project Number: **2708-60F**

Project Manager: **Rob Ede**

Report ID:

A9E0723 - 06 24 19 1133

QUALITY CONTROL (QC) SAMPLE RESULTS

TCLP Volatile Organic Compounds by EPA 1311/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051445 - EPA 1311/5030B TCLP Volatiles						Water						
LCS (9051445-BS1)						Prepared: 06/05/19 08:59 Analyzed: 06/05/19 10:40						TCLP
1311/8260C												
Acetone	1.96	---	1.00	mg/L	50	2.00	---	98	80-120%	---	---	
Benzene	1.07	---	0.0125	mg/L	50	1.00	---	107	80-120%	---	---	
Bromobenzene	1.06	---	0.0250	mg/L	50	1.00	---	106	80-120%	---	---	
Bromochloromethane	1.27	---	0.0500	mg/L	50	1.00	---	127	80-120%	---	---	Q-56
Bromodichloromethane	1.22	---	0.0500	mg/L	50	1.00	---	122	80-120%	---	---	Q-56
Bromoform	1.29	---	0.0500	mg/L	50	1.00	---	129	80-120%	---	---	Q-56
Bromomethane	1.33	---	0.250	mg/L	50	1.00	---	133	80-120%	---	---	E-05, Q-56
2-Butanone (MEK)	2.01	---	0.500	mg/L	50	2.00	---	101	80-120%	---	---	
n-Butylbenzene	1.14	---	0.0500	mg/L	50	1.00	---	114	80-120%	---	---	
sec-Butylbenzene	1.16	---	0.0500	mg/L	50	1.00	---	116	80-120%	---	---	
tert-Butylbenzene	1.10	---	0.0500	mg/L	50	1.00	---	110	80-120%	---	---	
Carbon tetrachloride	1.26	---	0.0500	mg/L	50	1.00	---	126	80-120%	---	---	Q-56
Chlorobenzene	1.07	---	0.0250	mg/L	50	1.00	---	107	80-120%	---	---	
Chloroethane	0.910	---	0.250	mg/L	50	1.00	---	91	80-120%	---	---	
Chloroform	1.14	---	0.0500	mg/L	50	1.00	---	114	80-120%	---	---	
Chloromethane	0.701	---	0.250	mg/L	50	1.00	---	70	80-120%	---	---	Q-55
2-Chlorotoluene	1.07	---	0.0500	mg/L	50	1.00	---	107	80-120%	---	---	
4-Chlorotoluene	1.13	---	0.0500	mg/L	50	1.00	---	113	80-120%	---	---	
1,2-Dibromo-3-chloropropane	0.963	---	0.250	mg/L	50	1.00	---	96	80-120%	---	---	
Dibromochloromethane	1.15	---	0.0500	mg/L	50	1.00	---	115	80-120%	---	---	
1,2-Dibromoethane (EDB)	1.08	---	0.0250	mg/L	50	1.00	---	108	80-120%	---	---	
Dibromomethane	1.15	---	0.0500	mg/L	50	1.00	---	115	80-120%	---	---	
1,2-Dichlorobenzene	1.07	---	0.0250	mg/L	50	1.00	---	107	80-120%	---	---	
1,3-Dichlorobenzene	1.10	---	0.0250	mg/L	50	1.00	---	110	80-120%	---	---	
1,4-Dichlorobenzene	1.07	---	0.0250	mg/L	50	1.00	---	107	80-120%	---	---	
Dichlorodifluoromethane	1.25	---	0.0500	mg/L	50	1.00	---	125	80-120%	---	---	Q-56
1,1-Dichloroethane	1.06	---	0.0250	mg/L	50	1.00	---	106	80-120%	---	---	
1,1-Dichloroethene	0.940	---	0.0250	mg/L	50	1.00	---	94	80-120%	---	---	
1,2-Dichloroethane (EDC)	1.14	---	0.0250	mg/L	50	1.00	---	114	80-120%	---	---	
cis-1,2-Dichloroethene	1.13	---	0.0500	mg/L	50	1.00	---	113	80-120%	---	---	
trans-1,2-Dichloroethene	1.02	---	0.0250	mg/L	50	1.00	---	102	80-120%	---	---	
1,2-Dichloropropane	1.10	---	0.0250	mg/L	50	1.00	---	110	80-120%	---	---	
1,3-Dichloropropane	1.10	---	0.0500	mg/L	50	1.00	---	110	80-120%	---	---	

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Philip Nerenberg, Lab Director



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QUALITY CONTROL (QC) SAMPLE RESULTS

TCLP Volatile Organic Compounds by EPA 1311/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051445 - EPA 1311/5030B TCLP Volatiles						Water						
LCS (9051445-BS1)						Prepared: 06/05/19 08:59 Analyzed: 06/05/19 10:40						TCLP
2,2-Dichloropropane	1.06	---	0.0500	mg/L	50	1.00	---	106	80-120%	---	---	
1,1-Dichloropropene	1.11	---	0.0500	mg/L	50	1.00	---	111	80-120%	---	---	
cis-1,3-Dichloropropene	1.01	---	0.0500	mg/L	50	1.00	---	101	80-120%	---	---	
trans-1,3-Dichloropropene	1.09	---	0.0500	mg/L	50	1.00	---	109	80-120%	---	---	
Ethylbenzene	1.13	---	0.0250	mg/L	50	1.00	---	113	80-120%	---	---	
Hexachlorobutadiene	1.12	---	0.250	mg/L	50	1.00	---	112	80-120%	---	---	
2-Hexanone	1.97	---	0.500	mg/L	50	2.00	---	99	80-120%	---	---	
Isopropylbenzene	1.11	---	0.0500	mg/L	50	1.00	---	111	80-120%	---	---	
4-Isopropyltoluene	1.13	---	0.0500	mg/L	50	1.00	---	113	80-120%	---	---	
4-Methyl-2-pentanone (MiBK)	1.99	---	0.500	mg/L	50	2.00	---	99	80-120%	---	---	
Methyl tert-butyl ether (MTBE)	0.992	---	0.0500	mg/L	50	1.00	---	99	80-120%	---	---	
Methylene chloride	0.996	---	0.250	mg/L	50	1.00	---	100	80-120%	---	---	
Naphthalene	0.843	---	0.100	mg/L	50	1.00	---	84	80-120%	---	---	
n-Propylbenzene	1.15	---	0.0250	mg/L	50	1.00	---	115	80-120%	---	---	
Styrene	1.15	---	0.0500	mg/L	50	1.00	---	115	80-120%	---	---	
1,1,1,2-Tetrachloroethane	1.20	---	0.0250	mg/L	50	1.00	---	120	80-120%	---	---	
1,1,2,2-Tetrachloroethane	1.12	---	0.0250	mg/L	50	1.00	---	112	80-120%	---	---	
Tetrachloroethene (PCE)	1.12	---	0.0250	mg/L	50	1.00	---	112	80-120%	---	---	
Toluene	1.07	---	0.0500	mg/L	50	1.00	---	107	80-120%	---	---	
1,2,3-Trichlorobenzene	0.964	---	0.0500	mg/L	50	1.00	---	96	80-120%	---	---	
1,2,4-Trichlorobenzene	0.966	---	0.100	mg/L	50	1.00	---	97	80-120%	---	---	
1,1,1-Trichloroethane	1.13	---	0.0250	mg/L	50	1.00	---	113	80-120%	---	---	
1,1,2-Trichloroethane	1.09	---	0.0250	mg/L	50	1.00	---	109	80-120%	---	---	
Trichloroethene (TCE)	1.09	---	0.0250	mg/L	50	1.00	---	109	80-120%	---	---	
Trichlorofluoromethane	1.05	---	0.100	mg/L	50	1.00	---	105	80-120%	---	---	
1,2,3-Trichloropropane	1.13	---	0.0500	mg/L	50	1.00	---	113	80-120%	---	---	
1,2,4-Trimethylbenzene	1.15	---	0.0500	mg/L	50	1.00	---	115	80-120%	---	---	
1,3,5-Trimethylbenzene	1.13	---	0.0500	mg/L	50	1.00	---	113	80-120%	---	---	
Vinyl chloride	0.905	---	0.0250	mg/L	50	1.00	---	90	80-120%	---	---	
m,p-Xylene	2.27	---	0.0500	mg/L	50	2.00	---	113	80-120%	---	---	
o-Xylene	1.07	---	0.0250	mg/L	50	1.00	---	107	80-120%	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 103 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>99 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>96 %</i>		<i>80-120 %</i>		<i>"</i>						



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QUALITY CONTROL (QC) SAMPLE RESULTS

TCLP Volatile Organic Compounds by EPA 1311/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051445 - EPA 1311/5030B TCLP Volatiles						Water						
Duplicate (9051445-DUP1)						Prepared: 06/05/19 08:59 Analyzed: 06/05/19 12:05						
QC Source Sample: 2708-190521-007 (A9E0723-01)												
1311/8260C												
Acetone	ND	---	1.00	mg/L	50	---	ND	---	---	---	30%	
Benzene	3.08	---	0.0125	mg/L	50	---	3.15	---	---	2	30%	
Bromobenzene	ND	---	0.0250	mg/L	50	---	ND	---	---	---	30%	
Bromochloromethane	ND	---	0.0500	mg/L	50	---	ND	---	---	---	30%	
Bromodichloromethane	ND	---	0.0500	mg/L	50	---	ND	---	---	---	30%	
Bromoform	ND	---	0.0500	mg/L	50	---	ND	---	---	---	30%	
Bromomethane	ND	---	0.250	mg/L	50	---	ND	---	---	---	30%	
2-Butanone (MEK)	ND	---	0.500	mg/L	50	---	ND	---	---	---	30%	
n-Butylbenzene	ND	---	0.0500	mg/L	50	---	ND	---	---	---	30%	
sec-Butylbenzene	ND	---	0.0500	mg/L	50	---	ND	---	---	---	30%	
tert-Butylbenzene	ND	---	0.0500	mg/L	50	---	ND	---	---	---	30%	
Carbon tetrachloride	ND	---	0.0500	mg/L	50	---	ND	---	---	---	30%	
Chlorobenzene	ND	---	0.0250	mg/L	50	---	ND	---	---	---	30%	
Chloroethane	ND	---	0.250	mg/L	50	---	ND	---	---	---	30%	
Chloroform	ND	---	0.0500	mg/L	50	---	ND	---	---	---	30%	
Chloromethane	ND	---	0.250	mg/L	50	---	ND	---	---	---	30%	
2-Chlorotoluene	ND	---	0.0500	mg/L	50	---	ND	---	---	---	30%	
4-Chlorotoluene	ND	---	0.0500	mg/L	50	---	ND	---	---	---	30%	
1,2-Dibromo-3-chloropropane	ND	---	0.250	mg/L	50	---	ND	---	---	---	30%	
Dibromochloromethane	ND	---	0.0500	mg/L	50	---	ND	---	---	---	30%	
1,2-Dibromoethane (EDB)	ND	---	0.0250	mg/L	50	---	ND	---	---	---	30%	
Dibromomethane	ND	---	0.0500	mg/L	50	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	---	0.0250	mg/L	50	---	ND	---	---	---	30%	
1,3-Dichlorobenzene	ND	---	0.0250	mg/L	50	---	ND	---	---	---	30%	
1,4-Dichlorobenzene	ND	---	0.0250	mg/L	50	---	ND	---	---	---	30%	
Dichlorodifluoromethane	ND	---	0.0500	mg/L	50	---	ND	---	---	---	30%	
1,1-Dichloroethane	ND	---	0.0250	mg/L	50	---	ND	---	---	---	30%	
1,1-Dichloroethene	ND	---	0.0250	mg/L	50	---	ND	---	---	---	30%	
1,2-Dichloroethane (EDC)	ND	---	0.0250	mg/L	50	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	ND	---	0.0500	mg/L	50	---	ND	---	---	---	30%	
trans-1,2-Dichloroethene	ND	---	0.0250	mg/L	50	---	ND	---	---	---	30%	

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QUALITY CONTROL (QC) SAMPLE RESULTS

TCLP Volatile Organic Compounds by EPA 1311/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051445 - EPA 1311/5030B TCLP Volatiles						Water						
Duplicate (9051445-DUP1)						Prepared: 06/05/19 08:59 Analyzed: 06/05/19 12:05						
QC Source Sample: 2708-190521-007 (A9E0723-01)												
1,2-Dichloropropane	ND	---	0.0250	mg/L	50	---	ND	---	---	---	30%	
1,3-Dichloropropane	ND	---	0.0500	mg/L	50	---	ND	---	---	---	30%	
2,2-Dichloropropane	ND	---	0.0500	mg/L	50	---	ND	---	---	---	30%	
1,1-Dichloropropene	ND	---	0.0500	mg/L	50	---	ND	---	---	---	30%	
cis-1,3-Dichloropropene	ND	---	0.0500	mg/L	50	---	ND	---	---	---	30%	
trans-1,3-Dichloropropene	ND	---	0.0500	mg/L	50	---	ND	---	---	---	30%	
Ethylbenzene	0.366	---	0.0250	mg/L	50	---	0.383	---	---	5	30%	
Hexachlorobutadiene	ND	---	0.250	mg/L	50	---	ND	---	---	---	30%	
2-Hexanone	ND	---	0.500	mg/L	50	---	ND	---	---	---	30%	
Isopropylbenzene	ND	---	0.0500	mg/L	50	---	ND	---	---	---	30%	
4-Isopropyltoluene	ND	---	0.0500	mg/L	50	---	ND	---	---	---	30%	
4-Methyl-2-pentanone (MiBK)	ND	---	0.500	mg/L	50	---	ND	---	---	---	30%	
Methyl tert-butyl ether (MTBE)	ND	---	0.0500	mg/L	50	---	ND	---	---	---	30%	
Methylene chloride	ND	---	0.250	mg/L	50	---	ND	---	---	---	30%	
Naphthalene	16.5	---	0.100	mg/L	50	---	15.7	---	---	5	30%	E
n-Propylbenzene	ND	---	0.0250	mg/L	50	---	ND	---	---	---	30%	
Styrene	0.171	---	0.0500	mg/L	50	---	0.183	---	---	7	30%	
1,1,1,2-Tetrachloroethane	ND	---	0.0250	mg/L	50	---	ND	---	---	---	30%	
1,1,1,2,2-Tetrachloroethane	ND	---	0.0250	mg/L	50	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	ND	---	0.0250	mg/L	50	---	ND	---	---	---	30%	
Toluene	1.52	---	0.0500	mg/L	50	---	1.56	---	---	3	30%	
1,2,3-Trichlorobenzene	ND	---	0.0500	mg/L	50	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	---	0.100	mg/L	50	---	ND	---	---	---	30%	
1,1,1-Trichloroethane	ND	---	0.0250	mg/L	50	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	---	0.0250	mg/L	50	---	ND	---	---	---	30%	
Trichloroethene (TCE)	ND	---	0.0250	mg/L	50	---	ND	---	---	---	30%	
Trichlorofluoromethane	ND	---	0.100	mg/L	50	---	ND	---	---	---	30%	
1,2,3-Trichloropropane	ND	---	0.0500	mg/L	50	---	ND	---	---	---	30%	
1,2,4-Trimethylbenzene	0.0557	---	0.0500	mg/L	50	---	0.0570	---	---	2	30%	
1,3,5-Trimethylbenzene	ND	---	0.0500	mg/L	50	---	0.0344	---	---	***	30%	
Vinyl chloride	ND	---	0.0250	mg/L	50	---	ND	---	---	---	30%	
m,p-Xylene	0.504	---	0.0500	mg/L	50	---	0.524	---	---	4	30%	
o-Xylene	0.166	---	0.0250	mg/L	50	---	0.175	---	---	5	30%	



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QUALITY CONTROL (QC) SAMPLE RESULTS

TCLP Volatile Organic Compounds by EPA 1311/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051445 - EPA 1311/5030B TCLP Volatiles						Water						
Duplicate (9051445-DUP1)						Prepared: 06/05/19 08:59 Analyzed: 06/05/19 12:05						
QC Source Sample: 2708-190521-007 (A9E0723-01)												
Surr: 1,4-Difluorobenzene (Surr) Recovery: 102 % Limits: 80-120 % Dilution: 1x												
Toluene-d8 (Surr) 101 % 80-120 % "												
4-Bromofluorobenzene (Surr) 98 % 80-120 % "												
Matrix Spike (9051445-MS1)						Prepared: 06/05/19 08:59 Analyzed: 06/05/19 13:59						
QC Source Sample: Non-SDG (A9F0033-01)												
1311/8260C												
Acetone	2.11	---	1.00	mg/L	50	2.00	ND	106	70-130%	---	---	
Benzene	1.95	---	0.0125	mg/L	50	1.00	0.822	112	70-130%	---	---	
Bromobenzene	1.07	---	0.0250	mg/L	50	1.00	ND	107	70-130%	---	---	
Bromochloromethane	1.27	---	0.0500	mg/L	50	1.00	ND	127	70-130%	---	---	Q-54j
Bromodichloromethane	1.21	---	0.0500	mg/L	50	1.00	ND	121	70-130%	---	---	Q-54d
Bromoform	1.23	---	0.0500	mg/L	50	1.00	ND	123	70-130%	---	---	Q-54k
Bromomethane	1.36	---	0.250	mg/L	50	1.00	ND	136	70-130%	---	---	E-05, Q-54c
2-Butanone (MEK)	2.07	---	0.500	mg/L	50	2.00	ND	103	70-130%	---	---	
n-Butylbenzene	1.24	---	0.0500	mg/L	50	1.00	ND	124	70-130%	---	---	
sec-Butylbenzene	1.19	---	0.0500	mg/L	50	1.00	ND	119	70-130%	---	---	
tert-Butylbenzene	1.11	---	0.0500	mg/L	50	1.00	ND	111	70-130%	---	---	
Carbon tetrachloride	1.22	---	0.0500	mg/L	50	1.00	ND	122	70-130%	---	---	Q-54i
Chlorobenzene	1.07	---	0.0250	mg/L	50	1.00	ND	107	70-130%	---	---	
Chloroethane	0.979	---	0.250	mg/L	50	1.00	ND	98	70-130%	---	---	
Chloroform	1.13	---	0.0500	mg/L	50	1.00	ND	113	70-130%	---	---	
Chloromethane	0.746	---	0.250	mg/L	50	1.00	ND	75	70-130%	---	---	Q-54n
2-Chlorotoluene	1.09	---	0.0500	mg/L	50	1.00	ND	109	70-130%	---	---	
4-Chlorotoluene	1.12	---	0.0500	mg/L	50	1.00	ND	112	70-130%	---	---	
1,2-Dibromo-3-chloropropane	1.01	---	0.250	mg/L	50	1.00	ND	101	70-130%	---	---	
Dibromochloromethane	1.11	---	0.0500	mg/L	50	1.00	ND	111	70-130%	---	---	
1,2-Dibromoethane (EDB)	1.07	---	0.0250	mg/L	50	1.00	ND	107	70-130%	---	---	
Dibromomethane	1.15	---	0.0500	mg/L	50	1.00	ND	115	70-130%	---	---	
1,2-Dichlorobenzene	1.07	---	0.0250	mg/L	50	1.00	ND	107	70-130%	---	---	
1,3-Dichlorobenzene	1.10	---	0.0250	mg/L	50	1.00	ND	110	70-130%	---	---	
1,4-Dichlorobenzene	1.09	---	0.0250	mg/L	50	1.00	ND	109	70-130%	---	---	
Dichlorodifluoromethane	1.26	---	0.0500	mg/L	50	1.00	ND	126	70-130%	---	---	Q-54h

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QUALITY CONTROL (QC) SAMPLE RESULTS

TCLP Volatile Organic Compounds by EPA 1311/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051445 - EPA 1311/5030B TCLP Volatiles						Water						
Matrix Spike (9051445-MS1)						Prepared: 06/05/19 08:59 Analyzed: 06/05/19 13:59						
QC Source Sample: Non-SDG (A9F0033-01)												
1,1-Dichloroethane	1.05	---	0.0250	mg/L	50	1.00	ND	105	70-130%	---	---	
1,1-Dichloroethene	0.952	---	0.0250	mg/L	50	1.00	ND	95	70-130%	---	---	
1,2-Dichloroethane (EDC)	1.12	---	0.0250	mg/L	50	1.00	ND	112	70-130%	---	---	
cis-1,2-Dichloroethene	1.13	---	0.0500	mg/L	50	1.00	ND	113	70-130%	---	---	
trans-1,2-Dichloroethene	1.03	---	0.0250	mg/L	50	1.00	ND	103	70-130%	---	---	
1,2-Dichloropropane	1.12	---	0.0250	mg/L	50	1.00	ND	112	70-130%	---	---	
1,3-Dichloropropane	1.08	---	0.0500	mg/L	50	1.00	ND	108	70-130%	---	---	
2,2-Dichloropropane	1.07	---	0.0500	mg/L	50	1.00	ND	107	70-130%	---	---	
1,1-Dichloropropene	1.12	---	0.0500	mg/L	50	1.00	ND	112	70-130%	---	---	
cis-1,3-Dichloropropene	0.996	---	0.0500	mg/L	50	1.00	ND	100	70-130%	---	---	
trans-1,3-Dichloropropene	1.09	---	0.0500	mg/L	50	1.00	ND	109	70-130%	---	---	
Ethylbenzene	2.52	---	0.0250	mg/L	50	1.00	1.34	118	70-130%	---	---	
Hexachlorobutadiene	1.11	---	0.250	mg/L	50	1.00	ND	111	70-130%	---	---	
2-Hexanone	2.08	---	0.500	mg/L	50	2.00	ND	104	70-130%	---	---	
Isopropylbenzene	1.19	---	0.0500	mg/L	50	1.00	0.0532	114	70-130%	---	---	
4-Isopropyltoluene	1.16	---	0.0500	mg/L	50	1.00	ND	116	70-130%	---	---	
4-Methyl-2-pentanone (MiBK)	2.03	---	0.500	mg/L	50	2.00	ND	102	70-130%	---	---	
Methyl tert-butyl ether (MTBE)	1.00	---	0.0500	mg/L	50	1.00	ND	100	70-130%	---	---	
Methylene chloride	1.00	---	0.250	mg/L	50	1.00	ND	100	70-130%	---	---	
Naphthalene	1.19	---	0.100	mg/L	50	1.00	0.153	104	70-130%	---	---	
n-Propylbenzene	1.33	---	0.0250	mg/L	50	1.00	0.158	117	70-130%	---	---	
Styrene	1.20	---	0.0500	mg/L	50	1.00	ND	120	70-130%	---	---	
1,1,1,2-Tetrachloroethane	1.18	---	0.0250	mg/L	50	1.00	ND	118	70-130%	---	---	
1,1,2,2-Tetrachloroethane	1.12	---	0.0250	mg/L	50	1.00	ND	112	70-130%	---	---	
Tetrachloroethene (PCE)	1.09	---	0.0250	mg/L	50	1.00	ND	109	70-130%	---	---	
Toluene	10.3	---	0.0500	mg/L	50	1.00	9.33	94	70-130%	---	---	
1,2,3-Trichlorobenzene	1.01	---	0.0500	mg/L	50	1.00	ND	101	70-130%	---	---	
1,2,4-Trichlorobenzene	1.02	---	0.100	mg/L	50	1.00	ND	102	70-130%	---	---	
1,1,1-Trichloroethane	1.11	---	0.0250	mg/L	50	1.00	ND	111	70-130%	---	---	
1,1,2-Trichloroethane	1.07	---	0.0250	mg/L	50	1.00	ND	107	70-130%	---	---	
Trichloroethene (TCE)	1.10	---	0.0250	mg/L	50	1.00	ND	110	70-130%	---	---	
Trichlorofluoromethane	1.02	---	0.100	mg/L	50	1.00	ND	102	70-130%	---	---	
1,2,3-Trichloropropane	1.13	---	0.0500	mg/L	50	1.00	ND	113	70-130%	---	---	

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Philip Nerenberg, Lab Director



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QUALITY CONTROL (QC) SAMPLE RESULTS

TCLP Volatile Organic Compounds by EPA 1311/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9051445 - EPA 1311/5030B TCLP Volatiles						Water						
Matrix Spike (9051445-MS1)						Prepared: 06/05/19 08:59 Analyzed: 06/05/19 13:59						
QC Source Sample: Non-SDG (A9F0033-01)												
1,2,4-Trimethylbenzene	2.54	---	0.0500	mg/L	50	1.00	1.26	128	70-130%	---	---	
1,3,5-Trimethylbenzene	1.50	---	0.0500	mg/L	50	1.00	0.320	118	70-130%	---	---	
Vinyl chloride	0.953	---	0.0250	mg/L	50	1.00	ND	95	70-130%	---	---	
m,p-Xylene	7.99	---	0.0500	mg/L	50	2.00	5.66	116	70-130%	---	---	
o-Xylene	4.28	---	0.0250	mg/L	50	1.00	3.10	118	70-130%	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 104 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>98 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>95 %</i>		<i>80-120 %</i>		<i>"</i>						



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QUALITY CONTROL (QC) SAMPLE RESULTS

SPLP Volatile Organic Compounds by EPA 1312/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060589 - EPA 1312/5030B SPLP Volatiles						Water						
Blank (9060589-BLK1)			Prepared: 06/05/19 09:09 Analyzed: 06/05/19 11:45									
<u>1312/8260C</u>												
Acetone	ND	---	0.0200	mg/L	1	---	---	---	---	---	---	
Benzene	ND	---	0.000250	mg/L	1	---	---	---	---	---	---	
Bromobenzene	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
Bromochloromethane	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
Bromodichloromethane	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
Bromoform	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
Bromomethane	ND	---	0.00500	mg/L	1	---	---	---	---	---	---	
2-Butanone (MEK)	ND	---	0.0100	mg/L	1	---	---	---	---	---	---	
n-Butylbenzene	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
sec-Butylbenzene	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
tert-Butylbenzene	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
Carbon tetrachloride	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
Chlorobenzene	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
Chloroethane	ND	---	0.00500	mg/L	1	---	---	---	---	---	---	
Chloroform	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
Chloromethane	ND	---	0.00500	mg/L	1	---	---	---	---	---	---	
2-Chlorotoluene	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
4-Chlorotoluene	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
1,2-Dibromo-3-chloropropane	ND	---	0.00500	mg/L	1	---	---	---	---	---	---	
Dibromochloromethane	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
1,2-Dibromoethane (EDB)	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
Dibromomethane	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
1,2-Dichlorobenzene	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
1,3-Dichlorobenzene	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
1,4-Dichlorobenzene	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
Dichlorodifluoromethane	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
1,1-Dichloroethane	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
1,2-Dichloroethane (EDC)	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
1,1-Dichloroethene	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
cis-1,2-Dichloroethene	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
trans-1,2-Dichloroethene	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
1,2-Dichloropropane	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
1,3-Dichloropropane	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	

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Philip Nerenberg, Lab Director



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QUALITY CONTROL (QC) SAMPLE RESULTS

SPLP Volatile Organic Compounds by EPA 1312/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060589 - EPA 1312/5030B SPLP Volatiles						Water						
Blank (9060589-BLK1)			Prepared: 06/05/19 09:09 Analyzed: 06/05/19 11:45									
2,2-Dichloropropane	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
1,1-Dichloropropene	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
cis-1,3-Dichloropropene	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
trans-1,3-Dichloropropene	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
Ethylbenzene	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
Hexachlorobutadiene	ND	---	0.00500	mg/L	1	---	---	---	---	---	---	
2-Hexanone	ND	---	0.0100	mg/L	1	---	---	---	---	---	---	
Isopropylbenzene	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
4-Isopropyltoluene	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
4-Methyl-2-pentanone (MiBK)	ND	---	0.0100	mg/L	1	---	---	---	---	---	---	
Methyl tert-butyl ether (MTBE)	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
Methylene chloride	ND	---	0.00500	mg/L	1	---	---	---	---	---	---	
Naphthalene	ND	---	0.00200	mg/L	1	---	---	---	---	---	---	
n-Propylbenzene	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
Styrene	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
1,1,1,2-Tetrachloroethane	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
1,1,2,2-Tetrachloroethane	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
Tetrachloroethene (PCE)	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
Toluene	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
1,2,3-Trichlorobenzene	ND	---	0.00200	mg/L	1	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	---	0.00200	mg/L	1	---	---	---	---	---	---	
1,1,1-Trichloroethane	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
1,1,2-Trichloroethane	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
Trichloroethene (TCE)	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
Trichlorofluoromethane	ND	---	0.00200	mg/L	1	---	---	---	---	---	---	
1,2,3-Trichloropropane	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
1,2,4-Trimethylbenzene	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
1,3,5-Trimethylbenzene	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
Vinyl chloride	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
m,p-Xylene	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
o-Xylene	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 106 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>101 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>100 %</i>		<i>80-120 %</i>		<i>"</i>						

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QUALITY CONTROL (QC) SAMPLE RESULTS

SPLP Volatile Organic Compounds by EPA 1312/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060589 - EPA 1312/5030B SPLP Volatiles						Water						
LCS (9060589-BS1)						Prepared: 06/05/19 09:09 Analyzed: 06/05/19 10:51						
1312/8260C												
Acetone	0.0403	---	0.0200	mg/L	1	0.0400	---	101	70-130%	---	---	
Benzene	0.0203	---	0.000250	mg/L	1	0.0200	---	101	70-130%	---	---	
Bromobenzene	0.0204	---	0.000500	mg/L	1	0.0200	---	102	70-130%	---	---	
Bromochloromethane	0.0231	---	0.00100	mg/L	1	0.0200	---	116	70-130%	---	---	
Bromodichloromethane	0.0225	---	0.00100	mg/L	1	0.0200	---	113	70-130%	---	---	
Bromoform	0.0246	---	0.00100	mg/L	1	0.0200	---	123	70-130%	---	---	
Bromomethane	0.0233	---	0.00500	mg/L	1	0.0200	---	117	70-130%	---	---	
2-Butanone (MEK)	0.0427	---	0.0100	mg/L	1	0.0400	---	107	70-130%	---	---	
n-Butylbenzene	0.0197	---	0.00100	mg/L	1	0.0200	---	99	70-130%	---	---	
sec-Butylbenzene	0.0189	---	0.00100	mg/L	1	0.0200	---	94	70-130%	---	---	
tert-Butylbenzene	0.0178	---	0.00100	mg/L	1	0.0200	---	89	70-130%	---	---	
Carbon tetrachloride	0.0206	---	0.00100	mg/L	1	0.0200	---	103	70-130%	---	---	
Chlorobenzene	0.0203	---	0.000500	mg/L	1	0.0200	---	102	70-130%	---	---	
Chloroethane	0.0151	---	0.00500	mg/L	1	0.0200	---	76	70-130%	---	---	
Chloroform	0.0211	---	0.00100	mg/L	1	0.0200	---	106	70-130%	---	---	
Chloromethane	0.0229	---	0.00500	mg/L	1	0.0200	---	114	70-130%	---	---	
2-Chlorotoluene	0.0191	---	0.00100	mg/L	1	0.0200	---	95	70-130%	---	---	
4-Chlorotoluene	0.0190	---	0.00100	mg/L	1	0.0200	---	95	70-130%	---	---	
1,2-Dibromo-3-chloropropane	0.0199	---	0.00500	mg/L	1	0.0200	---	99	70-130%	---	---	
Dibromochloromethane	0.0202	---	0.00100	mg/L	1	0.0200	---	101	70-130%	---	---	
1,2-Dibromoethane (EDB)	0.0208	---	0.000500	mg/L	1	0.0200	---	104	70-130%	---	---	
Dibromomethane	0.0224	---	0.00100	mg/L	1	0.0200	---	112	70-130%	---	---	
1,2-Dichlorobenzene	0.0202	---	0.000500	mg/L	1	0.0200	---	101	70-130%	---	---	
1,3-Dichlorobenzene	0.0201	---	0.000500	mg/L	1	0.0200	---	100	70-130%	---	---	
1,4-Dichlorobenzene	0.0198	---	0.000500	mg/L	1	0.0200	---	99	70-130%	---	---	
Dichlorodifluoromethane	0.0195	---	0.00100	mg/L	1	0.0200	---	97	70-130%	---	---	
1,1-Dichloroethane	0.0201	---	0.000500	mg/L	1	0.0200	---	100	70-130%	---	---	
1,2-Dichloroethane (EDC)	0.0217	---	0.000500	mg/L	1	0.0200	---	109	70-130%	---	---	
1,1-Dichloroethene	0.0183	---	0.000500	mg/L	1	0.0200	---	92	70-130%	---	---	
cis-1,2-Dichloroethene	0.0205	---	0.000500	mg/L	1	0.0200	---	102	70-130%	---	---	
trans-1,2-Dichloroethene	0.0200	---	0.000500	mg/L	1	0.0200	---	100	70-130%	---	---	
1,2-Dichloropropane	0.0211	---	0.000500	mg/L	1	0.0200	---	106	70-130%	---	---	
1,3-Dichloropropane	0.0202	---	0.00100	mg/L	1	0.0200	---	101	70-130%	---	---	

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Philip Nerenberg, Lab Director



Hahn and Associates
434 NW 6th Ave. Suite 203
Portland, OR 97209

Project: **Mult 802 Decommissioning**
Project Number: **2708-60F**
Project Manager: **Rob Ede**

Report ID:
A9E0723 - 06 24 19 1133

QUALITY CONTROL (QC) SAMPLE RESULTS

SPLP Volatile Organic Compounds by EPA 1312/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060589 - EPA 1312/5030B SPLP Volatiles						Water						
LCS (9060589-BS1)			Prepared: 06/05/19 09:09 Analyzed: 06/05/19 10:51									
2,2-Dichloropropane	0.0167	---	0.00100	mg/L	1	0.0200	---	83	70-130%	---	---	
1,1-Dichloropropene	0.0192	---	0.00100	mg/L	1	0.0200	---	96	70-130%	---	---	
cis-1,3-Dichloropropene	0.0191	---	0.00100	mg/L	1	0.0200	---	96	70-130%	---	---	
trans-1,3-Dichloropropene	0.0182	---	0.00100	mg/L	1	0.0200	---	91	70-130%	---	---	
Ethylbenzene	0.0189	---	0.000500	mg/L	1	0.0200	---	95	70-130%	---	---	
Hexachlorobutadiene	0.0197	---	0.00500	mg/L	1	0.0200	---	99	70-130%	---	---	
2-Hexanone	0.0402	---	0.0100	mg/L	1	0.0400	---	101	70-130%	---	---	
Isopropylbenzene	0.0187	---	0.00100	mg/L	1	0.0200	---	94	70-130%	---	---	
4-Isopropyltoluene	0.0190	---	0.00100	mg/L	1	0.0200	---	95	70-130%	---	---	
4-Methyl-2-pentanone (MiBK)	0.0392	---	0.0100	mg/L	1	0.0400	---	98	70-130%	---	---	
Methyl tert-butyl ether (MTBE)	0.0174	---	0.00100	mg/L	1	0.0200	---	87	70-130%	---	---	
Methylene chloride	0.0187	---	0.00500	mg/L	1	0.0200	---	94	70-130%	---	---	
Naphthalene	0.0170	---	0.00200	mg/L	1	0.0200	---	85	70-130%	---	---	
n-Propylbenzene	0.0183	---	0.000500	mg/L	1	0.0200	---	92	70-130%	---	---	
Styrene	0.0207	---	0.00100	mg/L	1	0.0200	---	104	70-130%	---	---	
1,1,1,2-Tetrachloroethane	0.0200	---	0.000500	mg/L	1	0.0200	---	100	70-130%	---	---	
1,1,2,2-Tetrachloroethane	0.0219	---	0.000500	mg/L	1	0.0200	---	109	70-130%	---	---	
Tetrachloroethene (PCE)	0.0195	---	0.000500	mg/L	1	0.0200	---	97	70-130%	---	---	
Toluene	0.0188	---	0.00100	mg/L	1	0.0200	---	94	70-130%	---	---	
1,2,3-Trichlorobenzene	0.0204	---	0.00200	mg/L	1	0.0200	---	102	70-130%	---	---	
1,2,4-Trichlorobenzene	0.0188	---	0.00200	mg/L	1	0.0200	---	94	70-130%	---	---	
1,1,1-Trichloroethane	0.0193	---	0.000500	mg/L	1	0.0200	---	97	70-130%	---	---	
1,1,2-Trichloroethane	0.0215	---	0.000500	mg/L	1	0.0200	---	108	70-130%	---	---	
Trichloroethene (TCE)	0.0205	---	0.000500	mg/L	1	0.0200	---	102	70-130%	---	---	
Trichlorofluoromethane	0.0243	---	0.00200	mg/L	1	0.0200	---	121	70-130%	---	---	
1,2,3-Trichloropropane	0.0198	---	0.00100	mg/L	1	0.0200	---	99	70-130%	---	---	
1,2,4-Trimethylbenzene	0.0195	---	0.00100	mg/L	1	0.0200	---	97	70-130%	---	---	
1,3,5-Trimethylbenzene	0.0191	---	0.00100	mg/L	1	0.0200	---	95	70-130%	---	---	
Vinyl chloride	0.0195	---	0.000500	mg/L	1	0.0200	---	97	70-130%	---	---	
m,p-Xylene	0.0384	---	0.00100	mg/L	1	0.0400	---	96	70-130%	---	---	
o-Xylene	0.0182	---	0.000500	mg/L	1	0.0200	---	91	70-130%	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>			<i>Recovery: 105 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>					
<i>Toluene-d8 (Surr)</i>			<i>99 %</i>		<i>80-120 %</i>		<i>"</i>					
<i>4-Bromofluorobenzene (Surr)</i>			<i>92 %</i>		<i>80-120 %</i>		<i>"</i>					

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Project: **Mult 802 Decommissioning**

Project Number: **2708-60F**

Project Manager: **Rob Ede**

Report ID:

A9E0723 - 06 24 19 1133

QUALITY CONTROL (QC) SAMPLE RESULTS

SPLP Volatile Organic Compounds by EPA 1312/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060589 - EPA 1312/5030B SPLP Volatiles						Water						
Duplicate (9060589-DUP2)						Prepared: 06/05/19 12:17 Analyzed: 06/05/19 14:00						
QC Source Sample: 2708-190521-007 (A9E0723-01)												
1312/8260C												
Acetone	ND	---	2.00	mg/L	100	---	ND	---	---	---	30%	
Benzene	3.20	---	0.0250	mg/L	100	---	3.40	---	---	6	30%	
Bromobenzene	ND	---	0.0500	mg/L	100	---	ND	---	---	---	30%	
Bromochloromethane	ND	---	0.100	mg/L	100	---	ND	---	---	---	30%	
Bromodichloromethane	ND	---	0.100	mg/L	100	---	ND	---	---	---	30%	
Bromoform	ND	---	0.100	mg/L	100	---	ND	---	---	---	30%	
Bromomethane	ND	---	0.500	mg/L	100	---	ND	---	---	---	30%	
2-Butanone (MEK)	ND	---	1.00	mg/L	100	---	ND	---	---	---	30%	
n-Butylbenzene	ND	---	0.100	mg/L	100	---	ND	---	---	---	30%	
sec-Butylbenzene	ND	---	0.100	mg/L	100	---	ND	---	---	---	30%	
tert-Butylbenzene	ND	---	0.100	mg/L	100	---	ND	---	---	---	30%	
Carbon tetrachloride	ND	---	0.100	mg/L	100	---	ND	---	---	---	30%	
Chlorobenzene	ND	---	0.0500	mg/L	100	---	ND	---	---	---	30%	
Chloroethane	ND	---	0.500	mg/L	100	---	ND	---	---	---	30%	
Chloroform	ND	---	0.100	mg/L	100	---	ND	---	---	---	30%	
Chloromethane	ND	---	0.500	mg/L	100	---	ND	---	---	---	30%	
2-Chlorotoluene	ND	---	0.100	mg/L	100	---	ND	---	---	---	30%	
4-Chlorotoluene	ND	---	0.100	mg/L	100	---	ND	---	---	---	30%	
1,2-Dibromo-3-chloropropane	ND	---	0.500	mg/L	100	---	ND	---	---	---	30%	
Dibromochloromethane	ND	---	0.100	mg/L	100	---	ND	---	---	---	30%	
1,2-Dibromoethane (EDB)	ND	---	0.0500	mg/L	100	---	ND	---	---	---	30%	
Dibromomethane	ND	---	0.100	mg/L	100	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	---	0.0500	mg/L	100	---	ND	---	---	---	30%	
1,3-Dichlorobenzene	ND	---	0.0500	mg/L	100	---	ND	---	---	---	30%	
1,4-Dichlorobenzene	ND	---	0.0500	mg/L	100	---	ND	---	---	---	30%	
Dichlorodifluoromethane	ND	---	0.100	mg/L	100	---	ND	---	---	---	30%	
1,1-Dichloroethane	ND	---	0.0500	mg/L	100	---	ND	---	---	---	30%	
1,2-Dichloroethane (EDC)	ND	---	0.0500	mg/L	100	---	ND	---	---	---	30%	
1,1-Dichloroethene	ND	---	0.0500	mg/L	100	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	ND	---	0.0500	mg/L	100	---	ND	---	---	---	30%	
trans-1,2-Dichloroethene	ND	---	0.0500	mg/L	100	---	ND	---	---	---	30%	

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Project: **Mult 802 Decommissioning**
Project Number: **2708-60F**
Project Manager: **Rob Ede**

Report ID:
A9E0723 - 06 24 19 1133

QUALITY CONTROL (QC) SAMPLE RESULTS

SPLP Volatile Organic Compounds by EPA 1312/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060589 - EPA 1312/5030B SPLP Volatiles						Water						
Duplicate (9060589-DUP2)						Prepared: 06/05/19 12:17 Analyzed: 06/05/19 14:00						
QC Source Sample: 2708-190521-007 (A9E0723-01)												
1,2-Dichloropropane	ND	---	0.0500	mg/L	100	---	ND	---	---	---	30%	
1,3-Dichloropropane	ND	---	0.100	mg/L	100	---	ND	---	---	---	30%	
2,2-Dichloropropane	ND	---	0.100	mg/L	100	---	ND	---	---	---	30%	
1,1-Dichloropropene	ND	---	0.100	mg/L	100	---	ND	---	---	---	30%	
cis-1,3-Dichloropropene	ND	---	0.100	mg/L	100	---	ND	---	---	---	30%	
trans-1,3-Dichloropropene	ND	---	0.100	mg/L	100	---	ND	---	---	---	30%	
Ethylbenzene	0.302	---	0.0500	mg/L	100	---	0.310	---	---	3	30%	
Hexachlorobutadiene	ND	---	0.500	mg/L	100	---	ND	---	---	---	30%	
2-Hexanone	ND	---	1.00	mg/L	100	---	ND	---	---	---	30%	
Isopropylbenzene	ND	---	0.100	mg/L	100	---	ND	---	---	---	30%	
4-Isopropyltoluene	ND	---	0.100	mg/L	100	---	ND	---	---	---	30%	
4-Methyl-2-pentanone (MiBK)	ND	---	1.00	mg/L	100	---	ND	---	---	---	30%	
Methyl tert-butyl ether (MTBE)	ND	---	0.100	mg/L	100	---	ND	---	---	---	30%	
Methylene chloride	ND	---	0.500	mg/L	100	---	ND	---	---	---	30%	
Naphthalene	12.8	---	0.200	mg/L	100	---	13.9	---	---	8	30%	
n-Propylbenzene	ND	---	0.0500	mg/L	100	---	ND	---	---	---	30%	
Styrene	0.128	---	0.100	mg/L	100	---	0.136	---	---	6	30%	
1,1,1,2-Tetrachloroethane	ND	---	0.0500	mg/L	100	---	ND	---	---	---	30%	
1,1,1,2,2-Tetrachloroethane	ND	---	0.0500	mg/L	100	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	ND	---	0.0500	mg/L	100	---	ND	---	---	---	30%	
Toluene	1.37	---	0.100	mg/L	100	---	1.46	---	---	6	30%	
1,2,3-Trichlorobenzene	ND	---	0.200	mg/L	100	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	---	0.200	mg/L	100	---	ND	---	---	---	30%	
1,1,1-Trichloroethane	ND	---	0.0500	mg/L	100	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	---	0.0500	mg/L	100	---	ND	---	---	---	30%	
Trichloroethene (TCE)	ND	---	0.0500	mg/L	100	---	ND	---	---	---	30%	
Trichlorofluoromethane	ND	---	0.200	mg/L	100	---	ND	---	---	---	30%	
1,2,3-Trichloropropane	ND	---	0.100	mg/L	100	---	ND	---	---	---	30%	
1,2,4-Trimethylbenzene	ND	---	0.100	mg/L	100	---	ND	---	---	---	30%	
1,3,5-Trimethylbenzene	ND	---	0.100	mg/L	100	---	ND	---	---	---	30%	
Vinyl chloride	ND	---	0.0500	mg/L	100	---	ND	---	---	---	30%	
m,p-Xylene	0.390	---	0.100	mg/L	100	---	0.419	---	---	7	30%	
o-Xylene	0.125	---	0.0500	mg/L	100	---	0.135	---	---	7	30%	



Hahn and Associates 434 NW 6th Ave. Suite 203 Portland, OR 97209	Project: Mult 802 Decommissioning Project Number: 2708-60F Project Manager: Rob Ede	Report ID: A9E0723 - 06 24 19 1133
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QUALITY CONTROL (QC) SAMPLE RESULTS

SPLP Volatile Organic Compounds by EPA 1312/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060589 - EPA 1312/5030B SPLP Volatiles						Water						
Duplicate (9060589-DUP2)						Prepared: 06/05/19 12:17 Analyzed: 06/05/19 14:00						
QC Source Sample: 2708-190521-007 (A9E0723-01)												
Surr: 1,4-Difluorobenzene (Surr) Recovery: 103 % Limits: 80-120 % Dilution: 1x												
Toluene-d8 (Surr) 100 % 80-120 % "												
4-Bromofluorobenzene (Surr) 96 % 80-120 % "												

Matrix Spike (9060589-MS2)						Prepared: 06/05/19 12:17 Analyzed: 06/05/19 15:48						
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QC Source Sample: Non-SDG (A9E0832-02)												
1312/8260C												
Acetone	18.8	---	10.0	mg/L	500	20.0	ND	94	70-130%	---	---	
Benzene	12.9	---	0.125	mg/L	500	10.0	2.31	106	70-130%	---	---	
Bromobenzene	10.2	---	0.250	mg/L	500	10.0	ND	102	70-130%	---	---	
Bromochloromethane	11.7	---	0.500	mg/L	500	10.0	ND	117	70-130%	---	---	
Bromodichloromethane	11.2	---	0.500	mg/L	500	10.0	ND	112	70-130%	---	---	
Bromoform	12.4	---	0.500	mg/L	500	10.0	ND	124	70-130%	---	---	
Bromomethane	12.5	---	2.50	mg/L	500	10.0	ND	125	70-130%	---	---	
2-Butanone (MEK)	20.4	---	5.00	mg/L	500	20.0	ND	102	70-130%	---	---	
n-Butylbenzene	10.5	---	0.500	mg/L	500	10.0	ND	105	70-130%	---	---	
sec-Butylbenzene	9.98	---	0.500	mg/L	500	10.0	ND	100	70-130%	---	---	
tert-Butylbenzene	9.14	---	0.500	mg/L	500	10.0	ND	91	70-130%	---	---	
Carbon tetrachloride	11.1	---	0.500	mg/L	500	10.0	ND	111	70-130%	---	---	
Chlorobenzene	10.7	---	0.250	mg/L	500	10.0	ND	107	70-130%	---	---	
Chloroethane	7.49	---	2.50	mg/L	500	10.0	ND	75	70-130%	---	---	
Chloroform	10.8	---	0.500	mg/L	500	10.0	ND	108	70-130%	---	---	
Chloromethane	11.0	---	2.50	mg/L	500	10.0	ND	110	70-130%	---	---	
2-Chlorotoluene	10.1	---	0.500	mg/L	500	10.0	ND	101	70-130%	---	---	
4-Chlorotoluene	9.63	---	0.500	mg/L	500	10.0	ND	96	70-130%	---	---	
1,2-Dibromo-3-chloropropane	9.58	---	2.50	mg/L	500	10.0	ND	96	70-130%	---	---	
Dibromochloromethane	10.4	---	0.500	mg/L	500	10.0	ND	104	70-130%	---	---	
1,2-Dibromoethane (EDB)	10.6	---	0.250	mg/L	500	10.0	ND	106	70-130%	---	---	
Dibromomethane	11.2	---	0.500	mg/L	500	10.0	ND	112	70-130%	---	---	
1,2-Dichlorobenzene	10.3	---	0.250	mg/L	500	10.0	ND	103	70-130%	---	---	
1,3-Dichlorobenzene	10.2	---	0.250	mg/L	500	10.0	ND	102	70-130%	---	---	
1,4-Dichlorobenzene	10.2	---	0.250	mg/L	500	10.0	ND	102	70-130%	---	---	
Dichlorodifluoromethane	10.6	---	0.500	mg/L	500	10.0	ND	106	70-130%	---	---	

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QUALITY CONTROL (QC) SAMPLE RESULTS

SPLP Volatile Organic Compounds by EPA 1312/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060589 - EPA 1312/5030B SPLP Volatiles						Water						
Matrix Spike (9060589-MS2)						Prepared: 06/05/19 12:17 Analyzed: 06/05/19 15:48						
QC Source Sample: Non-SDG (A9E0832-02)												
1,1-Dichloroethane	10.3	---	0.250	mg/L	500	10.0	ND	103	70-130%	---	---	
1,2-Dichloroethane (EDC)	10.6	---	0.250	mg/L	500	10.0	ND	106	70-130%	---	---	
1,1-Dichloroethene	9.78	---	0.250	mg/L	500	10.0	ND	98	70-130%	---	---	
cis-1,2-Dichloroethene	10.4	---	0.250	mg/L	500	10.0	ND	104	70-130%	---	---	
trans-1,2-Dichloroethene	10.3	---	0.250	mg/L	500	10.0	ND	103	70-130%	---	---	
1,2-Dichloropropane	10.6	---	0.250	mg/L	500	10.0	ND	106	70-130%	---	---	
1,3-Dichloropropane	10.4	---	0.500	mg/L	500	10.0	ND	104	70-130%	---	---	
2,2-Dichloropropane	8.60	---	0.500	mg/L	500	10.0	ND	86	70-130%	---	---	
1,1-Dichloropropene	10.3	---	0.500	mg/L	500	10.0	ND	103	70-130%	---	---	
cis-1,3-Dichloropropene	9.75	---	0.500	mg/L	500	10.0	ND	97	70-130%	---	---	
trans-1,3-Dichloropropene	9.23	---	0.500	mg/L	500	10.0	ND	92	70-130%	---	---	
Ethylbenzene	10.2	---	0.250	mg/L	500	10.0	0.180	100	70-130%	---	---	
Hexachlorobutadiene	10.7	---	2.50	mg/L	500	10.0	ND	107	70-130%	---	---	
2-Hexanone	19.5	---	5.00	mg/L	500	20.0	ND	97	70-130%	---	---	
Isopropylbenzene	10.3	---	0.500	mg/L	500	10.0	ND	103	70-130%	---	---	
4-Isopropyltoluene	9.92	---	0.500	mg/L	500	10.0	ND	99	70-130%	---	---	
4-Methyl-2-pentanone (MiBK)	19.2	---	5.00	mg/L	500	20.0	ND	96	70-130%	---	---	
Methyl tert-butyl ether (MTBE)	8.66	---	0.500	mg/L	500	10.0	ND	87	70-130%	---	---	
Methylene chloride	9.28	---	2.50	mg/L	500	10.0	ND	93	70-130%	---	---	
Naphthalene	16.9	---	1.00	mg/L	500	10.0	6.62	102	70-130%	---	---	
n-Propylbenzene	9.66	---	0.250	mg/L	500	10.0	ND	97	70-130%	---	---	
Styrene	11.1	---	0.500	mg/L	500	10.0	ND	111	70-130%	---	---	
1,1,1,2-Tetrachloroethane	10.5	---	0.250	mg/L	500	10.0	ND	105	70-130%	---	---	
1,1,2,2-Tetrachloroethane	10.5	---	0.250	mg/L	500	10.0	ND	105	70-130%	---	---	
Tetrachloroethene (PCE)	10.7	---	0.250	mg/L	500	10.0	ND	107	70-130%	---	---	
Toluene	11.1	---	0.500	mg/L	500	10.0	1.05	100	70-130%	---	---	
1,2,3-Trichlorobenzene	10.7	---	1.00	mg/L	500	10.0	ND	107	70-130%	---	---	
1,2,4-Trichlorobenzene	9.61	---	1.00	mg/L	500	10.0	ND	96	70-130%	---	---	
1,1,1-Trichloroethane	10.1	---	0.250	mg/L	500	10.0	ND	101	70-130%	---	---	
1,1,2-Trichloroethane	11.0	---	0.250	mg/L	500	10.0	ND	110	70-130%	---	---	
Trichloroethene (TCE)	11.0	---	0.250	mg/L	500	10.0	ND	110	70-130%	---	---	
Trichlorofluoromethane	13.3	---	1.00	mg/L	500	10.0	ND	133	70-130%	---	---	Q-01
1,2,3-Trichloropropane	9.64	---	0.500	mg/L	500	10.0	ND	96	70-130%	---	---	

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Philip Nerenberg, Lab Director



Hahn and Associates 434 NW 6th Ave. Suite 203 Portland, OR 97209	Project: Mult 802 Decommissioning Project Number: 2708-60F Project Manager: Rob Ede	Report ID: A9E0723 - 06 24 19 1133
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QUALITY CONTROL (QC) SAMPLE RESULTS

SPLP Volatile Organic Compounds by EPA 1312/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060589 - EPA 1312/5030B SPLP Volatiles						Water						
Matrix Spike (9060589-MS2)						Prepared: 06/05/19 12:17 Analyzed: 06/05/19 15:48						
QC Source Sample: Non-SDG (A9E0832-02)												
1,2,4-Trimethylbenzene	9.77	---	0.500	mg/L	500	10.0	ND	98	70-130%	---	---	
1,3,5-Trimethylbenzene	9.89	---	0.500	mg/L	500	10.0	ND	99	70-130%	---	---	
Vinyl chloride	10.3	---	0.250	mg/L	500	10.0	ND	103	70-130%	---	---	
m,p-Xylene	21.0	---	0.500	mg/L	500	20.0	0.268	104	70-130%	---	---	
o-Xylene	9.79	---	0.250	mg/L	500	10.0	ND	98	70-130%	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 104 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>100 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>91 %</i>		<i>80-120 %</i>		<i>"</i>						

Matrix Spike (9060589-MS3)						Prepared: 06/05/19 12:17 Analyzed: 06/05/19 22:07						
QC Source Sample: Non-SDG (A9E0832-02RE1)												
1312/8260C												
Acetone	1.86	---	1.00	mg/L	50	2.00	ND	93	70-130%	---	---	
Benzene	3.41	---	0.0125	mg/L	50	1.00	2.42	98	70-130%	---	---	
Bromobenzene	1.01	---	0.0250	mg/L	50	1.00	ND	101	70-130%	---	---	
Bromochloromethane	1.15	---	0.0500	mg/L	50	1.00	ND	115	70-130%	---	---	
Bromodichloromethane	1.11	---	0.0500	mg/L	50	1.00	ND	111	70-130%	---	---	
Bromoform	1.23	---	0.0500	mg/L	50	1.00	ND	123	70-130%	---	---	
Bromomethane	1.27	---	0.250	mg/L	50	1.00	ND	127	70-130%	---	---	
2-Butanone (MEK)	1.96	---	0.500	mg/L	50	2.00	ND	98	70-130%	---	---	
n-Butylbenzene	1.10	---	0.0500	mg/L	50	1.00	ND	110	70-130%	---	---	
sec-Butylbenzene	0.995	---	0.0500	mg/L	50	1.00	ND	99	70-130%	---	---	
tert-Butylbenzene	0.902	---	0.0500	mg/L	50	1.00	ND	90	70-130%	---	---	
Carbon tetrachloride	1.08	---	0.0500	mg/L	50	1.00	ND	108	70-130%	---	---	
Chlorobenzene	1.04	---	0.0250	mg/L	50	1.00	ND	104	70-130%	---	---	
Chloroethane	0.850	---	0.250	mg/L	50	1.00	ND	85	70-130%	---	---	
Chloroform	1.05	---	0.0500	mg/L	50	1.00	ND	105	70-130%	---	---	
Chloromethane	1.10	---	0.250	mg/L	50	1.00	ND	110	70-130%	---	---	
2-Chlorotoluene	0.987	---	0.0500	mg/L	50	1.00	ND	99	70-130%	---	---	
4-Chlorotoluene	0.946	---	0.0500	mg/L	50	1.00	ND	95	70-130%	---	---	
1,2-Dibromo-3-chloropropane	0.995	---	0.250	mg/L	50	1.00	ND	100	70-130%	---	---	
Dibromochloromethane	1.03	---	0.0500	mg/L	50	1.00	ND	103	70-130%	---	---	
1,2-Dibromoethane (EDB)	1.04	---	0.0250	mg/L	50	1.00	ND	104	70-130%	---	---	

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Philip Nerenberg, Lab Director



Hahn and Associates

434 NW 6th Ave. Suite 203
 Portland, OR 97209

Project: **Mult 802 Decommissioning**

Project Number: **2708-60F**

Project Manager: **Rob Ede**

Report ID:

A9E0723 - 06 24 19 1133

QUALITY CONTROL (QC) SAMPLE RESULTS

SPLP Volatile Organic Compounds by EPA 1312/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060589 - EPA 1312/5030B SPLP Volatiles						Water						
Matrix Spike (9060589-MS3)						Prepared: 06/05/19 12:17 Analyzed: 06/05/19 22:07						
QC Source Sample: Non-SDG (A9E0832-02RE1)												
Dibromomethane	1.08	---	0.0500	mg/L	50	1.00	ND	108	70-130%	---	---	
1,2-Dichlorobenzene	1.02	---	0.0250	mg/L	50	1.00	ND	102	70-130%	---	---	
1,3-Dichlorobenzene	1.01	---	0.0250	mg/L	50	1.00	ND	101	70-130%	---	---	
1,4-Dichlorobenzene	1.01	---	0.0250	mg/L	50	1.00	ND	101	70-130%	---	---	
Dichlorodifluoromethane	1.05	---	0.0500	mg/L	50	1.00	ND	105	70-130%	---	---	
1,1-Dichloroethane	0.999	---	0.0250	mg/L	50	1.00	ND	100	70-130%	---	---	
1,2-Dichloroethane (EDC)	1.02	---	0.0250	mg/L	50	1.00	ND	102	70-130%	---	---	
1,1-Dichloroethene	0.966	---	0.0250	mg/L	50	1.00	ND	97	70-130%	---	---	
cis-1,2-Dichloroethene	1.01	---	0.0250	mg/L	50	1.00	ND	101	70-130%	---	---	
trans-1,2-Dichloroethene	1.03	---	0.0250	mg/L	50	1.00	ND	103	70-130%	---	---	
1,2-Dichloropropane	1.03	---	0.0250	mg/L	50	1.00	ND	103	70-130%	---	---	
1,3-Dichloropropane	1.00	---	0.0500	mg/L	50	1.00	ND	100	70-130%	---	---	
2,2-Dichloropropane	0.793	---	0.0500	mg/L	50	1.00	ND	79	70-130%	---	---	
1,1-Dichloropropene	1.00	---	0.0500	mg/L	50	1.00	ND	100	70-130%	---	---	
cis-1,3-Dichloropropene	0.930	---	0.0500	mg/L	50	1.00	ND	93	70-130%	---	---	
trans-1,3-Dichloropropene	0.897	---	0.0500	mg/L	50	1.00	ND	90	70-130%	---	---	
Ethylbenzene	1.17	---	0.0250	mg/L	50	1.00	0.196	97	70-130%	---	---	
Hexachlorobutadiene	1.05	---	0.250	mg/L	50	1.00	ND	105	70-130%	---	---	
2-Hexanone	1.90	---	0.500	mg/L	50	2.00	ND	95	70-130%	---	---	
Isopropylbenzene	1.01	---	0.0500	mg/L	50	1.00	ND	101	70-130%	---	---	
4-Isopropyltoluene	0.993	---	0.0500	mg/L	50	1.00	ND	99	70-130%	---	---	
4-Methyl-2-pentanone (MiBK)	1.85	---	0.500	mg/L	50	2.00	ND	93	70-130%	---	---	
Methyl tert-butyl ether (MTBE)	0.830	---	0.0500	mg/L	50	1.00	ND	83	70-130%	---	---	
Methylene chloride	0.892	---	0.250	mg/L	50	1.00	ND	89	70-130%	---	---	
Naphthalene	9.89	---	0.100	mg/L	50	1.00	10.1	-20	70-130%	---	---	E, Q-03
n-Propylbenzene	0.951	---	0.0250	mg/L	50	1.00	ND	95	70-130%	---	---	
Styrene	1.23	---	0.0500	mg/L	50	1.00	0.107	113	70-130%	---	---	
1,1,1,2-Tetrachloroethane	1.01	---	0.0250	mg/L	50	1.00	ND	101	70-130%	---	---	
1,1,2,2-Tetrachloroethane	1.01	---	0.0250	mg/L	50	1.00	ND	101	70-130%	---	---	
Tetrachloroethene (PCE)	1.02	---	0.0250	mg/L	50	1.00	ND	102	70-130%	---	---	
Toluene	2.00	---	0.0500	mg/L	50	1.00	1.09	91	70-130%	---	---	
1,2,3-Trichlorobenzene	1.14	---	0.100	mg/L	50	1.00	ND	114	70-130%	---	---	
1,2,4-Trichlorobenzene	1.01	---	0.100	mg/L	50	1.00	ND	101	70-130%	---	---	

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QUALITY CONTROL (QC) SAMPLE RESULTS

SPLP Volatile Organic Compounds by EPA 1312/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060589 - EPA 1312/5030B SPLP Volatiles						Water						
Matrix Spike (9060589-MS3)						Prepared: 06/05/19 12:17 Analyzed: 06/05/19 22:07						
QC Source Sample: Non-SDG (A9E0832-02RE1)												
1,1,1-Trichloroethane	0.990	---	0.0250	mg/L	50	1.00	ND	99	70-130%	---	---	
1,1,2-Trichloroethane	1.05	---	0.0250	mg/L	50	1.00	ND	105	70-130%	---	---	
Trichloroethene (TCE)	1.08	---	0.0250	mg/L	50	1.00	ND	108	70-130%	---	---	
Trichlorofluoromethane	1.30	---	0.100	mg/L	50	1.00	ND	130	70-130%	---	---	
1,2,3-Trichloropropane	0.954	---	0.0500	mg/L	50	1.00	ND	95	70-130%	---	---	
1,2,4-Trimethylbenzene	1.06	---	0.0500	mg/L	50	1.00	0.0424	102	70-130%	---	---	
1,3,5-Trimethylbenzene	1.01	---	0.0500	mg/L	50	1.00	ND	101	70-130%	---	---	
Vinyl chloride	1.03	---	0.0250	mg/L	50	1.00	ND	103	70-130%	---	---	
m,p-Xylene	2.39	---	0.0500	mg/L	50	2.00	0.307	104	70-130%	---	---	
o-Xylene	1.09	---	0.0250	mg/L	50	1.00	0.106	98	70-130%	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 104 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>99 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>91 %</i>		<i>80-120 %</i>		<i>"</i>						



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QUALITY CONTROL (QC) SAMPLE RESULTS

SPLP Semivolatile Organic Compounds by EPA 1312/8270D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060759 - EPA 1312/3510C (BNA Extraction)						Solid						
Blank (9060759-BLK1)			Prepared: 06/10/19 10:22 Analyzed: 06/11/19 11:52									
<u>1312/8270D</u>												
Acenaphthene	ND	---	0.000200	mg/L	1	---	---	---	---	---	---	B-02
Acenaphthylene	ND	---	0.000200	mg/L	1	---	---	---	---	---	---	
Aniline	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
Anthracene	ND	---	0.000200	mg/L	1	---	---	---	---	---	---	
Azobenzene (1,2-DPH)	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
Benz(a)anthracene	ND	---	0.000200	mg/L	1	---	---	---	---	---	---	
Benzo(a)pyrene	ND	---	0.000300	mg/L	1	---	---	---	---	---	---	
Benzo(b)fluoranthene	ND	---	0.000300	mg/L	1	---	---	---	---	---	---	
Benzo(k)fluoranthene	ND	---	0.000300	mg/L	1	---	---	---	---	---	---	
Benzo(g,h,i)perylene	ND	---	0.000200	mg/L	1	---	---	---	---	---	---	
Benzoic acid	ND	---	0.0200	mg/L	1	---	---	---	---	---	---	
Benzyl alcohol	ND	---	0.00200	mg/L	1	---	---	---	---	---	---	
Bis(2-Chloroethoxy) methane	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
Bis(2-Chloroethyl) ether	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
2,2'-Oxybis(1-Chloropropane)	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
Bis(2-Ethylhexyl) adipate	ND	---	0.00500	mg/L	1	---	---	---	---	---	---	
Bis(2-ethylhexyl)phthalate	ND	---	0.00400	mg/L	1	---	---	---	---	---	---	
4-Bromophenyl phenyl ether	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
Butyl benzyl phthalate	ND	---	0.00400	mg/L	1	---	---	---	---	---	---	
Carbazole	ND	---	0.000300	mg/L	1	---	---	---	---	---	---	
4-Chloroaniline	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
4-Chloro-3-methylphenol	ND	---	0.00200	mg/L	1	---	---	---	---	---	---	
2-Chloronaphthalene	ND	---	0.000200	mg/L	1	---	---	---	---	---	---	
2-Chlorophenol	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
4-Chlorophenyl phenyl ether	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
Chrysene	ND	---	0.000200	mg/L	1	---	---	---	---	---	---	
Dibenz(a,h)anthracene	ND	---	0.000200	mg/L	1	---	---	---	---	---	---	
Dibenzofuran	ND	---	0.000200	mg/L	1	---	---	---	---	---	---	
1,2-Dichlorobenzene	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
1,3-Dichlorobenzene	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
1,4-Dichlorobenzene	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
2,4-Dichlorophenol	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
Di-n-butylphthalate	ND	---	0.00400	mg/L	1	---	---	---	---	---	---	

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QUALITY CONTROL (QC) SAMPLE RESULTS

SPLP Semivolatile Organic Compounds by EPA 1312/8270D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060759 - EPA 1312/3510C (BNA Extraction)						Solid						
Blank (9060759-BLK1)			Prepared: 06/10/19 10:22 Analyzed: 06/11/19 11:52									
Diethylphthalate	ND	---	0.00400	mg/L	1	---	---	---	---	---	---	
Dimethylphthalate	ND	---	0.00400	mg/L	1	---	---	---	---	---	---	
2,4-Dimethylphenol	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
1,2-Dinitrobenzene	ND	---	0.00500	mg/L	1	---	---	---	---	---	---	
1,3-Dinitrobenzene	ND	---	0.00500	mg/L	1	---	---	---	---	---	---	
1,4-Dinitrobenzene	ND	---	0.00500	mg/L	1	---	---	---	---	---	---	
4,6-Dinitro-2-methylphenol	ND	---	0.00500	mg/L	1	---	---	---	---	---	---	
2,4-Dinitrophenol	ND	---	0.00500	mg/L	1	---	---	---	---	---	---	
2,4-Dinitrotoluene	ND	---	0.00200	mg/L	1	---	---	---	---	---	---	
2,6-Dinitrotoluene	ND	---	0.00200	mg/L	1	---	---	---	---	---	---	
Di-n-octyl phthalate	ND	---	0.00400	mg/L	1	---	---	---	---	---	---	
Fluoranthene	ND	---	0.000200	mg/L	1	---	---	---	---	---	---	
Fluorene	ND	---	0.000200	mg/L	1	---	---	---	---	---	---	
Hexachlorobenzene	ND	---	0.000200	mg/L	1	---	---	---	---	---	---	
Hexachlorobutadiene	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
Hexachlorocyclopentadiene	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
Hexachloroethane	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
Indeno(1,2,3-cd)pyrene	ND	---	0.000200	mg/L	1	---	---	---	---	---	---	
Isophorone	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
1-Methylnaphthalene	ND	---	0.000400	mg/L	1	---	---	---	---	---	---	
2-Methylnaphthalene	ND	---	0.000400	mg/L	1	---	---	---	---	---	---	B-02
2-Methylphenol	0.00152	---	0.000500	mg/L	1	---	---	---	---	---	---	B
3+4-Methylphenol(s)	0.00313	---	0.000500	mg/L	1	---	---	---	---	---	---	B
Naphthalene	0.00306	---	0.000400	mg/L	1	---	---	---	---	---	---	B
2-Nitroaniline	ND	---	0.00400	mg/L	1	---	---	---	---	---	---	
3-Nitroaniline	ND	---	0.00400	mg/L	1	---	---	---	---	---	---	
4-Nitroaniline	ND	---	0.00400	mg/L	1	---	---	---	---	---	---	
Nitrobenzene	ND	---	0.00200	mg/L	1	---	---	---	---	---	---	
2-Nitrophenol	ND	---	0.00200	mg/L	1	---	---	---	---	---	---	
4-Nitrophenol	ND	---	0.00200	mg/L	1	---	---	---	---	---	---	
N-Nitrosodimethylamine	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
N-Nitroso-di-n-propylamine	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
N-Nitrosodiphenylamine	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
Pentachlorophenol (PCP)	ND	---	0.00200	mg/L	1	---	---	---	---	---	---	



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QUALITY CONTROL (QC) SAMPLE RESULTS

SPLP Semivolatile Organic Compounds by EPA 1312/8270D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060759 - EPA 1312/3510C (BNA Extraction)						Solid						
Blank (9060759-BLK1)			Prepared: 06/10/19 10:22 Analyzed: 06/11/19 11:52									
Phenanthrene	ND	---	0.000200	mg/L	1	---	---	---	---	---	---	B-02
Phenol	0.00431	---	0.00400	mg/L	1	---	---	---	---	---	---	B
Pyrene	ND	---	0.000200	mg/L	1	---	---	---	---	---	---	
Pyridine	ND	---	0.00200	mg/L	1	---	---	---	---	---	---	B-02
2,3,4,6-Tetrachlorophenol	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
2,3,5,6-Tetrachlorophenol	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
2,4,5-Trichlorophenol	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
2,4,6-Trichlorophenol	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
<i>Surr: Nitrobenzene-d5 (Surr)</i>			<i>Recovery: 72 %</i>	<i>Limits: 44-120 %</i>		<i>Dilution: 1x</i>						
<i>2-Fluorobiphenyl (Surr)</i>			<i>72 %</i>	<i>44-120 %</i>		<i>"</i>						
<i>Phenol-d6 (Surr)</i>			<i>22 %</i>	<i>10-120 %</i>		<i>"</i>						
<i>p-Terphenyl-d14 (Surr)</i>			<i>83 %</i>	<i>50-133 %</i>		<i>"</i>						
<i>2-Fluorophenol (Surr)</i>			<i>39 %</i>	<i>19-120 %</i>		<i>"</i>						
<i>2,4,6-Tribromophenol (Surr)</i>			<i>95 %</i>	<i>43-140 %</i>		<i>"</i>						
LCS (9060759-BS1)			Prepared: 06/10/19 10:22 Analyzed: 06/11/19 12:29									
1312/8270D												
Acenaphthene	0.0314	---	0.000400	mg/L	2	0.0400	---	79	47-122%	---	---	B-02
Acenaphthylene	0.0314	---	0.000400	mg/L	2	0.0400	---	79	41-130%	---	---	
Aniline	0.0255	---	0.00200	mg/L	2	0.0400	---	64	6-120%	---	---	Q-31
Anthracene	0.0359	---	0.000400	mg/L	2	0.0400	---	90	57-123%	---	---	
Azobenzene (1,2-DPH)	0.0377	---	0.00100	mg/L	2	0.0400	---	94	61-120%	---	---	
Benz(a)anthracene	0.0383	---	0.000400	mg/L	2	0.0400	---	96	58-125%	---	---	
Benzo(a)pyrene	0.0392	---	0.000600	mg/L	2	0.0400	---	98	54-128%	---	---	
Benzo(b)fluoranthene	0.0398	---	0.000600	mg/L	2	0.0400	---	100	53-131%	---	---	
Benzo(k)fluoranthene	0.0388	---	0.000600	mg/L	2	0.0400	---	97	57-129%	---	---	
Benzo(g,h,i)perylene	0.0389	---	0.000400	mg/L	2	0.0400	---	97	50-134%	---	---	
Benzoic acid	0.0281	---	0.0200	mg/L	2	0.0800	---	35	5-120%	---	---	Q-31
Benzyl alcohol	0.0304	---	0.00400	mg/L	2	0.0400	---	76	31-120%	---	---	
Bis(2-Chloroethoxy) methane	0.0336	---	0.00100	mg/L	2	0.0400	---	84	48-120%	---	---	
Bis(2-Chloroethyl) ether	0.0339	---	0.00100	mg/L	2	0.0400	---	85	43-120%	---	---	
2,2'-Oxybis(1-Chloropropane)	0.0308	---	0.00100	mg/L	2	0.0400	---	77	37-130%	---	---	
Bis(2-Ethylhexyl) adipate	0.0407	---	0.0100	mg/L	2	0.0400	---	102	40-125%	---	---	

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Philip Nerenberg, Lab Director



Hahn and Associates

434 NW 6th Ave. Suite 203
 Portland, OR 97209

Project: **Mult 802 Decommissioning**

Project Number: **2708-60F**

Project Manager: **Rob Ede**

Report ID:

A9E0723 - 06 24 19 1133

QUALITY CONTROL (QC) SAMPLE RESULTS

SPLP Semivolatile Organic Compounds by EPA 1312/8270D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060759 - EPA 1312/3510C (BNA Extraction)						Solid						
LCS (9060759-BS1)			Prepared: 06/10/19 10:22 Analyzed: 06/11/19 12:29									
Bis(2-ethylhexyl)phthalate	0.0419	---	0.00800	mg/L	2	0.0400	---	105	55-135%	---	---	
4-Bromophenyl phenyl ether	0.0373	---	0.00100	mg/L	2	0.0400	---	93	54-124%	---	---	
Butyl benzyl phthalate	0.0411	---	0.00800	mg/L	2	0.0400	---	103	53-134%	---	---	
Carbazole	0.0362	---	0.000600	mg/L	2	0.0400	---	90	60-122%	---	---	
4-Chloroaniline	0.0259	---	0.00100	mg/L	2	0.0400	---	65	33-120%	---	---	
4-Chloro-3-methylphenol	0.0335	---	0.00400	mg/L	2	0.0400	---	84	52-120%	---	---	
2-Chloronaphthalene	0.0279	---	0.000400	mg/L	2	0.0400	---	70	40-120%	---	---	
2-Chlorophenol	0.0316	---	0.00200	mg/L	2	0.0400	---	79	38-120%	---	---	
4-Chlorophenyl phenyl ether	0.0326	---	0.00100	mg/L	2	0.0400	---	82	53-121%	---	---	
Chrysene	0.0383	---	0.000400	mg/L	2	0.0400	---	96	59-123%	---	---	
Dibenz(a,h)anthracene	0.0401	---	0.000400	mg/L	2	0.0400	---	100	51-134%	---	---	
Dibenzofuran	0.0333	---	0.000400	mg/L	2	0.0400	---	83	53-120%	---	---	
1,2-Dichlorobenzene	0.0166	---	0.00100	mg/L	2	0.0400	---	42	32-120%	---	---	
1,3-Dichlorobenzene	0.0148	---	0.00100	mg/L	2	0.0400	---	37	28-120%	---	---	
1,4-Dichlorobenzene	0.0158	---	0.00100	mg/L	2	0.0400	---	40	29-120%	---	---	
2,4-Dichlorophenol	0.0366	---	0.00200	mg/L	2	0.0400	---	92	47-121%	---	---	
Di-n-butylphthalate	0.0385	---	0.00800	mg/L	2	0.0400	---	96	59-127%	---	---	
Diethylphthalate	0.0338	---	0.00800	mg/L	2	0.0400	---	85	55-125%	---	---	
Dimethylphthalate	0.0360	---	0.00800	mg/L	2	0.0400	---	90	45-127%	---	---	
2,4-Dimethylphenol	0.0303	---	0.00200	mg/L	2	0.0400	---	76	31-124%	---	---	
1,2-Dinitrobenzene	0.0358	---	0.0100	mg/L	2	0.0400	---	90	59-120%	---	---	
1,3-Dinitrobenzene	0.0375	---	0.0100	mg/L	2	0.0400	---	94	49-128%	---	---	
1,4-Dinitrobenzene	0.0362	---	0.0100	mg/L	2	0.0400	---	91	40-120%	---	---	
4,6-Dinitro-2-methylphenol	0.0377	---	0.0100	mg/L	2	0.0400	---	94	44-137%	---	---	
2,4-Dinitrophenol	0.0357	---	0.0100	mg/L	2	0.0400	---	89	23-143%	---	---	
2,4-Dinitrotoluene	0.0371	---	0.00400	mg/L	2	0.0400	---	93	57-128%	---	---	
2,6-Dinitrotoluene	0.0402	---	0.00400	mg/L	2	0.0400	---	100	57-124%	---	---	
Di-n-octyl phthalate	0.0420	---	0.00800	mg/L	2	0.0400	---	105	51-140%	---	---	
Fluoranthene	0.0358	---	0.000400	mg/L	2	0.0400	---	90	57-128%	---	---	
Fluorene	0.0322	---	0.000400	mg/L	2	0.0400	---	80	52-124%	---	---	
Hexachlorobenzene	0.0364	---	0.000400	mg/L	2	0.0400	---	91	52-125%	---	---	
Hexachlorobutadiene	0.0142	---	0.00100	mg/L	2	0.0400	---	36	22-124%	---	---	
Hexachlorocyclopentadiene	0.0135	---	0.00200	mg/L	2	0.0400	---	34	5-127%	---	---	
Hexachloroethane	0.0132	---	0.00100	mg/L	2	0.0400	---	33	21-120%	---	---	

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Philip Nerenberg, Lab Director



Hahn and Associates 434 NW 6th Ave. Suite 203 Portland, OR 97209	Project: Mult 802 Decommissioning Project Number: 2708-60F Project Manager: Rob Ede	Report ID: A9E0723 - 06 24 19 1133
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QUALITY CONTROL (QC) SAMPLE RESULTS

SPLP Semivolatile Organic Compounds by EPA 1312/8270D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060759 - EPA 1312/3510C (BNA Extraction)						Solid						
LCS (9060759-BS1)			Prepared: 06/10/19 10:22 Analyzed: 06/11/19 12:29									
Indeno(1,2,3-cd)pyrene	0.0370	---	0.000400	mg/L	2	0.0400	---	93	52-133%	---	---	
Isophorone	0.0332	---	0.00100	mg/L	2	0.0400	---	83	42-124%	---	---	
1-Methylnaphthalene	0.0244	---	0.000800	mg/L	2	0.0400	---	61	41-120%	---	---	
2-Methylnaphthalene	0.0237	---	0.000800	mg/L	2	0.0400	---	59	40-121%	---	---	B-02
2-Methylphenol	0.0329	---	0.00100	mg/L	2	0.0400	---	82	30-120%	---	---	B
3+4-Methylphenol(s)	0.0341	---	0.00100	mg/L	2	0.0400	---	85	29-120%	---	---	B
Naphthalene	0.0283	---	0.000800	mg/L	2	0.0400	---	71	40-121%	---	---	B
2-Nitroaniline	0.0385	---	0.00800	mg/L	2	0.0400	---	96	54-127%	---	---	
3-Nitroaniline	0.0304	---	0.00800	mg/L	2	0.0400	---	76	41-128%	---	---	
4-Nitroaniline	0.0251	---	0.00800	mg/L	2	0.0400	---	63	35-120%	---	---	
Nitrobenzene	0.0322	---	0.00400	mg/L	2	0.0400	---	81	45-121%	---	---	
2-Nitrophenol	0.0349	---	0.00400	mg/L	2	0.0400	---	87	47-123%	---	---	
4-Nitrophenol	0.0127	---	0.00400	mg/L	2	0.0400	---	32	5-120%	---	---	
N-Nitrosodimethylamine	0.0197	---	0.00100	mg/L	2	0.0400	---	49	6-120%	---	---	
N-Nitroso-di-n-propylamine	0.0335	---	0.00100	mg/L	2	0.0400	---	84	49-120%	---	---	
N-Nitrosodiphenylamine	0.0371	---	0.00100	mg/L	2	0.0400	---	93	51-123%	---	---	
Pentachlorophenol (PCP)	0.0336	---	0.00400	mg/L	2	0.0400	---	84	35-138%	---	---	
Phenanthrene	0.0362	---	0.000400	mg/L	2	0.0400	---	91	59-120%	---	---	B-02
Phenol	0.0221	---	0.00800	mg/L	2	0.0400	---	55	5-120%	---	---	B
Pyrene	0.0354	---	0.000400	mg/L	2	0.0400	---	88	57-126%	---	---	
Pyridine	0.0219	---	0.00400	mg/L	2	0.0400	---	55	5-120%	---	---	B-02
2,3,4,6-Tetrachlorophenol	0.0354	---	0.00200	mg/L	2	0.0400	---	88	50-128%	---	---	
2,3,5,6-Tetrachlorophenol	0.0336	---	0.00200	mg/L	2	0.0400	---	84	50-121%	---	---	
1,2,4-Trichlorobenzene	0.0175	---	0.00100	mg/L	2	0.0400	---	44	29-120%	---	---	
2,4,5-Trichlorophenol	0.0396	---	0.00200	mg/L	2	0.0400	---	99	53-123%	---	---	
2,4,6-Trichlorophenol	0.0383	---	0.00200	mg/L	2	0.0400	---	96	50-125%	---	---	
<i>Surr: Nitrobenzene-d5 (Surr)</i>		<i>Recovery: 80 %</i>		<i>Limits: 44-120 %</i>		<i>Dilution: 2x</i>						
<i>2-Fluorobiphenyl (Surr)</i>		<i>81 %</i>		<i>44-120 %</i>		<i>"</i>						
<i>Phenol-d6 (Surr)</i>		<i>31 %</i>		<i>10-120 %</i>		<i>"</i>						
<i>p-Terphenyl-d14 (Surr)</i>		<i>99 %</i>		<i>50-133 %</i>		<i>"</i>						
<i>2-Fluorophenol (Surr)</i>		<i>49 %</i>		<i>19-120 %</i>		<i>"</i>						
<i>2,4,6-Tribromophenol (Surr)</i>		<i>100 %</i>		<i>43-140 %</i>		<i>"</i>						

LCS Dup (9060759-BSD1)	Prepared: 06/10/19 10:22 Analyzed: 06/11/19 13:06	Q-19
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Philip Nerenberg, Lab Director



Hahn and Associates

434 NW 6th Ave. Suite 203
Portland, OR 97209

Project: **Mult 802 Decommissioning**

Project Number: **2708-60F**

Project Manager: **Rob Ede**

Report ID:

A9E0723 - 06 24 19 1133

QUALITY CONTROL (QC) SAMPLE RESULTS

SPLP Semivolatile Organic Compounds by EPA 1312/8270D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060759 - EPA 1312/3510C (BNA Extraction) Solid												
LCS Dup (9060759-BSD1) Prepared: 06/10/19 10:22 Analyzed: 06/11/19 13:06 Q-19												
<u>1312/8270D</u>												
Acenaphthene	0.0332	---	0.000400	mg/L	2	0.0400	---	83	47-122%	5	30%	B-02
Acenaphthylene	0.0332	---	0.000400	mg/L	2	0.0400	---	83	41-130%	5	30%	
Aniline	0.0260	---	0.00200	mg/L	2	0.0400	---	65	6-120%	2	30%	Q-31
Anthracene	0.0350	---	0.000400	mg/L	2	0.0400	---	88	57-123%	3	30%	
Azobenzene (1,2-DPH)	0.0371	---	0.00100	mg/L	2	0.0400	---	93	61-120%	2	30%	
Benz(a)anthracene	0.0378	---	0.000400	mg/L	2	0.0400	---	95	58-125%	1	30%	
Benzo(a)pyrene	0.0374	---	0.000600	mg/L	2	0.0400	---	93	54-128%	5	30%	
Benzo(b)fluoranthene	0.0385	---	0.000600	mg/L	2	0.0400	---	96	53-131%	3	30%	
Benzo(k)fluoranthene	0.0378	---	0.000600	mg/L	2	0.0400	---	95	57-129%	3	30%	
Benzo(g,h,i)perylene	0.0382	---	0.000400	mg/L	2	0.0400	---	95	50-134%	2	30%	
Benzoic acid	0.0294	---	0.0200	mg/L	2	0.0800	---	37	5-120%	5	30%	Q-31
Benzyl alcohol	0.0302	---	0.00400	mg/L	2	0.0400	---	76	31-120%	0.8	30%	
Bis(2-Chloroethoxy) methane	0.0332	---	0.00100	mg/L	2	0.0400	---	83	48-120%	1	30%	
Bis(2-Chloroethyl) ether	0.0347	---	0.00100	mg/L	2	0.0400	---	87	43-120%	3	30%	
2,2'-Oxybis(1-Chloropropane)	0.0316	---	0.00100	mg/L	2	0.0400	---	79	37-130%	3	30%	
Bis(2-Ethylhexyl) adipate	0.0403	---	0.0100	mg/L	2	0.0400	---	101	40-125%	1	30%	
Bis(2-ethylhexyl)phthalate	0.0413	---	0.00800	mg/L	2	0.0400	---	103	55-135%	1	30%	
4-Bromophenyl phenyl ether	0.0374	---	0.00100	mg/L	2	0.0400	---	94	54-124%	0.2	30%	
Butyl benzyl phthalate	0.0412	---	0.00800	mg/L	2	0.0400	---	103	53-134%	0.2	30%	
Carbazole	0.0364	---	0.000600	mg/L	2	0.0400	---	91	60-122%	0.5	30%	
4-Chloroaniline	0.0278	---	0.00100	mg/L	2	0.0400	---	70	33-120%	7	30%	
4-Chloro-3-methylphenol	0.0338	---	0.00400	mg/L	2	0.0400	---	85	52-120%	1	30%	
2-Chloronaphthalene	0.0313	---	0.000400	mg/L	2	0.0400	---	78	40-120%	12	30%	
2-Chlorophenol	0.0326	---	0.00200	mg/L	2	0.0400	---	82	38-120%	3	30%	
4-Chlorophenyl phenyl ether	0.0333	---	0.00100	mg/L	2	0.0400	---	83	53-121%	2	30%	
Chrysene	0.0377	---	0.000400	mg/L	2	0.0400	---	94	59-123%	2	30%	
Dibenz(a,h)anthracene	0.0375	---	0.000400	mg/L	2	0.0400	---	94	51-134%	7	30%	
Dibenzofuran	0.0345	---	0.000400	mg/L	2	0.0400	---	86	53-120%	3	30%	
1,2-Dichlorobenzene	0.0221	---	0.00100	mg/L	2	0.0400	---	55	32-120%	28	30%	
1,3-Dichlorobenzene	0.0206	---	0.00100	mg/L	2	0.0400	---	51	28-120%	33	30%	Q-24
1,4-Dichlorobenzene	0.0219	---	0.00100	mg/L	2	0.0400	---	55	29-120%	32	30%	Q-24
2,4-Dichlorophenol	0.0373	---	0.00200	mg/L	2	0.0400	---	93	47-121%	2	30%	
Di-n-butylphthalate	0.0381	---	0.00800	mg/L	2	0.0400	---	95	59-127%	0.8	30%	

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Philip Nerenberg, Lab Director



Hahn and Associates
434 NW 6th Ave. Suite 203
Portland, OR 97209

Project: **Mult 802 Decommissioning**
Project Number: **2708-60F**
Project Manager: **Rob Ede**

Report ID:
A9E0723 - 06 24 19 1133

QUALITY CONTROL (QC) SAMPLE RESULTS

SPLP Semivolatile Organic Compounds by EPA 1312/8270D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060759 - EPA 1312/3510C (BNA Extraction)						Solid						
LCS Dup (9060759-BSD1)						Prepared: 06/10/19 10:22 Analyzed: 06/11/19 13:06						Q-19
Diethylphthalate	0.0339	---	0.00800	mg/L	2	0.0400	---	85	55-125%	0.2	30%	
Dimethylphthalate	0.0360	---	0.00800	mg/L	2	0.0400	---	90	45-127%	0.08	30%	
2,4-Dimethylphenol	0.0339	---	0.00200	mg/L	2	0.0400	---	85	31-124%	11	30%	
1,2-Dinitrobenzene	0.0367	---	0.0100	mg/L	2	0.0400	---	92	59-120%	2	30%	
1,3-Dinitrobenzene	0.0375	---	0.0100	mg/L	2	0.0400	---	94	49-128%	0.2	30%	
1,4-Dinitrobenzene	0.0367	---	0.0100	mg/L	2	0.0400	---	92	40-120%	1	30%	
4,6-Dinitro-2-methylphenol	0.0419	---	0.0100	mg/L	2	0.0400	---	105	44-137%	11	30%	
2,4-Dinitrophenol	0.0394	---	0.0100	mg/L	2	0.0400	---	98	23-143%	10	30%	
2,4-Dinitrotoluene	0.0371	---	0.00400	mg/L	2	0.0400	---	93	57-128%	0.03	30%	
2,6-Dinitrotoluene	0.0392	---	0.00400	mg/L	2	0.0400	---	98	57-124%	2	30%	
Di-n-octyl phthalate	0.0402	---	0.00800	mg/L	2	0.0400	---	100	51-140%	4	30%	
Fluoranthene	0.0362	---	0.000400	mg/L	2	0.0400	---	90	57-128%	1	30%	
Fluorene	0.0319	---	0.000400	mg/L	2	0.0400	---	80	52-124%	0.7	30%	
Hexachlorobenzene	0.0358	---	0.000400	mg/L	2	0.0400	---	90	52-125%	2	30%	
Hexachlorobutadiene	0.0215	---	0.00100	mg/L	2	0.0400	---	54	22-124%	41	30%	Q-24
Hexachlorocyclopentadiene	0.0215	---	0.00200	mg/L	2	0.0400	---	54	5-127%	46	30%	Q-24
Hexachloroethane	0.0205	---	0.00100	mg/L	2	0.0400	---	51	21-120%	43	30%	Q-24
Indeno(1,2,3-cd)pyrene	0.0359	---	0.000400	mg/L	2	0.0400	---	90	52-133%	3	30%	
Isophorone	0.0331	---	0.00100	mg/L	2	0.0400	---	83	42-124%	0.2	30%	
1-Methylnaphthalene	0.0278	---	0.000800	mg/L	2	0.0400	---	69	41-120%	13	30%	
2-Methylnaphthalene	0.0281	---	0.000800	mg/L	2	0.0400	---	70	40-121%	17	30%	B-02
2-Methylphenol	0.0302	---	0.00100	mg/L	2	0.0400	---	76	30-120%	9	30%	B
3+4-Methylphenol(s)	0.0287	---	0.00100	mg/L	2	0.0400	---	72	29-120%	17	30%	B
Naphthalene	0.0288	---	0.000800	mg/L	2	0.0400	---	72	40-121%	2	30%	B
2-Nitroaniline	0.0387	---	0.00800	mg/L	2	0.0400	---	97	54-127%	0.6	30%	
3-Nitroaniline	0.0351	---	0.00800	mg/L	2	0.0400	---	88	41-128%	14	30%	
4-Nitroaniline	0.0280	---	0.00800	mg/L	2	0.0400	---	70	35-120%	11	30%	
Nitrobenzene	0.0325	---	0.00400	mg/L	2	0.0400	---	81	45-121%	0.9	30%	
2-Nitrophenol	0.0381	---	0.00400	mg/L	2	0.0400	---	95	47-123%	9	30%	
4-Nitrophenol	0.0128	---	0.00400	mg/L	2	0.0400	---	32	5-120%	0.9	30%	
N-Nitrosodimethylamine	0.0191	---	0.00100	mg/L	2	0.0400	---	48	6-120%	3	30%	
N-Nitroso-di-n-propylamine	0.0342	---	0.00100	mg/L	2	0.0400	---	86	49-120%	2	30%	
N-Nitrosodiphenylamine	0.0363	---	0.00100	mg/L	2	0.0400	---	91	51-123%	2	30%	
Pentachlorophenol (PCP)	0.0342	---	0.00400	mg/L	2	0.0400	---	86	35-138%	2	30%	

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Philip Nerenberg, Lab Director



Hahn and Associates 434 NW 6th Ave. Suite 203 Portland, OR 97209	Project: Mult 802 Decommissioning Project Number: 2708-60F Project Manager: Rob Ede	Report ID: A9E0723 - 06 24 19 1133
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QUALITY CONTROL (QC) SAMPLE RESULTS

SPLP Semivolatile Organic Compounds by EPA 1312/8270D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060759 - EPA 1312/3510C (BNA Extraction)						Solid						
LCS Dup (9060759-BSD1)						Prepared: 06/10/19 10:22 Analyzed: 06/11/19 13:06						Q-19
Phenanthrene	0.0354	---	0.000400	mg/L	2	0.0400	---	89	59-120%	2	30%	B-02
Phenol	0.0157	---	0.00800	mg/L	2	0.0400	---	39	5-120%	34	30%	Q-24, B
Pyrene	0.0356	---	0.000400	mg/L	2	0.0400	---	89	57-126%	0.6	30%	
Pyridine	0.0187	---	0.00400	mg/L	2	0.0400	---	47	5-120%	16	30%	B-02
2,3,4,6-Tetrachlorophenol	0.0357	---	0.00200	mg/L	2	0.0400	---	89	50-128%	0.8	30%	
2,3,5,6-Tetrachlorophenol	0.0349	---	0.00200	mg/L	2	0.0400	---	87	50-121%	4	30%	
1,2,4-Trichlorobenzene	0.0237	---	0.00100	mg/L	2	0.0400	---	59	29-120%	30	30%	
2,4,5-Trichlorophenol	0.0397	---	0.00200	mg/L	2	0.0400	---	99	53-123%	0.2	30%	
2,4,6-Trichlorophenol	0.0376	---	0.00200	mg/L	2	0.0400	---	94	50-125%	2	30%	
<i>Surr: Nitrobenzene-d5 (Surr) Recovery: 79 % Limits: 44-120 % Dilution: 2x</i>												
<i>2-Fluorobiphenyl (Surr) 83 % 44-120 % "</i>												
<i>Phenol-d6 (Surr) 29 % 10-120 % "</i>												
<i>p-Terphenyl-d14 (Surr) 97 % 50-133 % "</i>												
<i>2-Fluorophenol (Surr) 47 % 19-120 % "</i>												
<i>2,4,6-Tribromophenol (Surr) 100 % 43-140 % "</i>												



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QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060490 - EPA 3546						Solid						
Blank (9060490-BLK2)			Prepared: 06/03/19 10:10 Analyzed: 06/04/19 10:24									
EPA 8270D												
Acenaphthene	ND	---	2.67	ug/kg	1	---	---	---	---	---	---	
Acenaphthylene	ND	---	2.67	ug/kg	1	---	---	---	---	---	---	
Anthracene	ND	---	2.67	ug/kg	1	---	---	---	---	---	---	
Benz(a)anthracene	ND	---	2.67	ug/kg	1	---	---	---	---	---	---	
Benzo(a)pyrene	ND	---	4.00	ug/kg	1	---	---	---	---	---	---	
Benzo(b)fluoranthene	ND	---	4.00	ug/kg	1	---	---	---	---	---	---	
Benzo(k)fluoranthene	ND	---	4.00	ug/kg	1	---	---	---	---	---	---	
Benzo(g,h,i)perylene	ND	---	2.67	ug/kg	1	---	---	---	---	---	---	
Chrysene	ND	---	2.67	ug/kg	1	---	---	---	---	---	---	
Dibenz(a,h)anthracene	ND	---	2.67	ug/kg	1	---	---	---	---	---	---	
Fluoranthene	ND	---	2.67	ug/kg	1	---	---	---	---	---	---	
Fluorene	ND	---	2.67	ug/kg	1	---	---	---	---	---	---	
Indeno(1,2,3-cd)pyrene	ND	---	2.67	ug/kg	1	---	---	---	---	---	---	
1-Methylnaphthalene	ND	---	5.33	ug/kg	1	---	---	---	---	---	---	
2-Methylnaphthalene	ND	---	5.33	ug/kg	1	---	---	---	---	---	---	
Naphthalene	ND	---	5.33	ug/kg	1	---	---	---	---	---	---	
Phenanthrene	ND	---	2.67	ug/kg	1	---	---	---	---	---	---	
Pyrene	ND	---	2.67	ug/kg	1	---	---	---	---	---	---	
Carbazole	ND	---	4.00	ug/kg	1	---	---	---	---	---	---	
Dibenzofuran	ND	---	2.67	ug/kg	1	---	---	---	---	---	---	
4-Chloro-3-methylphenol	ND	---	26.7	ug/kg	1	---	---	---	---	---	---	
2-Chlorophenol	ND	---	13.3	ug/kg	1	---	---	---	---	---	---	
2,4-Dichlorophenol	ND	---	13.3	ug/kg	1	---	---	---	---	---	---	
2,4-Dimethylphenol	ND	---	13.3	ug/kg	1	---	---	---	---	---	---	
2,4-Dinitrophenol	ND	---	66.7	ug/kg	1	---	---	---	---	---	---	
4,6-Dinitro-2-methylphenol	ND	---	66.7	ug/kg	1	---	---	---	---	---	---	
2-Methylphenol	ND	---	6.67	ug/kg	1	---	---	---	---	---	---	
3+4-Methylphenol(s)	ND	---	6.67	ug/kg	1	---	---	---	---	---	---	
2-Nitrophenol	ND	---	26.7	ug/kg	1	---	---	---	---	---	---	
4-Nitrophenol	ND	---	26.7	ug/kg	1	---	---	---	---	---	---	
Pentachlorophenol (PCP)	ND	---	26.7	ug/kg	1	---	---	---	---	---	---	
Phenol	ND	---	5.33	ug/kg	1	---	---	---	---	---	---	
2,3,4,6-Tetrachlorophenol	ND	---	13.3	ug/kg	1	---	---	---	---	---	---	

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Philip Nerenberg, Lab Director



Hahn and Associates
 434 NW 6th Ave. Suite 203
 Portland, OR 97209

Project: **Mult 802 Decommissioning**
 Project Number: **2708-60F**
 Project Manager: **Rob Ede**

Report ID:
A9E0723 - 06 24 19 1133

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060490 - EPA 3546						Solid						
Blank (9060490-BLK2)			Prepared: 06/03/19 10:10 Analyzed: 06/04/19 10:24									
2,3,5,6-Tetrachlorophenol	ND	---	13.3	ug/kg	1	---	---	---	---	---	---	
2,4,5-Trichlorophenol	ND	---	13.3	ug/kg	1	---	---	---	---	---	---	
2,4,6-Trichlorophenol	ND	---	13.3	ug/kg	1	---	---	---	---	---	---	
Bis(2-ethylhexyl)phthalate	ND	---	40.0	ug/kg	1	---	---	---	---	---	---	
Butyl benzyl phthalate	ND	---	26.7	ug/kg	1	---	---	---	---	---	---	
Diethylphthalate	ND	---	26.7	ug/kg	1	---	---	---	---	---	---	
Dimethylphthalate	ND	---	26.7	ug/kg	1	---	---	---	---	---	---	
Di-n-butylphthalate	ND	---	26.7	ug/kg	1	---	---	---	---	---	---	
Di-n-octyl phthalate	ND	---	26.7	ug/kg	1	---	---	---	---	---	---	
N-Nitrosodimethylamine	ND	---	6.67	ug/kg	1	---	---	---	---	---	---	
N-Nitroso-di-n-propylamine	ND	---	6.67	ug/kg	1	---	---	---	---	---	---	
N-Nitrosodiphenylamine	ND	---	6.67	ug/kg	1	---	---	---	---	---	---	
Bis(2-Chloroethoxy) methane	ND	---	6.67	ug/kg	1	---	---	---	---	---	---	
Bis(2-Chloroethyl) ether	ND	---	6.67	ug/kg	1	---	---	---	---	---	---	
2,2'-Oxybis(1-Chloropropane)	ND	---	6.67	ug/kg	1	---	---	---	---	---	---	
Hexachlorobenzene	ND	---	2.67	ug/kg	1	---	---	---	---	---	---	
Hexachlorobutadiene	ND	---	6.67	ug/kg	1	---	---	---	---	---	---	
Hexachlorocyclopentadiene	ND	---	13.3	ug/kg	1	---	---	---	---	---	---	
Hexachloroethane	ND	---	6.67	ug/kg	1	---	---	---	---	---	---	
2-Chloronaphthalene	ND	---	2.67	ug/kg	1	---	---	---	---	---	---	
1,2-Dichlorobenzene	ND	---	6.67	ug/kg	1	---	---	---	---	---	---	
1,3-Dichlorobenzene	ND	---	6.67	ug/kg	1	---	---	---	---	---	---	
1,4-Dichlorobenzene	ND	---	6.67	ug/kg	1	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	---	6.67	ug/kg	1	---	---	---	---	---	---	
4-Bromophenyl phenyl ether	ND	---	6.67	ug/kg	1	---	---	---	---	---	---	
4-Chlorophenyl phenyl ether	ND	---	6.67	ug/kg	1	---	---	---	---	---	---	
Aniline	ND	---	13.3	ug/kg	1	---	---	---	---	---	---	
4-Chloroaniline	ND	---	6.67	ug/kg	1	---	---	---	---	---	---	
2-Nitroaniline	ND	---	53.3	ug/kg	1	---	---	---	---	---	---	
3-Nitroaniline	ND	---	53.3	ug/kg	1	---	---	---	---	---	---	
4-Nitroaniline	ND	---	53.3	ug/kg	1	---	---	---	---	---	---	
Nitrobenzene	ND	---	26.7	ug/kg	1	---	---	---	---	---	---	
2,4-Dinitrotoluene	ND	---	26.7	ug/kg	1	---	---	---	---	---	---	
2,6-Dinitrotoluene	ND	---	26.7	ug/kg	1	---	---	---	---	---	---	

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Philip Nerenberg, Lab Director



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QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes	
Batch 9060490 - EPA 3546						Solid							
Blank (9060490-BLK2)			Prepared: 06/03/19 10:10 Analyzed: 06/04/19 10:24										
Benzoic acid	ND	---	333	ug/kg	1	---	---	---	---	---	---		
Benzyl alcohol	ND	---	13.3	ug/kg	1	---	---	---	---	---	---		
Isophorone	ND	---	6.67	ug/kg	1	---	---	---	---	---	---		
Azobenzene (1,2-DPH)	ND	---	6.67	ug/kg	1	---	---	---	---	---	---		
Bis(2-Ethylhexyl) adipate	ND	---	66.7	ug/kg	1	---	---	---	---	---	---		
3,3'-Dichlorobenzidine	ND	---	26.7	ug/kg	1	---	---	---	---	---	---	Q-52	
1,2-Dinitrobenzene	ND	---	66.7	ug/kg	1	---	---	---	---	---	---		
1,3-Dinitrobenzene	ND	---	66.7	ug/kg	1	---	---	---	---	---	---		
1,4-Dinitrobenzene	ND	---	66.7	ug/kg	1	---	---	---	---	---	---		
Pyridine	ND	---	13.3	ug/kg	1	---	---	---	---	---	---		
<i>Surr: Nitrobenzene-d5 (Surr)</i>		<i>Recovery: 75 %</i>		<i>Limits: 37-122 %</i>		<i>Dilution: 1x</i>							Q-41
<i>2-Fluorobiphenyl (Surr)</i>		<i>75 %</i>		<i>44-115 %</i>		<i>"</i>							
<i>Phenol-d6 (Surr)</i>		<i>76 %</i>		<i>33-122 %</i>		<i>"</i>							
<i>p-Terphenyl-d14 (Surr)</i>		<i>92 %</i>		<i>54-127 %</i>		<i>"</i>							
<i>2-Fluorophenol (Surr)</i>		<i>71 %</i>		<i>35-115 %</i>		<i>"</i>							
<i>2,4,6-Tribromophenol (Surr)</i>		<i>77 %</i>		<i>39-132 %</i>		<i>"</i>							Q-41
LCS (9060490-BS2)						Prepared: 06/03/19 10:10 Analyzed: 06/04/19 11:00						Q-18	
EPA 8270D													
Acenaphthene	553	---	5.34	ug/kg	2	533	---	104	40-122%	---	---		
Acenaphthylene	538	---	5.34	ug/kg	2	533	---	101	32-132%	---	---		
Anthracene	537	---	5.34	ug/kg	2	533	---	101	47-123%	---	---		
Benz(a)anthracene	530	---	5.34	ug/kg	2	533	---	99	49-126%	---	---		
Benzo(a)pyrene	647	---	8.00	ug/kg	2	533	---	121	45-129%	---	---		
Benzo(b)fluoranthene	608	---	8.00	ug/kg	2	533	---	114	45-132%	---	---		
Benzo(k)fluoranthene	624	---	8.00	ug/kg	2	533	---	117	47-132%	---	---		
Benzo(g,h,i)perylene	520	---	5.34	ug/kg	2	533	---	98	43-134%	---	---		
Chrysene	537	---	5.34	ug/kg	2	533	---	101	50-124%	---	---		
Dibenz(a,h)anthracene	563	---	5.34	ug/kg	2	533	---	106	45-134%	---	---		
Fluoranthene	610	---	5.34	ug/kg	2	533	---	114	50-127%	---	---		
Fluorene	549	---	5.34	ug/kg	2	533	---	103	43-125%	---	---		
Indeno(1,2,3-cd)pyrene	508	---	5.34	ug/kg	2	533	---	95	45-133%	---	---		
1-Methylnaphthalene	521	---	10.7	ug/kg	2	533	---	98	40-120%	---	---		
2-Methylnaphthalene	582	---	10.7	ug/kg	2	533	---	109	38-122%	---	---		

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Portland, OR 97209

Project: **Mult 802 Decommissioning**
Project Number: **2708-60F**
Project Manager: **Rob Ede**

Report ID:
A9E0723 - 06 24 19 1133

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060490 - EPA 3546						Solid						
LCS (9060490-BS2)						Prepared: 06/03/19 10:10 Analyzed: 06/04/19 11:00						Q-18
Naphthalene	869	---	10.7	ug/kg	2	533	---	163	35-123%	---	---	Q-29
Phenanthrene	534	---	5.34	ug/kg	2	533	---	100	50-121%	---	---	
Pyrene	624	---	5.34	ug/kg	2	533	---	117	47-127%	---	---	
Carbazole	572	---	8.00	ug/kg	2	533	---	107	50-122%	---	---	
Dibenzofuran	539	---	5.34	ug/kg	2	533	---	101	44-120%	---	---	
4-Chloro-3-methylphenol	524	---	53.4	ug/kg	2	533	---	98	45-122%	---	---	
2-Chlorophenol	526	---	26.6	ug/kg	2	533	---	99	34-121%	---	---	
2,4-Dichlorophenol	570	---	26.6	ug/kg	2	533	---	107	40-122%	---	---	
2,4-Dimethylphenol	546	---	26.6	ug/kg	2	533	---	102	30-127%	---	---	
2,4-Dinitrophenol	696	---	133	ug/kg	2	533	---	131	5-137%	---	---	Q-41
4,6-Dinitro-2-methylphenol	764	---	133	ug/kg	2	533	---	143	29-132%	---	---	Q-29, Q-41
2-Methylphenol	539	---	13.3	ug/kg	2	533	---	101	32-122%	---	---	
3+4-Methylphenol(s)	551	---	13.3	ug/kg	2	533	---	103	34-120%	---	---	
2-Nitrophenol	575	---	53.4	ug/kg	2	533	---	108	36-123%	---	---	Q-41
4-Nitrophenol	645	---	53.4	ug/kg	2	533	---	121	30-132%	---	---	
Pentachlorophenol (PCP)	587	---	53.4	ug/kg	2	533	---	110	25-133%	---	---	
Phenol	576	---	10.7	ug/kg	2	533	---	108	34-120%	---	---	
2,3,4,6-Tetrachlorophenol	568	---	26.6	ug/kg	2	533	---	107	44-125%	---	---	
2,3,5,6-Tetrachlorophenol	608	---	26.6	ug/kg	2	533	---	114	40-120%	---	---	Q-41
2,4,5-Trichlorophenol	607	---	26.6	ug/kg	2	533	---	114	41-124%	---	---	
2,4,6-Trichlorophenol	625	---	26.6	ug/kg	2	533	---	117	39-126%	---	---	Q-41
Bis(2-ethylhexyl)phthalate	518	---	80.0	ug/kg	2	533	---	97	51-133%	---	---	
Butyl benzyl phthalate	511	---	53.4	ug/kg	2	533	---	96	48-132%	---	---	
Diethylphthalate	567	---	53.4	ug/kg	2	533	---	106	50-124%	---	---	
Dimethylphthalate	517	---	53.4	ug/kg	2	533	---	97	48-124%	---	---	
Di-n-butylphthalate	569	---	53.4	ug/kg	2	533	---	107	51-128%	---	---	
Di-n-octyl phthalate	574	---	53.4	ug/kg	2	533	---	108	44-140%	---	---	
N-Nitrosodimethylamine	499	---	13.3	ug/kg	2	533	---	93	23-120%	---	---	
N-Nitroso-di-n-propylamine	518	---	13.3	ug/kg	2	533	---	97	36-120%	---	---	
N-Nitrosodiphenylamine	509	---	13.3	ug/kg	2	533	---	95	38-127%	---	---	
Bis(2-Chloroethoxy) methane	506	---	13.3	ug/kg	2	533	---	95	36-121%	---	---	
Bis(2-Chloroethyl) ether	495	---	13.3	ug/kg	2	533	---	93	31-120%	---	---	
2,2'-Oxybis(1-Chloropropane)	540	---	13.3	ug/kg	2	533	---	101	33-131%	---	---	
Hexachlorobenzene	501	---	5.34	ug/kg	2	533	---	94	44-122%	---	---	

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Philip Nerenberg, Lab Director



Hahn and Associates

434 NW 6th Ave. Suite 203
Portland, OR 97209

Project: **Mult 802 Decommissioning**

Project Number: **2708-60F**
Project Manager: **Rob Ede**

Report ID:
A9E0723 - 06 24 19 1133

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes	
Batch 9060490 - EPA 3546						Solid							
LCS (9060490-BS2)			Prepared: 06/03/19 10:10 Analyzed: 06/04/19 11:00						Q-18				
Hexachlorobutadiene	541	---	13.3	ug/kg	2	533	---	101	32-123%	---	---		
Hexachlorocyclopentadiene	549	---	26.6	ug/kg	2	533	---	103	5-140%	---	---		
Hexachloroethane	487	---	13.3	ug/kg	2	533	---	91	28-120%	---	---		
2-Chloronaphthalene	543	---	5.34	ug/kg	2	533	---	102	41-120%	---	---		
1,2-Dichlorobenzene	481	---	13.3	ug/kg	2	533	---	90	33-120%	---	---		
1,3-Dichlorobenzene	475	---	13.3	ug/kg	2	533	---	89	30-120%	---	---		
1,4-Dichlorobenzene	486	---	13.3	ug/kg	2	533	---	91	31-120%	---	---		
1,2,4-Trichlorobenzene	508	---	13.3	ug/kg	2	533	---	95	34-120%	---	---		
4-Bromophenyl phenyl ether	521	---	13.3	ug/kg	2	533	---	98	46-124%	---	---		
4-Chlorophenyl phenyl ether	550	---	13.3	ug/kg	2	533	---	103	45-121%	---	---		
Aniline	472	---	26.6	ug/kg	2	533	---	88	7-120%	---	---		
4-Chloroaniline	482	---	13.3	ug/kg	2	533	---	90	16-120%	---	---		
2-Nitroaniline	550	---	107	ug/kg	2	533	---	103	44-127%	---	---		
3-Nitroaniline	510	---	107	ug/kg	2	533	---	96	33-120%	---	---		
4-Nitroaniline	683	---	107	ug/kg	2	533	---	128	35-120%	---	---	Q-29	
Nitrobenzene	545	---	53.4	ug/kg	2	533	---	102	34-122%	---	---		
2,4-Dinitrotoluene	592	---	53.4	ug/kg	2	533	---	111	48-126%	---	---		
2,6-Dinitrotoluene	549	---	53.4	ug/kg	2	533	---	103	46-124%	---	---		
Benzoic acid	967	---	666	ug/kg	2	1070	---	91	5-140%	---	---	Q-41	
Benzyl alcohol	534	---	26.6	ug/kg	2	533	---	100	29-122%	---	---		
Isophorone	508	---	13.3	ug/kg	2	533	---	95	30-122%	---	---		
Azobenzene (1,2-DPH)	503	---	13.3	ug/kg	2	533	---	94	39-125%	---	---		
Bis(2-Ethylhexyl) adipate	480	---	133	ug/kg	2	533	---	90	60-121%	---	---		
3,3'-Dichlorobenzidine	1020	---	53.4	ug/kg	2	1070	---	95	22-121%	---	---		
1,2-Dinitrobenzene	562	---	133	ug/kg	2	533	---	105	44-120%	---	---		
1,3-Dinitrobenzene	585	---	133	ug/kg	2	533	---	110	42-127%	---	---		
1,4-Dinitrobenzene	633	---	133	ug/kg	2	533	---	119	37-132%	---	---	Q-41	
Pyridine	414	---	26.6	ug/kg	2	533	---	78	5-120%	---	---		
<i>Surr: Nitrobenzene-d5 (Surr)</i>		<i>Recovery: 88 %</i>		<i>Limits: 37-122 %</i>		<i>Dilution: 2x</i>		Q-41					
<i>2-Fluorobiphenyl (Surr)</i>		<i>88 %</i>		<i>44-115 %</i>		<i>"</i>							
<i>Phenol-d6 (Surr)</i>		<i>83 %</i>		<i>33-122 %</i>		<i>"</i>							
<i>p-Terphenyl-d14 (Surr)</i>		<i>86 %</i>		<i>54-127 %</i>		<i>"</i>							
<i>2-Fluorophenol (Surr)</i>		<i>81 %</i>		<i>35-115 %</i>		<i>"</i>							
<i>2,4,6-Tribromophenol (Surr)</i>		<i>95 %</i>		<i>39-132 %</i>		<i>"</i>		Q-41					



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QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060490 - EPA 3546						Solid						
Duplicate (9060490-DUP2)			Prepared: 06/03/19 10:10 Analyzed: 06/04/19 14:04									
QC Source Sample: Non-SDG (A9E0785-01RE1)												
Acenaphthene	9810000	---	902000	ug/kg	10000	---	9640000	---	---	2	30%	
Acenaphthylene	ND	---	902000	ug/kg	10000	---	ND	---	---	---	30%	
Anthracene	5370000	---	902000	ug/kg	10000	---	5530000	---	---	3	30%	
Benz(a)anthracene	4700000	---	902000	ug/kg	10000	---	5340000	---	---	13	30%	
Benzo(a)pyrene	5610000	---	1350000	ug/kg	10000	---	6700000	---	---	18	30%	
Benzo(b)fluoranthene	6330000	---	1350000	ug/kg	10000	---	7160000	---	---	12	30%	M-05
Benzo(k)fluoranthene	2190000	---	1350000	ug/kg	10000	---	3260000	---	---	39	30%	M-05, Q-17
Benzo(g,h,i)perylene	3710000	---	902000	ug/kg	10000	---	4290000	---	---	14	30%	
Chrysene	5320000	---	902000	ug/kg	10000	---	6020000	---	---	12	30%	
Dibenz(a,h)anthracene	ND	---	902000	ug/kg	10000	---	631000	---	---	***	30%	
Fluoranthene	19100000	---	902000	ug/kg	10000	---	19800000	---	---	4	30%	
Fluorene	4990000	---	902000	ug/kg	10000	---	5130000	---	---	3	30%	
Indeno(1,2,3-cd)pyrene	4130000	---	902000	ug/kg	10000	---	4670000	---	---	12	30%	
1-Methylnaphthalene	2840000	---	1800000	ug/kg	10000	---	2860000	---	---	0.7	30%	
2-Methylnaphthalene	5790000	---	1800000	ug/kg	10000	---	5990000	---	---	3	30%	
Naphthalene	15400000	---	1800000	ug/kg	10000	---	15500000	---	---	1	30%	Q-29
Phenanthrene	21800000	---	902000	ug/kg	10000	---	22100000	---	---	1	30%	
Pyrene	17400000	---	902000	ug/kg	10000	---	18300000	---	---	5	30%	
Carbazole	3020000	---	1350000	ug/kg	10000	---	3060000	---	---	1	30%	
Dibenzofuran	5710000	---	902000	ug/kg	10000	---	5510000	---	---	4	30%	
4-Chloro-3-methylphenol	ND	---	9020000	ug/kg	10000	---	ND	---	---	---	30%	
2-Chlorophenol	ND	---	4490000	ug/kg	10000	---	ND	---	---	---	30%	
2,4-Dichlorophenol	ND	---	4490000	ug/kg	10000	---	ND	---	---	---	30%	
2,4-Dimethylphenol	ND	---	4490000	ug/kg	10000	---	ND	---	---	---	30%	
2,4-Dinitrophenol	ND	---	22500000	ug/kg	10000	---	ND	---	---	---	30%	
4,6-Dinitro-2-methylphenol	ND	---	22500000	ug/kg	10000	---	ND	---	---	---	30%	
2-Methylphenol	ND	---	2250000	ug/kg	10000	---	ND	---	---	---	30%	
3+4-Methylphenol(s)	ND	---	2250000	ug/kg	10000	---	ND	---	---	---	30%	
2-Nitrophenol	ND	---	9020000	ug/kg	10000	---	ND	---	---	---	30%	
4-Nitrophenol	ND	---	9020000	ug/kg	10000	---	ND	---	---	---	30%	
Pentachlorophenol (PCP)	ND	---	9020000	ug/kg	10000	---	ND	---	---	---	30%	
Phenol	ND	---	1800000	ug/kg	10000	---	ND	---	---	---	30%	



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QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060490 - EPA 3546						Solid						
Duplicate (9060490-DUP2)			Prepared: 06/03/19 10:10 Analyzed: 06/04/19 14:04									
QC Source Sample: Non-SDG (A9E0785-01RE1)												
2,3,4,6-Tetrachlorophenol	ND	---	4490000	ug/kg	10000	---	ND	---	---	---	30%	
2,3,5,6-Tetrachlorophenol	ND	---	4490000	ug/kg	10000	---	ND	---	---	---	30%	
2,4,5-Trichlorophenol	ND	---	4490000	ug/kg	10000	---	ND	---	---	---	30%	
2,4,6-Trichlorophenol	ND	---	4490000	ug/kg	10000	---	ND	---	---	---	30%	
Bis(2-ethylhexyl)phthalate	ND	---	13500000	ug/kg	10000	---	ND	---	---	---	30%	
Butyl benzyl phthalate	ND	---	9020000	ug/kg	10000	---	ND	---	---	---	30%	
Diethylphthalate	ND	---	9020000	ug/kg	10000	---	ND	---	---	---	30%	
Dimethylphthalate	ND	---	9020000	ug/kg	10000	---	ND	---	---	---	30%	
Di-n-butylphthalate	ND	---	9020000	ug/kg	10000	---	ND	---	---	---	30%	
Di-n-octyl phthalate	ND	---	9020000	ug/kg	10000	---	ND	---	---	---	30%	
N-Nitrosodimethylamine	ND	---	2250000	ug/kg	10000	---	ND	---	---	---	30%	
N-Nitroso-di-n-propylamine	ND	---	2250000	ug/kg	10000	---	ND	---	---	---	30%	
N-Nitrosodiphenylamine	ND	---	2250000	ug/kg	10000	---	ND	---	---	---	30%	
Bis(2-Chloroethoxy) methane	ND	---	2250000	ug/kg	10000	---	ND	---	---	---	30%	
Bis(2-Chloroethyl) ether	ND	---	2250000	ug/kg	10000	---	ND	---	---	---	30%	
2,2'-Oxybis(1-Chloropropane)	ND	---	2250000	ug/kg	10000	---	ND	---	---	---	30%	
Hexachlorobenzene	ND	---	902000	ug/kg	10000	---	ND	---	---	---	30%	
Hexachlorobutadiene	ND	---	2250000	ug/kg	10000	---	ND	---	---	---	30%	
Hexachlorocyclopentadiene	ND	---	4490000	ug/kg	10000	---	ND	---	---	---	30%	
Hexachloroethane	ND	---	2250000	ug/kg	10000	---	ND	---	---	---	30%	
2-Chloronaphthalene	ND	---	902000	ug/kg	10000	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	---	2250000	ug/kg	10000	---	ND	---	---	---	30%	
1,3-Dichlorobenzene	ND	---	2250000	ug/kg	10000	---	ND	---	---	---	30%	
1,4-Dichlorobenzene	ND	---	2250000	ug/kg	10000	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	---	2250000	ug/kg	10000	---	ND	---	---	---	30%	
4-Bromophenyl phenyl ether	ND	---	2250000	ug/kg	10000	---	ND	---	---	---	30%	
4-Chlorophenyl phenyl ether	ND	---	2250000	ug/kg	10000	---	ND	---	---	---	30%	
Aniline	ND	---	4490000	ug/kg	10000	---	ND	---	---	---	30%	
4-Chloroaniline	ND	---	2250000	ug/kg	10000	---	ND	---	---	---	30%	
2-Nitroaniline	ND	---	18000000	ug/kg	10000	---	ND	---	---	---	30%	
3-Nitroaniline	ND	---	18000000	ug/kg	10000	---	ND	---	---	---	30%	
4-Nitroaniline	ND	---	18000000	ug/kg	10000	---	ND	---	---	---	30%	
Nitrobenzene	ND	---	9020000	ug/kg	10000	---	ND	---	---	---	30%	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060490 - EPA 3546						Solid						
Duplicate (9060490-DUP2)			Prepared: 06/03/19 10:10 Analyzed: 06/04/19 14:04									
QC Source Sample: Non-SDG (A9E0785-01RE1)												
2,4-Dinitrotoluene	ND	---	9020000	ug/kg	10000	---	ND	---	---	---	30%	
2,6-Dinitrotoluene	ND	---	9020000	ug/kg	10000	---	ND	---	---	---	30%	
Benzoic acid	ND	---	112000000	ug/kg	10000	---	ND	---	---	---	30%	
Benzyl alcohol	ND	---	4490000	ug/kg	10000	---	ND	---	---	---	30%	
Isophorone	ND	---	2250000	ug/kg	10000	---	ND	---	---	---	30%	
Azobenzene (1,2-DPH)	ND	---	2250000	ug/kg	10000	---	ND	---	---	---	30%	
Bis(2-Ethylhexyl) adipate	ND	---	22500000	ug/kg	10000	---	ND	---	---	---	30%	
3,3'-Dichlorobenzidine	ND	---	9020000	ug/kg	10000	---	ND	---	---	---	30%	Q-52
1,2-Dinitrobenzene	ND	---	22500000	ug/kg	10000	---	ND	---	---	---	30%	
1,3-Dinitrobenzene	ND	---	22500000	ug/kg	10000	---	ND	---	---	---	30%	
1,4-Dinitrobenzene	ND	---	22500000	ug/kg	10000	---	ND	---	---	---	30%	
Pyridine	ND	---	4490000	ug/kg	10000	---	ND	---	---	---	30%	
<i>Surr: Nitrobenzene-d5 (Surr)</i>		<i>Recovery: 298 %</i>		<i>Limits: 37-122 %</i>		<i>Dilution: 10000x</i>					S-05	
<i>2-Fluorobiphenyl (Surr)</i>		<i>%</i>		<i>44-115 %</i>		<i>"</i>					S-01	
<i>Phenol-d6 (Surr)</i>		<i>%</i>		<i>33-122 %</i>		<i>"</i>					S-01	
<i>p-Terphenyl-d14 (Surr)</i>		<i>251 %</i>		<i>54-127 %</i>		<i>"</i>					S-05	
<i>2-Fluorophenol (Surr)</i>		<i>%</i>		<i>35-115 %</i>		<i>"</i>					S-01	
<i>2,4,6-Tribromophenol (Surr)</i>		<i>%</i>		<i>39-132 %</i>		<i>"</i>					S-01	



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QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020A (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060676 - EPA 3051A						Solid						
Blank (9060676-BLK1)			Prepared: 06/06/19 15:18 Analyzed: 06/07/19 14:08									
<u>EPA 6020A</u>												
Aluminum	ND	---	48.1	mg/kg	10	---	---	---	---	---	---	
Antimony	ND	---	0.962	mg/kg	10	---	---	---	---	---	---	
Arsenic	ND	---	0.962	mg/kg	10	---	---	---	---	---	---	
Barium	ND	---	0.962	mg/kg	10	---	---	---	---	---	---	
Beryllium	ND	---	0.192	mg/kg	10	---	---	---	---	---	---	
Cadmium	ND	---	0.192	mg/kg	10	---	---	---	---	---	---	
Calcium	ND	---	96.2	mg/kg	10	---	---	---	---	---	---	
Chromium	ND	---	0.962	mg/kg	10	---	---	---	---	---	---	
Copper	ND	---	0.962	mg/kg	10	---	---	---	---	---	---	
Iron	ND	---	48.1	mg/kg	10	---	---	---	---	---	---	
Lead	ND	---	0.192	mg/kg	10	---	---	---	---	---	---	
Magnesium	ND	---	48.1	mg/kg	10	---	---	---	---	---	---	
Manganese	ND	---	0.962	mg/kg	10	---	---	---	---	---	---	
Mercury	ND	---	0.0769	mg/kg	10	---	---	---	---	---	---	
Nickel	ND	---	0.962	mg/kg	10	---	---	---	---	---	---	
Potassium	ND	---	96.2	mg/kg	10	---	---	---	---	---	---	
Selenium	ND	---	0.962	mg/kg	10	---	---	---	---	---	---	
Silver	ND	---	0.192	mg/kg	10	---	---	---	---	---	---	
Sodium	ND	---	96.2	mg/kg	10	---	---	---	---	---	---	
Thallium	ND	---	0.192	mg/kg	10	---	---	---	---	---	---	
Vanadium	ND	---	0.962	mg/kg	10	---	---	---	---	---	---	
Zinc	ND	---	3.85	mg/kg	10	---	---	---	---	---	---	

LCS (9060676-BS1)			Prepared: 06/06/19 15:18 Analyzed: 06/07/19 14:13									
<u>EPA 6020A</u>												
Aluminum	2650	---	50.0	mg/kg	10	2500	---	106	80-120%	---	---	
Antimony	23.4	---	1.00	mg/kg	10	25.0	---	93	80-120%	---	---	
Arsenic	52.6	---	1.00	mg/kg	10	50.0	---	105	80-120%	---	---	
Barium	52.5	---	1.00	mg/kg	10	50.0	---	105	80-120%	---	---	
Beryllium	24.5	---	0.200	mg/kg	10	25.0	---	98	80-120%	---	---	
Cadmium	49.7	---	0.200	mg/kg	10	50.0	---	99	80-120%	---	---	
Calcium	2680	---	100	mg/kg	10	2500	---	107	80-120%	---	---	
Chromium	54.6	---	1.00	mg/kg	10	50.0	---	109	80-120%	---	---	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020A (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060676 - EPA 3051A												
Solid												
LCS (9060676-BS1)												
Prepared: 06/06/19 15:18 Analyzed: 06/07/19 14:13												
Copper	57.5	---	1.00	mg/kg	10	50.0	---	115	80-120%	---	---	
Iron	2740	---	50.0	mg/kg	10	2500	---	110	80-120%	---	---	
Lead	52.0	---	0.200	mg/kg	10	50.0	---	104	80-120%	---	---	
Magnesium	2600	---	50.0	mg/kg	10	2500	---	104	80-120%	---	---	
Manganese	53.7	---	1.00	mg/kg	10	50.0	---	107	80-120%	---	---	
Mercury	0.991	---	0.0800	mg/kg	10	1.00	---	99	80-120%	---	---	
Nickel	56.1	---	1.00	mg/kg	10	50.0	---	112	80-120%	---	---	
Potassium	2770	---	100	mg/kg	10	2500	---	111	80-120%	---	---	
Selenium	24.4	---	1.00	mg/kg	10	25.0	---	97	80-120%	---	---	
Silver	24.6	---	0.200	mg/kg	10	25.0	---	99	80-120%	---	---	
Sodium	2910	---	100	mg/kg	10	2500	---	116	80-120%	---	---	
Thallium	24.1	---	0.200	mg/kg	10	25.0	---	96	80-120%	---	---	
Vanadium	52.9	---	1.00	mg/kg	10	50.0	---	106	80-120%	---	---	
Zinc	54.8	---	4.00	mg/kg	10	50.0	---	110	80-120%	---	---	

Duplicate (9060676-DUP1)												
Prepared: 06/06/19 15:18 Analyzed: 06/07/19 14:22												
QC Source Sample: 2708-190521-007 (A9E0723-01)												
EPA 6020A												
Aluminum	ND	---	231	mg/kg	10	---	ND	---	---	---	40%	R-04
Antimony	ND	---	4.63	mg/kg	10	---	ND	---	---	---	40%	R-04
Arsenic	ND	---	4.63	mg/kg	10	---	ND	---	---	---	40%	R-04
Barium	ND	---	4.63	mg/kg	10	---	ND	---	---	---	40%	Q-05, R-04
Beryllium	ND	---	0.926	mg/kg	10	---	ND	---	---	---	40%	R-04
Cadmium	ND	---	0.926	mg/kg	10	---	ND	---	---	---	40%	R-04
Calcium	ND	---	463	mg/kg	10	---	ND	---	---	---	40%	R-04
Chromium	ND	---	4.63	mg/kg	10	---	ND	---	---	---	40%	R-04
Copper	ND	---	4.63	mg/kg	10	---	ND	---	---	---	40%	R-04
Iron	2260	---	231	mg/kg	10	---	1130	---	---	67	40%	Q-04
Lead	23.8	---	0.926	mg/kg	10	---	13.1	---	---	58	40%	Q-04
Magnesium	ND	---	231	mg/kg	10	---	ND	---	---	---	40%	R-04
Manganese	19.9	---	4.63	mg/kg	10	---	16.7	---	---	17	40%	
Mercury	ND	---	0.370	mg/kg	10	---	ND	---	---	---	40%	R-04
Nickel	ND	---	4.63	mg/kg	10	---	ND	---	---	---	40%	R-04
Potassium	ND	---	463	mg/kg	10	---	ND	---	---	---	40%	R-04

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QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020A (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060676 - EPA 3051A												
Solid												
Duplicate (9060676-DUP1)												
Prepared: 06/06/19 15:18 Analyzed: 06/07/19 14:22												
QC Source Sample: 2708-190521-007 (A9E0723-01)												
Selenium	ND	---	4.63	mg/kg	10	---	ND	---	---	---	40%	R-04
Silver	ND	---	0.926	mg/kg	10	---	ND	---	---	---	40%	R-04
Sodium	ND	---	463	mg/kg	10	---	ND	---	---	---	40%	R-04
Thallium	ND	---	0.926	mg/kg	10	---	ND	---	---	---	40%	R-04
Vanadium	ND	---	4.63	mg/kg	10	---	ND	---	---	---	40%	R-04
Zinc	30.4	---	18.5	mg/kg	10	---	14.6	---	---	70	40%	Q-05

Matrix Spike (9060676-MS1)												
Prepared: 06/06/19 15:18 Analyzed: 06/07/19 14:27												
QC Source Sample: 2708-190521-007 (A9E0723-01)												
EPA 6020A												
Aluminum	8110	---	144	mg/kg	10	7180	ND	113	75-125%	---	---	
Antimony	69.6	---	2.87	mg/kg	10	71.8	ND	97	75-125%	---	---	
Arsenic	161	---	2.87	mg/kg	10	144	ND	112	75-125%	---	---	
Barium	157	---	2.87	mg/kg	10	144	ND	108	75-125%	---	---	
Beryllium	73.2	---	0.575	mg/kg	10	71.8	ND	102	75-125%	---	---	
Cadmium	149	---	0.575	mg/kg	10	144	ND	103	75-125%	---	---	
Calcium	8220	---	287	mg/kg	10	7180	ND	114	75-125%	---	---	
Chromium	165	---	2.87	mg/kg	10	144	ND	115	75-125%	---	---	
Copper	177	---	2.87	mg/kg	10	144	ND	123	75-125%	---	---	
Iron	11100	---	144	mg/kg	10	7180	1130	138	75-125%	---	---	Q-04
Lead	184	---	0.575	mg/kg	10	144	13.1	119	75-125%	---	---	
Magnesium	7740	---	144	mg/kg	10	7180	ND	108	75-125%	---	---	
Manganese	180	---	2.87	mg/kg	10	144	16.7	114	75-125%	---	---	
Mercury	2.95	---	0.230	mg/kg	10	2.87	ND	103	75-125%	---	---	
Nickel	172	---	2.87	mg/kg	10	144	ND	120	75-125%	---	---	
Potassium	8380	---	287	mg/kg	10	7180	ND	117	75-125%	---	---	
Selenium	72.7	---	2.87	mg/kg	10	71.8	ND	101	75-125%	---	---	
Silver	73.2	---	0.575	mg/kg	10	71.8	ND	102	75-125%	---	---	
Sodium	8970	---	287	mg/kg	10	7180	ND	125	75-125%	---	---	
Thallium	67.5	---	0.575	mg/kg	10	71.8	ND	94	75-125%	---	---	
Vanadium	162	---	2.87	mg/kg	10	144	ND	112	75-125%	---	---	
Zinc	201	---	11.5	mg/kg	10	144	14.6	130	75-125%	---	---	Q-04

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SAMPLE PREPARATION INFORMATION

Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Prep: EPA 3546 (Fuels)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<u>Batch: 9060517</u>							
A9E0723-03	Solid	NWTPH-Dx	05/21/19 11:55	06/03/19 16:03	0.56g/5mL	10g/5mL	17.90

Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

Prep: EPA 5035A

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<u>Batch: 9060533</u>							
A9E0723-03	Solid	NWTPH-Gx (MS)	05/21/19 11:55	05/31/19 15:40	1.17g/5mL	5g/5mL	4.27

Volatile Organic Compounds by EPA 5035A/8260C

Prep: EPA 5035A

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<u>Batch: 9051139</u>							
A9E0723-01	Solid	5035A/8260C	05/21/19 10:55	05/22/19 15:02	1.77g/5mL	5g/5mL	2.82
A9E0723-02	Solid	5035A/8260C	05/21/19 11:00	05/22/19 15:02	1.21g/5mL	5g/5mL	4.13
<u>Batch: 9051198</u>							
A9E0723-04RE1	Solid	5035A/8260C	05/21/19 15:30	05/22/19 15:02	1.11g/5mL	5g/5mL	4.50
<u>Batch: 9060533</u>							
A9E0723-03	Solid	5035A/8260C	05/21/19 11:55	05/31/19 15:40	1.17g/5mL	5g/5mL	4.27
<u>Batch: 9060582</u>							
A9E0723-03RE1	Solid	5035A/8260C	05/21/19 11:55	05/31/19 15:40	1.17g/5mL	5g/5mL	4.27

TCLP Volatile Organic Compounds by EPA 1311/8260C

Prep: EPA 1311/5030B TCLP Volatiles

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<u>Batch: 9051445</u>							
A9E0723-01	Solid	1311/8260C	05/21/19 10:55	06/05/19 09:08	5mL/5mL	5mL/5mL	1.00
A9E0723-01RE1	Solid	1311/8260C	05/21/19 10:55	06/05/19 09:08	5mL/5mL	5mL/5mL	1.00

SPLP Volatile Organic Compounds by EPA 1312/8260C

Prep: EPA 1312/5030B SPLP Volatiles

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
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Philip Nerenberg, Lab Director



Hahn and Associates 434 NW 6th Ave. Suite 203 Portland, OR 97209	Project: Mult 802 Decommissioning Project Number: 2708-60F Project Manager: Rob Ede	Report ID: A9E0723 - 06 24 19 1133
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SAMPLE PREPARATION INFORMATION

SPLP Volatile Organic Compounds by EPA 1312/8260C

Prep: EPA 1312/5030B SPLP Volatiles

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 9060589							
A9E0723-01	Solid	1312/8260C	05/21/19 10:55	06/05/19 12:17	5mL/5mL	5mL/5mL	1.00

SPLP Semivolatile Organic Compounds by EPA 1312/8270D

Prep: EPA 1312/3510C (BNA Extraction)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 9060759							
A9E0723-01	Solid	1312/8270D	05/21/19 10:55	06/10/19 10:22	200mL/2mL	200mL/2mL	1.00
A9E0723-01RE1	Solid	1312/8270D	05/21/19 10:55	06/10/19 10:22	200mL/2mL	200mL/2mL	1.00

Semivolatile Organic Compounds by EPA 8270D

Prep: EPA 3546

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 9060490							
A9E0723-01RE1	Solid	EPA 8270D	05/21/19 10:55	06/03/19 12:46	1.06g/5mL	15g/2mL	35.40

Total Metals by EPA 6020A (ICPMS)

Prep: EPA 3051A

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 9060676							
A9E0723-01	Solid	EPA 6020A	05/21/19 10:55	06/06/19 15:18	0.105g/50mL	0.5g/50mL	4.76

SPLP Extraction by EPA 1312

Prep: EPA 1312 (SPLP)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 9060621							
A9E0723-01	Solid	EPA 1312	05/21/19 10:55	06/05/19 17:15	100g/2000mL	100g/2000mL	NA

Prep: EPA 1311 TCLP/ZHE

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 9060554							
A9E0723-01	Solid	EPA 1312 ZHE	05/21/19 10:55	06/04/19 15:58	25.04g/500mL	25g/500mL	NA

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6700 S.W. Sandburg Street
Tigard, OR 97223
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EPA ID: OR01039

Hahn and Associates

434 NW 6th Ave. Suite 203
Portland, OR 97209

Project: **Mult 802 Decommissioning**

Project Number: **2708-60F**

Project Manager: **Rob Ede**

Report ID:

A9E0723 - 06 24 19 1133

SAMPLE PREPARATION INFORMATION

TCLP Extraction by EPA 1311 (ZHE)

Prep: EPA 1311 TCLP/ZHE

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<u>Batch: 9060587</u>							
A9E0723-01	Solid	EPA 1311 ZHE	05/21/19 10:55	06/04/19 15:58	20.07g/500mL	25g/500mL	NA

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Project: **Mult 802 Decommissioning**

Project Number: **2708-60F**

Project Manager: **Rob Ede**

Report ID:

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QUALIFIER DEFINITIONS

Client Sample and Quality Control (QC) Sample Qualifier Definitions:

Apex Laboratories

- B** Analyte detected in an associated blank at a level above the MRL. (See Notes and Conventions below.)
- B-02** Analyte detected in an associated blank at a level between one-half the MRL and the MRL. (See Notes and Conventions below.)
- E** Estimated Value. The result is above the calibration range of the instrument.
- E-05** Estimated Result. Initial Calibration Verification (ICV) failed high. No affect on non-detect results.
- F-17** No fuel pattern detected. The Diesel result represents carbon range C12 to C24, and the Oil result represents >C24 to C40.
- H-01** This sample was analyzed outside the recommended holding time.
- H-08** Sample hold time extended by freezing at -18 degrees C. Total time at 4 degrees C was less than the standard hold time.
- M-02** Due to matrix interference, this analyte cannot be accurately quantified. The reported result is estimated.
- M-04** Due to matrix interference, this analyte cannot be accurately quantified. The reported result may contain a high bias.
- M-05** Estimated results. Peak separation for structural isomers is insufficient for accurate quantification.
- Q-01** Spike recovery and/or RPD is outside acceptance limits.
- Q-03** Spike recovery and/or RPD is outside control limits due to the high concentration of analyte present in the sample.
- Q-04** Spike recovery and/or RPD is outside control limits due to a non-homogeneous sample matrix.
- Q-05** Analyses are not controlled on RPD values from sample and duplicate concentrations that are below 5 times the reporting level.
- Q-17** RPD between original and duplicate sample is outside of established control limits.
- Q-18** Matrix Spike results for this extraction batch are not reported due to the high dilution necessary for analysis of the source sample.
- Q-19** Blank Spike Duplicate (BSD) sample analyzed in place of Matrix Spike/Duplicate samples due to limited sample amount available for analysis.
- Q-24** The RPD for this spike and spike duplicate is above established control limits. Recoveries for both the spike and spike duplicate are within control limits.
- Q-29** Recovery for Lab Control Spike (LCS) is above the upper control limit. Data may be biased high.
- Q-31** Estimated Results. Recovery of Continuing Calibration Verification sample below lower control limit for this analyte. Results are likely biased low.
- Q-39** Results for sample duplicate are significantly higher than the sample results. See duplicate results in QC section of the report.
- Q-41** Estimated Results. Recovery of Continuing Calibration Verification sample above upper control limit for this analyte. Results are likely biased high.
- Q-42** Matrix Spike and/or Duplicate analysis was performed on this sample. % Recovery or RPD for this analyte is outside laboratory control limits. (Refer to the QC Section of Analytical Report.)
- Q-52** Due to erratic or low blank spike recoveries, results for this analyte are considered Estimated Values.



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- Q-54** Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +1.6%. The results are reported as Estimated Values.
- Q-54a** Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +1.8%. The results are reported as Estimated Values.
- Q-54b** Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +12.6%. The results are reported as Estimated Values.
- Q-54c** Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +13%. The results are reported as Estimated Values.
- Q-54d** Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +2%. The results are reported as Estimated Values.
- Q-54e** Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +3.2%. The results are reported as Estimated Values.
- Q-54f** Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +3.8%. The results are reported as Estimated Values.
- Q-54g** Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +4.9%. The results are reported as Estimated Values.
- Q-54h** Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +5%. The results are reported as Estimated Values.
- Q-54i** Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +6%. The results are reported as Estimated Values.
- Q-54j** Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +7%. The results are reported as Estimated Values.
- Q-54k** Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +9%. The results are reported as Estimated Values.
- Q-54l** Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +9.0%. The results are reported as Estimated Values.
- Q-54m** Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by -1.1%. The results are reported as Estimated Values.
- Q-54n** Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by -10%. The results are reported as Estimated Values.
- Q-54o** Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by -14%. The results are reported as Estimated Values.
- Q-54p** Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by -2%. The results are reported as Estimated Values.
- Q-54q** Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by -24%. The results are reported as Estimated Values.
- Q-54r** Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by -5.8%. The results are reported as Estimated Values.
- Q-54s** Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by -8.3%. The results are reported as Estimated Values.



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- Q-54t** Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by -9%. The results are reported as Estimated Values.
- Q-55** Daily CCV/LCS recovery for this analyte was below the +/-20% criteria listed in EPA 8260C, however there is adequate sensitivity to ensure detection at the reporting level.
- Q-56** Daily CCV/LCS recovery for this analyte was above the +/-20% criteria listed in EPA 8260C
- R-02** The Reporting Limit for this analyte has been raised to account for interference from coeluting organic compounds present in the sample.
- R-04** Reporting levels elevated due to preparation and/or analytical dilution necessary for analysis.
- S-01** Surrogate recovery for this sample is not available due to sample dilution required from high analyte concentration and/or matrix interference.
- S-05** Surrogate recovery is estimated due to sample dilution required for high analyte concentration and/or matrix interference.
- TCLP** This batch QC sample was prepared with TCLP or SPLP fluid from preparation batch 906587.
- V-15** Sample aliquot was subsampled from the sample container. The subsampled aliquot was preserved in the laboratory within 48 hours of sampling.
- V-16** Sample aliquot was subsampled from the sample container in the laboratory. The subsampled aliquot was not preserved within 48 hours of sampling.
- X** See Case Narrative.



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REPORTING NOTES AND CONVENTIONS:

Abbreviations:

- DET Analyte DETECTED at or above the detection or reporting limit.
- ND Analyte NOT DETECTED at or above the detection or reporting limit.
- NR Result Not Reported
- RPD Relative Percent Difference. RPDs for Matrix Spikes and Matrix Spike Duplicates are based on concentration, not recovery.

Detection Limits: Limit of Detection (LOD)

Limits of Detection (LODs) are normally set at a level of one half the validated Limit of Quantitation (LOQ).
If no value is listed ('-----'), then the data has not been evaluated below the Reporting Limit.

Reporting Limits: Limit of Quantitation (LOQ)

Validated Limits of Quantitation (LOQs) are reported as the Reporting Limits for all analyses where the LOQ, MRL, PQL or CRL are requested. The LOQ represents a level at or above the low point of the calibration curve, that has been validated according to Apex Laboratories' comprehensive LOQ policies and procedures.

Reporting Conventions:

- Basis: Results for soil samples are generally reported on a 100% dry weight basis.
The Result Basis is listed following the units as "dry", "wet", or " " (blank) designation.
 - "dry" Sample results and Reporting Limits are reported on a dry weight basis. (i.e. "ug/kg dry")
See Percent Solids section for details of dry weight analysis.
 - "wet" Sample results and Reporting Limits for this analysis are normally dry weight corrected, but have not been modified in this case.
 - " " Results without 'wet' or 'dry' designation are not normally dry weight corrected. These results are considered 'As Received'.

QC Source:

In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) may be analyzed to demonstrate accuracy and precision of the extraction batch.

Non-Client Batch QC Samples (Duplicates and Matrix Spike/Duplicates) may not be included in this report. Please request a Full QC report if this data is required.

Miscellaneous Notes:

- " --- " QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.
- " *** " Used to indicate a possible discrepancy with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).

Blanks:

Standard practice is to evaluate the results from Blank QC Samples down to a level equal to 1/2 the Reporting Limit (RL).
-For Blank hits falling between 1/2 the RL and the RL (J flagged hits), the associated sample and QC data will receive a 'B-02' qualifier.
-For Blank hits above the RL, the associated sample and QC data will receive a 'B' qualifier, per Apex Laboratories' Blank Policy.
For further details, please request a copy of this document.



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REPORTING NOTES AND CONVENTIONS (Cont.):

Blanks (Cont.):

Sample results flagged with a 'B' or 'B-02' qualifier are potentially biased high if the sample results are less than ten times the level found in the blank for inorganic analyses, or less than five times the level found in the blank for organic analyses.

'B' and 'B-02' qualifications are only applied to sample results detected above the Reporting Level.

Preparation Notes:

Mixed Matrix Samples:

Water Samples:

Water samples containing significant amounts of sediment are decanted or separated prior to extraction, and only the water portion analyzed, unless otherwise directed by the client.

Soil and Sediment Samples:

Soil and Sediment samples containing significant amounts of water are decanted prior to extraction, and only the solid portion analyzed, unless otherwise directed by the client.

Sampling and Preservation Notes:

Certain regulatory programs, such as National Pollutant Discharge Elimination System (NPDES), require that activities such as sample filtration (for dissolved metals, orthophosphate, hexavalent chromium, etc.) and testing of short hold analytes (pH, Dissolved Oxygen, etc.) be performed in the field (on-site) within a short time window. In addition, sample matrix spikes are required for some analyses, and sufficient volume must be provided, and billable site specific QC requested, if this is required. All regulatory permits should be reviewed to ensure that these requirements are being met.

Data users should be aware of which regulations pertain to the samples they submit for testing. If related sample collection activities are not approved for a particular regulatory program, results should be considered estimates. Apex Laboratories will qualify these analytes according to the most stringent requirements, however results for samples that are for non-regulatory purposes may be acceptable.

Samples that have been filtered and preserved at Apex Laboratories per client request are listed in the preparation section of the report with the date and time of filtration listed.

Apex Laboratories maintains detailed records on sample receipt, including client label verification, cooler temperature, sample preservation, hold time compliance and field filtration. Data is qualified as necessary, and the lack of qualification indicates compliance with required parameters.



Apex Laboratories, LLC

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Report ID:

A9E0723 - 06 24 19 1133

LABORATORY ACCREDITATION INFORMATION

TNI Certification ID: OR100062 (Primary Accreditation) - EPA ID: OR01039

All methods and analytes reported from work performed at Apex Laboratories are included on Apex Laboratories' ORELAP Scope of Certification, with the exception of any analyte(s) listed below:

Apex Laboratories

Matrix	Analysis	TNI_ID	Analyte	TNI_ID	Accreditation
<u>All reported analytes are included in Apex Laboratories' current ORELAP scope.</u>					

Secondary Accreditations

Apex Laboratories also maintains reciprocal accreditation with non-TNI states (Washington DOE), as well as other state specific accreditations not listed here.

Subcontract Laboratory Accreditations

Subcontracted data falls outside of Apex Laboratories' Scope of Accreditation. Please see the Subcontract Laboratory report for full details, or contact your Project Manager for more information.

Field Testing Parameters

Results for Field Tested data are provided by the client or sampler, and fall outside of Apex Laboratories' Scope of Accreditation.

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A9E0723

CHAIN OF CUSTODY																																									
Hahn and Associates, Inc. Environmental Consultants 434 NW Sixth Avenue, Suite 203 • Portland OR 97209 (503) 796-2717 • Fax (503) 227-2209	Apex Labs Tigard, Oregon Chain of Custody No. 1																																								
Project Manager: Rob Ede Project No.: 2708-60F Project Name: Mult 802 Decommissioning Collected by: Rob Ede / Ben Jeli	Samples Received at 4C (Y or N) _____ Appropriate Containers Used (Y or N) _____ Provide Verbal Results (Y or N) _____ Provide Preliminary Fax Results (Yes/No) _____																																								
Liquid with Sediment Sample Test Bottle: _____ Multi-Phase Sample Test Separately: _____ Test One Person: _____	Analyse to be Performed VOCs by EPA Method 8260C SVOCs by EPA Method 8270D Full List NWTF-HX NWTF-GX Gasco Metals by EPA 6000/7000 Series Total Cyanide by EPA Method 225.4																																								
Matrix Soil _____ Water _____ Air _____ Other _____	Remarks 24 Hour TAT 24 Hour TAT 24 Hour TAT																																								
Comments Sample Number Prefix: 2708-190521- PLEASE FREEZE and HOLD (Archive) Please freeze and hold remaining 8-oz jars.																																									
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Lab ID</th> <th>Sample #</th> <th>Date</th> <th>Time</th> <th>Sample Description</th> <th>Matrix</th> <th>Number of Containers</th> <th>Remarks</th> </tr> </thead> <tbody> <tr> <td></td> <td>007</td> <td>21-May-19</td> <td>10:55</td> <td>352 feet bgs</td> <td>Soil</td> <td>2</td> <td>X</td> </tr> <tr> <td></td> <td>008</td> <td>21-May-19</td> <td>11:00</td> <td>358 feet bgs</td> <td>Soil</td> <td>2</td> <td>X</td> </tr> <tr> <td></td> <td>009</td> <td>21-May-19</td> <td>11:55</td> <td>368 feet bgs</td> <td>Soil</td> <td>4</td> <td>X</td> </tr> <tr> <td></td> <td>010</td> <td>21-May-19</td> <td>15:30</td> <td>380 feet bgs</td> <td>Soil</td> <td>5</td> <td>X</td> </tr> </tbody> </table>	Lab ID	Sample #	Date	Time	Sample Description	Matrix	Number of Containers	Remarks		007	21-May-19	10:55	352 feet bgs	Soil	2	X		008	21-May-19	11:00	358 feet bgs	Soil	2	X		009	21-May-19	11:55	368 feet bgs	Soil	4	X		010	21-May-19	15:30	380 feet bgs	Soil	5	X	
Lab ID	Sample #	Date	Time	Sample Description	Matrix	Number of Containers	Remarks																																		
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	009	21-May-19	11:55	368 feet bgs	Soil	4	X																																		
	010	21-May-19	15:30	380 feet bgs	Soil	5	X																																		
Relinquished by: <i>[Signature]</i> Relinquished by: <i>[Signature]</i> Relinquished by: _____	Received by: <i>[Signature]</i> Received by: <i>[Signature]</i> Received by: _____																																								
Hahn and Associates, Inc. Company	Apex Laboratories, LLC Company																																								

Philip Nerenberg

Hahn and Associates 434 NW 6th Ave. Suite 203 Portland, OR 97209	Project: Mult 802 Decommissioning Project Number: 2708-60F Project Manager: Rob Ede	Report ID: A9E0723 - 06 24 19 1133
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APEX LABS COOLER RECEIPT FORM

Client: Hahn + Associates Element WO#: A9 E0723

Project/Project #: Mult 802 Decommissioning 2708-60F

Delivery Info:
 Date/time received: 5-22-19 @ 1241 By: EJ
 Delivered by: Apex Client ESS FedEx UPS Swift Senvoy SDS Other

Cooler Inspection Date/time inspected: 5-22-19 @ 1325 By: EJ

Chain of Custody included? Yes No Custody seals? Yes No
 Signed/dated by client? Yes No
 Signed/dated by Apex? Yes No

	Cooler #1	Cooler #2	Cooler #3	Cooler #4	Cooler #5	Cooler #6	Cooler #7
Temperature (°C)	<u>0.9</u>						
Received on ice? (Y/N)	<u>Y</u>						
Temp. blanks? (Y/N)	<u>Y</u>						
Ice type: (Gel/Real/Other)	<u>Real</u>						
Condition:	<u>Good</u>						

Cooler out of temp? (Y/N) NA Possible reason why: _____
 If some coolers are in temp and some out, were green dots applied to out of temperature samples? Yes/No/NA NA
 Out of temperature samples form initiated? Yes/No/NA NA

Samples Inspection: Date/time inspected: 5/22/19 @ 1410 By: (Signature)

All samples intact? Yes No Comments: _____

Bottle labels/COCs agree? Yes No Comments: _____

COC/container discrepancies form initiated? Yes No NA

Containers/volumes received appropriate for analysis? Yes No Comments: _____

Do VOA vials have visible headspace? Yes No NA
 Comments: _____

Water samples: pH checked: Yes No NA pH appropriate? Yes No NA
 Comments: _____

Additional information: _____

Labeled by: (Signature) Witness: (Signature) Cooler Inspected by: (Signature) See Project Contact Form: Y

Philip Nerenberg



Wednesday, June 19, 2019

Rob Ede
Hahn and Associates
434 NW 6th Ave. Suite 203
Portland, OR 97209

RE: A9E0785 - Mult 802 Decommissioning - 2708-60F

Thank you for using Apex Laboratories. We greatly appreciate your business and strive to provide the highest quality services to the environmental industry.

Enclosed are the results of analyses for work order A9E0785, which was received by the laboratory on 5/23/2019 at 1:55:00PM.

If you have any questions concerning this report or the services we offer, please feel free to contact me by email at: pnerenberg@apex-labs.com, or by phone at 503-718-2323.

Please note: All samples will be disposed of within 30 days of final reporting, unless prior arrangements have been made.

Cooler Receipt Information

(See Cooler Receipt Form for details)

Cooler #1 4.3 degC

This Final Report is the official version of the data results for this sample submission, unless superseded by a subsequent, labeled amended report.
All other deliverables derived from this data, including Electronic Data Deliverables (EDDs), CLP-like forms, client requested summary sheets, and all other products are considered secondary to this report.



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Philip Nerenberg, Lab Director



Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Hahn and Associates 434 NW 6th Ave. Suite 203 Portland, OR 97209	Project: Mult 802 Decommissioning Project Number: 2708-60F Project Manager: Rob Ede	Report ID: A9E0785 - 06 19 19 1644
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ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
2708-190522-011	A9E0785-01	Solid	05/22/19 16:30	05/23/19 13:55

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Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Hahn and Associates

434 NW 6th Ave. Suite 203
Portland, OR 97209

Project: Mult 802 Decommissioning

Project Number: 2708-60F

Project Manager: Rob Ede

Report ID:

A9E0785 - 06 19 19 1644

ANALYTICAL CASE NARRATIVE

Work Order: A9E0785

Preservation Nonconformance

A temperature excursion occurred during sample storage. Sample 2708-190522-011 (A9E0785-01) analyzed for EPA Method 8260 and NWTPH-Gx was stored out of EPA recommended storage temp (>6C) reaching 17C for a period of approximately 48 hours. No other analysis was affected.

Mark Zehr
Organics Manager
6/5/2019

Apex Laboratories

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ANALYTICAL SAMPLE RESULTS

Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes	
2708-190522-011 (A9E0785-01)				Matrix: Solid		Batch: 9060517			
Diesel	162000	---	33900	mg/kg	100	06/04/19	NWTPH-Dx	F-17	
Oil	133000	---	67800	mg/kg	100	06/04/19	NWTPH-Dx	F-17	
<i>Surrogate: o-Terphenyl (Surr)</i>		<i>Recovery: %</i>		<i>Limits: 50-150 %</i>		<i>100</i>	<i>06/04/19</i>	<i>NWTPH-Dx</i>	<i>S-01</i>

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 503-718-2323
 EPA ID: OR01039

Hahn and Associates 434 NW 6th Ave. Suite 203 Portland, OR 97209	Project: Mult 802 Decommissioning Project Number: 2708-60F Project Manager: Rob Ede	Report ID: A9E0785 - 06 19 19 1644
---	--	--

ANALYTICAL SAMPLE RESULTS

Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
2708-190522-011 (A9E0785-01)				Matrix: Solid		Batch: 9060533		V-16, X
Gasoline Range Organics	21800	---	3500	mg/kg	10000	06/04/19	NWTPH-Gx (MS)	
<i>Surrogate: 4-Bromofluorobenzene (Sur)</i>		<i>Recovery: 89 %</i>		<i>Limits: 50-150 %</i>		<i>1</i>	<i>06/04/19</i>	<i>NWTPH-Gx (MS)</i>
<i>1,4-Difluorobenzene (Sur)</i>		<i>83 %</i>		<i>50-150 %</i>		<i>1</i>	<i>06/04/19</i>	<i>NWTPH-Gx (MS)</i>

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 434 NW 6th Ave. Suite 203
 Portland, OR 97209

Project: **Mult 802 Decommissioning**
 Project Number: **2708-60F**
 Project Manager: **Rob Ede**

Report ID:
A9E0785 - 06 19 19 1644

ANALYTICAL SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
2708-190522-011 (A9E0785-01)				Matrix: Solid		Batch: 9060533		V-16, X
Acetone	ND	---	699000	ug/kg	10000	06/04/19	5035A/8260C	
Acrylonitrile	ND	---	69900	ug/kg	10000	06/04/19	5035A/8260C	
Benzene	114000	---	6990	ug/kg	10000	06/04/19	5035A/8260C	
Bromobenzene	ND	---	17500	ug/kg	10000	06/04/19	5035A/8260C	
Bromochloromethane	ND	---	35000	ug/kg	10000	06/04/19	5035A/8260C	
Bromodichloromethane	ND	---	35000	ug/kg	10000	06/04/19	5035A/8260C	
Bromoform	ND	---	69900	ug/kg	10000	06/04/19	5035A/8260C	
Bromomethane	ND	---	350000	ug/kg	10000	06/04/19	5035A/8260C	
2-Butanone (MEK)	ND	---	350000	ug/kg	10000	06/04/19	5035A/8260C	
n-Butylbenzene	ND	---	35000	ug/kg	10000	06/04/19	5035A/8260C	
sec-Butylbenzene	ND	---	35000	ug/kg	10000	06/04/19	5035A/8260C	
tert-Butylbenzene	ND	---	35000	ug/kg	10000	06/04/19	5035A/8260C	
Carbon disulfide	ND	---	350000	ug/kg	10000	06/04/19	5035A/8260C	
Carbon tetrachloride	ND	---	35000	ug/kg	10000	06/04/19	5035A/8260C	
Chlorobenzene	ND	---	17500	ug/kg	10000	06/04/19	5035A/8260C	
Chloroethane	ND	---	350000	ug/kg	10000	06/04/19	5035A/8260C	
Chloroform	ND	---	35000	ug/kg	10000	06/04/19	5035A/8260C	
Chloromethane	ND	---	175000	ug/kg	10000	06/04/19	5035A/8260C	
2-Chlorotoluene	ND	---	35000	ug/kg	10000	06/04/19	5035A/8260C	
4-Chlorotoluene	ND	---	35000	ug/kg	10000	06/04/19	5035A/8260C	
Dibromochloromethane	ND	---	69900	ug/kg	10000	06/04/19	5035A/8260C	
1,2-Dibromo-3-chloropropane	ND	---	175000	ug/kg	10000	06/04/19	5035A/8260C	
1,2-Dibromoethane (EDB)	ND	---	35000	ug/kg	10000	06/04/19	5035A/8260C	
Dibromomethane	ND	---	35000	ug/kg	10000	06/04/19	5035A/8260C	
1,2-Dichlorobenzene	ND	---	17500	ug/kg	10000	06/04/19	5035A/8260C	
1,3-Dichlorobenzene	ND	---	17500	ug/kg	10000	06/04/19	5035A/8260C	
1,4-Dichlorobenzene	ND	---	17500	ug/kg	10000	06/04/19	5035A/8260C	
Dichlorodifluoromethane	ND	---	69900	ug/kg	10000	06/04/19	5035A/8260C	
1,1-Dichloroethane	ND	---	17500	ug/kg	10000	06/04/19	5035A/8260C	
1,2-Dichloroethane (EDC)	ND	---	17500	ug/kg	10000	06/04/19	5035A/8260C	
1,1-Dichloroethene	ND	---	17500	ug/kg	10000	06/04/19	5035A/8260C	
cis-1,2-Dichloroethene	ND	---	17500	ug/kg	10000	06/04/19	5035A/8260C	
trans-1,2-Dichloroethene	ND	---	17500	ug/kg	10000	06/04/19	5035A/8260C	

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Philip Nerenberg, Lab Director



Hahn and Associates
434 NW 6th Ave. Suite 203
Portland, OR 97209

Project: **Mult 802 Decommissioning**
Project Number: **2708-60F**
Project Manager: **Rob Ede**

Report ID:
A9E0785 - 06 19 19 1644

ANALYTICAL SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
2708-190522-011 (A9E0785-01)				Matrix: Solid		Batch: 9060533		V-16, X
1,2-Dichloropropane	ND	---	17500	ug/kg	10000	06/04/19	5035A/8260C	
1,3-Dichloropropane	ND	---	35000	ug/kg	10000	06/04/19	5035A/8260C	
2,2-Dichloropropane	ND	---	35000	ug/kg	10000	06/04/19	5035A/8260C	
1,1-Dichloropropene	ND	---	35000	ug/kg	10000	06/04/19	5035A/8260C	
cis-1,3-Dichloropropene	ND	---	35000	ug/kg	10000	06/04/19	5035A/8260C	
trans-1,3-Dichloropropene	ND	---	35000	ug/kg	10000	06/04/19	5035A/8260C	
Ethylbenzene	104000	---	17500	ug/kg	10000	06/04/19	5035A/8260C	
Hexachlorobutadiene	ND	---	69900	ug/kg	10000	06/04/19	5035A/8260C	
2-Hexanone	ND	---	350000	ug/kg	10000	06/04/19	5035A/8260C	
Isopropylbenzene	ND	---	35000	ug/kg	10000	06/04/19	5035A/8260C	
4-Isopropyltoluene	ND	---	35000	ug/kg	10000	06/04/19	5035A/8260C	
Methylene chloride	ND	---	175000	ug/kg	10000	06/04/19	5035A/8260C	
4-Methyl-2-pentanone (MIBK)	ND	---	350000	ug/kg	10000	06/04/19	5035A/8260C	
Methyl tert-butyl ether (MTBE)	ND	---	35000	ug/kg	10000	06/04/19	5035A/8260C	
n-Propylbenzene	ND	---	17500	ug/kg	10000	06/04/19	5035A/8260C	
Styrene	39500	---	35000	ug/kg	10000	06/04/19	5035A/8260C	
1,1,1,2-Tetrachloroethane	ND	---	17500	ug/kg	10000	06/04/19	5035A/8260C	
1,1,2,2-Tetrachloroethane	ND	---	35000	ug/kg	10000	06/04/19	5035A/8260C	
Tetrachloroethene (PCE)	ND	---	17500	ug/kg	10000	06/04/19	5035A/8260C	
Toluene	145000	---	35000	ug/kg	10000	06/04/19	5035A/8260C	
1,2,3-Trichlorobenzene	ND	---	175000	ug/kg	10000	06/04/19	5035A/8260C	
1,2,4-Trichlorobenzene	ND	---	175000	ug/kg	10000	06/04/19	5035A/8260C	
1,1,1-Trichloroethane	ND	---	17500	ug/kg	10000	06/04/19	5035A/8260C	
1,1,2-Trichloroethane	ND	---	17500	ug/kg	10000	06/04/19	5035A/8260C	
Trichloroethene (TCE)	ND	---	17500	ug/kg	10000	06/04/19	5035A/8260C	
Trichlorofluoromethane	ND	---	69900	ug/kg	10000	06/04/19	5035A/8260C	
1,2,3-Trichloropropane	ND	---	35000	ug/kg	10000	06/04/19	5035A/8260C	
1,2,4-Trimethylbenzene	58000	---	35000	ug/kg	10000	06/04/19	5035A/8260C	
1,3,5-Trimethylbenzene	ND	---	35000	ug/kg	10000	06/04/19	5035A/8260C	
Vinyl chloride	ND	---	17500	ug/kg	10000	06/04/19	5035A/8260C	
m,p-Xylene	156000	---	35000	ug/kg	10000	06/04/19	5035A/8260C	
o-Xylene	50300	---	17500	ug/kg	10000	06/04/19	5035A/8260C	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 91 %</i>		<i>Limits: 80-120 %</i>		<i>1</i>	<i>06/04/19</i>	<i>5035A/8260C</i>

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Philip Nerenberg, Lab Director



Apex Laboratories, LLC

6700 S.W. Sandburg Street
 Tigard, OR 97223
 503-718-2323
 EPA ID: OR01039

Hahn and Associates 434 NW 6th Ave. Suite 203 Portland, OR 97209	Project: Mult 802 Decommissioning Project Number: 2708-60F Project Manager: Rob Ede	Report ID: A9E0785 - 06 19 19 1644
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ANALYTICAL SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
2708-190522-011 (A9E0785-01)				Matrix: Solid		Batch: 9060533		V-16, X
<i>Surrogate: Toluene-d8 (Surr)</i>			<i>Recovery: 98 %</i>	<i>Limits: 80-120 %</i>	<i>1</i>	<i>06/04/19</i>	<i>5035A/8260C</i>	
<i>4-Bromofluorobenzene (Surr)</i>			<i>101 %</i>	<i>80-120 %</i>	<i>1</i>	<i>06/04/19</i>	<i>5035A/8260C</i>	
2708-190522-011 (A9E0785-01RE1)				Matrix: Solid		Batch: 9060582		V-16, X
Naphthalene	9020000	---	699000	ug/kg	100000	06/05/19	5035A/8260C	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>			<i>Recovery: 90 %</i>	<i>Limits: 80-120 %</i>	<i>1</i>	<i>06/05/19</i>	<i>5035A/8260C</i>	
<i>Toluene-d8 (Surr)</i>			<i>100 %</i>	<i>80-120 %</i>	<i>1</i>	<i>06/05/19</i>	<i>5035A/8260C</i>	
<i>4-Bromofluorobenzene (Surr)</i>			<i>102 %</i>	<i>80-120 %</i>	<i>1</i>	<i>06/05/19</i>	<i>5035A/8260C</i>	

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Philip Nerenberg, Lab Director



Hahn and Associates
 434 NW 6th Ave. Suite 203
 Portland, OR 97209

Project: **Mult 802 Decommissioning**
 Project Number: **2708-60F**
 Project Manager: **Rob Ede**

Report ID:
A9E0785 - 06 19 19 1644

ANALYTICAL SAMPLE RESULTS

SPLP Volatile Organic Compounds by EPA 1312/8260C

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
2708-190522-011 (A9E0785-01RE1)				Matrix: Solid		Batch: 9060589		
Acetone	ND	---	1.00	mg/L	50	06/05/19	1312/8260C	
Benzene	1.17	---	0.0125	mg/L	50	06/05/19	1312/8260C	
Bromobenzene	ND	---	0.0250	mg/L	50	06/05/19	1312/8260C	
Bromochloromethane	ND	---	0.0500	mg/L	50	06/05/19	1312/8260C	
Bromodichloromethane	ND	---	0.0500	mg/L	50	06/05/19	1312/8260C	
Bromoform	ND	---	0.0500	mg/L	50	06/05/19	1312/8260C	
Bromomethane	ND	---	0.250	mg/L	50	06/05/19	1312/8260C	
2-Butanone (MEK)	ND	---	0.500	mg/L	50	06/05/19	1312/8260C	
n-Butylbenzene	ND	---	0.0500	mg/L	50	06/05/19	1312/8260C	
sec-Butylbenzene	ND	---	0.0500	mg/L	50	06/05/19	1312/8260C	
tert-Butylbenzene	ND	---	0.0500	mg/L	50	06/05/19	1312/8260C	
Carbon tetrachloride	ND	---	0.0500	mg/L	50	06/05/19	1312/8260C	
Chlorobenzene	ND	---	0.0250	mg/L	50	06/05/19	1312/8260C	
Chloroethane	ND	---	0.250	mg/L	50	06/05/19	1312/8260C	
Chloroform	ND	---	0.0500	mg/L	50	06/05/19	1312/8260C	
Chloromethane	ND	---	0.250	mg/L	50	06/05/19	1312/8260C	
2-Chlorotoluene	ND	---	0.0500	mg/L	50	06/05/19	1312/8260C	
4-Chlorotoluene	ND	---	0.0500	mg/L	50	06/05/19	1312/8260C	
1,2-Dibromo-3-chloropropane	ND	---	0.250	mg/L	50	06/05/19	1312/8260C	
Dibromochloromethane	ND	---	0.0500	mg/L	50	06/05/19	1312/8260C	
1,2-Dibromoethane (EDB)	ND	---	0.0250	mg/L	50	06/05/19	1312/8260C	
Dibromomethane	ND	---	0.0500	mg/L	50	06/05/19	1312/8260C	
1,2-Dichlorobenzene	ND	---	0.0250	mg/L	50	06/05/19	1312/8260C	
1,3-Dichlorobenzene	ND	---	0.0250	mg/L	50	06/05/19	1312/8260C	
1,4-Dichlorobenzene	ND	---	0.0250	mg/L	50	06/05/19	1312/8260C	
Dichlorodifluoromethane	ND	---	0.0500	mg/L	50	06/05/19	1312/8260C	
1,1-Dichloroethane	ND	---	0.0250	mg/L	50	06/05/19	1312/8260C	
1,2-Dichloroethane (EDC)	ND	---	0.0250	mg/L	50	06/05/19	1312/8260C	
1,1-Dichloroethene	ND	---	0.0250	mg/L	50	06/05/19	1312/8260C	
cis-1,2-Dichloroethene	ND	---	0.0250	mg/L	50	06/05/19	1312/8260C	
trans-1,2-Dichloroethene	ND	---	0.0250	mg/L	50	06/05/19	1312/8260C	
1,2-Dichloropropane	ND	---	0.0250	mg/L	50	06/05/19	1312/8260C	
1,3-Dichloropropane	ND	---	0.0500	mg/L	50	06/05/19	1312/8260C	

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Philip Nerenberg, Lab Director



Hahn and Associates
434 NW 6th Ave. Suite 203
Portland, OR 97209

Project: **Mult 802 Decommissioning**
Project Number: **2708-60F**
Project Manager: **Rob Ede**

Report ID:
A9E0785 - 06 19 19 1644

ANALYTICAL SAMPLE RESULTS

SPLP Volatile Organic Compounds by EPA 1312/8260C

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
2708-190522-011 (A9E0785-01RE1)				Matrix: Solid		Batch: 9060589		
2,2-Dichloropropane	ND	---	0.0500	mg/L	50	06/05/19	1312/8260C	
1,1-Dichloropropene	ND	---	0.0500	mg/L	50	06/05/19	1312/8260C	
cis-1,3-Dichloropropene	ND	---	0.0500	mg/L	50	06/05/19	1312/8260C	
trans-1,3-Dichloropropene	ND	---	0.0500	mg/L	50	06/05/19	1312/8260C	
Ethylbenzene	0.213	---	0.0250	mg/L	50	06/05/19	1312/8260C	
Hexachlorobutadiene	ND	---	0.250	mg/L	50	06/05/19	1312/8260C	
2-Hexanone	ND	---	0.500	mg/L	50	06/05/19	1312/8260C	
Isopropylbenzene	ND	---	0.0500	mg/L	50	06/05/19	1312/8260C	
4-Isopropyltoluene	ND	---	0.0500	mg/L	50	06/05/19	1312/8260C	
4-Methyl-2-pentanone (MiBK)	ND	---	0.500	mg/L	50	06/05/19	1312/8260C	
Methyl tert-butyl ether (MTBE)	ND	---	0.0500	mg/L	50	06/05/19	1312/8260C	
Methylene chloride	ND	---	0.250	mg/L	50	06/05/19	1312/8260C	
Naphthalene	9.71	---	0.100	mg/L	50	06/05/19	1312/8260C	
n-Propylbenzene	ND	---	0.0250	mg/L	50	06/05/19	1312/8260C	
Styrene	0.0830	---	0.0500	mg/L	50	06/05/19	1312/8260C	
1,1,1,2-Tetrachloroethane	ND	---	0.0250	mg/L	50	06/05/19	1312/8260C	
1,1,2,2-Tetrachloroethane	ND	---	0.0250	mg/L	50	06/05/19	1312/8260C	
Tetrachloroethene (PCE)	ND	---	0.0250	mg/L	50	06/05/19	1312/8260C	
Toluene	0.724	---	0.0500	mg/L	50	06/05/19	1312/8260C	
1,2,3-Trichlorobenzene	ND	---	0.100	mg/L	50	06/05/19	1312/8260C	
1,2,4-Trichlorobenzene	ND	---	0.100	mg/L	50	06/05/19	1312/8260C	
1,1,1-Trichloroethane	ND	---	0.0250	mg/L	50	06/05/19	1312/8260C	
1,1,2-Trichloroethane	ND	---	0.0250	mg/L	50	06/05/19	1312/8260C	
Trichloroethene (TCE)	ND	---	0.0250	mg/L	50	06/05/19	1312/8260C	
Trichlorofluoromethane	ND	---	0.100	mg/L	50	06/05/19	1312/8260C	
1,2,3-Trichloropropane	ND	---	0.0500	mg/L	50	06/05/19	1312/8260C	
1,2,4-Trimethylbenzene	ND	---	0.0500	mg/L	50	06/05/19	1312/8260C	
1,3,5-Trimethylbenzene	ND	---	0.0500	mg/L	50	06/05/19	1312/8260C	
Vinyl chloride	ND	---	0.0250	mg/L	50	06/05/19	1312/8260C	
m,p-Xylene	0.277	---	0.0500	mg/L	50	06/05/19	1312/8260C	
o-Xylene	0.0916	---	0.0250	mg/L	50	06/05/19	1312/8260C	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 102 %</i>		<i>Limits: 80-120 %</i>		<i>1</i>	<i>06/05/19</i>	<i>1312/8260C</i>
<i>Toluene-d8 (Surr)</i>		<i>100 %</i>		<i>80-120 %</i>		<i>1</i>	<i>06/05/19</i>	<i>1312/8260C</i>

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ANALYTICAL SAMPLE RESULTS

SPLP Volatile Organic Compounds by EPA 1312/8260C

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
2708-190522-011 (A9E0785-01RE1)				Matrix: Solid		Batch: 9060589		
<i>Surrogate: 4-Bromofluorobenzene (Surr)</i>		<i>Recovery: 97 %</i>		<i>Limits: 80-120 %</i>		<i>1</i>	<i>06/05/19</i>	<i>1312/8260C</i>

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ANALYTICAL SAMPLE RESULTS

Polyaromatic Hydrocarbons (PAHs) by EPA 8270D SIM

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
2708-190522-011 (A9E0785-01)				Matrix: Solid		Batch: 9060490		
Acenaphthene	9320000	---	877000	ug/kg	10000	06/04/19	EPA 8270D (SIM)	
Acenaphthylene	ND	---	877000	ug/kg	10000	06/04/19	EPA 8270D (SIM)	
Anthracene	6230000	---	877000	ug/kg	10000	06/04/19	EPA 8270D (SIM)	
Benz(a)anthracene	5750000	---	877000	ug/kg	10000	06/04/19	EPA 8270D (SIM)	M-05
Benzo(a)pyrene	6830000	---	877000	ug/kg	10000	06/04/19	EPA 8270D (SIM)	
Benzo(b)fluoranthene	7020000	---	877000	ug/kg	10000	06/04/19	EPA 8270D (SIM)	M-05
Benzo(k)fluoranthene	2840000	---	877000	ug/kg	10000	06/04/19	EPA 8270D (SIM)	M-05
Benzo(g,h,i)perylene	4250000	---	877000	ug/kg	10000	06/04/19	EPA 8270D (SIM)	
Chrysene	5980000	---	877000	ug/kg	10000	06/04/19	EPA 8270D (SIM)	M-05
Dibenz(a,h)anthracene	904000	---	877000	ug/kg	10000	06/04/19	EPA 8270D (SIM)	Q-42
Dibenzofuran	5590000	---	877000	ug/kg	10000	06/04/19	EPA 8270D (SIM)	
Fluoranthene	19300000	---	877000	ug/kg	10000	06/04/19	EPA 8270D (SIM)	
Fluorene	5240000	---	877000	ug/kg	10000	06/04/19	EPA 8270D (SIM)	
Indeno(1,2,3-cd)pyrene	4670000	---	877000	ug/kg	10000	06/04/19	EPA 8270D (SIM)	
1-Methylnaphthalene	2960000	---	877000	ug/kg	10000	06/04/19	EPA 8270D (SIM)	
2-Methylnaphthalene	5650000	---	877000	ug/kg	10000	06/04/19	EPA 8270D (SIM)	
Naphthalene	16200000	---	877000	ug/kg	10000	06/04/19	EPA 8270D (SIM)	Q-29
Phenanthrene	20600000	---	877000	ug/kg	10000	06/04/19	EPA 8270D (SIM)	
Pyrene	18100000	---	877000	ug/kg	10000	06/04/19	EPA 8270D (SIM)	
<i>Surrogate: 2-Fluorobiphenyl (Surr)</i>		<i>Recovery: %</i>		<i>Limits: 44-120 %</i>	<i>10000</i>	<i>06/04/19</i>	<i>EPA 8270D (SIM)</i>	<i>S-01</i>
<i>p-Terphenyl-d14 (Surr)</i>		<i>%</i>		<i>54-127 %</i>	<i>10000</i>	<i>06/04/19</i>	<i>EPA 8270D (SIM)</i>	<i>S-01</i>



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ANALYTICAL SAMPLE RESULTS

SPLP PAH by EPA 1312/8270D SIM

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes	
2708-190522-011 (A9E0785-01)				Matrix: Solid		Batch: 9060758			
Acenaphthene	0.733	---	0.200	mg/L	1000	06/11/19	1312/8270D (SIM)		
Acenaphthylene	ND	---	0.200	mg/L	1000	06/11/19	1312/8270D (SIM)		
Anthracene	ND	---	0.200	mg/L	1000	06/11/19	1312/8270D (SIM)		
Benz(a)anthracene	ND	---	0.200	mg/L	1000	06/11/19	1312/8270D (SIM)		
Benzo(a)pyrene	ND	---	0.200	mg/L	1000	06/11/19	1312/8270D (SIM)		
Benzo(b)fluoranthene	ND	---	0.200	mg/L	1000	06/11/19	1312/8270D (SIM)		
Benzo(k)fluoranthene	ND	---	0.200	mg/L	1000	06/11/19	1312/8270D (SIM)		
Benzo(g,h,i)perylene	ND	---	0.400	mg/L	1000	06/11/19	1312/8270D (SIM)		
Chrysene	ND	---	0.200	mg/L	1000	06/11/19	1312/8270D (SIM)		
Dibenz(a,h)anthracene	ND	---	0.200	mg/L	1000	06/11/19	1312/8270D (SIM)		
Fluoranthene	ND	---	0.200	mg/L	1000	06/11/19	1312/8270D (SIM)		
Fluorene	0.228	---	0.200	mg/L	1000	06/11/19	1312/8270D (SIM)		
Indeno(1,2,3-cd)pyrene	ND	---	0.200	mg/L	1000	06/11/19	1312/8270D (SIM)		
Naphthalene	9.95	---	0.400	mg/L	1000	06/11/19	1312/8270D (SIM)	B	
Phenanthrene	0.267	---	0.200	mg/L	1000	06/11/19	1312/8270D (SIM)		
Pyrene	ND	---	0.200	mg/L	1000	06/11/19	1312/8270D (SIM)		
<i>Surrogate: 2-Fluorobiphenyl (Surr)</i>		<i>Recovery: 99 %</i>		<i>Limits: 44-120 %</i>		<i>1000</i>	<i>06/11/19</i>	<i>1312/8270D (SIM)</i>	<i>S-01</i>
<i>p-Terphenyl-d14 (Surr)</i>		<i>114 %</i>		<i>50-133 %</i>		<i>1000</i>	<i>06/11/19</i>	<i>1312/8270D (SIM)</i>	<i>S-01</i>



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ANALYTICAL SAMPLE RESULTS

SPLP Extraction by EPA 1312 (ZHE)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
2708-190522-011 (A9E0785-01)				Matrix: Solid		Batch: 9060554		
TCLP ZHE Extraction	PREP	---		N/A	1	06/04/19	EPA 1312 ZHE	
SPLP Extraction	PREP	---		N/A	1	06/05/19	EPA 1312	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060517 - EPA 3546 (Fuels)						Solid						
Blank (9060517-BLK1)			Prepared: 06/03/19 16:03 Analyzed: 06/04/19 05:28									
<u>NWTPH-Dx</u>												
Diesel	ND	---	25.0	mg/kg	1	---	---	---	---	---	---	
Oil	ND	---	50.0	mg/kg	1	---	---	---	---	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 95 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
LCS (9060517-BS1)			Prepared: 06/03/19 16:03 Analyzed: 06/04/19 05:50									
<u>NWTPH-Dx</u>												
Diesel	116	---	25.0	mg/kg	1	125	---	93	70-130%	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 93 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
Duplicate (9060517-DUP1)			Prepared: 06/03/19 16:03 Analyzed: 06/04/19 06:36									
<u>QC Source Sample: Non-SDG (A9E0723-03)</u>												
Diesel	114000	---	37700	mg/kg	100	---	116000	---	---	2	30%	F-17
Oil	ND	---	75500	mg/kg	100	---	51400	---	---	***	30%	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 100x</i>						S-01



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Project Number: **2708-60F**

Project Manager: **Rob Ede**

Report ID:

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QUALITY CONTROL (QC) SAMPLE RESULTS

Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060533 - EPA 5035A												
Soil												
Blank (9060533-BLK1)												
Prepared: 06/04/19 09:03 Analyzed: 06/04/19 11:23												
<u>NWTPH-Gx (MS)</u>												
Gasoline Range Organics	ND	---	3.33	mg/kg	50	---	---	---	---	---	---	
Surr: 4-Bromofluorobenzene (Sur)			Recovery: 95 %	Limits: 50-150 %		Dilution: 1x						
1,4-Difluorobenzene (Sur)			89 %	50-150 %		"						
LCS (9060533-BS2)												
Prepared: 06/04/19 09:03 Analyzed: 06/04/19 10:56												
<u>NWTPH-Gx (MS)</u>												
Gasoline Range Organics	23.4	---	5.00	mg/kg	50	25.0	---	94	80-120%	---	---	
Surr: 4-Bromofluorobenzene (Sur)			Recovery: 95 %	Limits: 50-150 %		Dilution: 1x						
1,4-Difluorobenzene (Sur)			93 %	50-150 %		"						
Duplicate (9060533-DUP1)												
Prepared: 05/29/19 11:20 Analyzed: 06/04/19 20:32												
<u>QC Source Sample: Non-SDG (A9F0057-03)</u>												
Gasoline Range Organics	581	---	17.8	mg/kg	200	---	ND	---	---		30%	Q-04
Surr: 4-Bromofluorobenzene (Sur)			Recovery: 93 %	Limits: 50-150 %		Dilution: 1x						
1,4-Difluorobenzene (Sur)			98 %	50-150 %		"						
Duplicate (9060533-DUP2)												
Prepared: 05/29/19 11:00 Analyzed: 06/04/19 21:27												
<u>QC Source Sample: Non-SDG (A9F0057-02)</u>												
Gasoline Range Organics	12900	---	192	mg/kg	2000	---	9940	---	---	26	30%	
Surr: 4-Bromofluorobenzene (Sur)			Recovery: 80 %	Limits: 50-150 %		Dilution: 1x						
1,4-Difluorobenzene (Sur)			112 %	50-150 %		"						



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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060533 - EPA 5035A						Soil						
Blank (9060533-BLK1)			Prepared: 06/04/19 09:03 Analyzed: 06/04/19 11:23									
<u>5035A/8260C</u>												
Acetone	ND	---	667	ug/kg	50	---	---	---	---	---	---	
Acrylonitrile	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	
Benzene	ND	---	6.67	ug/kg	50	---	---	---	---	---	---	
Bromobenzene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Bromochloromethane	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Bromodichloromethane	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Bromoform	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	
Bromomethane	ND	---	333	ug/kg	50	---	---	---	---	---	---	
2-Butanone (MEK)	ND	---	333	ug/kg	50	---	---	---	---	---	---	
n-Butylbenzene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
sec-Butylbenzene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
tert-Butylbenzene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Carbon disulfide	ND	---	333	ug/kg	50	---	---	---	---	---	---	
Carbon tetrachloride	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Chlorobenzene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Chloroethane	ND	---	333	ug/kg	50	---	---	---	---	---	---	
Chloroform	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Chloromethane	ND	---	167	ug/kg	50	---	---	---	---	---	---	
2-Chlorotoluene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
4-Chlorotoluene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Dibromochloromethane	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	
1,2-Dibromo-3-chloropropane	ND	---	167	ug/kg	50	---	---	---	---	---	---	
1,2-Dibromoethane (EDB)	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Dibromomethane	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
1,2-Dichlorobenzene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
1,3-Dichlorobenzene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
1,4-Dichlorobenzene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Dichlorodifluoromethane	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	
1,1-Dichloroethane	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
1,2-Dichloroethane (EDC)	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
1,1-Dichloroethene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
cis-1,2-Dichloroethene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
trans-1,2-Dichloroethene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060533 - EPA 5035A						Soil						
Blank (9060533-BLK1)			Prepared: 06/04/19 09:03 Analyzed: 06/04/19 11:23									
1,2-Dichloropropane	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
1,3-Dichloropropane	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
2,2-Dichloropropane	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
1,1-Dichloropropene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
cis-1,3-Dichloropropene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
trans-1,3-Dichloropropene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Ethylbenzene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Hexachlorobutadiene	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	
2-Hexanone	ND	---	333	ug/kg	50	---	---	---	---	---	---	
Isopropylbenzene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
4-Isopropyltoluene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Methylene chloride	ND	---	167	ug/kg	50	---	---	---	---	---	---	
4-Methyl-2-pentanone (MiBK)	ND	---	333	ug/kg	50	---	---	---	---	---	---	
Methyl tert-butyl ether (MTBE)	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Naphthalene	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	
n-Propylbenzene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Styrene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
1,1,1,2-Tetrachloroethane	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
1,1,2,2-Tetrachloroethane	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Tetrachloroethene (PCE)	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Toluene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
1,2,3-Trichlorobenzene	ND	---	167	ug/kg	50	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	---	167	ug/kg	50	---	---	---	---	---	---	
1,1,1-Trichloroethane	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
1,1,2-Trichloroethane	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Trichloroethene (TCE)	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Trichlorofluoromethane	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	
1,2,3-Trichloropropane	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
1,2,4-Trimethylbenzene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
1,3,5-Trimethylbenzene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Vinyl chloride	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
m,p-Xylene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
o-Xylene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	

Surr: 1,4-Difluorobenzene (Surr)

Recovery: 94 % Limits: 80-120 %

Dilution: 1x

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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060533 - EPA 5035A												
Soil												
Blank (9060533-BLK1)												
Prepared: 06/04/19 09:03 Analyzed: 06/04/19 11:23												
Surr: Toluene-d8 (Surr) Recovery: 99 % Limits: 80-120 % Dilution: 1x												
4-Bromofluorobenzene (Surr) 101 % 80-120 % "												
LCS (9060533-BS1)												
Prepared: 06/04/19 09:03 Analyzed: 06/04/19 10:28												
5035A/8260C												
Acetone	1860	---	1000	ug/kg	50	2000	---	93	80-120%	---	---	
Acrylonitrile	998	---	100	ug/kg	50	1000	---	100	80-120%	---	---	
Benzene	962	---	10.0	ug/kg	50	1000	---	96	80-120%	---	---	
Bromobenzene	1120	---	25.0	ug/kg	50	1000	---	112	80-120%	---	---	
Bromochloromethane	1040	---	50.0	ug/kg	50	1000	---	104	80-120%	---	---	
Bromodichloromethane	1040	---	50.0	ug/kg	50	1000	---	104	80-120%	---	---	
Bromoform	902	---	100	ug/kg	50	1000	---	90	80-120%	---	---	
Bromomethane	955	---	500	ug/kg	50	1000	---	96	80-120%	---	---	
2-Butanone (MEK)	1860	---	500	ug/kg	50	2000	---	93	80-120%	---	---	
n-Butylbenzene	1110	---	50.0	ug/kg	50	1000	---	111	80-120%	---	---	
sec-Butylbenzene	1120	---	50.0	ug/kg	50	1000	---	112	80-120%	---	---	
tert-Butylbenzene	1100	---	50.0	ug/kg	50	1000	---	110	80-120%	---	---	
Carbon disulfide	980	---	500	ug/kg	50	1000	---	98	80-120%	---	---	
Carbon tetrachloride	1050	---	50.0	ug/kg	50	1000	---	105	80-120%	---	---	
Chlorobenzene	1030	---	25.0	ug/kg	50	1000	---	103	80-120%	---	---	
Chloroethane	858	---	500	ug/kg	50	1000	---	86	80-120%	---	---	
Chloroform	966	---	50.0	ug/kg	50	1000	---	97	80-120%	---	---	
Chloromethane	902	---	250	ug/kg	50	1000	---	90	80-120%	---	---	
2-Chlorotoluene	1090	---	50.0	ug/kg	50	1000	---	109	80-120%	---	---	
4-Chlorotoluene	1080	---	50.0	ug/kg	50	1000	---	108	80-120%	---	---	
Dibromochloromethane	922	---	100	ug/kg	50	1000	---	92	80-120%	---	---	
1,2-Dibromo-3-chloropropane	975	---	250	ug/kg	50	1000	---	98	80-120%	---	---	
1,2-Dibromoethane (EDB)	1120	---	50.0	ug/kg	50	1000	---	112	80-120%	---	---	
Dibromomethane	986	---	50.0	ug/kg	50	1000	---	99	80-120%	---	---	
1,2-Dichlorobenzene	1030	---	25.0	ug/kg	50	1000	---	103	80-120%	---	---	
1,3-Dichlorobenzene	1030	---	25.0	ug/kg	50	1000	---	103	80-120%	---	---	
1,4-Dichlorobenzene	1030	---	25.0	ug/kg	50	1000	---	103	80-120%	---	---	
Dichlorodifluoromethane	984	---	100	ug/kg	50	1000	---	98	80-120%	---	---	
1,1-Dichloroethane	1030	---	25.0	ug/kg	50	1000	---	103	80-120%	---	---	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060533 - EPA 5035A												
Soil												
LCS (9060533-BS1)												
Prepared: 06/04/19 09:03 Analyzed: 06/04/19 10:28												
1,2-Dichloroethane (EDC)	988	---	25.0	ug/kg	50	1000	---	99	80-120%	---	---	
1,1-Dichloroethene	1040	---	25.0	ug/kg	50	1000	---	104	80-120%	---	---	
cis-1,2-Dichloroethene	988	---	25.0	ug/kg	50	1000	---	99	80-120%	---	---	
trans-1,2-Dichloroethene	1020	---	25.0	ug/kg	50	1000	---	102	80-120%	---	---	
1,2-Dichloropropane	992	---	25.0	ug/kg	50	1000	---	99	80-120%	---	---	
1,3-Dichloropropane	1060	---	50.0	ug/kg	50	1000	---	106	80-120%	---	---	
2,2-Dichloropropane	1140	---	50.0	ug/kg	50	1000	---	114	80-120%	---	---	
1,1-Dichloropropene	970	---	50.0	ug/kg	50	1000	---	97	80-120%	---	---	
cis-1,3-Dichloropropene	1120	---	50.0	ug/kg	50	1000	---	112	80-120%	---	---	
trans-1,3-Dichloropropene	1110	---	50.0	ug/kg	50	1000	---	111	80-120%	---	---	
Ethylbenzene	1050	---	25.0	ug/kg	50	1000	---	105	80-120%	---	---	
Hexachlorobutadiene	1200	---	100	ug/kg	50	1000	---	120	80-120%	---	---	
2-Hexanone	1980	---	500	ug/kg	50	2000	---	99	80-120%	---	---	
Isopropylbenzene	1070	---	50.0	ug/kg	50	1000	---	107	80-120%	---	---	
4-Isopropyltoluene	1120	---	50.0	ug/kg	50	1000	---	112	80-120%	---	---	
Methylene chloride	712	---	250	ug/kg	50	1000	---	71	80-120%	---	---	Q-55
4-Methyl-2-pentanone (MiBK)	1900	---	500	ug/kg	50	2000	---	95	80-120%	---	---	
Methyl tert-butyl ether (MTBE)	947	---	50.0	ug/kg	50	1000	---	95	80-120%	---	---	
Naphthalene	1070	---	100	ug/kg	50	1000	---	107	80-120%	---	---	
n-Propylbenzene	1090	---	25.0	ug/kg	50	1000	---	109	80-120%	---	---	
Styrene	1100	---	50.0	ug/kg	50	1000	---	110	80-120%	---	---	
1,1,1,2-Tetrachloroethane	1130	---	25.0	ug/kg	50	1000	---	113	80-120%	---	---	
1,1,2,2-Tetrachloroethane	1050	---	50.0	ug/kg	50	1000	---	105	80-120%	---	---	
Tetrachloroethene (PCE)	1000	---	25.0	ug/kg	50	1000	---	100	80-120%	---	---	
Toluene	1020	---	50.0	ug/kg	50	1000	---	102	80-120%	---	---	
1,2,3-Trichlorobenzene	1120	---	25.0	ug/kg	50	1000	---	112	80-120%	---	---	
1,2,4-Trichlorobenzene	1080	---	25.0	ug/kg	50	1000	---	108	80-120%	---	---	
1,1,1-Trichloroethane	1030	---	25.0	ug/kg	50	1000	---	103	80-120%	---	---	
1,1,2-Trichloroethane	1100	---	25.0	ug/kg	50	1000	---	110	80-120%	---	---	
Trichloroethene (TCE)	930	---	25.0	ug/kg	50	1000	---	93	80-120%	---	---	
Trichlorofluoromethane	982	---	100	ug/kg	50	1000	---	98	80-120%	---	---	
1,2,3-Trichloropropane	1050	---	50.0	ug/kg	50	1000	---	105	80-120%	---	---	
1,2,4-Trimethylbenzene	1110	---	50.0	ug/kg	50	1000	---	111	80-120%	---	---	
1,3,5-Trimethylbenzene	1120	---	50.0	ug/kg	50	1000	---	112	80-120%	---	---	



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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060533 - EPA 5035A						Soil						
LCS (9060533-BS1)			Prepared: 06/04/19 09:03 Analyzed: 06/04/19 10:28									
Vinyl chloride	910	---	25.0	ug/kg	50	1000	---	91	80-120%	---	---	
m,p-Xylene	2160	---	50.0	ug/kg	50	2000	---	108	80-120%	---	---	
o-Xylene	1070	---	25.0	ug/kg	50	1000	---	107	80-120%	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 95 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>100 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>100 %</i>		<i>80-120 %</i>		<i>"</i>						

Duplicate (9060533-DUP1)		Prepared: 05/29/19 11:20 Analyzed: 06/04/19 20:32										
QC Source Sample: Non-SDG (A9F0057-03)												
Acetone	ND	---	3560	ug/kg	200	---	ND	---	---	---	30%	
Acrylonitrile	ND	---	1070	ug/kg	200	---	ND	---	---	---	30%	R-02
Benzene	ND	---	35.6	ug/kg	200	---	ND	---	---	---	30%	
Bromobenzene	ND	---	88.9	ug/kg	200	---	ND	---	---	---	30%	
Bromochloromethane	ND	---	178	ug/kg	200	---	ND	---	---	---	30%	
Bromodichloromethane	ND	---	178	ug/kg	200	---	ND	---	---	---	30%	
Bromoform	ND	---	356	ug/kg	200	---	ND	---	---	---	30%	
Bromomethane	ND	---	1780	ug/kg	200	---	ND	---	---	---	30%	
2-Butanone (MEK)	ND	---	2670	ug/kg	200	---	ND	---	---	---	30%	R-02
n-Butylbenzene	1210	---	178	ug/kg	200	---	ND	---	---	---	30%	M-02, Q-04
sec-Butylbenzene	407	---	178	ug/kg	200	---	ND	---	---	---	30%	Q-04
tert-Butylbenzene	ND	---	178	ug/kg	200	---	ND	---	---	---	30%	
Carbon disulfide	ND	---	1780	ug/kg	200	---	ND	---	---	---	30%	
Carbon tetrachloride	ND	---	178	ug/kg	200	---	ND	---	---	---	30%	
Chlorobenzene	ND	---	88.9	ug/kg	200	---	ND	---	---	---	30%	
Chloroethane	ND	---	1780	ug/kg	200	---	ND	---	---	---	30%	
Chloroform	ND	---	178	ug/kg	200	---	ND	---	---	---	30%	
Chloromethane	ND	---	889	ug/kg	200	---	ND	---	---	---	30%	
2-Chlorotoluene	ND	---	178	ug/kg	200	---	ND	---	---	---	30%	
4-Chlorotoluene	ND	---	178	ug/kg	200	---	ND	---	---	---	30%	
Dibromochloromethane	ND	---	356	ug/kg	200	---	ND	---	---	---	30%	
1,2-Dibromo-3-chloropropane	ND	---	889	ug/kg	200	---	ND	---	---	---	30%	
1,2-Dibromoethane (EDB)	ND	---	178	ug/kg	200	---	ND	---	---	---	30%	
Dibromomethane	ND	---	178	ug/kg	200	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	---	88.9	ug/kg	200	---	ND	---	---	---	30%	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060533 - EPA 5035A						Soil						
Duplicate (9060533-DUP1)			Prepared: 05/29/19 11:20 Analyzed: 06/04/19 20:32									
QC Source Sample: Non-SDG (A9F0057-03)												
1,3-Dichlorobenzene	ND	---	88.9	ug/kg	200	---	ND	---	---	---	30%	
1,4-Dichlorobenzene	ND	---	88.9	ug/kg	200	---	ND	---	---	---	30%	
Dichlorodifluoromethane	ND	---	356	ug/kg	200	---	ND	---	---	---	30%	
1,1-Dichloroethane	ND	---	88.9	ug/kg	200	---	ND	---	---	---	30%	
1,2-Dichloroethane (EDC)	ND	---	88.9	ug/kg	200	---	ND	---	---	---	30%	
1,1-Dichloroethene	ND	---	88.9	ug/kg	200	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	ND	---	88.9	ug/kg	200	---	ND	---	---	---	30%	
trans-1,2-Dichloroethene	ND	---	88.9	ug/kg	200	---	ND	---	---	---	30%	
1,2-Dichloropropane	ND	---	88.9	ug/kg	200	---	ND	---	---	---	30%	
1,3-Dichloropropane	ND	---	178	ug/kg	200	---	ND	---	---	---	30%	
2,2-Dichloropropane	ND	---	178	ug/kg	200	---	ND	---	---	---	30%	
1,1-Dichloropropene	ND	---	178	ug/kg	200	---	ND	---	---	---	30%	
cis-1,3-Dichloropropene	ND	---	178	ug/kg	200	---	ND	---	---	---	30%	
trans-1,3-Dichloropropene	ND	---	178	ug/kg	200	---	ND	---	---	---	30%	
Ethylbenzene	1440	---	88.9	ug/kg	200	---	ND	---	---	---	30%	Q-04
Hexachlorobutadiene	ND	---	356	ug/kg	200	---	ND	---	---	---	30%	
2-Hexanone	ND	---	1780	ug/kg	200	---	ND	---	---	---	30%	
Isopropylbenzene	919	---	178	ug/kg	200	---	ND	---	---	---	30%	Q-04
4-Isopropyltoluene	181	---	178	ug/kg	200	---	ND	---	---	---	30%	M-02, Q-04
Methylene chloride	ND	---	889	ug/kg	200	---	ND	---	---	---	30%	
4-Methyl-2-pentanone (MiBK)	ND	---	1780	ug/kg	200	---	ND	---	---	---	30%	
Methyl tert-butyl ether (MTBE)	ND	---	178	ug/kg	200	---	ND	---	---	---	30%	
Naphthalene	1370	---	356	ug/kg	200	---	ND	---	---	---	30%	Q-04
n-Propylbenzene	4220	---	88.9	ug/kg	200	---	ND	---	---	---	30%	Q-04
Styrene	ND	---	178	ug/kg	200	---	ND	---	---	---	30%	
1,1,1,2-Tetrachloroethane	ND	---	88.9	ug/kg	200	---	ND	---	---	---	30%	
1,1,2,2-Tetrachloroethane	ND	---	178	ug/kg	200	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	ND	---	88.9	ug/kg	200	---	ND	---	---	---	30%	
Toluene	ND	---	178	ug/kg	200	---	ND	---	---	---	30%	
1,2,3-Trichlorobenzene	ND	---	889	ug/kg	200	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	---	889	ug/kg	200	---	ND	---	---	---	30%	
1,1,1-Trichloroethane	ND	---	88.9	ug/kg	200	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	---	88.9	ug/kg	200	---	ND	---	---	---	30%	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060533 - EPA 5035A												
Soil												
Duplicate (9060533-DUP1)			Prepared: 05/29/19 11:20 Analyzed: 06/04/19 20:32									
QC Source Sample: Non-SDG (A9F0057-03)												
Trichloroethene (TCE)	ND	---	88.9	ug/kg	200	---	ND	---	---	---	30%	
Trichlorofluoromethane	ND	---	356	ug/kg	200	---	ND	---	---	---	30%	
1,2,3-Trichloropropane	ND	---	178	ug/kg	200	---	ND	---	---	---	30%	
1,2,4-Trimethylbenzene	11600	---	178	ug/kg	200	---	ND	---	---	---	30%	Q-04
1,3,5-Trimethylbenzene	6560	---	178	ug/kg	200	---	ND	---	---	---	30%	Q-04
Vinyl chloride	ND	---	88.9	ug/kg	200	---	ND	---	---	---	30%	
m,p-Xylene	3010	---	178	ug/kg	200	---	ND	---	---	---	30%	Q-04
o-Xylene	197	---	88.9	ug/kg	200	---	ND	---	---	---	30%	Q-04
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 91 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>99 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>102 %</i>		<i>80-120 %</i>		<i>"</i>						

Duplicate (9060533-DUP2)			Prepared: 05/29/19 11:00 Analyzed: 06/04/19 21:27									
QC Source Sample: Non-SDG (A9F0057-02)												
Acetone	ND	---	38500	ug/kg	2000	---	ND	---	---	---	30%	
Acrylonitrile	ND	---	15400	ug/kg	2000	---	ND	---	---	---	30%	R-02
Benzene	ND	---	385	ug/kg	2000	---	ND	---	---	---	30%	
Bromobenzene	ND	---	962	ug/kg	2000	---	ND	---	---	---	30%	
Bromochloromethane	ND	---	1920	ug/kg	2000	---	ND	---	---	---	30%	
Bromodichloromethane	ND	---	1920	ug/kg	2000	---	ND	---	---	---	30%	
Bromoform	ND	---	3850	ug/kg	2000	---	ND	---	---	---	30%	
Bromomethane	ND	---	19200	ug/kg	2000	---	ND	---	---	---	30%	
2-Butanone (MEK)	ND	---	44200	ug/kg	2000	---	ND	---	---	---	30%	R-02
n-Butylbenzene	24000	---	1920	ug/kg	2000	---	18700	---	---	25	30%	M-02
sec-Butylbenzene	7980	---	1920	ug/kg	2000	---	6190	---	---	25	30%	
tert-Butylbenzene	ND	---	1920	ug/kg	2000	---	ND	---	---	---	30%	
Carbon disulfide	ND	---	19200	ug/kg	2000	---	ND	---	---	---	30%	
Carbon tetrachloride	ND	---	1920	ug/kg	2000	---	ND	---	---	---	30%	
Chlorobenzene	ND	---	962	ug/kg	2000	---	ND	---	---	---	30%	
Chloroethane	ND	---	19200	ug/kg	2000	---	ND	---	---	---	30%	
Chloroform	ND	---	1920	ug/kg	2000	---	ND	---	---	---	30%	
Chloromethane	ND	---	9620	ug/kg	2000	---	ND	---	---	---	30%	
2-Chlorotoluene	ND	---	1920	ug/kg	2000	---	ND	---	---	---	30%	

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Hahn and Associates
434 NW 6th Ave. Suite 203
Portland, OR 97209

Project: **Mult 802 Decommissioning**
Project Number: **2708-60F**
Project Manager: **Rob Ede**

Report ID:
A9E0785 - 06 19 19 1644

QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060533 - EPA 5035A						Soil						
Duplicate (9060533-DUP2)			Prepared: 05/29/19 11:00 Analyzed: 06/04/19 21:27									
QC Source Sample: Non-SDG (A9F0057-02)												
4-Chlorotoluene	ND	---	1920	ug/kg	2000	---	ND	---	---	---	30%	
Dibromochloromethane	ND	---	3850	ug/kg	2000	---	ND	---	---	---	30%	
1,2-Dibromo-3-chloropropane	ND	---	9620	ug/kg	2000	---	ND	---	---	---	30%	
1,2-Dibromoethane (EDB)	ND	---	1920	ug/kg	2000	---	ND	---	---	---	30%	
Dibromomethane	ND	---	1920	ug/kg	2000	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	---	962	ug/kg	2000	---	ND	---	---	---	30%	
1,3-Dichlorobenzene	ND	---	962	ug/kg	2000	---	ND	---	---	---	30%	
1,4-Dichlorobenzene	ND	---	962	ug/kg	2000	---	ND	---	---	---	30%	
Dichlorodifluoromethane	ND	---	3850	ug/kg	2000	---	ND	---	---	---	30%	
1,1-Dichloroethane	ND	---	962	ug/kg	2000	---	ND	---	---	---	30%	
1,2-Dichloroethane (EDC)	ND	---	962	ug/kg	2000	---	ND	---	---	---	30%	
1,1-Dichloroethene	ND	---	962	ug/kg	2000	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	ND	---	962	ug/kg	2000	---	ND	---	---	---	30%	
trans-1,2-Dichloroethene	ND	---	962	ug/kg	2000	---	ND	---	---	---	30%	
1,2-Dichloropropane	ND	---	962	ug/kg	2000	---	ND	---	---	---	30%	
1,3-Dichloropropane	ND	---	1920	ug/kg	2000	---	ND	---	---	---	30%	
2,2-Dichloropropane	ND	---	1920	ug/kg	2000	---	ND	---	---	---	30%	
1,1-Dichloropropene	ND	---	1920	ug/kg	2000	---	ND	---	---	---	30%	
cis-1,3-Dichloropropene	ND	---	1920	ug/kg	2000	---	ND	---	---	---	30%	
trans-1,3-Dichloropropene	ND	---	1920	ug/kg	2000	---	ND	---	---	---	30%	
Ethylbenzene	78100	---	962	ug/kg	2000	---	62300	---	---	22	30%	
Hexachlorobutadiene	ND	---	3850	ug/kg	2000	---	ND	---	---	---	30%	
2-Hexanone	ND	---	19200	ug/kg	2000	---	ND	---	---	---	30%	
Isopropylbenzene	19100	---	1920	ug/kg	2000	---	15100	---	---	23	30%	
4-Isopropyltoluene	2900	---	1920	ug/kg	2000	---	2080	---	---	33	30%	M-02, Q-04
Methylene chloride	ND	---	9620	ug/kg	2000	---	ND	---	---	---	30%	
4-Methyl-2-pentanone (MiBK)	ND	---	19200	ug/kg	2000	---	ND	---	---	---	30%	
Methyl tert-butyl ether (MTBE)	ND	---	1920	ug/kg	2000	---	ND	---	---	---	30%	
Naphthalene	52000	---	3850	ug/kg	2000	---	43200	---	---	19	30%	
n-Propylbenzene	98100	---	962	ug/kg	2000	---	78300	---	---	22	30%	
Styrene	ND	---	1920	ug/kg	2000	---	ND	---	---	---	30%	
1,1,1,2-Tetrachloroethane	ND	---	962	ug/kg	2000	---	ND	---	---	---	30%	
1,1,2,2-Tetrachloroethane	ND	---	5770	ug/kg	2000	---	ND	---	---	---	30%	R-02

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Philip Nerenberg, Lab Director



Hahn and Associates

434 NW 6th Ave. Suite 203
Portland, OR 97209

Project: **Mult 802 Decommissioning**

Project Number: **2708-60F**

Project Manager: **Rob Ede**

Report ID:

A9E0785 - 06 19 19 1644

QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060533 - EPA 5035A												
Soil												
Duplicate (9060533-DUP2)												
Prepared: 05/29/19 11:00 Analyzed: 06/04/19 21:27												
QC Source Sample: Non-SDG (A9F0057-02)												
Tetrachloroethene (PCE)	ND	---	962	ug/kg	2000	---	ND	---	---	---	30%	
Toluene	ND	---	1920	ug/kg	2000	---	ND	---	---	---	30%	
1,2,3-Trichlorobenzene	ND	---	9620	ug/kg	2000	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	---	9620	ug/kg	2000	---	ND	---	---	---	30%	
1,1,1-Trichloroethane	ND	---	962	ug/kg	2000	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	---	962	ug/kg	2000	---	ND	---	---	---	30%	
Trichloroethene (TCE)	ND	---	962	ug/kg	2000	---	ND	---	---	---	30%	
Trichlorofluoromethane	ND	---	3850	ug/kg	2000	---	ND	---	---	---	30%	
1,2,3-Trichloropropane	ND	---	1920	ug/kg	2000	---	ND	---	---	---	30%	
1,2,4-Trimethylbenzene	348000	---	1920	ug/kg	2000	---	285000	---	---	20	30%	
1,3,5-Trimethylbenzene	160000	---	1920	ug/kg	2000	---	128000	---	---	22	30%	
Vinyl chloride	ND	---	962	ug/kg	2000	---	ND	---	---	---	30%	
m,p-Xylene	141000	---	1920	ug/kg	2000	---	113000	---	---	22	30%	
o-Xylene	8790	---	962	ug/kg	2000	---	7010	---	---	23	30%	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 92 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>102 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>102 %</i>		<i>80-120 %</i>		<i>"</i>						

Matrix Spike (9060533-MS1)												
Prepared: 05/29/19 11:00 Analyzed: 06/04/19 14:33												
QC Source Sample: Non-SDG (A9E0932-01)												
5035A/8260C												
Acetone	1760	---	928	ug/kg	50	1860	ND	95	36-164%	---	---	
Acrylonitrile	918	---	92.8	ug/kg	50	929	ND	99	65-134%	---	---	
Benzene	851	---	9.28	ug/kg	50	929	ND	92	77-121%	---	---	
Bromobenzene	1040	---	23.2	ug/kg	50	929	ND	112	78-121%	---	---	
Bromochloromethane	869	---	46.4	ug/kg	50	929	ND	94	78-125%	---	---	
Bromodichloromethane	855	---	46.4	ug/kg	50	929	ND	92	75-127%	---	---	
Bromoform	832	---	92.8	ug/kg	50	929	ND	90	67-132%	---	---	
Bromomethane	821	---	46.4	ug/kg	50	929	ND	88	53-143%	---	---	
2-Butanone (MEK)	1740	---	46.4	ug/kg	50	1860	ND	94	51-148%	---	---	
n-Butylbenzene	977	---	46.4	ug/kg	50	929	ND	105	70-128%	---	---	
sec-Butylbenzene	990	---	46.4	ug/kg	50	929	ND	107	73-126%	---	---	
tert-Butylbenzene	943	---	46.4	ug/kg	50	929	ND	101	73-125%	---	---	

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Philip Nerenberg, Lab Director



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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060533 - EPA 5035A						Soil						
Matrix Spike (9060533-MS1)						Prepared: 05/29/19 11:00 Analyzed: 06/04/19 14:33						X
QC Source Sample: Non-SDG (A9E0932-01)												
Carbon disulfide	821	---	464	ug/kg	50	929	ND	88	63-132%	---	---	
Carbon tetrachloride	847	---	46.4	ug/kg	50	929	ND	91	70-135%	---	---	
Chlorobenzene	947	---	23.2	ug/kg	50	929	ND	102	79-120%	---	---	
Chloroethane	691	---	464	ug/kg	50	929	ND	74	59-139%	---	---	
Chloroform	833	---	46.4	ug/kg	50	929	ND	90	78-123%	---	---	
Chloromethane	759	---	232	ug/kg	50	929	ND	82	50-136%	---	---	
2-Chlorotoluene	982	---	46.4	ug/kg	50	929	ND	106	75-122%	---	---	
4-Chlorotoluene	964	---	46.4	ug/kg	50	929	ND	104	72-124%	---	---	
Dibromochloromethane	869	---	92.8	ug/kg	50	929	ND	94	74-126%	---	---	
1,2-Dibromo-3-chloropropane	934	---	232	ug/kg	50	929	ND	101	61-132%	---	---	
1,2-Dibromoethane (EDB)	1050	---	46.4	ug/kg	50	929	ND	113	78-122%	---	---	
Dibromomethane	901	---	46.4	ug/kg	50	929	ND	97	78-125%	---	---	
1,2-Dichlorobenzene	943	---	23.2	ug/kg	50	929	ND	102	78-121%	---	---	
1,3-Dichlorobenzene	947	---	23.2	ug/kg	50	929	ND	102	77-121%	---	---	
1,4-Dichlorobenzene	945	---	23.2	ug/kg	50	929	ND	102	75-120%	---	---	
Dichlorodifluoromethane	840	---	92.8	ug/kg	50	929	ND	90	29-149%	---	---	
1,1-Dichloroethane	889	---	23.2	ug/kg	50	929	ND	96	76-125%	---	---	
1,2-Dichloroethane (EDC)	818	---	23.2	ug/kg	50	929	ND	88	73-128%	---	---	
1,1-Dichloroethene	873	---	23.2	ug/kg	50	929	ND	94	70-131%	---	---	
cis-1,2-Dichloroethene	850	---	23.2	ug/kg	50	929	ND	92	77-123%	---	---	
trans-1,2-Dichloroethene	878	---	23.2	ug/kg	50	929	ND	94	74-125%	---	---	
1,2-Dichloropropane	864	---	23.2	ug/kg	50	929	ND	93	76-123%	---	---	
1,3-Dichloropropane	988	---	46.4	ug/kg	50	929	ND	106	77-121%	---	---	
2,2-Dichloropropane	915	---	46.4	ug/kg	50	929	ND	99	67-133%	---	---	
1,1-Dichloropropene	842	---	46.4	ug/kg	50	929	ND	91	76-125%	---	---	
cis-1,3-Dichloropropene	1020	---	46.4	ug/kg	50	929	ND	110	74-126%	---	---	
trans-1,3-Dichloropropene	985	---	46.4	ug/kg	50	929	ND	106	71-130%	---	---	
Ethylbenzene	960	---	23.2	ug/kg	50	929	ND	103	76-122%	---	---	
Hexachlorobutadiene	1120	---	92.8	ug/kg	50	929	ND	120	61-135%	---	---	
2-Hexanone	1850	---	464	ug/kg	50	1860	ND	99	53-145%	---	---	
Isopropylbenzene	984	---	46.4	ug/kg	50	929	ND	106	68-134%	---	---	
4-Isopropyltoluene	1010	---	46.4	ug/kg	50	929	ND	109	73-127%	---	---	
Methylene chloride	634	---	232	ug/kg	50	929	ND	68	70-128%	---	---	Q-54c

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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060533 - EPA 5035A												
Soil												
Matrix Spike (9060533-MS1)												
Prepared: 05/29/19 11:00 Analyzed: 06/04/19 14:33												
QC Source Sample: Non-SDG (A9E0932-01)												
4-Methyl-2-pentanone (MiBK)	1790	---	464	ug/kg	50	1860	ND	96	65-135%	---	---	
Methyl tert-butyl ether (MTBE)	847	---	46.4	ug/kg	50	929	ND	91	73-125%	---	---	
Naphthalene	1060	---	92.8	ug/kg	50	929	ND	115	62-129%	---	---	
n-Propylbenzene	968	---	23.2	ug/kg	50	929	ND	104	73-125%	---	---	
Styrene	1050	---	46.4	ug/kg	50	929	ND	113	76-124%	---	---	
1,1,1,2-Tetrachloroethane	1030	---	23.2	ug/kg	50	929	ND	111	78-125%	---	---	
1,1,2,2-Tetrachloroethane	928	---	46.4	ug/kg	50	929	ND	100	70-124%	---	---	
Tetrachloroethene (PCE)	950	---	23.2	ug/kg	50	929	ND	102	73-128%	---	---	
Toluene	936	---	46.4	ug/kg	50	929	ND	101	77-121%	---	---	
1,2,3-Trichlorobenzene	1040	---	232	ug/kg	50	929	ND	112	66-130%	---	---	
1,2,4-Trichlorobenzene	1020	---	232	ug/kg	50	929	ND	109	67-129%	---	---	
1,1,1-Trichloroethane	860	---	23.2	ug/kg	50	929	ND	93	73-130%	---	---	
1,1,2-Trichloroethane	1030	---	23.2	ug/kg	50	929	ND	111	78-121%	---	---	
Trichloroethene (TCE)	888	---	23.2	ug/kg	50	929	ND	96	77-123%	---	---	
Trichlorofluoromethane	628	---	92.8	ug/kg	50	929	ND	68	62-140%	---	---	
1,2,3-Trichloropropane	973	---	46.4	ug/kg	50	929	ND	105	73-125%	---	---	
1,2,4-Trimethylbenzene	988	---	46.4	ug/kg	50	929	ND	106	75-123%	---	---	
1,3,5-Trimethylbenzene	1010	---	46.4	ug/kg	50	929	ND	108	73-124%	---	---	
Vinyl chloride	819	---	23.2	ug/kg	50	929	ND	88	56-135%	---	---	
m,p-Xylene	1940	---	46.4	ug/kg	50	1860	ND	104	77-124%	---	---	
o-Xylene	960	---	23.2	ug/kg	50	929	ND	103	77-123%	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr) Recovery: 92 % Limits: 80-120 % Dilution: 1x</i>												
<i>Toluene-d8 (Surr) 99 % 80-120 % "</i>												
<i>4-Bromofluorobenzene (Surr) 102 % 80-120 % "</i>												



Hahn and Associates 434 NW 6th Ave. Suite 203 Portland, OR 97209	Project: Mult 802 Decommissioning Project Number: 2708-60F Project Manager: Rob Ede	Report ID: A9E0785 - 06 19 19 1644
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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060582 - EPA 5035A						Soil						
Blank (9060582-BLK1)			Prepared: 06/05/19 13:00 Analyzed: 06/05/19 14:47									
<u>5035A/8260C</u>												
Acetone	ND	---	667	ug/kg	50	---	---	---	---	---	---	
Acrylonitrile	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	
Benzene	ND	---	6.67	ug/kg	50	---	---	---	---	---	---	
Bromobenzene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Bromochloromethane	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Bromodichloromethane	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Bromoform	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	
Bromomethane	ND	---	333	ug/kg	50	---	---	---	---	---	---	
2-Butanone (MEK)	ND	---	333	ug/kg	50	---	---	---	---	---	---	
n-Butylbenzene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
sec-Butylbenzene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
tert-Butylbenzene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Carbon disulfide	ND	---	333	ug/kg	50	---	---	---	---	---	---	
Carbon tetrachloride	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Chlorobenzene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Chloroethane	ND	---	333	ug/kg	50	---	---	---	---	---	---	
Chloroform	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Chloromethane	ND	---	167	ug/kg	50	---	---	---	---	---	---	
2-Chlorotoluene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
4-Chlorotoluene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Dibromochloromethane	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	
1,2-Dibromo-3-chloropropane	ND	---	167	ug/kg	50	---	---	---	---	---	---	
1,2-Dibromoethane (EDB)	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Dibromomethane	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
1,2-Dichlorobenzene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
1,3-Dichlorobenzene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
1,4-Dichlorobenzene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Dichlorodifluoromethane	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	
1,1-Dichloroethane	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
1,2-Dichloroethane (EDC)	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
1,1-Dichloroethene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
cis-1,2-Dichloroethene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
trans-1,2-Dichloroethene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	

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Philip Nerenberg, Lab Director



Hahn and Associates
 434 NW 6th Ave. Suite 203
 Portland, OR 97209

Project: **Mult 802 Decommissioning**
 Project Number: **2708-60F**
 Project Manager: **Rob Ede**

Report ID:
A9E0785 - 06 19 19 1644

QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060582 - EPA 5035A						Soil						
Blank (9060582-BLK1)			Prepared: 06/05/19 13:00 Analyzed: 06/05/19 14:47									
1,2-Dichloropropane	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
1,3-Dichloropropane	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
2,2-Dichloropropane	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
1,1-Dichloropropene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
cis-1,3-Dichloropropene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
trans-1,3-Dichloropropene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Ethylbenzene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Hexachlorobutadiene	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	
2-Hexanone	ND	---	333	ug/kg	50	---	---	---	---	---	---	
Isopropylbenzene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
4-Isopropyltoluene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Methylene chloride	ND	---	167	ug/kg	50	---	---	---	---	---	---	
4-Methyl-2-pentanone (MiBK)	ND	---	333	ug/kg	50	---	---	---	---	---	---	
Methyl tert-butyl ether (MTBE)	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Naphthalene	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	
n-Propylbenzene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Styrene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
1,1,1,2-Tetrachloroethane	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
1,1,2,2-Tetrachloroethane	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Tetrachloroethene (PCE)	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Toluene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
1,2,3-Trichlorobenzene	ND	---	167	ug/kg	50	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	---	167	ug/kg	50	---	---	---	---	---	---	
1,1,1-Trichloroethane	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
1,1,2-Trichloroethane	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Trichloroethene (TCE)	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
Trichlorofluoromethane	ND	---	66.7	ug/kg	50	---	---	---	---	---	---	
1,2,3-Trichloropropane	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
1,2,4-Trimethylbenzene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
1,3,5-Trimethylbenzene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
Vinyl chloride	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	
m,p-Xylene	ND	---	33.3	ug/kg	50	---	---	---	---	---	---	
o-Xylene	ND	---	16.7	ug/kg	50	---	---	---	---	---	---	

Surr: 1,4-Difluorobenzene (Surr)

Recovery: 90 % Limits: 80-120 %

Dilution: 1x

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Philip Nerenberg, Lab Director



Hahn and Associates 434 NW 6th Ave. Suite 203 Portland, OR 97209	Project: Mult 802 Decommissioning Project Number: 2708-60F Project Manager: Rob Ede	Report ID: A9E0785 - 06 19 19 1644
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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060582 - EPA 5035A												
Soil												
Blank (9060582-BLK1)												
Prepared: 06/05/19 13:00 Analyzed: 06/05/19 14:47												
Surr: Toluene-d8 (Surr) Recovery: 102 % Limits: 80-120 % Dilution: 1x												
4-Bromofluorobenzene (Surr) 103 % 80-120 % "												
LCS (9060582-BS1)												
Prepared: 06/05/19 13:00 Analyzed: 06/05/19 13:52												
5035A/8260C												
Acetone	1680	---	1000	ug/kg	50	2000	---	84	80-120%	---	---	
Acrylonitrile	893	---	100	ug/kg	50	1000	---	89	80-120%	---	---	
Benzene	867	---	10.0	ug/kg	50	1000	---	87	80-120%	---	---	
Bromobenzene	1060	---	25.0	ug/kg	50	1000	---	106	80-120%	---	---	
Bromochloromethane	894	---	50.0	ug/kg	50	1000	---	89	80-120%	---	---	
Bromodichloromethane	899	---	50.0	ug/kg	50	1000	---	90	80-120%	---	---	
Bromoform	864	---	100	ug/kg	50	1000	---	86	80-120%	---	---	
Bromomethane	884	---	500	ug/kg	50	1000	---	88	80-120%	---	---	
2-Butanone (MEK)	1700	---	500	ug/kg	50	2000	---	85	80-120%	---	---	
n-Butylbenzene	1060	---	50.0	ug/kg	50	1000	---	106	80-120%	---	---	
sec-Butylbenzene	1060	---	50.0	ug/kg	50	1000	---	106	80-120%	---	---	
tert-Butylbenzene	1020	---	50.0	ug/kg	50	1000	---	102	80-120%	---	---	
Carbon disulfide	872	---	500	ug/kg	50	1000	---	87	80-120%	---	---	
Carbon tetrachloride	925	---	50.0	ug/kg	50	1000	---	92	80-120%	---	---	
Chlorobenzene	1010	---	25.0	ug/kg	50	1000	---	101	80-120%	---	---	
Chloroethane	658	---	500	ug/kg	50	1000	---	66	80-120%	---	---	Q-55
Chloroform	830	---	50.0	ug/kg	50	1000	---	83	80-120%	---	---	
Chloromethane	782	---	250	ug/kg	50	1000	---	78	80-120%	---	---	Q-55
2-Chlorotoluene	1040	---	50.0	ug/kg	50	1000	---	104	80-120%	---	---	
4-Chlorotoluene	1000	---	50.0	ug/kg	50	1000	---	100	80-120%	---	---	
Dibromochloromethane	906	---	100	ug/kg	50	1000	---	91	80-120%	---	---	
1,2-Dibromo-3-chloropropane	942	---	250	ug/kg	50	1000	---	94	80-120%	---	---	
1,2-Dibromoethane (EDB)	1060	---	50.0	ug/kg	50	1000	---	106	80-120%	---	---	
Dibromomethane	874	---	50.0	ug/kg	50	1000	---	87	80-120%	---	---	
1,2-Dichlorobenzene	980	---	25.0	ug/kg	50	1000	---	98	80-120%	---	---	
1,3-Dichlorobenzene	996	---	25.0	ug/kg	50	1000	---	100	80-120%	---	---	
1,4-Dichlorobenzene	988	---	25.0	ug/kg	50	1000	---	99	80-120%	---	---	
Dichlorodifluoromethane	843	---	100	ug/kg	50	1000	---	84	80-120%	---	---	
1,1-Dichloroethane	883	---	25.0	ug/kg	50	1000	---	88	80-120%	---	---	

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Philip Nerenberg, Lab Director



Hahn and Associates
434 NW 6th Ave. Suite 203
Portland, OR 97209

Project: **Mult 802 Decommissioning**
Project Number: **2708-60F**
Project Manager: **Rob Ede**

Report ID:
A9E0785 - 06 19 19 1644

QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060582 - EPA 5035A												
Soil												
LCS (9060582-BS1)												
Prepared: 06/05/19 13:00 Analyzed: 06/05/19 13:52												
1,2-Dichloroethane (EDC)	862	---	25.0	ug/kg	50	1000	---	86	80-120%	---	---	
1,1-Dichloroethene	924	---	25.0	ug/kg	50	1000	---	92	80-120%	---	---	
cis-1,2-Dichloroethene	886	---	25.0	ug/kg	50	1000	---	89	80-120%	---	---	
trans-1,2-Dichloroethene	913	---	25.0	ug/kg	50	1000	---	91	80-120%	---	---	
1,2-Dichloropropane	886	---	25.0	ug/kg	50	1000	---	89	80-120%	---	---	
1,3-Dichloropropane	1040	---	50.0	ug/kg	50	1000	---	104	80-120%	---	---	
2,2-Dichloropropane	1000	---	50.0	ug/kg	50	1000	---	100	80-120%	---	---	
1,1-Dichloropropene	886	---	50.0	ug/kg	50	1000	---	89	80-120%	---	---	
cis-1,3-Dichloropropene	1100	---	50.0	ug/kg	50	1000	---	110	80-120%	---	---	
trans-1,3-Dichloropropene	1060	---	50.0	ug/kg	50	1000	---	106	80-120%	---	---	
Ethylbenzene	1000	---	25.0	ug/kg	50	1000	---	100	80-120%	---	---	
Hexachlorobutadiene	1120	---	100	ug/kg	50	1000	---	112	80-120%	---	---	
2-Hexanone	1900	---	500	ug/kg	50	2000	---	95	80-120%	---	---	
Isopropylbenzene	1040	---	50.0	ug/kg	50	1000	---	104	80-120%	---	---	
4-Isopropyltoluene	1110	---	50.0	ug/kg	50	1000	---	111	80-120%	---	---	
Methylene chloride	560	---	250	ug/kg	50	1000	---	56	80-120%	---	---	Q-55
4-Methyl-2-pentanone (MiBK)	1830	---	500	ug/kg	50	2000	---	91	80-120%	---	---	
Methyl tert-butyl ether (MTBE)	863	---	50.0	ug/kg	50	1000	---	86	80-120%	---	---	
Naphthalene	1050	---	100	ug/kg	50	1000	---	105	80-120%	---	---	
n-Propylbenzene	1040	---	25.0	ug/kg	50	1000	---	104	80-120%	---	---	
Styrene	1060	---	50.0	ug/kg	50	1000	---	106	80-120%	---	---	
1,1,1,2-Tetrachloroethane	1080	---	25.0	ug/kg	50	1000	---	108	80-120%	---	---	
1,1,2,2-Tetrachloroethane	1000	---	50.0	ug/kg	50	1000	---	100	80-120%	---	---	
Tetrachloroethene (PCE)	1030	---	25.0	ug/kg	50	1000	---	103	80-120%	---	---	
Toluene	981	---	50.0	ug/kg	50	1000	---	98	80-120%	---	---	
1,2,3-Trichlorobenzene	1100	---	250	ug/kg	50	1000	---	110	80-120%	---	---	
1,2,4-Trichlorobenzene	1080	---	250	ug/kg	50	1000	---	108	80-120%	---	---	
1,1,1-Trichloroethane	904	---	25.0	ug/kg	50	1000	---	90	80-120%	---	---	
1,1,2-Trichloroethane	1050	---	25.0	ug/kg	50	1000	---	105	80-120%	---	---	
Trichloroethene (TCE)	878	---	25.0	ug/kg	50	1000	---	88	80-120%	---	---	
Trichlorofluoromethane	714	---	100	ug/kg	50	1000	---	71	80-120%	---	---	Q-55
1,2,3-Trichloropropane	984	---	50.0	ug/kg	50	1000	---	98	80-120%	---	---	
1,2,4-Trimethylbenzene	1030	---	50.0	ug/kg	50	1000	---	103	80-120%	---	---	
1,3,5-Trimethylbenzene	1080	---	50.0	ug/kg	50	1000	---	108	80-120%	---	---	



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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060582 - EPA 5035A						Soil						
LCS (9060582-BS1)			Prepared: 06/05/19 13:00 Analyzed: 06/05/19 13:52									
Vinyl chloride	821	---	25.0	ug/kg	50	1000	---	82	80-120%	---	---	
m,p-Xylene	2030	---	50.0	ug/kg	50	2000	---	102	80-120%	---	---	
o-Xylene	1010	---	25.0	ug/kg	50	1000	---	101	80-120%	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 90 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>101 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>102 %</i>		<i>80-120 %</i>		<i>"</i>						
Duplicate (9060582-DUP1)						Prepared: 05/29/19 16:30 Analyzed: 06/05/19 21:14						
QC Source Sample: Non-SDG (A9F0057-09)												
Acetone	ND	---	836	ug/kg	50	---	ND	---	---	---	30%	
Acrylonitrile	ND	---	167	ug/kg	50	---	ND	---	---	---	30%	R-02
Benzene	ND	---	8.36	ug/kg	50	---	ND	---	---	---	30%	Q-05
Bromobenzene	ND	---	20.9	ug/kg	50	---	ND	---	---	---	30%	
Bromochloromethane	ND	---	41.8	ug/kg	50	---	ND	---	---	---	30%	
Bromodichloromethane	ND	---	41.8	ug/kg	50	---	ND	---	---	---	30%	
Bromoform	ND	---	83.6	ug/kg	50	---	ND	---	---	---	30%	
Bromomethane	ND	---	418	ug/kg	50	---	ND	---	---	---	30%	
2-Butanone (MEK)	ND	---	418	ug/kg	50	---	ND	---	---	---	30%	
n-Butylbenzene	96.6	---	41.8	ug/kg	50	---	73.9	---	---	27	30%	M-02
sec-Butylbenzene	ND	---	41.8	ug/kg	50	---	28.9	---	---	***	30%	
tert-Butylbenzene	ND	---	41.8	ug/kg	50	---	ND	---	---	---	30%	
Carbon disulfide	ND	---	418	ug/kg	50	---	ND	---	---	---	30%	
Carbon tetrachloride	ND	---	41.8	ug/kg	50	---	ND	---	---	---	30%	
Chlorobenzene	ND	---	20.9	ug/kg	50	---	ND	---	---	---	30%	
Chloroethane	ND	---	418	ug/kg	50	---	ND	---	---	---	30%	
Chloroform	ND	---	41.8	ug/kg	50	---	ND	---	---	---	30%	
Chloromethane	ND	---	209	ug/kg	50	---	ND	---	---	---	30%	
2-Chlorotoluene	ND	---	41.8	ug/kg	50	---	ND	---	---	---	30%	
4-Chlorotoluene	ND	---	41.8	ug/kg	50	---	ND	---	---	---	30%	
Dibromochloromethane	ND	---	83.6	ug/kg	50	---	ND	---	---	---	30%	
1,2-Dibromo-3-chloropropane	ND	---	209	ug/kg	50	---	ND	---	---	---	30%	
1,2-Dibromoethane (EDB)	ND	---	41.8	ug/kg	50	---	ND	---	---	---	30%	
Dibromomethane	ND	---	41.8	ug/kg	50	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	---	20.9	ug/kg	50	---	ND	---	---	---	30%	

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 434 NW 6th Ave. Suite 203
 Portland, OR 97209

Project: **Mult 802 Decommissioning**
 Project Number: **2708-60F**
 Project Manager: **Rob Ede**

Report ID:
A9E0785 - 06 19 19 1644

QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060582 - EPA 5035A												
Soil												
Duplicate (9060582-DUP1)												
Prepared: 05/29/19 16:30 Analyzed: 06/05/19 21:14												
QC Source Sample: Non-SDG (A9F0057-09)												
1,3-Dichlorobenzene	ND	---	20.9	ug/kg	50	---	ND	---	---	---	30%	
1,4-Dichlorobenzene	ND	---	20.9	ug/kg	50	---	ND	---	---	---	30%	
Dichlorodifluoromethane	ND	---	83.6	ug/kg	50	---	ND	---	---	---	30%	
1,1-Dichloroethane	ND	---	20.9	ug/kg	50	---	ND	---	---	---	30%	
1,2-Dichloroethane (EDC)	ND	---	20.9	ug/kg	50	---	ND	---	---	---	30%	
1,1-Dichloroethene	ND	---	20.9	ug/kg	50	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	ND	---	20.9	ug/kg	50	---	ND	---	---	---	30%	
trans-1,2-Dichloroethene	ND	---	20.9	ug/kg	50	---	ND	---	---	---	30%	
1,2-Dichloropropane	ND	---	20.9	ug/kg	50	---	ND	---	---	---	30%	
1,3-Dichloropropane	ND	---	41.8	ug/kg	50	---	ND	---	---	---	30%	
2,2-Dichloropropane	ND	---	41.8	ug/kg	50	---	ND	---	---	---	30%	
1,1-Dichloropropene	ND	---	41.8	ug/kg	50	---	ND	---	---	---	30%	
cis-1,3-Dichloropropene	ND	---	41.8	ug/kg	50	---	ND	---	---	---	30%	
trans-1,3-Dichloropropene	ND	---	41.8	ug/kg	50	---	ND	---	---	---	30%	
Ethylbenzene	472	---	20.9	ug/kg	50	---	413	---	---	13	30%	
Hexachlorobutadiene	ND	---	83.6	ug/kg	50	---	ND	---	---	---	30%	
2-Hexanone	ND	---	418	ug/kg	50	---	ND	---	---	---	30%	
Isopropylbenzene	99.1	---	41.8	ug/kg	50	---	78.8	---	---	23	30%	
4-Isopropyltoluene	ND	---	41.8	ug/kg	50	---	ND	---	---	---	30%	
Methylene chloride	ND	---	209	ug/kg	50	---	ND	---	---	---	30%	
4-Methyl-2-pentanone (MiBK)	ND	---	418	ug/kg	50	---	ND	---	---	---	30%	
Methyl tert-butyl ether (MTBE)	ND	---	41.8	ug/kg	50	---	ND	---	---	---	30%	
Naphthalene	473	---	83.6	ug/kg	50	---	367	---	---	25	30%	
n-Propylbenzene	490	---	20.9	ug/kg	50	---	378	---	---	26	30%	
Styrene	ND	---	41.8	ug/kg	50	---	ND	---	---	---	30%	
1,1,1,2-Tetrachloroethane	ND	---	20.9	ug/kg	50	---	ND	---	---	---	30%	
1,1,2,2-Tetrachloroethane	ND	---	41.8	ug/kg	50	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	ND	---	20.9	ug/kg	50	---	ND	---	---	---	30%	
Toluene	ND	---	41.8	ug/kg	50	---	ND	---	---	---	30%	
1,2,3-Trichlorobenzene	ND	---	209	ug/kg	50	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	---	209	ug/kg	50	---	ND	---	---	---	30%	
1,1,1-Trichloroethane	ND	---	20.9	ug/kg	50	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	---	20.9	ug/kg	50	---	ND	---	---	---	30%	



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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060582 - EPA 5035A												
Soil												
Duplicate (9060582-DUP1)												
Prepared: 05/29/19 16:30 Analyzed: 06/05/19 21:14												
QC Source Sample: Non-SDG (A9F0057-09)												
Trichloroethene (TCE)	ND	---	20.9	ug/kg	50	---	ND	---	---	---	30%	
Trichlorofluoromethane	ND	---	83.6	ug/kg	50	---	ND	---	---	---	30%	
1,2,3-Trichloropropane	ND	---	41.8	ug/kg	50	---	ND	---	---	---	30%	
1,2,4-Trimethylbenzene	2620	---	41.8	ug/kg	50	---	2030	---	---	25	30%	
1,3,5-Trimethylbenzene	898	---	41.8	ug/kg	50	---	685	---	---	27	30%	
Vinyl chloride	ND	---	20.9	ug/kg	50	---	ND	---	---	---	30%	
m,p-Xylene	1350	---	41.8	ug/kg	50	---	1170	---	---	14	30%	
o-Xylene	269	---	20.9	ug/kg	50	---	250	---	---	7	30%	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 90 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>99 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>102 %</i>		<i>80-120 %</i>		<i>"</i>						

Matrix Spike (9060582-MS1)												
Prepared: 05/29/19 17:30 Analyzed: 06/05/19 22:09												
QC Source Sample: Non-SDG (A9F0057-10)												
5035A/8260C												
Acetone	1980	---	1050	ug/kg	50	2100	ND	94	36-164%	---	---	
Acrylonitrile	1000	---	105	ug/kg	50	1050	ND	95	65-134%	---	---	
Benzene	937	---	10.5	ug/kg	50	1050	ND	89	77-121%	---	---	
Bromobenzene	1160	---	26.3	ug/kg	50	1050	ND	110	78-121%	---	---	
Bromochloromethane	988	---	52.5	ug/kg	50	1050	ND	94	78-125%	---	---	
Bromodichloromethane	944	---	52.5	ug/kg	50	1050	ND	90	75-127%	---	---	
Bromoform	871	---	105	ug/kg	50	1050	ND	83	67-132%	---	---	
Bromomethane	919	---	525	ug/kg	50	1050	ND	87	53-143%	---	---	
2-Butanone (MEK)	1900	---	525	ug/kg	50	2100	ND	90	51-148%	---	---	
n-Butylbenzene	1110	---	52.5	ug/kg	50	1050	ND	105	70-128%	---	---	
sec-Butylbenzene	1120	---	52.5	ug/kg	50	1050	ND	106	73-126%	---	---	
tert-Butylbenzene	1110	---	52.5	ug/kg	50	1050	ND	105	73-125%	---	---	
Carbon disulfide	906	---	525	ug/kg	50	1050	ND	86	63-132%	---	---	
Carbon tetrachloride	968	---	52.5	ug/kg	50	1050	ND	92	70-135%	---	---	
Chlorobenzene	1090	---	26.3	ug/kg	50	1050	ND	104	79-120%	---	---	
Chloroethane	822	---	525	ug/kg	50	1050	ND	78	59-139%	---	---	Q-54
Chloroform	941	---	52.5	ug/kg	50	1050	ND	90	78-123%	---	---	
Chloromethane	848	---	263	ug/kg	50	1050	ND	81	50-136%	---	---	Q-54a

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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060582 - EPA 5035A						Soil						
Matrix Spike (9060582-MS1)			Prepared: 05/29/19 17:30 Analyzed: 06/05/19 22:09									
QC Source Sample: Non-SDG (A9F0057-10)												
2-Chlorotoluene	1100	---	52.5	ug/kg	50	1050	ND	105	75-122%	---	---	
4-Chlorotoluene	1090	---	52.5	ug/kg	50	1050	ND	104	72-124%	---	---	
Dibromochloromethane	950	---	105	ug/kg	50	1050	ND	90	74-126%	---	---	
1,2-Dibromo-3-chloropropane	935	---	263	ug/kg	50	1050	ND	89	61-132%	---	---	
1,2-Dibromoethane (EDB)	1120	---	52.5	ug/kg	50	1050	ND	107	78-122%	---	---	
Dibromomethane	954	---	52.5	ug/kg	50	1050	ND	91	78-125%	---	---	
1,2-Dichlorobenzene	1050	---	26.3	ug/kg	50	1050	ND	100	78-121%	---	---	
1,3-Dichlorobenzene	1060	---	26.3	ug/kg	50	1050	ND	101	77-121%	---	---	
1,4-Dichlorobenzene	1040	---	26.3	ug/kg	50	1050	ND	99	75-120%	---	---	
Dichlorodifluoromethane	966	---	105	ug/kg	50	1050	ND	92	29-149%	---	---	
1,1-Dichloroethane	1030	---	26.3	ug/kg	50	1050	ND	98	76-125%	---	---	
1,2-Dichloroethane (EDC)	974	---	26.3	ug/kg	50	1050	ND	93	73-128%	---	---	
1,1-Dichloroethene	1020	---	26.3	ug/kg	50	1050	ND	97	70-131%	---	---	
cis-1,2-Dichloroethene	988	---	26.3	ug/kg	50	1050	ND	94	77-123%	---	---	
trans-1,2-Dichloroethene	1020	---	26.3	ug/kg	50	1050	ND	97	74-125%	---	---	
1,2-Dichloropropane	958	---	26.3	ug/kg	50	1050	ND	91	76-123%	---	---	
1,3-Dichloropropane	1100	---	52.5	ug/kg	50	1050	ND	105	77-121%	---	---	
2,2-Dichloropropane	954	---	52.5	ug/kg	50	1050	ND	91	67-133%	---	---	
1,1-Dichloropropene	963	---	52.5	ug/kg	50	1050	ND	92	76-125%	---	---	
cis-1,3-Dichloropropene	1140	---	52.5	ug/kg	50	1050	ND	109	74-126%	---	---	
trans-1,3-Dichloropropene	1100	---	52.5	ug/kg	50	1050	ND	105	71-130%	---	---	
Ethylbenzene	1070	---	26.3	ug/kg	50	1050	ND	102	76-122%	---	---	
Hexachlorobutadiene	1130	---	105	ug/kg	50	1050	ND	107	61-135%	---	---	
2-Hexanone	2010	---	525	ug/kg	50	2100	ND	96	53-145%	---	---	
Isopropylbenzene	1110	---	52.5	ug/kg	50	1050	ND	105	68-134%	---	---	
4-Isopropyltoluene	1150	---	52.5	ug/kg	50	1050	ND	109	73-127%	---	---	
Methylene chloride	649	---	263	ug/kg	50	1050	ND	62	70-128%	---	---	Q-54b
4-Methyl-2-pentanone (MiBK)	1970	---	525	ug/kg	50	2100	ND	94	65-135%	---	---	
Methyl tert-butyl ether (MTBE)	923	---	52.5	ug/kg	50	1050	ND	88	73-125%	---	---	
Naphthalene	1070	---	105	ug/kg	50	1050	ND	101	62-129%	---	---	
n-Propylbenzene	1110	---	26.3	ug/kg	50	1050	ND	106	73-125%	---	---	
Styrene	1120	---	52.5	ug/kg	50	1050	ND	107	76-124%	---	---	
1,1,1,2-Tetrachloroethane	1130	---	26.3	ug/kg	50	1050	ND	108	78-125%	---	---	

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Philip Nerenberg, Lab Director



Hahn and Associates 434 NW 6th Ave. Suite 203 Portland, OR 97209	Project: Mult 802 Decommissioning Project Number: 2708-60F Project Manager: Rob Ede	Report ID: A9E0785 - 06 19 1644
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QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060582 - EPA 5035A						Soil						
Matrix Spike (9060582-MS1)			Prepared: 05/29/19 17:30 Analyzed: 06/05/19 22:09									
QC Source Sample: Non-SDG (A9F0057-10)												
1,1,2,2-Tetrachloroethane	963	---	52.5	ug/kg	50	1050	ND	92	70-124%	---	---	
Tetrachloroethene (PCE)	1090	---	26.3	ug/kg	50	1050	ND	104	73-128%	---	---	
Toluene	1070	---	52.5	ug/kg	50	1050	ND	101	77-121%	---	---	
1,2,3-Trichlorobenzene	1110	---	263	ug/kg	50	1050	ND	106	66-130%	---	---	
1,2,4-Trichlorobenzene	1100	---	263	ug/kg	50	1050	ND	105	67-129%	---	---	
1,1,1-Trichloroethane	984	---	26.3	ug/kg	50	1050	ND	94	73-130%	---	---	
1,1,2-Trichloroethane	1120	---	26.3	ug/kg	50	1050	ND	106	78-121%	---	---	
Trichloroethene (TCE)	988	---	26.3	ug/kg	50	1050	ND	94	77-123%	---	---	
Trichlorofluoromethane	807	---	105	ug/kg	50	1050	ND	77	62-140%	---	---	Q-54c
1,2,3-Trichloropropane	1040	---	52.5	ug/kg	50	1050	ND	99	73-125%	---	---	
1,2,4-Trimethylbenzene	1120	---	52.5	ug/kg	50	1050	ND	106	75-123%	---	---	
1,3,5-Trimethylbenzene	1150	---	52.5	ug/kg	50	1050	ND	109	73-124%	---	---	
Vinyl chloride	919	---	26.3	ug/kg	50	1050	ND	87	56-135%	---	---	
m,p-Xylene	2180	---	52.5	ug/kg	50	2100	ND	104	77-124%	---	---	
o-Xylene	1080	---	26.3	ug/kg	50	1050	ND	103	77-123%	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 90 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>101 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>103 %</i>		<i>80-120 %</i>		<i>"</i>						



Hahn and Associates
 434 NW 6th Ave. Suite 203
 Portland, OR 97209

Project: **Mult 802 Decommissioning**
 Project Number: **2708-60F**
 Project Manager: **Rob Ede**

Report ID:
A9E0785 - 06 19 19 1644

QUALITY CONTROL (QC) SAMPLE RESULTS

SPLP Volatile Organic Compounds by EPA 1312/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060589 - EPA 1312/5030B SPLP Volatiles						Water						
Blank (9060589-BLK1)			Prepared: 06/05/19 09:09 Analyzed: 06/05/19 11:45									
<u>1312/8260C</u>												
Acetone	ND	---	0.0200	mg/L	1	---	---	---	---	---	---	
Benzene	ND	---	0.000250	mg/L	1	---	---	---	---	---	---	
Bromobenzene	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
Bromochloromethane	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
Bromodichloromethane	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
Bromoform	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
Bromomethane	ND	---	0.00500	mg/L	1	---	---	---	---	---	---	
2-Butanone (MEK)	ND	---	0.0100	mg/L	1	---	---	---	---	---	---	
n-Butylbenzene	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
sec-Butylbenzene	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
tert-Butylbenzene	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
Carbon tetrachloride	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
Chlorobenzene	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
Chloroethane	ND	---	0.00500	mg/L	1	---	---	---	---	---	---	
Chloroform	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
Chloromethane	ND	---	0.00500	mg/L	1	---	---	---	---	---	---	
2-Chlorotoluene	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
4-Chlorotoluene	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
1,2-Dibromo-3-chloropropane	ND	---	0.00500	mg/L	1	---	---	---	---	---	---	
Dibromochloromethane	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
1,2-Dibromoethane (EDB)	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
Dibromomethane	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
1,2-Dichlorobenzene	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
1,3-Dichlorobenzene	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
1,4-Dichlorobenzene	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
Dichlorodifluoromethane	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
1,1-Dichloroethane	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
1,2-Dichloroethane (EDC)	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
1,1-Dichloroethene	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
cis-1,2-Dichloroethene	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
trans-1,2-Dichloroethene	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
1,2-Dichloropropane	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
1,3-Dichloropropane	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	

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QUALITY CONTROL (QC) SAMPLE RESULTS

SPLP Volatile Organic Compounds by EPA 1312/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060589 - EPA 1312/5030B SPLP Volatiles						Water						
Blank (9060589-BLK1)			Prepared: 06/05/19 09:09 Analyzed: 06/05/19 11:45									
2,2-Dichloropropane	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
1,1-Dichloropropene	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
cis-1,3-Dichloropropene	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
trans-1,3-Dichloropropene	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
Ethylbenzene	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
Hexachlorobutadiene	ND	---	0.00500	mg/L	1	---	---	---	---	---	---	
2-Hexanone	ND	---	0.0100	mg/L	1	---	---	---	---	---	---	
Isopropylbenzene	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
4-Isopropyltoluene	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
4-Methyl-2-pentanone (MiBK)	ND	---	0.0100	mg/L	1	---	---	---	---	---	---	
Methyl tert-butyl ether (MTBE)	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
Methylene chloride	ND	---	0.00500	mg/L	1	---	---	---	---	---	---	
Naphthalene	ND	---	0.00200	mg/L	1	---	---	---	---	---	---	
n-Propylbenzene	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
Styrene	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
1,1,1,2-Tetrachloroethane	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
1,1,2,2-Tetrachloroethane	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
Tetrachloroethene (PCE)	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
Toluene	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
1,2,3-Trichlorobenzene	ND	---	0.00200	mg/L	1	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	---	0.00200	mg/L	1	---	---	---	---	---	---	
1,1,1-Trichloroethane	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
1,1,2-Trichloroethane	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
Trichloroethene (TCE)	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
Trichlorofluoromethane	ND	---	0.00200	mg/L	1	---	---	---	---	---	---	
1,2,3-Trichloropropane	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
1,2,4-Trimethylbenzene	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
1,3,5-Trimethylbenzene	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
Vinyl chloride	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
m,p-Xylene	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
o-Xylene	ND	---	0.000500	mg/L	1	---	---	---	---	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 106 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>101 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>100 %</i>		<i>80-120 %</i>		<i>"</i>						

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QUALITY CONTROL (QC) SAMPLE RESULTS

SPLP Volatile Organic Compounds by EPA 1312/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060589 - EPA 1312/5030B SPLP Volatiles						Water						
LCS (9060589-BS1)						Prepared: 06/05/19 09:09 Analyzed: 06/05/19 10:51						
<u>1312/8260C</u>												
Acetone	0.0403	---	0.0200	mg/L	1	0.0400	---	101	70-130%	---	---	
Benzene	0.0203	---	0.000250	mg/L	1	0.0200	---	101	70-130%	---	---	
Bromobenzene	0.0204	---	0.000500	mg/L	1	0.0200	---	102	70-130%	---	---	
Bromochloromethane	0.0231	---	0.00100	mg/L	1	0.0200	---	116	70-130%	---	---	
Bromodichloromethane	0.0225	---	0.00100	mg/L	1	0.0200	---	113	70-130%	---	---	
Bromoform	0.0246	---	0.00100	mg/L	1	0.0200	---	123	70-130%	---	---	
Bromomethane	0.0233	---	0.00500	mg/L	1	0.0200	---	117	70-130%	---	---	
2-Butanone (MEK)	0.0427	---	0.0100	mg/L	1	0.0400	---	107	70-130%	---	---	
n-Butylbenzene	0.0197	---	0.00100	mg/L	1	0.0200	---	99	70-130%	---	---	
sec-Butylbenzene	0.0189	---	0.00100	mg/L	1	0.0200	---	94	70-130%	---	---	
tert-Butylbenzene	0.0178	---	0.00100	mg/L	1	0.0200	---	89	70-130%	---	---	
Carbon tetrachloride	0.0206	---	0.00100	mg/L	1	0.0200	---	103	70-130%	---	---	
Chlorobenzene	0.0203	---	0.000500	mg/L	1	0.0200	---	102	70-130%	---	---	
Chloroethane	0.0151	---	0.00500	mg/L	1	0.0200	---	76	70-130%	---	---	
Chloroform	0.0211	---	0.00100	mg/L	1	0.0200	---	106	70-130%	---	---	
Chloromethane	0.0229	---	0.00500	mg/L	1	0.0200	---	114	70-130%	---	---	
2-Chlorotoluene	0.0191	---	0.00100	mg/L	1	0.0200	---	95	70-130%	---	---	
4-Chlorotoluene	0.0190	---	0.00100	mg/L	1	0.0200	---	95	70-130%	---	---	
1,2-Dibromo-3-chloropropane	0.0199	---	0.00500	mg/L	1	0.0200	---	99	70-130%	---	---	
Dibromochloromethane	0.0202	---	0.00100	mg/L	1	0.0200	---	101	70-130%	---	---	
1,2-Dibromoethane (EDB)	0.0208	---	0.000500	mg/L	1	0.0200	---	104	70-130%	---	---	
Dibromomethane	0.0224	---	0.00100	mg/L	1	0.0200	---	112	70-130%	---	---	
1,2-Dichlorobenzene	0.0202	---	0.000500	mg/L	1	0.0200	---	101	70-130%	---	---	
1,3-Dichlorobenzene	0.0201	---	0.000500	mg/L	1	0.0200	---	100	70-130%	---	---	
1,4-Dichlorobenzene	0.0198	---	0.000500	mg/L	1	0.0200	---	99	70-130%	---	---	
Dichlorodifluoromethane	0.0195	---	0.00100	mg/L	1	0.0200	---	97	70-130%	---	---	
1,1-Dichloroethane	0.0201	---	0.000500	mg/L	1	0.0200	---	100	70-130%	---	---	
1,2-Dichloroethane (EDC)	0.0217	---	0.000500	mg/L	1	0.0200	---	109	70-130%	---	---	
1,1-Dichloroethene	0.0183	---	0.000500	mg/L	1	0.0200	---	92	70-130%	---	---	
cis-1,2-Dichloroethene	0.0205	---	0.000500	mg/L	1	0.0200	---	102	70-130%	---	---	
trans-1,2-Dichloroethene	0.0200	---	0.000500	mg/L	1	0.0200	---	100	70-130%	---	---	
1,2-Dichloropropane	0.0211	---	0.000500	mg/L	1	0.0200	---	106	70-130%	---	---	
1,3-Dichloropropane	0.0202	---	0.00100	mg/L	1	0.0200	---	101	70-130%	---	---	

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Hahn and Associates
434 NW 6th Ave. Suite 203
Portland, OR 97209

Project: **Mult 802 Decommissioning**
Project Number: **2708-60F**
Project Manager: **Rob Ede**

Report ID:
A9E0785 - 06 19 19 1644

QUALITY CONTROL (QC) SAMPLE RESULTS

SPLP Volatile Organic Compounds by EPA 1312/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060589 - EPA 1312/5030B SPLP Volatiles						Water						
LCS (9060589-BS1)			Prepared: 06/05/19 09:09 Analyzed: 06/05/19 10:51									
2,2-Dichloropropane	0.0167	---	0.00100	mg/L	1	0.0200	---	83	70-130%	---	---	
1,1-Dichloropropene	0.0192	---	0.00100	mg/L	1	0.0200	---	96	70-130%	---	---	
cis-1,3-Dichloropropene	0.0191	---	0.00100	mg/L	1	0.0200	---	96	70-130%	---	---	
trans-1,3-Dichloropropene	0.0182	---	0.00100	mg/L	1	0.0200	---	91	70-130%	---	---	
Ethylbenzene	0.0189	---	0.000500	mg/L	1	0.0200	---	95	70-130%	---	---	
Hexachlorobutadiene	0.0197	---	0.00500	mg/L	1	0.0200	---	99	70-130%	---	---	
2-Hexanone	0.0402	---	0.0100	mg/L	1	0.0400	---	101	70-130%	---	---	
Isopropylbenzene	0.0187	---	0.00100	mg/L	1	0.0200	---	94	70-130%	---	---	
4-Isopropyltoluene	0.0190	---	0.00100	mg/L	1	0.0200	---	95	70-130%	---	---	
4-Methyl-2-pentanone (MiBK)	0.0392	---	0.0100	mg/L	1	0.0400	---	98	70-130%	---	---	
Methyl tert-butyl ether (MTBE)	0.0174	---	0.00100	mg/L	1	0.0200	---	87	70-130%	---	---	
Methylene chloride	0.0187	---	0.00500	mg/L	1	0.0200	---	94	70-130%	---	---	
Naphthalene	0.0170	---	0.00200	mg/L	1	0.0200	---	85	70-130%	---	---	
n-Propylbenzene	0.0183	---	0.000500	mg/L	1	0.0200	---	92	70-130%	---	---	
Styrene	0.0207	---	0.00100	mg/L	1	0.0200	---	104	70-130%	---	---	
1,1,1,2-Tetrachloroethane	0.0200	---	0.000500	mg/L	1	0.0200	---	100	70-130%	---	---	
1,1,2,2-Tetrachloroethane	0.0219	---	0.000500	mg/L	1	0.0200	---	109	70-130%	---	---	
Tetrachloroethene (PCE)	0.0195	---	0.000500	mg/L	1	0.0200	---	97	70-130%	---	---	
Toluene	0.0188	---	0.00100	mg/L	1	0.0200	---	94	70-130%	---	---	
1,2,3-Trichlorobenzene	0.0204	---	0.00200	mg/L	1	0.0200	---	102	70-130%	---	---	
1,2,4-Trichlorobenzene	0.0188	---	0.00200	mg/L	1	0.0200	---	94	70-130%	---	---	
1,1,1-Trichloroethane	0.0193	---	0.000500	mg/L	1	0.0200	---	97	70-130%	---	---	
1,1,2-Trichloroethane	0.0215	---	0.000500	mg/L	1	0.0200	---	108	70-130%	---	---	
Trichloroethene (TCE)	0.0205	---	0.000500	mg/L	1	0.0200	---	102	70-130%	---	---	
Trichlorofluoromethane	0.0243	---	0.00200	mg/L	1	0.0200	---	121	70-130%	---	---	
1,2,3-Trichloropropane	0.0198	---	0.00100	mg/L	1	0.0200	---	99	70-130%	---	---	
1,2,4-Trimethylbenzene	0.0195	---	0.00100	mg/L	1	0.0200	---	97	70-130%	---	---	
1,3,5-Trimethylbenzene	0.0191	---	0.00100	mg/L	1	0.0200	---	95	70-130%	---	---	
Vinyl chloride	0.0195	---	0.000500	mg/L	1	0.0200	---	97	70-130%	---	---	
m,p-Xylene	0.0384	---	0.00100	mg/L	1	0.0400	---	96	70-130%	---	---	
o-Xylene	0.0182	---	0.000500	mg/L	1	0.0200	---	91	70-130%	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>			<i>Recovery: 105 %</i>	<i>Limits: 80-120 %</i>	<i>Dilution: 1x</i>							
<i>Toluene-d8 (Surr)</i>			<i>99 %</i>	<i>80-120 %</i>	<i>"</i>							
<i>4-Bromofluorobenzene (Surr)</i>			<i>92 %</i>	<i>80-120 %</i>	<i>"</i>							

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Philip Nerenberg, Lab Director



Hahn and Associates

434 NW 6th Ave. Suite 203
Portland, OR 97209

Project: **Mult 802 Decommissioning**

Project Number: **2708-60F**

Project Manager: **Rob Ede**

Report ID:

A9E0785 - 06 19 19 1644

QUALITY CONTROL (QC) SAMPLE RESULTS

SPLP Volatile Organic Compounds by EPA 1312/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060589 - EPA 1312/5030B SPLP Volatiles						Water						
Duplicate (9060589-DUP2)						Prepared: 06/05/19 12:17 Analyzed: 06/05/19 14:00						
QC Source Sample: Non-SDG (A9E0723-01)												
Acetone	ND	---	2.00	mg/L	100	---	ND	---	---	---	30%	
Benzene	3.20	---	0.0250	mg/L	100	---	3.40	---	---	6	30%	
Bromobenzene	ND	---	0.0500	mg/L	100	---	ND	---	---	---	30%	
Bromochloromethane	ND	---	0.100	mg/L	100	---	ND	---	---	---	30%	
Bromodichloromethane	ND	---	0.100	mg/L	100	---	ND	---	---	---	30%	
Bromoform	ND	---	0.100	mg/L	100	---	ND	---	---	---	30%	
Bromomethane	ND	---	0.500	mg/L	100	---	ND	---	---	---	30%	
2-Butanone (MEK)	ND	---	1.00	mg/L	100	---	ND	---	---	---	30%	
n-Butylbenzene	ND	---	0.100	mg/L	100	---	ND	---	---	---	30%	
sec-Butylbenzene	ND	---	0.100	mg/L	100	---	ND	---	---	---	30%	
tert-Butylbenzene	ND	---	0.100	mg/L	100	---	ND	---	---	---	30%	
Carbon tetrachloride	ND	---	0.100	mg/L	100	---	ND	---	---	---	30%	
Chlorobenzene	ND	---	0.0500	mg/L	100	---	ND	---	---	---	30%	
Chloroethane	ND	---	0.500	mg/L	100	---	ND	---	---	---	30%	
Chloroform	ND	---	0.100	mg/L	100	---	ND	---	---	---	30%	
Chloromethane	ND	---	0.500	mg/L	100	---	ND	---	---	---	30%	
2-Chlorotoluene	ND	---	0.100	mg/L	100	---	ND	---	---	---	30%	
4-Chlorotoluene	ND	---	0.100	mg/L	100	---	ND	---	---	---	30%	
1,2-Dibromo-3-chloropropane	ND	---	0.500	mg/L	100	---	ND	---	---	---	30%	
Dibromochloromethane	ND	---	0.100	mg/L	100	---	ND	---	---	---	30%	
1,2-Dibromoethane (EDB)	ND	---	0.0500	mg/L	100	---	ND	---	---	---	30%	
Dibromomethane	ND	---	0.100	mg/L	100	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	---	0.0500	mg/L	100	---	ND	---	---	---	30%	
1,3-Dichlorobenzene	ND	---	0.0500	mg/L	100	---	ND	---	---	---	30%	
1,4-Dichlorobenzene	ND	---	0.0500	mg/L	100	---	ND	---	---	---	30%	
Dichlorodifluoromethane	ND	---	0.100	mg/L	100	---	ND	---	---	---	30%	
1,1-Dichloroethane	ND	---	0.0500	mg/L	100	---	ND	---	---	---	30%	
1,2-Dichloroethane (EDC)	ND	---	0.0500	mg/L	100	---	ND	---	---	---	30%	
1,1-Dichloroethene	ND	---	0.0500	mg/L	100	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	ND	---	0.0500	mg/L	100	---	ND	---	---	---	30%	
trans-1,2-Dichloroethene	ND	---	0.0500	mg/L	100	---	ND	---	---	---	30%	
1,2-Dichloropropane	ND	---	0.0500	mg/L	100	---	ND	---	---	---	30%	

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Philip Nerenberg, Lab Director



Hahn and Associates 434 NW 6th Ave. Suite 203 Portland, OR 97209	Project: Mult 802 Decommissioning Project Number: 2708-60F Project Manager: Rob Ede	Report ID: A9E0785 - 06 19 19 1644
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QUALITY CONTROL (QC) SAMPLE RESULTS

SPLP Volatile Organic Compounds by EPA 1312/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060589 - EPA 1312/5030B SPLP Volatiles						Water						
Duplicate (9060589-DUP2)						Prepared: 06/05/19 12:17 Analyzed: 06/05/19 14:00						
QC Source Sample: Non-SDG (A9E0723-01)												
1,3-Dichloropropane	ND	---	0.100	mg/L	100	---	ND	---	---	---	30%	
2,2-Dichloropropane	ND	---	0.100	mg/L	100	---	ND	---	---	---	30%	
1,1-Dichloropropene	ND	---	0.100	mg/L	100	---	ND	---	---	---	30%	
cis-1,3-Dichloropropene	ND	---	0.100	mg/L	100	---	ND	---	---	---	30%	
trans-1,3-Dichloropropene	ND	---	0.100	mg/L	100	---	ND	---	---	---	30%	
Ethylbenzene	0.302	---	0.0500	mg/L	100	---	0.310	---	---	3	30%	
Hexachlorobutadiene	ND	---	0.500	mg/L	100	---	ND	---	---	---	30%	
2-Hexanone	ND	---	1.00	mg/L	100	---	ND	---	---	---	30%	
Isopropylbenzene	ND	---	0.100	mg/L	100	---	ND	---	---	---	30%	
4-Isopropyltoluene	ND	---	0.100	mg/L	100	---	ND	---	---	---	30%	
4-Methyl-2-pentanone (MiBK)	ND	---	1.00	mg/L	100	---	ND	---	---	---	30%	
Methyl tert-butyl ether (MTBE)	ND	---	0.100	mg/L	100	---	ND	---	---	---	30%	
Methylene chloride	ND	---	0.500	mg/L	100	---	ND	---	---	---	30%	
Naphthalene	12.8	---	0.200	mg/L	100	---	13.9	---	---	8	30%	
n-Propylbenzene	ND	---	0.0500	mg/L	100	---	ND	---	---	---	30%	
Styrene	0.128	---	0.100	mg/L	100	---	0.136	---	---	6	30%	
1,1,1,2-Tetrachloroethane	ND	---	0.0500	mg/L	100	---	ND	---	---	---	30%	
1,1,2,2-Tetrachloroethane	ND	---	0.0500	mg/L	100	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	ND	---	0.0500	mg/L	100	---	ND	---	---	---	30%	
Toluene	1.37	---	0.100	mg/L	100	---	1.46	---	---	6	30%	
1,2,3-Trichlorobenzene	ND	---	0.200	mg/L	100	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	---	0.200	mg/L	100	---	ND	---	---	---	30%	
1,1,1-Trichloroethane	ND	---	0.0500	mg/L	100	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	---	0.0500	mg/L	100	---	ND	---	---	---	30%	
Trichloroethene (TCE)	ND	---	0.0500	mg/L	100	---	ND	---	---	---	30%	
Trichlorofluoromethane	ND	---	0.200	mg/L	100	---	ND	---	---	---	30%	
1,2,3-Trichloropropane	ND	---	0.100	mg/L	100	---	ND	---	---	---	30%	
1,2,4-Trimethylbenzene	ND	---	0.100	mg/L	100	---	ND	---	---	---	30%	
1,3,5-Trimethylbenzene	ND	---	0.100	mg/L	100	---	ND	---	---	---	30%	
Vinyl chloride	ND	---	0.0500	mg/L	100	---	ND	---	---	---	30%	
m,p-Xylene	0.390	---	0.100	mg/L	100	---	0.419	---	---	7	30%	
o-Xylene	0.125	---	0.0500	mg/L	100	---	0.135	---	---	7	30%	

Surr: 1,4-Difluorobenzene (Surr) Recovery: 103 % Limits: 80-120 % Dilution: 1x

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Philip Nerenberg, Lab Director



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QUALITY CONTROL (QC) SAMPLE RESULTS

SPLP Volatile Organic Compounds by EPA 1312/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060589 - EPA 1312/5030B SPLP Volatiles						Water						
Duplicate (9060589-DUP2)						Prepared: 06/05/19 12:17 Analyzed: 06/05/19 14:00						
QC Source Sample: Non-SDG (A9E0723-01)												
<i>Surr: Toluene-d8 (Surr)</i>		<i>Recovery: 100 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>96 %</i>		<i>80-120 %</i>		<i>"</i>						

Matrix Spike (9060589-MS2)						Prepared: 06/05/19 12:17 Analyzed: 06/05/19 15:48						
QC Source Sample: Non-SDG (A9E0832-02)												
1312/8260C												
Acetone	18.8	---	10.0	mg/L	500	20.0	ND	94	70-130%	---	---	
Benzene	12.9	---	0.125	mg/L	500	10.0	2.31	106	70-130%	---	---	
Bromobenzene	10.2	---	0.250	mg/L	500	10.0	ND	102	70-130%	---	---	
Bromochloromethane	11.7	---	0.500	mg/L	500	10.0	ND	117	70-130%	---	---	
Bromodichloromethane	11.2	---	0.500	mg/L	500	10.0	ND	112	70-130%	---	---	
Bromoform	12.4	---	0.500	mg/L	500	10.0	ND	124	70-130%	---	---	
Bromomethane	12.5	---	2.50	mg/L	500	10.0	ND	125	70-130%	---	---	
2-Butanone (MEK)	20.4	---	5.00	mg/L	500	20.0	ND	102	70-130%	---	---	
n-Butylbenzene	10.5	---	0.500	mg/L	500	10.0	ND	105	70-130%	---	---	
sec-Butylbenzene	9.98	---	0.500	mg/L	500	10.0	ND	100	70-130%	---	---	
tert-Butylbenzene	9.14	---	0.500	mg/L	500	10.0	ND	91	70-130%	---	---	
Carbon tetrachloride	11.1	---	0.500	mg/L	500	10.0	ND	111	70-130%	---	---	
Chlorobenzene	10.7	---	0.250	mg/L	500	10.0	ND	107	70-130%	---	---	
Chloroethane	7.49	---	2.50	mg/L	500	10.0	ND	75	70-130%	---	---	
Chloroform	10.8	---	0.500	mg/L	500	10.0	ND	108	70-130%	---	---	
Chloromethane	11.0	---	2.50	mg/L	500	10.0	ND	110	70-130%	---	---	
2-Chlorotoluene	10.1	---	0.500	mg/L	500	10.0	ND	101	70-130%	---	---	
4-Chlorotoluene	9.63	---	0.500	mg/L	500	10.0	ND	96	70-130%	---	---	
1,2-Dibromo-3-chloropropane	9.58	---	2.50	mg/L	500	10.0	ND	96	70-130%	---	---	
Dibromochloromethane	10.4	---	0.500	mg/L	500	10.0	ND	104	70-130%	---	---	
1,2-Dibromoethane (EDB)	10.6	---	0.250	mg/L	500	10.0	ND	106	70-130%	---	---	
Dibromomethane	11.2	---	0.500	mg/L	500	10.0	ND	112	70-130%	---	---	
1,2-Dichlorobenzene	10.3	---	0.250	mg/L	500	10.0	ND	103	70-130%	---	---	
1,3-Dichlorobenzene	10.2	---	0.250	mg/L	500	10.0	ND	102	70-130%	---	---	
1,4-Dichlorobenzene	10.2	---	0.250	mg/L	500	10.0	ND	102	70-130%	---	---	
Dichlorodifluoromethane	10.6	---	0.500	mg/L	500	10.0	ND	106	70-130%	---	---	
1,1-Dichloroethane	10.3	---	0.250	mg/L	500	10.0	ND	103	70-130%	---	---	

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Philip Nerenberg, Lab Director



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QUALITY CONTROL (QC) SAMPLE RESULTS

SPLP Volatile Organic Compounds by EPA 1312/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060589 - EPA 1312/5030B SPLP Volatiles						Water						
Matrix Spike (9060589-MS2)						Prepared: 06/05/19 12:17 Analyzed: 06/05/19 15:48						
QC Source Sample: Non-SDG (A9E0832-02)												
1,2-Dichloroethane (EDC)	10.6	---	0.250	mg/L	500	10.0	ND	106	70-130%	---	---	
1,1-Dichloroethene	9.78	---	0.250	mg/L	500	10.0	ND	98	70-130%	---	---	
cis-1,2-Dichloroethene	10.4	---	0.250	mg/L	500	10.0	ND	104	70-130%	---	---	
trans-1,2-Dichloroethene	10.3	---	0.250	mg/L	500	10.0	ND	103	70-130%	---	---	
1,2-Dichloropropane	10.6	---	0.250	mg/L	500	10.0	ND	106	70-130%	---	---	
1,3-Dichloropropane	10.4	---	0.500	mg/L	500	10.0	ND	104	70-130%	---	---	
2,2-Dichloropropane	8.60	---	0.500	mg/L	500	10.0	ND	86	70-130%	---	---	
1,1-Dichloropropene	10.3	---	0.500	mg/L	500	10.0	ND	103	70-130%	---	---	
cis-1,3-Dichloropropene	9.75	---	0.500	mg/L	500	10.0	ND	97	70-130%	---	---	
trans-1,3-Dichloropropene	9.23	---	0.500	mg/L	500	10.0	ND	92	70-130%	---	---	
Ethylbenzene	10.2	---	0.250	mg/L	500	10.0	0.180	100	70-130%	---	---	
Hexachlorobutadiene	10.7	---	2.50	mg/L	500	10.0	ND	107	70-130%	---	---	
2-Hexanone	19.5	---	5.00	mg/L	500	20.0	ND	97	70-130%	---	---	
Isopropylbenzene	10.3	---	0.500	mg/L	500	10.0	ND	103	70-130%	---	---	
4-Isopropyltoluene	9.92	---	0.500	mg/L	500	10.0	ND	99	70-130%	---	---	
4-Methyl-2-pentanone (MiBK)	19.2	---	5.00	mg/L	500	20.0	ND	96	70-130%	---	---	
Methyl tert-butyl ether (MTBE)	8.66	---	0.500	mg/L	500	10.0	ND	87	70-130%	---	---	
Methylene chloride	9.28	---	2.50	mg/L	500	10.0	ND	93	70-130%	---	---	
Naphthalene	16.9	---	1.00	mg/L	500	10.0	6.62	102	70-130%	---	---	
n-Propylbenzene	9.66	---	0.250	mg/L	500	10.0	ND	97	70-130%	---	---	
Styrene	11.1	---	0.500	mg/L	500	10.0	ND	111	70-130%	---	---	
1,1,1,2-Tetrachloroethane	10.5	---	0.250	mg/L	500	10.0	ND	105	70-130%	---	---	
1,1,2,2-Tetrachloroethane	10.5	---	0.250	mg/L	500	10.0	ND	105	70-130%	---	---	
Tetrachloroethene (PCE)	10.7	---	0.250	mg/L	500	10.0	ND	107	70-130%	---	---	
Toluene	11.1	---	0.500	mg/L	500	10.0	1.05	100	70-130%	---	---	
1,2,3-Trichlorobenzene	10.7	---	1.00	mg/L	500	10.0	ND	107	70-130%	---	---	
1,2,4-Trichlorobenzene	9.61	---	1.00	mg/L	500	10.0	ND	96	70-130%	---	---	
1,1,1-Trichloroethane	10.1	---	0.250	mg/L	500	10.0	ND	101	70-130%	---	---	
1,1,2-Trichloroethane	11.0	---	0.250	mg/L	500	10.0	ND	110	70-130%	---	---	
Trichloroethene (TCE)	11.0	---	0.250	mg/L	500	10.0	ND	110	70-130%	---	---	
Trichlorofluoromethane	13.3	---	1.00	mg/L	500	10.0	ND	133	70-130%	---	---	Q-01
1,2,3-Trichloropropane	9.64	---	0.500	mg/L	500	10.0	ND	96	70-130%	---	---	
1,2,4-Trimethylbenzene	9.77	---	0.500	mg/L	500	10.0	ND	98	70-130%	---	---	

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QUALITY CONTROL (QC) SAMPLE RESULTS

SPLP Volatile Organic Compounds by EPA 1312/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060589 - EPA 1312/5030B SPLP Volatiles						Water						
Matrix Spike (9060589-MS2)						Prepared: 06/05/19 12:17 Analyzed: 06/05/19 15:48						
QC Source Sample: Non-SDG (A9E0832-02)												
1,3,5-Trimethylbenzene	9.89	---	0.500	mg/L	500	10.0	ND	99	70-130%	---	---	
Vinyl chloride	10.3	---	0.250	mg/L	500	10.0	ND	103	70-130%	---	---	
m,p-Xylene	21.0	---	0.500	mg/L	500	20.0	0.268	104	70-130%	---	---	
o-Xylene	9.79	---	0.250	mg/L	500	10.0	ND	98	70-130%	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 104 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>100 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>91 %</i>		<i>80-120 %</i>		<i>"</i>						

Matrix Spike (9060589-MS3)						Prepared: 06/05/19 12:17 Analyzed: 06/05/19 22:07						
QC Source Sample: Non-SDG (A9E0832-02RE1)												
1312/8260C												
Acetone	1.86	---	1.00	mg/L	50	2.00	ND	93	70-130%	---	---	
Benzene	3.41	---	0.0125	mg/L	50	1.00	2.42	98	70-130%	---	---	
Bromobenzene	1.01	---	0.0250	mg/L	50	1.00	ND	101	70-130%	---	---	
Bromochloromethane	1.15	---	0.0500	mg/L	50	1.00	ND	115	70-130%	---	---	
Bromodichloromethane	1.11	---	0.0500	mg/L	50	1.00	ND	111	70-130%	---	---	
Bromoform	1.23	---	0.0500	mg/L	50	1.00	ND	123	70-130%	---	---	
Bromomethane	1.27	---	0.250	mg/L	50	1.00	ND	127	70-130%	---	---	
2-Butanone (MEK)	1.96	---	0.500	mg/L	50	2.00	ND	98	70-130%	---	---	
n-Butylbenzene	1.10	---	0.0500	mg/L	50	1.00	ND	110	70-130%	---	---	
sec-Butylbenzene	0.995	---	0.0500	mg/L	50	1.00	ND	99	70-130%	---	---	
tert-Butylbenzene	0.902	---	0.0500	mg/L	50	1.00	ND	90	70-130%	---	---	
Carbon tetrachloride	1.08	---	0.0500	mg/L	50	1.00	ND	108	70-130%	---	---	
Chlorobenzene	1.04	---	0.0250	mg/L	50	1.00	ND	104	70-130%	---	---	
Chloroethane	0.850	---	0.250	mg/L	50	1.00	ND	85	70-130%	---	---	
Chloroform	1.05	---	0.0500	mg/L	50	1.00	ND	105	70-130%	---	---	
Chloromethane	1.10	---	0.250	mg/L	50	1.00	ND	110	70-130%	---	---	
2-Chlorotoluene	0.987	---	0.0500	mg/L	50	1.00	ND	99	70-130%	---	---	
4-Chlorotoluene	0.946	---	0.0500	mg/L	50	1.00	ND	95	70-130%	---	---	
1,2-Dibromo-3-chloropropane	0.995	---	0.250	mg/L	50	1.00	ND	100	70-130%	---	---	
Dibromochloromethane	1.03	---	0.0500	mg/L	50	1.00	ND	103	70-130%	---	---	
1,2-Dibromoethane (EDB)	1.04	---	0.0250	mg/L	50	1.00	ND	104	70-130%	---	---	
Dibromomethane	1.08	---	0.0500	mg/L	50	1.00	ND	108	70-130%	---	---	

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Hahn and Associates 434 NW 6th Ave. Suite 203 Portland, OR 97209	Project: Mult 802 Decommissioning Project Number: 2708-60F Project Manager: Rob Ede	Report ID: A9E0785 - 06 19 19 1644
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QUALITY CONTROL (QC) SAMPLE RESULTS

SPLP Volatile Organic Compounds by EPA 1312/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060589 - EPA 1312/5030B SPLP Volatiles						Water						
Matrix Spike (9060589-MS3)						Prepared: 06/05/19 12:17 Analyzed: 06/05/19 22:07						
QC Source Sample: Non-SDG (A9E0832-02RE1)												
1,2-Dichlorobenzene	1.02	---	0.0250	mg/L	50	1.00	ND	102	70-130%	---	---	
1,3-Dichlorobenzene	1.01	---	0.0250	mg/L	50	1.00	ND	101	70-130%	---	---	
1,4-Dichlorobenzene	1.01	---	0.0250	mg/L	50	1.00	ND	101	70-130%	---	---	
Dichlorodifluoromethane	1.05	---	0.0500	mg/L	50	1.00	ND	105	70-130%	---	---	
1,1-Dichloroethane	0.999	---	0.0250	mg/L	50	1.00	ND	100	70-130%	---	---	
1,2-Dichloroethane (EDC)	1.02	---	0.0250	mg/L	50	1.00	ND	102	70-130%	---	---	
1,1-Dichloroethene	0.966	---	0.0250	mg/L	50	1.00	ND	97	70-130%	---	---	
cis-1,2-Dichloroethene	1.01	---	0.0250	mg/L	50	1.00	ND	101	70-130%	---	---	
trans-1,2-Dichloroethene	1.03	---	0.0250	mg/L	50	1.00	ND	103	70-130%	---	---	
1,2-Dichloropropane	1.03	---	0.0250	mg/L	50	1.00	ND	103	70-130%	---	---	
1,3-Dichloropropane	1.00	---	0.0500	mg/L	50	1.00	ND	100	70-130%	---	---	
2,2-Dichloropropane	0.793	---	0.0500	mg/L	50	1.00	ND	79	70-130%	---	---	
1,1-Dichloropropene	1.00	---	0.0500	mg/L	50	1.00	ND	100	70-130%	---	---	
cis-1,3-Dichloropropene	0.930	---	0.0500	mg/L	50	1.00	ND	93	70-130%	---	---	
trans-1,3-Dichloropropene	0.897	---	0.0500	mg/L	50	1.00	ND	90	70-130%	---	---	
Ethylbenzene	1.17	---	0.0250	mg/L	50	1.00	0.196	97	70-130%	---	---	
Hexachlorobutadiene	1.05	---	0.250	mg/L	50	1.00	ND	105	70-130%	---	---	
2-Hexanone	1.90	---	0.500	mg/L	50	2.00	ND	95	70-130%	---	---	
Isopropylbenzene	1.01	---	0.0500	mg/L	50	1.00	ND	101	70-130%	---	---	
4-Isopropyltoluene	0.993	---	0.0500	mg/L	50	1.00	ND	99	70-130%	---	---	
4-Methyl-2-pentanone (MiBK)	1.85	---	0.500	mg/L	50	2.00	ND	93	70-130%	---	---	
Methyl tert-butyl ether (MTBE)	0.830	---	0.0500	mg/L	50	1.00	ND	83	70-130%	---	---	
Methylene chloride	0.892	---	0.250	mg/L	50	1.00	ND	89	70-130%	---	---	
Naphthalene	9.89	---	0.100	mg/L	50	1.00	10.1	-20	70-130%	---	---	E, Q-03
n-Propylbenzene	0.951	---	0.0250	mg/L	50	1.00	ND	95	70-130%	---	---	
Styrene	1.23	---	0.0500	mg/L	50	1.00	0.107	113	70-130%	---	---	
1,1,1,2-Tetrachloroethane	1.01	---	0.0250	mg/L	50	1.00	ND	101	70-130%	---	---	
1,1,2,2-Tetrachloroethane	1.01	---	0.0250	mg/L	50	1.00	ND	101	70-130%	---	---	
Tetrachloroethene (PCE)	1.02	---	0.0250	mg/L	50	1.00	ND	102	70-130%	---	---	
Toluene	2.00	---	0.0500	mg/L	50	1.00	1.09	91	70-130%	---	---	
1,2,3-Trichlorobenzene	1.14	---	0.100	mg/L	50	1.00	ND	114	70-130%	---	---	
1,2,4-Trichlorobenzene	1.01	---	0.100	mg/L	50	1.00	ND	101	70-130%	---	---	
1,1,1-Trichloroethane	0.990	---	0.0250	mg/L	50	1.00	ND	99	70-130%	---	---	

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QUALITY CONTROL (QC) SAMPLE RESULTS

SPLP Volatile Organic Compounds by EPA 1312/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060589 - EPA 1312/5030B SPLP Volatiles						Water						
Matrix Spike (9060589-MS3)			Prepared: 06/05/19 12:17 Analyzed: 06/05/19 22:07									
QC Source Sample: Non-SDG (A9E0832-02RE1)												
1,1,2-Trichloroethane	1.05	---	0.0250	mg/L	50	1.00	ND	105	70-130%	---	---	
Trichloroethene (TCE)	1.08	---	0.0250	mg/L	50	1.00	ND	108	70-130%	---	---	
Trichlorofluoromethane	1.30	---	0.100	mg/L	50	1.00	ND	130	70-130%	---	---	
1,2,3-Trichloropropane	0.954	---	0.0500	mg/L	50	1.00	ND	95	70-130%	---	---	
1,2,4-Trimethylbenzene	1.06	---	0.0500	mg/L	50	1.00	0.0424	102	70-130%	---	---	
1,3,5-Trimethylbenzene	1.01	---	0.0500	mg/L	50	1.00	ND	101	70-130%	---	---	
Vinyl chloride	1.03	---	0.0250	mg/L	50	1.00	ND	103	70-130%	---	---	
m,p-Xylene	2.39	---	0.0500	mg/L	50	2.00	0.307	104	70-130%	---	---	
o-Xylene	1.09	---	0.0250	mg/L	50	1.00	0.106	98	70-130%	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 104 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>99 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>91 %</i>		<i>80-120 %</i>		<i>"</i>						



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QUALITY CONTROL (QC) SAMPLE RESULTS

Polyaromatic Hydrocarbons (PAHs) by EPA 8270D SIM

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060490 - EPA 3546												
Solid												
Blank (9060490-BLK1)												
Prepared: 06/03/19 10:10 Analyzed: 06/04/19 14:03												
<u>EPA 8270D (SIM)</u>												
Acenaphthene	ND	---	2.67	ug/kg	1	---	---	---	---	---	---	
Acenaphthylene	ND	---	2.67	ug/kg	1	---	---	---	---	---	---	
Anthracene	ND	---	2.67	ug/kg	1	---	---	---	---	---	---	
Benz(a)anthracene	ND	---	2.67	ug/kg	1	---	---	---	---	---	---	
Benzo(a)pyrene	ND	---	2.67	ug/kg	1	---	---	---	---	---	---	
Benzo(b)fluoranthene	ND	---	2.67	ug/kg	1	---	---	---	---	---	---	
Benzo(k)fluoranthene	ND	---	2.67	ug/kg	1	---	---	---	---	---	---	
Benzo(g,h,i)perylene	ND	---	2.67	ug/kg	1	---	---	---	---	---	---	
Chrysene	ND	---	2.67	ug/kg	1	---	---	---	---	---	---	
Dibenz(a,h)anthracene	ND	---	2.67	ug/kg	1	---	---	---	---	---	---	
Dibenzofuran	ND	---	2.67	ug/kg	1	---	---	---	---	---	---	
Fluoranthene	ND	---	2.67	ug/kg	1	---	---	---	---	---	---	
Fluorene	ND	---	2.67	ug/kg	1	---	---	---	---	---	---	
Indeno(1,2,3-cd)pyrene	ND	---	2.67	ug/kg	1	---	---	---	---	---	---	
1-Methylnaphthalene	ND	---	2.67	ug/kg	1	---	---	---	---	---	---	
2-Methylnaphthalene	ND	---	2.67	ug/kg	1	---	---	---	---	---	---	
Naphthalene	ND	---	2.67	ug/kg	1	---	---	---	---	---	---	
Phenanthrene	ND	---	2.67	ug/kg	1	---	---	---	---	---	---	
Pyrene	ND	---	2.67	ug/kg	1	---	---	---	---	---	---	
<i>Surr: 2-Fluorobiphenyl (Surr)</i>		<i>Recovery: 66 %</i>		<i>Limits: 44-120 %</i>		<i>Dilution: 1x</i>						
<i>p-Terphenyl-d14 (Surr)</i>		<i>70 %</i>		<i>54-127 %</i>		<i>"</i>						

LCS (9060490-BS1)												
Prepared: 06/03/19 10:10 Analyzed: 06/04/19 14:30												
<u>EPA 8270D (SIM)</u>												
Acenaphthene	499	---	2.67	ug/kg	1	533	---	94	40-122%	---	---	
Acenaphthylene	482	---	2.67	ug/kg	1	533	---	90	32-132%	---	---	
Anthracene	475	---	2.67	ug/kg	1	533	---	89	47-123%	---	---	
Benz(a)anthracene	453	---	2.67	ug/kg	1	533	---	85	49-126%	---	---	
Benzo(a)pyrene	504	---	2.67	ug/kg	1	533	---	94	45-129%	---	---	
Benzo(b)fluoranthene	464	---	2.67	ug/kg	1	533	---	87	45-132%	---	---	
Benzo(k)fluoranthene	456	---	2.67	ug/kg	1	533	---	86	47-132%	---	---	
Benzo(g,h,i)perylene	399	---	2.67	ug/kg	1	533	---	75	43-134%	---	---	
Chrysene	459	---	2.67	ug/kg	1	533	---	86	50-124%	---	---	

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Philip Nerenberg, Lab Director



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QUALITY CONTROL (QC) SAMPLE RESULTS

Polyaromatic Hydrocarbons (PAHs) by EPA 8270D SIM

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060490 - EPA 3546						Solid						
LCS (9060490-BS1)			Prepared: 06/03/19 10:10 Analyzed: 06/04/19 14:30									
Dibenz(a,h)anthracene	489	---	2.67	ug/kg	1	533	---	92	45-134%	---	---	
Dibenzofuran	501	---	2.67	ug/kg	1	533	---	94	44-120%	---	---	
Fluoranthene	504	---	2.67	ug/kg	1	533	---	95	50-127%	---	---	
Fluorene	502	---	2.67	ug/kg	1	533	---	94	43-125%	---	---	
Indeno(1,2,3-cd)pyrene	430	---	2.67	ug/kg	1	533	---	81	45-133%	---	---	
1-Methylnaphthalene	496	---	2.67	ug/kg	1	533	---	93	40-120%	---	---	
2-Methylnaphthalene	541	---	2.67	ug/kg	1	533	---	101	38-122%	---	---	
Naphthalene	802	---	2.67	ug/kg	1	533	---	150	35-123%	---	---	Q-29
Phenanthrene	456	---	2.67	ug/kg	1	533	---	86	50-121%	---	---	
Pyrene	510	---	2.67	ug/kg	1	533	---	96	47-127%	---	---	
<i>Surr: 2-Fluorobiphenyl (Surr)</i>		<i>Recovery: 74 %</i>		<i>Limits: 44-120 %</i>		<i>Dilution: 1x</i>						
<i>p-Terphenyl-d14 (Surr)</i>		<i>65 %</i>		<i>54-127 %</i>		<i>"</i>						

Duplicate (9060490-DUP1)			Prepared: 06/03/19 10:10 Analyzed: 06/04/19 15:23									
QC Source Sample: 2708-190522-011 (A9E0785-01)												
EPA 8270D (SIM)												
Acenaphthene	9630000	---	901000	ug/kg	10000	---	9320000	---	---	3	30%	
Acenaphthylene	ND	---	901000	ug/kg	10000	---	ND	---	---	---	30%	
Anthracene	6090000	---	901000	ug/kg	10000	---	6230000	---	---	2	30%	
Benz(a)anthracene	5120000	---	901000	ug/kg	10000	---	5750000	---	---	12	30%	M-05
Benzo(a)pyrene	5870000	---	901000	ug/kg	10000	---	6830000	---	---	15	30%	
Benzo(b)fluoranthene	6060000	---	901000	ug/kg	10000	---	7020000	---	---	15	30%	M-05
Benzo(k)fluoranthene	2470000	---	901000	ug/kg	10000	---	2840000	---	---	14	30%	M-05
Benzo(g,h,i)perylene	3630000	---	901000	ug/kg	10000	---	4250000	---	---	16	30%	
Chrysene	5250000	---	901000	ug/kg	10000	---	5980000	---	---	13	30%	M-05
Dibenz(a,h)anthracene	ND	---	901000	ug/kg	10000	---	904000	---	---	***	30%	Q-17
Dibenzofuran	5830000	---	901000	ug/kg	10000	---	5590000	---	---	4	30%	
Fluoranthene	17800000	---	901000	ug/kg	10000	---	19300000	---	---	8	30%	
Fluorene	5420000	---	901000	ug/kg	10000	---	5240000	---	---	3	30%	
Indeno(1,2,3-cd)pyrene	3880000	---	901000	ug/kg	10000	---	4670000	---	---	18	30%	
1-Methylnaphthalene	3000000	---	901000	ug/kg	10000	---	2960000	---	---	1	30%	
2-Methylnaphthalene	5700000	---	901000	ug/kg	10000	---	5650000	---	---	0.7	30%	
Naphthalene	16000000	---	901000	ug/kg	10000	---	16200000	---	---	1	30%	Q-29
Phenanthrene	19900000	---	901000	ug/kg	10000	---	20600000	---	---	3	30%	

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Philip Nerenberg, Lab Director



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EPA ID: OR01039

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QUALITY CONTROL (QC) SAMPLE RESULTS

Polyaromatic Hydrocarbons (PAHs) by EPA 8270D SIM

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060490 - EPA 3546						Solid						
Duplicate (9060490-DUP1)			Prepared: 06/03/19 10:10 Analyzed: 06/04/19 15:23									
<u>QC Source Sample: 2708-190522-011 (A9E0785-01)</u>												
Pyrene	16500000	---	901000	ug/kg	10000	---	18100000	---	---	10	30%	
Surr: 2-Fluorobiphenyl (Surr)			Recovery: %	Limits: 44-120 %		Dilution: 10000x						S-01
p-Terphenyl-d14 (Surr)			%	54-127 %		"						S-01

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QUALITY CONTROL (QC) SAMPLE RESULTS

SPLP PAH by EPA 1312/8270D SIM

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060758 - EPA 1312/3510C (Acid Ext.)												
Solid												
Blank (9060758-BLK1)												
Prepared: 06/10/19 10:20 Analyzed: 06/11/19 10:28												
<u>1312/8270D (SIM)</u>												
Acenaphthene	ND	---	0.000200	mg/L	1	---	---	---	---	---	---	
Acenaphthylene	ND	---	0.000200	mg/L	1	---	---	---	---	---	---	
Anthracene	ND	---	0.000200	mg/L	1	---	---	---	---	---	---	
Benz(a)anthracene	ND	---	0.000200	mg/L	1	---	---	---	---	---	---	
Benzo(a)pyrene	ND	---	0.000200	mg/L	1	---	---	---	---	---	---	
Benzo(b)fluoranthene	ND	---	0.000200	mg/L	1	---	---	---	---	---	---	
Benzo(k)fluoranthene	ND	---	0.000200	mg/L	1	---	---	---	---	---	---	
Benzo(g,h,i)perylene	ND	---	0.000400	mg/L	1	---	---	---	---	---	---	
Chrysene	ND	---	0.000200	mg/L	1	---	---	---	---	---	---	
Dibenz(a,h)anthracene	ND	---	0.000200	mg/L	1	---	---	---	---	---	---	
Fluoranthene	ND	---	0.000200	mg/L	1	---	---	---	---	---	---	
Fluorene	ND	---	0.000200	mg/L	1	---	---	---	---	---	---	
Indeno(1,2,3-cd)pyrene	ND	---	0.000200	mg/L	1	---	---	---	---	---	---	
Naphthalene	0.00194	---	0.000400	mg/L	1	---	---	---	---	---	---	B
Phenanthrene	ND	---	0.000200	mg/L	1	---	---	---	---	---	---	
Pyrene	ND	---	0.000200	mg/L	1	---	---	---	---	---	---	
Surr: 2-Fluorobiphenyl (Surr) Recovery: 79 % Limits: 44-120 % Dilution: 1x												
p-Terphenyl-d14 (Surr) 78 % 50-133 % "												

LCS (9060758-BS1)												
Prepared: 06/10/19 10:20 Analyzed: 06/11/19 10:54												
<u>1312/8270D (SIM)</u>												
Acenaphthene	0.0358	---	0.000200	mg/L	1	0.0400	---	89	47-122%	---	---	
Acenaphthylene	0.0367	---	0.000200	mg/L	1	0.0400	---	92	41-130%	---	---	
Anthracene	0.0375	---	0.000200	mg/L	1	0.0400	---	94	57-123%	---	---	
Benz(a)anthracene	0.0377	---	0.000200	mg/L	1	0.0400	---	94	58-125%	---	---	
Benzo(a)pyrene	0.0404	---	0.000200	mg/L	1	0.0400	---	101	54-128%	---	---	
Benzo(b)fluoranthene	0.0376	---	0.000200	mg/L	1	0.0400	---	94	53-131%	---	---	
Benzo(k)fluoranthene	0.0391	---	0.000200	mg/L	1	0.0400	---	98	57-129%	---	---	
Benzo(g,h,i)perylene	0.0344	---	0.000400	mg/L	1	0.0400	---	86	50-134%	---	---	
Chrysene	0.0374	---	0.000200	mg/L	1	0.0400	---	93	59-123%	---	---	
Dibenz(a,h)anthracene	0.0405	---	0.000200	mg/L	1	0.0400	---	101	51-134%	---	---	
Fluoranthene	0.0408	---	0.000200	mg/L	1	0.0400	---	102	57-128%	---	---	
Fluorene	0.0382	---	0.000200	mg/L	1	0.0400	---	96	52-124%	---	---	

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Philip Nerenberg, Lab Director



Hahn and Associates

434 NW 6th Ave. Suite 203
Portland, OR 97209

Project: **Mult 802 Decommissioning**

Project Number: **2708-60F**

Project Manager: **Rob Ede**

Report ID:

A9E0785 - 06 19 19 1644

QUALITY CONTROL (QC) SAMPLE RESULTS

SPLP PAH by EPA 1312/8270D SIM

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 9060758 - EPA 1312/3510C (Acid Ext.)												
Solid												
LCS (9060758-BS1)			Prepared: 06/10/19 10:20 Analyzed: 06/11/19 10:54									
Indeno(1,2,3-cd)pyrene	0.0364	---	0.000200	mg/L	1	0.0400	---	91	52-133%	---	---	
Naphthalene	0.0355	---	0.000400	mg/L	1	0.0400	---	89	40-121%	---	---	B
Phenanthrene	0.0365	---	0.000200	mg/L	1	0.0400	---	91	59-120%	---	---	
Pyrene	0.0419	---	0.000200	mg/L	1	0.0400	---	105	57-126%	---	---	
<i>Surr: 2-Fluorobiphenyl (Surr)</i>		<i>Recovery: 84 %</i>		<i>Limits: 44-120 %</i>		<i>Dilution: 1x</i>						
<i>p-Terphenyl-d14 (Surr)</i>		<i>74 %</i>		<i>50-133 %</i>		<i>"</i>						

LCS Dup (9060758-BSD1)			Prepared: 06/10/19 10:20 Analyzed: 06/11/19 11:21									Q-19
1312/8270D (SIM)												
Acenaphthene	0.0359	---	0.000200	mg/L	1	0.0400	---	90	47-122%	0.3	30%	
Acenaphthylene	0.0371	---	0.000200	mg/L	1	0.0400	---	93	41-130%	1	30%	
Anthracene	0.0398	---	0.000200	mg/L	1	0.0400	---	100	57-123%	6	30%	
Benz(a)anthracene	0.0388	---	0.000200	mg/L	1	0.0400	---	97	58-125%	3	30%	
Benzo(a)pyrene	0.0421	---	0.000200	mg/L	1	0.0400	---	105	54-128%	4	30%	
Benzo(b)fluoranthene	0.0389	---	0.000200	mg/L	1	0.0400	---	97	53-131%	4	30%	
Benzo(k)fluoranthene	0.0402	---	0.000200	mg/L	1	0.0400	---	100	57-129%	3	30%	
Benzo(g,h,i)perylene	0.0353	---	0.000400	mg/L	1	0.0400	---	88	50-134%	2	30%	
Chrysene	0.0394	---	0.000200	mg/L	1	0.0400	---	99	59-123%	5	30%	
Dibenz(a,h)anthracene	0.0418	---	0.000200	mg/L	1	0.0400	---	105	51-134%	3	30%	
Fluoranthene	0.0426	---	0.000200	mg/L	1	0.0400	---	107	57-128%	4	30%	
Fluorene	0.0385	---	0.000200	mg/L	1	0.0400	---	96	52-124%	0.8	30%	
Indeno(1,2,3-cd)pyrene	0.0378	---	0.000200	mg/L	1	0.0400	---	94	52-133%	4	30%	
Naphthalene	0.0330	---	0.000400	mg/L	1	0.0400	---	83	40-121%	7	30%	B
Phenanthrene	0.0381	---	0.000200	mg/L	1	0.0400	---	95	59-120%	4	30%	
Pyrene	0.0436	---	0.000200	mg/L	1	0.0400	---	109	57-126%	4	30%	
<i>Surr: 2-Fluorobiphenyl (Surr)</i>		<i>Recovery: 85 %</i>		<i>Limits: 44-120 %</i>		<i>Dilution: 1x</i>						
<i>p-Terphenyl-d14 (Surr)</i>		<i>72 %</i>		<i>50-133 %</i>		<i>"</i>						



Hahn and Associates 434 NW 6th Ave. Suite 203 Portland, OR 97209	Project: Mult 802 Decommissioning Project Number: 2708-60F Project Manager: Rob Ede	Report ID: A9E0785 - 06 19 19 1644
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SAMPLE PREPARATION INFORMATION

Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Prep: EPA 3546 (Fuels)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<u>Batch: 9060517</u>							
A9E0785-01	Solid	NWTPH-Dx	05/22/19 16:30	06/03/19 16:03	0.59g/5mL	10g/5mL	16.90

Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

Prep: EPA 5035A

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<u>Batch: 9060533</u>							
A9E0785-01	Solid	NWTPH-Gx (MS)	05/22/19 16:30	05/31/19 15:46	1.43g/5mL	5g/5mL	3.50

Volatile Organic Compounds by EPA 5035A/8260C

Prep: EPA 5035A

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<u>Batch: 9060533</u>							
A9E0785-01	Solid	5035A/8260C	05/22/19 16:30	05/31/19 15:46	1.43g/5mL	5g/5mL	3.50
<u>Batch: 9060582</u>							
A9E0785-01RE1	Solid	5035A/8260C	05/22/19 16:30	05/31/19 15:46	1.43g/5mL	5g/5mL	3.50

SPLP Volatile Organic Compounds by EPA 1312/8260C

Prep: EPA 1312/5030B SPLP Volatiles

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<u>Batch: 9060589</u>							
A9E0785-01RE1	Solid	1312/8260C	05/22/19 16:30	06/05/19 12:17	5mL/5mL	5mL/5mL	1.00

Polyaromatic Hydrocarbons (PAHs) by EPA 8270D SIM

Prep: EPA 3546

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<u>Batch: 9060490</u>							
A9E0785-01	Solid	EPA 8270D (SIM)	05/22/19 16:30	06/03/19 10:10	1.14g/5mL	10g/5mL	8.77

SPLP PAH by EPA 1312/8270D SIM



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SAMPLE PREPARATION INFORMATION

SPLP PAH by EPA 1312/8270D SIM

Prep: EPA 1312/3510C (Acid Ext.)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 9060758							
A9E0785-01	Solid	1312/8270D (SIM)	05/22/19 16:30	06/10/19 10:20	200mL/2mL	200mL/2mL	1.00

SPLP Extraction by EPA 1312

Prep: EPA 1312 (SPLP)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 9060621							
A9E0785-01	Solid	EPA 1312	05/22/19 16:30	06/05/19 17:15	100g/2000mL	100g/2000mL	NA

Prep: EPA 1311 TCLP/ZHE

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 9060554							
A9E0785-01	Solid	EPA 1312 ZHE	05/22/19 16:30	06/04/19 15:58	15g/300mL	25g/500mL	NA



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Project: **Mult 802 Decommissioning**

Project Number: **2708-60F**

Project Manager: **Rob Ede**

Report ID:

A9E0785 - 06 19 1644

QUALIFIER DEFINITIONS

Client Sample and Quality Control (QC) Sample Qualifier Definitions:

Apex Laboratories

- B** Analyte detected in an associated blank at a level above the MRL. (See Notes and Conventions below.)
- E** Estimated Value. The result is above the calibration range of the instrument.
- F-17** No fuel pattern detected. The Diesel result represents carbon range C12 to C24, and the Oil result represents >C24 to C40.
- M-02** Due to matrix interference, this analyte cannot be accurately quantified. The reported result is estimated.
- M-05** Estimated results. Peak separation for structural isomers is insufficient for accurate quantification.
- Q-01** Spike recovery and/or RPD is outside acceptance limits.
- Q-03** Spike recovery and/or RPD is outside control limits due to the high concentration of analyte present in the sample.
- Q-04** Spike recovery and/or RPD is outside control limits due to a non-homogeneous sample matrix.
- Q-05** Analyses are not controlled on RPD values from sample and duplicate concentrations that are below 5 times the reporting level.
- Q-17** RPD between original and duplicate sample is outside of established control limits.
- Q-19** Blank Spike Duplicate (BSD) sample analyzed in place of Matrix Spike/Duplicate samples due to limited sample amount available for analysis.
- Q-29** Recovery for Lab Control Spike (LCS) is above the upper control limit. Data may be biased high.
- Q-42** Matrix Spike and/or Duplicate analysis was performed on this sample. % Recovery or RPD for this analyte is outside laboratory control limits. (Refer to the QC Section of Analytical Report.)
- Q-54** Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by -14%. The results are reported as Estimated Values.
- Q-54a** Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by -2%. The results are reported as Estimated Values.
- Q-54b** Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by -24%. The results are reported as Estimated Values.
- Q-54c** Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by -9%. The results are reported as Estimated Values.
- Q-55** Daily CCV/LCS recovery for this analyte was below the +/-20% criteria listed in EPA 8260C, however there is adequate sensitivity to ensure detection at the reporting level.
- R-02** The Reporting Limit for this analyte has been raised to account for interference from coeluting organic compounds present in the sample.
- S-01** Surrogate recovery for this sample is not available due to sample dilution required from high analyte concentration and/or matrix interference.
- V-16** Sample aliquot was subsampled from the sample container in the laboratory. The subsampled aliquot was not preserved within 48 hours of sampling.
- X** See Case Narrative.

Apex Laboratories

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

Philip Nerenberg, Lab Director



Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

EPA ID: OR01039

Hahn and Associates

434 NW 6th Ave. Suite 203

Portland, OR 97209

Project: Mult 802 Decommissioning

Project Number: **2708-60F**

Project Manager: **Rob Ede**

Report ID:

A9E0785 - 06 19 19 1644

Apex Laboratories

A handwritten signature in black ink that reads "Philip Nerenberg".

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Philip Nerenberg, Lab Director



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REPORTING NOTES AND CONVENTIONS:

Abbreviations:

- DET Analyte DETECTED at or above the detection or reporting limit.
- ND Analyte NOT DETECTED at or above the detection or reporting limit.
- NR Result Not Reported
- RPD Relative Percent Difference. RPDs for Matrix Spikes and Matrix Spike Duplicates are based on concentration, not recovery.

Detection Limits: Limit of Detection (LOD)

Limits of Detection (LODs) are normally set at a level of one half the validated Limit of Quantitation (LOQ).
If no value is listed ('-----'), then the data has not been evaluated below the Reporting Limit.

Reporting Limits: Limit of Quantitation (LOQ)

Validated Limits of Quantitation (LOQs) are reported as the Reporting Limits for all analyses where the LOQ, MRL, PQL or CRL are requested. The LOQ represents a level at or above the low point of the calibration curve, that has been validated according to Apex Laboratories' comprehensive LOQ policies and procedures.

Reporting Conventions:

- Basis: Results for soil samples are generally reported on a 100% dry weight basis.
The Result Basis is listed following the units as " dry", " wet", or " " (blank) designation.
 - " dry" Sample results and Reporting Limits are reported on a dry weight basis. (i.e. "ug/kg dry")
See Percent Solids section for details of dry weight analysis.
 - " wet" Sample results and Reporting Limits for this analysis are normally dry weight corrected, but have not been modified in this case.
 - " " Results without 'wet' or 'dry' designation are not normally dry weight corrected. These results are considered 'As Received'.

QC Source:

In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) may be analyzed to demonstrate accuracy and precision of the extraction batch.

Non-Client Batch QC Samples (Duplicates and Matrix Spike/Duplicates) may not be included in this report. Please request a Full QC report if this data is required.

Miscellaneous Notes:

- " --- " QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.
- " *** " Used to indicate a possible discrepancy with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).

Blanks:

Standard practice is to evaluate the results from Blank QC Samples down to a level equal to 1/2 the Reporting Limit (RL).
-For Blank hits falling between 1/2 the RL and the RL (J flagged hits), the associated sample and QC data will receive a 'B-02' qualifier.
-For Blank hits above the RL, the associated sample and QC data will receive a 'B' qualifier, per Apex Laboratories' Blank Policy.
For further details, please request a copy of this document.



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Portland, OR 97209

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REPORTING NOTES AND CONVENTIONS (Cont.):

Blanks (Cont.):

Sample results flagged with a 'B' or 'B-02' qualifier are potentially biased high if the sample results are less than ten times the level found in the blank for inorganic analyses, or less than five times the level found in the blank for organic analyses.

'B' and 'B-02' qualifications are only applied to sample results detected above the Reporting Level.

Preparation Notes:

Mixed Matrix Samples:

Water Samples:

Water samples containing significant amounts of sediment are decanted or separated prior to extraction, and only the water portion analyzed, unless otherwise directed by the client.

Soil and Sediment Samples:

Soil and Sediment samples containing significant amounts of water are decanted prior to extraction, and only the solid portion analyzed, unless otherwise directed by the client.

Sampling and Preservation Notes:

Certain regulatory programs, such as National Pollutant Discharge Elimination System (NPDES), require that activities such as sample filtration (for dissolved metals, orthophosphate, hexavalent chromium, etc.) and testing of short hold analytes (pH, Dissolved Oxygen, etc.) be performed in the field (on-site) within a short time window. In addition, sample matrix spikes are required for some analyses, and sufficient volume must be provided, and billable site specific QC requested, if this is required. All regulatory permits should be reviewed to ensure that these requirements are being met.

Data users should be aware of which regulations pertain to the samples they submit for testing. If related sample collection activities are not approved for a particular regulatory program, results should be considered estimates. Apex Laboratories will qualify these analytes according to the most stringent requirements, however results for samples that are for non-regulatory purposes may be acceptable.

Samples that have been filtered and preserved at Apex Laboratories per client request are listed in the preparation section of the report with the date and time of filtration listed.

Apex Laboratories maintains detailed records on sample receipt, including client label verification, cooler temperature, sample preservation, hold time compliance and field filtration. Data is qualified as necessary, and the lack of qualification indicates compliance with required parameters.



Apex Laboratories, LLC

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Hahn and Associates 434 NW 6th Ave. Suite 203 Portland, OR 97209	Project: Mult 802 Decommissioning Project Number: 2708-60F Project Manager: Rob Ede	Report ID: A9E0785 - 06 19 19 1644
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LABORATORY ACCREDITATION INFORMATION

TNI Certification ID: OR100062 (Primary Accreditation) - EPA ID: OR01039

All methods and analytes reported from work performed at Apex Laboratories are included on Apex Laboratories' ORELAP Scope of Certification, with the exception of any analyte(s) listed below:

Apex Laboratories

Matrix	Analysis	TNI_ID	Analyte	TNI_ID	Accreditation
<u>All reported analytes are included in Apex Laboratories' current ORELAP scope.</u>					

Secondary Accreditations

Apex Laboratories also maintains reciprocal accreditation with non-TNI states (Washington DOE), as well as other state specific accreditations not listed here.

Subcontract Laboratory Accreditations

Subcontracted data falls outside of Apex Laboratories' Scope of Accreditation. Please see the Subcontract Laboratory report for full details, or contact your Project Manager for more information.

Field Testing Parameters

Results for Field Tested data are provided by the client or sampler, and fall outside of Apex Laboratories' Scope of Accreditation.

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Philip Nerenberg, Lab Director



Hahn and Associates

434 NW 6th Ave. Suite 203
 Portland, OR 97209

Project: Mult 802 Decommissioning

Project Number: 2708-60F

Project Manager: Rob Ede

Report ID:

A9E0785 - 06 19 19 1644

A9E0785

Hahn and Associates, Inc. Environmental Consultants 434 NW 6th Avenue, Suite 203 • Portland OR 97209 (503) 796-0717 • Fax (503) 227-2209		Apex Labs Tigard, Oregon		CHAIN OF CUSTODY Chain of Custody No. 1							
Project Manager: Rob Ede Project No.: 2708-60F Project Name: Mult 802 Decommissioning Collected by: Ben Ude	Lab Project No.: Lab Project No.:	Liquid with Sediment Sample Test Freeze Multi-Phase Sample Test One (matrix)	Test Sediment Test Separately Shake	Samples Received at 4C (Y or N) Appropriate Containers Used (Y or N) Provide Verbal Results (Y or N) Provide Preliminary Fax Results	No Yes						
Comments Sample Number Prefix: 2708-190522- PLEASE FREEZE and HOLD all but VOAs. Please freeze and hold remaining 8-oz jar.											
Matrix Soil <input checked="" type="checkbox"/> Water <input type="checkbox"/> Air <input type="checkbox"/> Other <input type="checkbox"/>											
Analyses to be Performed VOCs by EPA Method 8260C SVOCs by EPA Method 8270D Full List NMTPH-DX NMTPH-GX Gaseous Metals by EPA 6000/7000 Series Total Cyanide by EPA Method 225.4											
Number of Containers Other: 6 Total: 6											
Lab ID Sample # Date Time Sample Description	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">011</td> <td style="width: 10%;">22-May-19</td> <td style="width: 10%;">16:30</td> <td style="width: 10%;">363 feet bgs</td> <td style="width: 10%; text-align: center;">X</td> <td style="width: 50%;"></td> </tr> </table>					011	22-May-19	16:30	363 feet bgs	X	
011	22-May-19	16:30	363 feet bgs	X							
Requisitioned by: Ben Ude Requisitioned by Company: Hahn and Associates, Inc. Requisitioned by Company:	Date: 5/23/19 Date:	Time: 1355 Time:	Received by: [Signature] Received by Company: Apex Labs Received by Company:	Date:	Time:						

Philip Nerenberg

Hahn and Associates 434 NW 6th Ave. Suite 203 Portland, OR 97209	Project: Mult 802 Decommissioning Project Number: 2708-60F Project Manager: Rob Ede	Report ID: A9E0785 - 06 19 1644
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APEX LABS COOLER RECEIPT FORM

Client: Hahn Element WO#: A9E0785

Project/Project #: Mult 802 Decommissioning 2708-60F

Delivery Info:
 Date/time received: 5/23/19 @ 1355 By: CFH
 Delivered by: Apex Client ESS FedEx UPS Swift Senvoy SDS Other

Cooler Inspection Date/time inspected: 5/23/19 @ 1449 By: CFH
 Chain of Custody included? Yes No Custody seals? Yes No
 Signed/dated by client? Yes No
 Signed/dated by Apex? Yes No

	Cooler #1	Cooler #2	Cooler #3	Cooler #4	Cooler #5	Cooler #6	Cooler #7
Temperature (°C)	<u>4.3</u>						
Received on ice? (Y/N)	<u>Y</u>						
Temp. blanks? (Y/N)	<u>N</u>						
Ice type: (Gel/Real/Other)	<u>Gel</u>						
Condition:	<u>Good</u>						

Cooler out of temp? (Y/N) NA Possible reason why: _____
 If some coolers are in temp and some out, were green dots applied to out of temperature samples? Yes/No/NA
 Out of temperature samples form initiated? Yes/No/NA

Samples Inspection: Date/time inspected: 5/23/19 @ 1630 By: OB
 All samples intact? Yes No Comments: _____
 Bottle labels/COCs agree? Yes No Comments: _____
 COC/container discrepancies form initiated? Yes No NA
 Containers/volumes received appropriate for analysis? Yes No Comments: _____
 Do VOA vials have visible headspace? Yes No NA
 Comments: _____
 Water samples: pH checked: Yes No NA pH appropriate? Yes No NA
 Comments: _____

Additional information:

Labeled by: OB Witness: RM Cooler Inspected by: OB See Project Contact Form: Y

Philip Nerenberg

Triton Analytics Corp.
16840 Barker Springs, #302
Houston, TX 77084
(281) 578-2289

TAC Reference: 10733
 Requested By: R. Ede | Hahn & Associates
 Date: 07/25/2019 (Original) 10/29/2019 (Updated)

Certificate of Analysis

	Sample Name (HAI) Sample Name (Apex)	2708-190521-007 A9E0723-01 A	2708-190606-OIL A9F0287-01 A
	Method		
Density @ 60 F, (g/cm3)			1.0002
API Gravity @ 60 F	ASTM D4052		9.8
Specific Gravity @ 60 F			1.0012
Dynamic Visc @ 10 C, (mPa-s)			16.1
Kinematic Visc @ 10 C, (mm2/s)	ASTM D7042		16.0
Density @ 10 C, (g/cm3)			1.0040
Dynamic Visc @ 30 C, (mPa-s)		10096	7.43
Kinematic Visc @ 30 C, (mm2/s)	ASTM D7042	8432	7.51
Density @ 30 C, (g/cm3)		1.1973	0.9896
Dynamic Visc @ 35 C, (mPa-s)		5262	
Kinematic Visc @ 35 C, (mm2/s)	ASTM D7042	4406	±3.4%
Density @ 35 C, (g/cm3)		1.1944	
Dynamic Visc @ 40 C, (mPa-s)		2847	
Kinematic Visc @ 40 C, (mm2/s)	ASTM D7042	2387	
Density @ 40 C, (g/cm3)		1.1927	
Dynamic Visc @ 45 C, (mPa-s)		1601	
Kinematic Visc @ 45 C, (mm2/s)	ASTM D7042	1347	±3.2%
Density @ 45 C, (g/cm3)		1.1882	
Dynamic Visc @ 50 C, (mPa-s)		964	
Kinematic Visc @ 50 C, (mm2/s)	ASTM D7042	814	±3.1%
Density @ 50 C, (g/cm3)		1.1850	

ATTACHMENT 4

Voluntary Agreement No. WMCVC-NWR-94-13, August 8, 1994, as Amended by the First Addendum, Dated July 19, 2006, and the Second Addendum, Dated October 11, 2016

RECEIVED SEP 8 2004

VOLUNTARY AGREEMENT FOR
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

DEQ NO. WMCVC-NWR-94-13

BETWEEN: Northwest Natural Gas Company
AND: Oregon Department of Environmental Quality (DEQ)
EFFECTIVE DATE: 8/8/94

Pursuant to ORS 465.260(2) and (4), the Director, Oregon Department of Environmental Quality (DEQ), enters this Agreement with the Northwest Natural Gas Company (NWNG). This Agreement contains the following provisions:

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II. Agreement.....	3
A. Work.....	3
B. Public Participation.....	3
C. DEQ Access and Oversight.....	3
D. Project Managers.....	4
E. Notice and Samples.....	4
F. Quality Assurance.....	5
G. Records.....	5
H. Progress Reports.....	6
I. Other Applicable Laws.....	6
J. Reimbursement of DEQ Costs.....	6
K. Force Majeure.....	7
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N. Enforcement of Agreement and Reservation of Rights.....	8
O. Hold Harmless.....	8
P. Parties Bound.....	9
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I. RECITALS

- A. NWNG is a "person" under ORS 465.200(13).
- B. The NWNG site is a "facility" under ORS 465.200(6). The NWNG site occupies approximately 47 acres at 7540 N.W. St. Helens Road, Portland, Oregon and is the location of a former oil gasification plant. A vicinity map and a site map are included in Attachment A to this Agreement.

- C. From 1913 until 1956, NWNG, then known as the Portland Gas and Coke Company (GASCO) operated an oil gasification plant on the present property owned by NWNG. An adjoining approximately 73 acre portion of the property was sold by NWNG in 1962 and is currently the site of the Wacker Siltronics Corporation manufacturing facility. The former GASCO facility produced oil gas and lampblack briquettes. Other materials produced by the plant for sale included light oils, tar and electrode grade coke. Wastes generated at the facility included tar, wastewater containing dissolved and suspended hydrocarbons, and spent oxide. Many of these wastes were disposed of in on-site tar ponds. In 1971 the largest remaining tar pond was estimated to contain 6 million gallons of tar and tar/water emulsion. This tar pond was subsequently filled in with spent oxide material and rubble and spread out over the southeastern portion of the site. NWNG currently operates a liquified natural gas (LNG) plant at the site and leases portions of the former GASCO facility to Pacific Northern Oil Company (Pacific Northern) and Koppers Industries, Incorporated (Koppers).
- D. Investigations conducted to date indicate that petroleum hydrocarbons, volatile aromatic hydrocarbons and polycyclic aromatic hydrocarbons (PAHs) are present in subsurface soils and groundwater on the NWNG property. A total PAH concentration of 926 mg/l was detected in a 1984 sample collected from a monitoring well installed on the property leased from NWNG by Koppers. Ethylbenzene and xylene were detected in the same monitoring well at 380 mg/l and 2600 mg/l respectively. Analysis of a 1984 sediment sample collected from the NWNG LNG containment basin detected 300 mg/kg of total PAHs. Analysis of a 1993 water sample collected from the NWNG LNG containment basin detected 8.3 mg/l of benzene and 1.4 mg/l of total PAHs.

The substances described in this section are "hazardous substances" under ORS 465.200(9). The presence of hazardous substances in soil and groundwater at the facility constitutes a "release" or "threat of release" into the environment under ORS 465.200(14).

- E. NWNG requested DEQ oversight of its investigation and cleanup activities and executed a voluntary Letter Agreement with DEQ on January 3, 1994. NWNG provided a \$5,000 advance deposit to cover initial DEQ oversight costs.
- F. DEQ considers the activities required by this Agreement to be necessary to protect public health, safety, and welfare and the environment.

II. AGREEMENT

The parties agree as follows:

A. Work

1. Remedial Investigation and Feasibility Study.

NWNG shall perform a remedial investigation and feasibility study (RI/FS) satisfying OAR 340-122-070 and OAR 340-122-080, the terms and schedule of a DEQ-approved work plan developed by NWNG, and applicable elements of the general Scope of Work contained in Attachment B to this Agreement. NWNG may specify, in the proposed work plan, elements of the Scope of Work that NWNG considers inapplicable or unnecessary to the RI/FS for the facility. NWNG may propose to perform the work in phases or operable units.

2. Review

DEQ shall provide review, approvals/disapprovals, and oversight in accordance with the schedule set forth in the Scope of Work, or as soon as thereafter practicable in the event staff resources or workload prevent compliance with the schedule. Any DEQ delay shall correspondingly extend NWNG's schedule for a related deliverable or activity.

3. Additional Measures

NWNG may elect at any time during the term of this Agreement to undertake measures other than those required under this Agreement necessary to address a release or threatened release of hazardous substances at the facility which is the subject of this Agreement. Such other measures shall be subject to prior approval by DEQ, which approval shall be granted if DEQ determines that the additional measures will not compromise the validity of the RI/FS and will not threaten human health or the environment.

B. Public Participation

Upon execution of this Agreement, DEQ will provide public notice of this Agreement through issuance of a press release, at a minimum to a local newspaper of general circulation, describing the measures required under this Agreement. Copies of the Agreement will be made available to the public. DEQ shall provide NWNG a draft of such press release and consider any comments by NWNG on the draft press release, before publication.

C. DEQ Access and Oversight

1. DEQ shall use its best efforts, but not be obligated, to provide reasonable advance notice before entering the

facility. NWNG shall allow DEQ to enter and move freely about all portions of the facility at all reasonable times for the purposes, among other things, of inspecting records relating to work under this Agreement; observing NWNG's progress in implementing this Agreement; conducting such tests and taking such samples as DEQ deems necessary; verifying data submitted to DEQ by NWNG; and, using camera, sound recording, or other recording equipment for purposes relating to work under this Agreement.

2. NWNG shall permit DEQ to inspect and copy all records, files, photographs, documents, and data relating to work under this Agreement, except that NWNG shall not be required to permit DEQ inspection or copying of items subject to attorney-client or attorney work product privilege. DEQ shall use its best efforts, but not be obligated, to provide reasonable advance notice before records inspection and copying requests.
3. Attorney-client and work product privileges may not be asserted with respect to any records required under Section II.G.1 and II.G.2 of this Agreement. NWNG shall identify to DEQ, by addressor-addressee, date, general subject matter, and distribution, any document, record, or item withheld from DEQ on the basis of attorney-client or attorney work product privilege. DEQ reserves its rights under law to obtain documents DEQ asserts are improperly withheld by NWNG.

D. Project Managers

1. To the extent possible, all reports, notices, and other communications required under or relating to this Agreement shall be directed to:

DEQ Project Manager:

Eric Blischke
Department of Environmental Quality
Northwest Region
2020 S.W. Fourth Avenue, Suite 400
Portland, OR 97201
(503) 229-6802

NWNG Project Manager:

Sandra Hart
Northwest Natural Gas
Company
220 S.W. Second Avenue
Portland, OR 97209
(503) 226-4211

2. NWNG's and DEQ's Project Managers shall be available and have the authority to make day-to-day decisions necessary to complete the scope of work under this Agreement.

E. Notice and Samples

NWNG shall make every reasonable attempt to notify DEQ of any excavation, drilling, or sampling to be conducted under this Agreement at least five (5) working days before such activity but in no event less than twenty-four (24) hours before such activity. Upon DEQ's verbal request, NWNG shall make available to DEQ a

split or duplicate of any sample taken pursuant to this Agreement. DEQ shall make every effort to complete analysis of any split or duplicate sample on a schedule consistent with NWNG's schedule for related activities.

F. Quality Assurance

NWNG shall conduct all sampling, sample transport, and sample analysis in accordance with the Quality Assurance/ Quality Control (QA/QC) provisions approved by DEQ as part of the work plan. All plans prepared and work conducted as part of this Agreement shall be consistent with DEQ's "Quality Assurance Policy No. 760.00". NWNG shall ensure that each laboratory used by NWNG for analysis performs such analyses in accordance with such provisions.

G. Records

1. In addition to those technical reports and documents specifically required under this Agreement, NWNG shall provide to DEQ within ten (10) days of DEQ's written request copies of existing documents relating to work required under this Agreement, including QA/QC memoranda and audits, final plans, final reports, task memoranda, field notes, and laboratory analytical data that have undergone data quality validation.
2. If DEQ determines that review of raw data or preliminary laboratory reports is necessary in order to ensure protection of public health, safety, and welfare and the environment, that information will be provided by NWNG immediately upon DEQ's written request. When such information is requested, DEQ will fully inform NWNG of the reasons making the request necessary.
3. Except for preliminary drafts which have been superseded, NWNG and DEQ shall preserve all records and documents in possession or control of NWNG and DEQ, respectively, or their employees, agents, or contractors that relate in any way to activities under this Agreement for at least five (5) years after termination under Section II.R. of this Agreement; provided that after such 5-year period, NWNG and DEQ shall provide the other sixty (60) days notice before destruction or other disposal of such records and make them available for inspection and copying.
4. NWNG may assert a claim of confidentiality regarding any documents or records submitted to or copied by DEQ pursuant to this Agreement. DEQ shall treat documents and records for which a claim of confidentiality has been made in accordance with ORS 192.410 through 192.505. If NWNG does not make a claim of confidentiality at the time the documents or records are submitted to or copied by DEQ, the documents or records may be made available to the public without notice to NWNG.

H. Progress Reports

During each month of this Agreement, NWNG shall deliver to DEQ on or before the tenth (10th) day of each month two (2) copies of a progress report containing the following items. DEQ anticipates that the progress report will not exceed 2 pages in length.

1. Actions taken under this Agreement during the previous month;
2. Actions scheduled to be taken in the next month;
3. Sampling, test results, and any other data generated by NWNG during the previous month; and
4. A description of any problems experienced during the previous month and the actions taken to resolve them.

I. Other Applicable Laws

All actions under this Agreement shall be performed in accordance with all applicable federal, state, and local laws and regulations; except that, in accordance with ORS 465.315(2), DEQ in its discretion may exempt the on-site portion of any removal or remedial action from applicable requirements of ORS 466.005 to 466.385, ORS Chapter 459, or ORS Chapter 468 (1989).

J. Reimbursement of DEQ Oversight Costs

1. DEQ shall submit to NWNG a monthly statement of costs actually and reasonably incurred after issuance of this Agreement by DEQ or the State of Oregon in connection with any activities related to the facility or oversight of NWNG's implementation of this Agreement. Each invoice will include a summary of costs billed to date. DEQ will also include a direct labor summary showing the person charging the time, the number of hours and the nature of the work performed.
2. DEQ or State of Oregon oversight costs payable by NWNG shall include both direct and indirect costs. Direct costs include site-specific expenses, DEQ contractor costs, and DEQ legal costs. Indirect costs are those general management and support costs of the DEQ and of the Waste Management and Cleanup Division allocable to DEQ oversight of this Agreement and not charged as direct, site-specific costs. Indirect costs are based on a percentage of direct personal services costs. DEQ shall maintain work logs, payroll records, receipts and other documents to document work performed and expenses incurred under this Agreement and, upon request, shall make such records available to Respondent for inspection during the time of this Agreement and for at least one year thereafter.

3. Within thirty (30) days of receipt of the monthly statement, NWNG shall pay the amount of costs billed by check made payable to the "State of Oregon, Hazardous Substance Remedial Action Fund".

K. Force Majeure

1. If any event occurs that is beyond NWNG's reasonable control and that causes or might cause a delay or deviation in performance of the requirements of this Agreement, NWNG shall promptly notify DEQ's Project Manager verbally of the cause of the delay or deviation and its anticipated duration, the measures that have been or will be taken to prevent or minimize the delay or deviation, and the timetable by which NWNG proposes to carry out such measures. NWNG shall confirm in writing this information within five (5) working days of the verbal notification.
2. If NWNG demonstrates to DEQ's satisfaction that the delay or deviation has been or will be caused by circumstances beyond the control and despite the due diligence of NWNG, DEQ shall extend times for performance of related activities under this Agreement as appropriate. Circumstances or events beyond NWNG's control might include but are not limited to acts of God, unforeseen strikes or work stoppages, fire, explosion, riot, sabotage, or war. Increased cost of performance or changed business or economic circumstances shall be presumed not to be circumstances beyond NWNG's control.

L. Prior Approval

Where DEQ review and approval is required for any plan or activity under this Agreement, NWNG shall not proceed to implement the plan or activity until DEQ approval is received. Any DEQ delay in granting or denying approval shall correspondingly extend the time for completion by NWNG. Prior approval shall not be required in emergencies or in instances where NWNG believes a delay in undertaking a particular action will threaten human health, safety or the environment; provided NWNG shall notify DEQ immediately after the emergency or activity and evaluate its impact on the RI/FS.

M. Dispute Resolution

In the event of disagreement between NWNG and DEQ regarding implementation of this Agreement, NWNG and DEQ shall, in the following order: 1) make a good faith effort to resolve the dispute between Project Managers; 2) if necessary, refer the dispute for resolution by the immediate supervisors of the Project Managers; and 3) if necessary, provide each other their respective positions in writing and refer the dispute for resolution by DEQ's Administrator of the Waste Management and Cleanup Division or the appropriate Region Administrator and NWNG's Chief Executive

Officer. DEQ's final decision after such dialogue shall be enforceable under this Agreement. If NWNG refuses or fails to follow DEQ's final decision, the parties shall be entitled to such rights and remedies, including but not limited to, judicial review and subject to such limitation as provided by applicable law.

N. Enforcement of Agreement and Reservation of Rights

1. In the event of NWNG's failure to comply with this Agreement (including any failure to reimburse oversight costs), DEQ may enforce this Agreement under ORS 465.260(5) or may terminate this Agreement after thirty (30) days written notice to NWNG.
2. In the event of DEQ's failure to provide oversight in accordance with this Agreement, NWNG may terminate this Agreement after thirty (30) days written notice to DEQ. Costs incurred or obligated by DEQ before the effective date of any termination of this Agreement shall be owed under the Agreement notwithstanding such termination.
3. NWNG does not admit any liability or violation of law by virtue of entering this Agreement.
4. Nothing in this Agreement shall prevent NWNG from exercising any rights of contribution or indemnification NWNG might have against any person regarding activities under this Agreement; provided, NWNG waives any right it might have under ORS 465.260(7) to seek reimbursement from the Hazardous Substance Remedial Action Fund for costs incurred under this Agreement.
5. NWNG agrees not to litigate, in any proceeding brought by DEQ to enforce this Agreement, any issue other than NWNG's compliance with this Agreement.

O. Hold Harmless

1. NWNG shall save and hold harmless the State of Oregon and its commissions, agencies, officers, employees, contractors, and agents, and indemnify the foregoing, from and against any and all claims arising from acts or omissions related to this Agreement of NWNG or its officers, employees, contractors, agents, receivers, trustees, or assigns. The State of Oregon shall notify NWNG of any such claims or actions as soon as practicable after receiving notice that such a claim or action is threatened or has been filed. NWNG shall have the right to participate fully at its own expense in the defense or settlement of such claims, including the right to promptly receive related correspondence with the claimant and the opportunity to participate in related meetings and telephone conferences with the claimant. The state will confer with NWNG regarding litigation and settlement strategy and, to the extent practicable, will allow NWNG to review and comment on

pleadings and settlement documents before they are filed with the court or sent to the claimant. NWNG shall have no obligations under this subsection with respect to any claim settled or otherwise compromised without NWNG's having been provided the opportunity to participate in accordance with this subsection. Subject to Article XI, Section 7 of the Oregon constitution and the Oregon Tort Claims Act, DEQ and the State of Oregon shall be responsible for the acts and omissions of their own employees and agents, except for DEQ acts approving or omissions constituting approval of NWNG's activities under this Agreement. DEQ shall not be considered a party to any contract made by NWNG or its agents in carrying out activities under this Agreement.

2. To the extent permitted by Article XI, Section 7, or the Oregon Constitution and by the Oregon Tort Claims Act, the State of Oregon shall save and hold harmless NWNG and its officers, employees, contractors, and agents, and indemnify the foregoing, from and against any and all claims arising from acts or omissions related to this Agreement of the State of Oregon or its commissions, agencies, officers, employees, contractors, or agents (except for acts approving or omissions constituting approval of any activity of NWNG under this Agreement). NWNG shall not be considered a party to any contract made by DEQ or its agents in carrying out activities under this Agreement.

P. Parties Bound

This Agreement shall be binding on the parties and their respective successors, agents, and assigns. The undersigned representative of each party certifies that he or she is fully authorized to execute and bind such party to this Agreement. No change in ownership or corporate or partnership status relating to the facility shall in any way alter NWNG's obligations under this Agreement, unless otherwise approved in writing by DEQ.

Q. Modification

DEQ and NWNG may modify this Agreement by mutual written agreement.

R. Duration and Termination

Upon completion of work under this Agreement, NWNG shall submit to DEQ a written notice of completion. This Agreement shall be deemed satisfied and terminated upon payment of all oversight cost owed and upon DEQ's issuance of a letter acknowledging satisfactory completion of activities in accordance with this Agreement. Such letter shall be issued within sixty (60) days of receipt of notice of completion and payment of outstanding DEQ oversight costs, or as soon thereafter as is reasonably practicable.

NORTHWEST NATURAL GAS COMPANY

By: B. J. [Signature]
(Name)
Sr. V.P.
(Title)

Date: _____

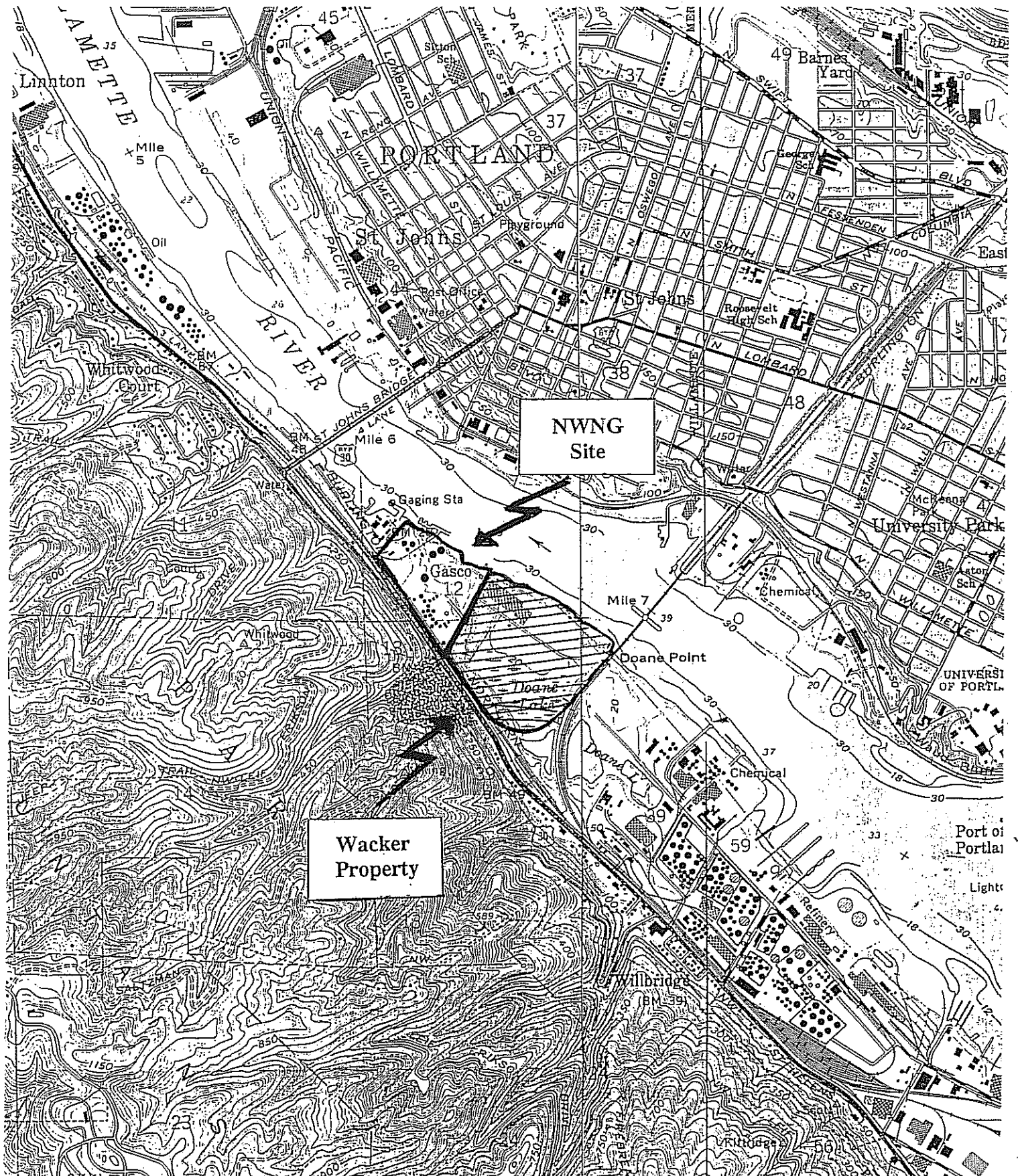
STATE OF OREGON
DEPARTMENT OF ENVIRONMENTAL QUALITY

By: Jell Hansen
(Name)

(Title)

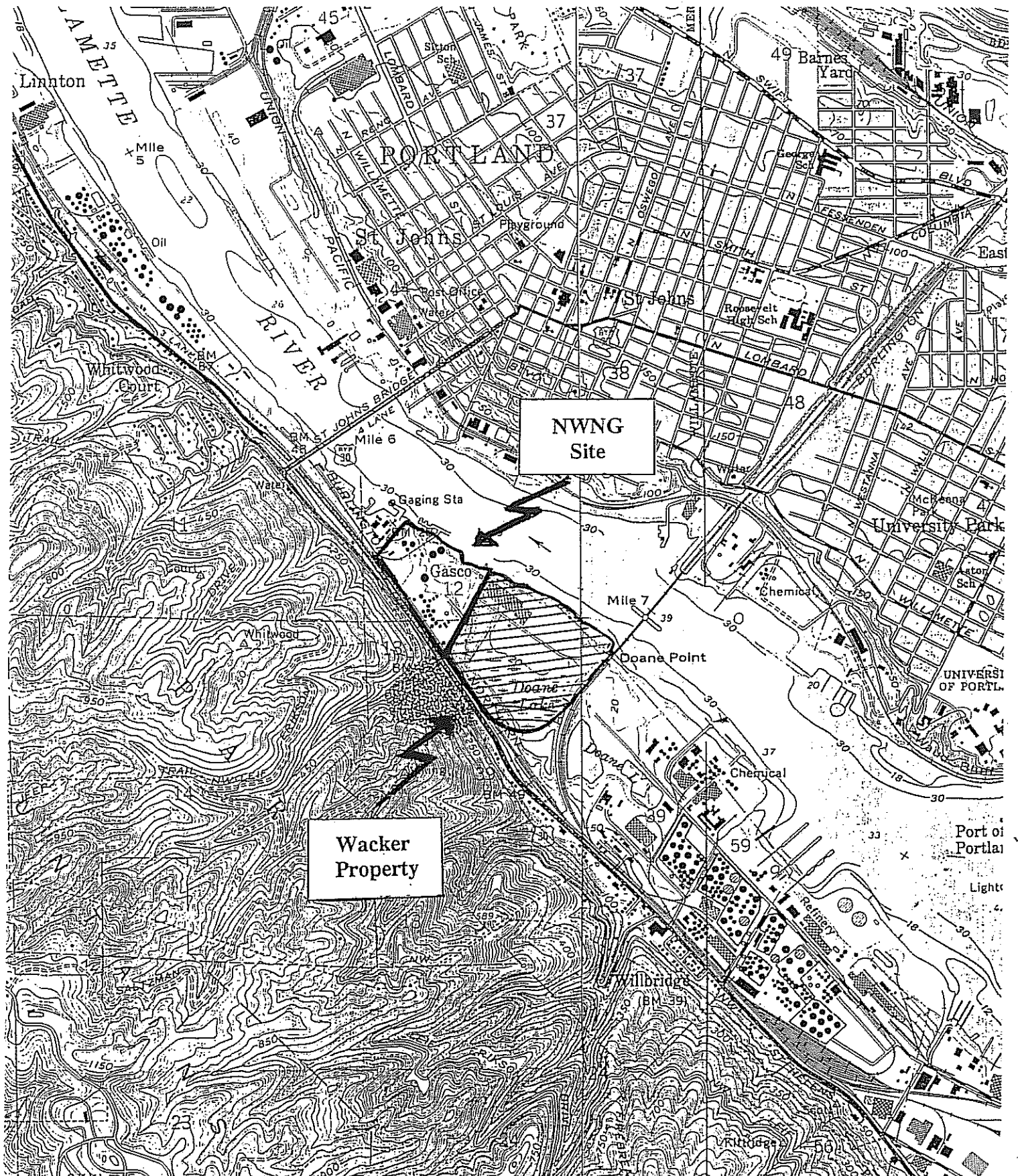
Date: AUG 8 1994

ATTACHMENT A
VICINITY AND SITE MAPS



NWNG Site

Wacker Property



U.S. CORPS OF
ENGINEERS DREDGING
FACILITIES

WILLAMETTE RIVER

NORTHWEST PORTLAND
INDUSTRIAL AREA

BURLINGTON NORTHERN R.R.

NORTHWEST
NATURAL GAS

PACIFIC NORTHERN COMPANY
OIL LEASE AREA

GASCO
ADMIN. BLDG.

WACKER

KOPPER'S
LEASE AREA

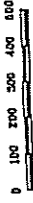
OLYMPIC PIPELINE AND UTILITIES EASEMENT

SILTRONIC

N.W. ST. HELENS ROAD

ROCK
QUARRY

NORTH
DOANE
LAKE



NORTH DOANE'S LAKE SITE INVESTIG

STUDY AREA FEATURES

CAMP DRESSER & MCKEE INC
2300 15th STREET
SUITE 200
DENVER, COLORADO 80202

CDM

SHEET NO.

2-2

CDM 6433-118

ATTACHMENT B

SCOPE OF WORK

ATTACHMENT B

VOLUNTARY CLEANUP PROGRAM
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
SCOPE OF WORK

I. OBJECTIVES AND SCHEDULE

A. OBJECTIVES

1. Work performed under this Agreement shall complement and incorporate existing site information with the following specific objectives:
 - i. Determine the magnitude, nature and extent of contamination at the Northwest Natural Gas Company (NWNNG) site located at 7540 N.W. St. Helens Road. The investigation and cleanup, if required, shall include properties leased to Pacific Northern Oil Company and Koppers Industries, Incorporated. The investigation shall focus on, but not be limited to, petroleum related contaminants such as volatile aromatic compounds and polycyclic aromatic hydrocarbons (PAHs) and inorganic contaminants such as metals, cyanide and hydrogen sulfide.
2. Work performed under this Agreement shall complement and incorporate existing site information with the following overall objectives:
 - i. Identify the hazardous substances which have been released to the environment,
 - ii. Determine the full nature and extent of hazardous substances in affected media on and off-site,
 - iii. Determine the distribution of hazardous substance concentrations,
 - iv. Determine the direction and rate of migration of hazardous substances,
 - v. Identify migration pathways,
 - vi. Identify the environmental impact and risk to human health and/or the environment,
 - vii. Develop the information necessary to select a remedial action.

B. SCHEDULE

The Remedial Investigation/Feasibility Study (RI/FS) described in this Scope of Work may be completed in phases if that approach will better enable NWNNG to meet the objectives listed above. All work under this Agreement will proceed in accordance with the schedule below, which assumes a phased approach and is measured in calendar days:

RI/FS Proposal	Provide to DEQ within 30 days of issuance of this agreement.
Meeting to discuss RI/FS Proposal	Between DEQ and NWNG within 15 days of DEQ's receipt of the RI/FS proposal; DEQ and NWNG will meet, if necessary, to review the proposal, concur on the RI/FS approach, and discuss the content and format of deliverables.
DEQ approval of RI/FS Proposal	To NWNG within 10 days of meeting or within 15 days of receipt of RI/FS Proposal if meeting not held.
Draft RI/FS Work Plan	To DEQ within 45 days of receipt of DEQ's approval of the RI/FS Proposal; the Draft RI/FS Work Plan shall include the draft Sampling and Analysis Plan (SAP), Health and Safety Plan (HASP), Quality Assurance Project Plan (QAPP), Endangerment Assessment Work Plan (EAWP) and Feasibility Study Work Plan (FSWP).
DEQ review and comments	To NWNG within 30 days of receipt of the Draft RI/FS Work Plan.
Revised Draft RI/FS Work Plan	To DEQ within 15 days of receipt of DEQ comments; the revised RI/FS Work Plan shall include a revised SAP, HASP, QAPP, EAWP and FSWP as necessary, addressing DEQ comments.
DEQ review and approval	To NWNG within 15 days of receipt of an approvable RI/FS Work Plan.
Implementation of RI	Within 15 days of receipt of DEQ approval; NWNG shall complete work according to the schedule specified in the approved Work Plan.
RI Letter Report	To DEQ within 30 days of completion of RI and receipt of laboratory data. Data shall be validated and any unusable data identified. Shall include a recommendation whether additional phases are required; format to be mutually agreed upon by DEQ and NWNG.
DEQ review and comments	To NWNG within 15 days of receipt.
Subsequent Phase Work Plan Addenda	If it is mutually determined by DEQ and NWNG that additional phases are required, NWNG shall submit a Work Plan Addendum according to a format and schedule agreed upon between the parties prior to starting each phase of the Remedial Investigation, the Endangerment Assessment and the Feasibility Study.
DEQ review and comment	To NWNG within 21 days of receipt of each Work Plan Addendum.

Subsequent Phase RI Letter Reports	Within 30 days of completion of subsequent phases of the RI work, NWNG shall issue additional Phase ___ RI Letter Reports which summarize the RI work to date and include a recommendation whether additional phases are required.
DEQ review and comment	To NWNG within 15 days of receipt of the Letter report for each phase of the RI.
Draft RI Report Outline	To DEQ within 30 days of receipt of DEQ's comments on the final phase of the RI work and receipt of all laboratory data; the outline will provide a table of contents and a list of figures and tables.
DEQ Review and Comment	To NWNG within 15 days of receipt.
Draft RI Report	To DEQ within 60 days of receipt of DEQ's comments; the draft RI report will include a draft Endangerment Assessment, summarize all RI work to date and respond to all DEQ comments to-date.
DEQ review and comments	To NWNG within 45 days of receipt of the Draft RI Report.
Final RI Report	To DEQ within 30 days of receipt of DEQ comments.
Review and approval	To NWNG within 30 days of receipt of an approvable RI Report.
Draft FS Report	To DEQ within 60 days of DEQ approval of the Final RI Report
DEQ review and comments	To NWNG within 45 days of receipt of the Draft FS report
Final FS Report	To DEQ within 30 days of receipt of DEQ's comments
DEQ review and approval	To NWNG within 30 days of receipt of an approvable FS Report

II. RI/FS PROPOSAL

The RI/FS Proposal will be a brief discussion of NWNG's proposed approach to the RI/FS, addressing soil, groundwater, surface water, sediments, and air. The proposal will provide the framework for the RI/FS Work Plan and will include the following, assuming a phased approach:

- A. A summary of site-specific issues and a review of the results of previously completed work;
- B. A general description of each proposed phase, including the goals and objectives of each;
- C. Phase I sample locations, depths, proposed analytical methods, and the rationale for each (include map); and

- D. The estimated schedule for implementation of Phase I and subsequent phases if necessary.

III. REMEDIAL INVESTIGATION WORK PLAN

The RI Work Plan shall be based on the Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, OSWER Directive 9355.3-01, 1988, and developed in accordance with OAR 340-122-080.

The Work Plan shall include, but not be limited to the following items:

A. PROJECT MANAGEMENT PLAN

1. A proposed schedule for submittals and implementation of all proposed activities.
2. A description of the personnel involved in the project, including their qualifications to do the proposed work.

B. SITE DESCRIPTION

A description of facility operations shall include, but not be limited to, the following:

1. A list of chemical products used on-site currently and historically.
2. The estimated volume of waste disposed of on-site and/or discharged off-site.
3. Time and volume of known spills.
4. A description of past and present waste treatment/disposal practices and areas.
5. The location of past and present raw material and finished product storage areas.
6. The approximate time periods for past operational, treatment, storage, disposal, and/or discharge practices where hazardous substances were involved relative to this investigation.

C. SITE CHARACTERIZATION PLAN

1. Soils

Objective: To identify releases of hazardous substances to soils and to assess the nature and extent of soil contamination.

Scope: The plan shall address all areas which could potentially have received spills, leaks from tanks or piping, been used for waste treatment, storage, or disposal, or have been affected by contaminated surface water or storm water runoff, and all other areas where soil contamination is known or suspected, to the extent necessary for DEQ to select a remedy for the site.

Procedures: The sampling program shall supplement previous soil

sampling at the facility. At a minimum, the plan shall include, but not be limited to, the following:

- a. The proposed location of soil borings including;
 - i. Depth of borings
 - ii. Sampling interval
 - iii. Sample collection methods
 - iv. Analytical parameters
 - v. Method to determine background concentrations for each parameter
 - vi. Rationale for each of the above
- b. Provisions for describing soil boring samples, to include:
 - i. The soil type according to the ASTM D 2487-85, Classification of Soils for Engineering Purposes, and
 - ii. Soil color, structure, texture, mineral composition, moisture, and percent recovery according to ASTM D 2488-84, Description and Identification of Soils (Visual-Manual Procedures)
 - iii. Other relevant characteristics such as visual identification of contamination, odor, and detection of vapors by use of field screening instruments such as HNU, OVA or other equivalent type equipment, and as described by a qualified geologist or geotechnical engineer.

2. Groundwater

Objective: To identify releases of hazardous substances and characterize the lateral and vertical extent of these releases to groundwater

Scope: The plan shall supplement previous investigations at the facility and shall identify releases of hazardous substances to groundwater, and shall also characterize the vertical and lateral extent of groundwater contamination, both on-site and migrating off-site to the extent necessary for DEQ to select a remedy for the site.

Procedures: The sampling program shall supplement previous groundwater sampling at the facility. At a minimum, the plan shall include, but not be limited to, the following:

- a. Well installation plan to include:
 - i. Proposed well locations.

- ii. Proposed well depths.
 - iii. Length of proposed screened intervals.
 - iv. Proposed drilling methods.
 - v. Proposed construction materials and installation methods.
 - vi. Proposed well development and completion methods.
 - vii. Proposed sample collection methods
 - viii. Proposed analytical parameters
 - ix. Proposed method to determine background concentrations of each parameter
 - x. Proposed schedule for sampling all monitoring wells
- b. Hydrologic characterization proposal to include:
- i. Provisions to collect and describe formation materials during drilling. NWNG may consider obtaining continuous cores and using borehole geophysics to supplement coring.
 - ii. A plan to characterize the hydrogeology including a description of:
 - (a) stratigraphy
 - (b) structural geology
 - (c) depositional history
 - (d) regional ground-water flow patterns
 - iii. A plan to describe the hydrogeologic properties of affected hydrogeologic units found at the site, and additional units as necessary to complete the RI/FS, including:
 - (a) hydraulic conductivity
 - (b) porosity
 - (c) lithology
 - (d) hydraulic interconnections between saturated zones
 - iv. Plans to identify the following for each affected aquifer, and additional aquifers as necessary to complete the RI/FS:
 - (a) A description of ground-water flow direction.
 - (b) Identification of vertical and horizontal gradient(s).
 - (c) Interpretation of the flow system including the rate (horizontal and vertical) of groundwater flow, and including seasonal variations.

- v. A plan to describe surface and subsurface features, characteristics, and interrelationships with a potential to influence groundwater flow patterns at the site, including:
 - (a) Identification of pumping groundwater wells, past and present.
 - (b) Influences of rivers, streams, and ditches.
 - (c) Influences of ponds and lakes.
 - (d) Identification of areas of recharge/discharge.

- c. A plan to conduct a well inventory to identify all active and inactive water wells within a one-mile radius of the facility, to include, as necessary:
 - i. Identification of all wells listed with the Oregon Water Resources Department and field confirmation of their location
 - ii. A door-to-door field survey to identify wells for which no logs are on file
 - iii. For all located wells, to the extent practicable, identify:
 - (a) Owner
 - (b) Address
 - (c) Map location
 - (d) Driller
 - (e) Date drilled
 - (f) Depth
 - (g) Casing and screen material, depths and intervals
 - (h) Seal types, depths and intervals
 - (i) Static water levels
 - (j) Approximate land surface elevation
 - (k) Reported water quality and use of well
 - iv. A plan to sample those private wells identified above which, based on the available hydrogeological information, may be at greatest risk of contamination.

3. Surface Water and Sediments

Objective: The Work Plan shall include a plan to identify and evaluate releases of hazardous substances to surface water, including their sediments.

Scope: The plan shall supplement previous investigations at the facility and shall identify all past, existing, and potential impacts to surface waters from the identified release to the extent necessary for DEQ to select a remedy for the site.

Procedures: The sampling program shall supplement previous surface water and sediment sampling at the facility. At a minimum, the plan shall include but not be limited to,

the following:

- a. A delineation of past and present surface drainage patterns at the site.
- b. Proposed sampling points in past and current surface drainages.
- c. Proposed sample collection methodology.
- d. Proposed analytical parameters
- e. Proposed method for determining background values for all parameters.
- f. A rationale for each of the above.

4. Air

Objective: To identify and characterize the release of hazardous substances to the air from unregulated sources at the facility.

Scope: The air assessment plan shall supplement previous investigations at the facility and shall be designed to determine if unregulated air emissions from the site threaten human health or the environment.

Procedures: The sampling plan shall supplement previous air sampling at the facility. At a minimum, the plan shall include, but not be limited to, the following:

- a. Proposed sample locations
- b. Proposed analytical parameters
- c. Proposed sample collection methods
- d. Methodology for determining background values for each parameter
- e. Rationale for each of the above

D. SAMPLING AND ANALYSIS PLAN (SAP)

Objective: To adequately document all sampling and analysis procedures.

Scope: The SAP shall be sufficiently detailed to function as a manual for field staff. In preparation of the SAP, the following guidance documents shall be utilized: Data Quality Objectives for Remedial Response Activities, EPA/540/G-87/004 (OSWER Directive 9355.0-7B), March, 1987; Test Methods for Evaluating Solid Waste, SW-846; and A Compendium of Superfund Field Operations Methods, EPA/540/P-87/001 (OSWER Directive 9355.0-14), December, 1987. The SAP shall address all topics listed in Policy #760.000, Quality Assurance Policy.

Procedures: The Work Plan shall include a SAP for all sampling activities. The SAP shall include, at a minimum:

1. Proposed analytical parameters and rationale.
2. Description of sample collection methods, sampling equipment, and sample handling procedures.
3. Quality assurance and quality control procedures for both field and lab procedures, including a data quality objectives plan.
4. Chain of custody procedures.
5. Analytical methods for each parameter.
6. A methodology for determining background concentrations for all detected contaminants.
7. A methodology for determining statistically significant increases in concentrations for the sampling parameters.

E. HEALTH AND SAFETY PLAN (HASP)

The Health and Safety Plan shall:

1. Describe the known hazards and risks.
2. Identifying levels of protective clothing and equipment to be worn.
3. Describe decontamination procedures.
4. Identify any special requirements or training needs.
5. Provide a contingency plan for emergencies.

An existing Health and Safety Plan can be included by reference, if it adequately includes the above items.

F. ENDANGERMENT ASSESSMENT WORK PLAN

The Endangerment Assessment portion of the Work Plan shall be developed based on the *Risk Assessment Guidance for Superfund - Human Health Evaluation Manual Part A*, United States Environmental Protection Agency, Interim Final, July 1989, (RAGS-HHEM); *Risk Assessment Guidance for Superfund Volume II - Environmental Evaluation Manual (EEM)*, United States Environmental Protection Agency, Interim Final, March 1989; *EPA Region 10, Supplemental Risk Assessment Guidance for Superfund*, United States Environmental Protection Agency, August 1991, (SRAGS); and, *Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors"*, United States Environmental Protection Agency, March 1991, (HHE-SG).

1. Human Health Evaluation

Objective: The human health evaluation (HHE) is an analysis of the potential adverse health effects caused by hazardous substance release(s) from a site in the absence of any actions to control or mitigate these releases (i.e., under an assumption of no action). It is used to document the magnitude of the potential risk at a site and to evaluate the cause(s) of that risk. It is also

used to support risk management decisions, and to set remediation goals, if necessary.

Scope: This section shall describe the different tasks involved in preparing the HHE portion of the endangerment assessment. A suggested outline for the human health evaluation is given in Exhibit 9-1 of the RAGS-HHEM. The Work Plan should use this outline as a framework for discussing the methodologies and assumptions to be used in assessing the potential human health risks at the site.

The HHE shall include an estimate of the reasonable maximum exposure (RME) expected to occur under both current and future land use conditions. Guidance on quantifying the RME is given in Chapter 6 of the RAGS-HHEM, SRAGS, and HHE-SG. Quantifying the potential risks associated with the RME shall be the overall goal of the Endangerment Assessment.

The Work Plan should include, but not be limited to the following:

- a. A conceptual site model for the site. This model should be an iterative flow chart based on available site information showing contaminant sources, release mechanisms, transport routes and media, potential receptors, and other important information as appropriate. Iterations of this model shall be carried through the work plan and the endangerment assessment as additional information is generated. Exhibit 4-1 of the RAGS-HHEM presents an example of a conceptual site model.
- b. The exposure parameters for the RME based on both current and future land use scenarios.
- c. A list of all chemicals identified at the site (by media).
- d. The analytical methods used during the site investigation, and the method detection limits that were used for all analytes. In addition, an explanation of how non-detect values and qualified data will be used to estimate exposure point concentrations should be provided.
- e. The rationale for selecting chemicals that will be carried through the HHE.
- f. A discussion of how the fate and transport of site-related chemicals will be evaluated. In addition, a description of the fate and transport model that will be used to estimate the potential infiltration (or contribution) of chemicals in soil to ground water should be included.
- g. A summary table of the chemicals found, and their respective critical toxicity values (reference doses - RfDs), slope factors, and other relevant critical toxicity factors) and citations for these values; data on absorption factors that will be used (e.g., dermal absorption factors) should also be included.

- h. The exposure points and exposure point concentrations to be used in the HHE (and/or how they will be estimated). A description of the model(s) that will be to estimate exposure point concentrations should be provided, if necessary.
- i. An explanation of how the uncertainty analysis will be conducted.

2. Environmental Evaluation

Objective: The environmental evaluation (EE) provides an assessment of the potential threat to ecological populations, communities or ecosystems in the absence of any remedial action. It can provide a basis for determining whether or not remedial action is necessary, and can also be used to support risk management decisions.

Scope: The EE and the HHE are parallel activities used in the evaluation of hazardous substance sites. Much of the data and analyses relating to the nature, fate, and transport of a site's contaminants can be used for both evaluations. Available data (from the HHE or previous investigations) can be utilized, whenever appropriate, and additional data should be generated whenever necessary in order to conduct the ecological assessment.

The EE shall follow the organization presented in Chapter 6 of the EEM, as applicable. The Work Plan shall discuss the different tasks involved in evaluating whether or not the potential ecological impacts of the contaminants at a site warrant remedial action.

The Work Plan should include, but not be limited to the following:

- a. A list of all chemicals identified at the site (by media). The HHE can be referenced, if appropriate.
- b. The rationale for selecting chemicals that will be carried through the EE.
- c. A description of the site and study area. A description of how the EE will account for the ecosystems and populations potentially exposed to chemicals at the site (e.g., a description of the habitat and lists of species either collected or observed), and how they will be evaluated should be included.
- d. A discussion of how the fate and transport of site-related chemicals will be evaluated (through both physical and biological means). The HHE can be referenced, if and/or where appropriate.
- e. The exposure points and exposure point concentrations that will be used in the EE (and/or how they will be estimated). A discussion of actual or potential exposure pathways (and the media involved) should also be included.
- f. A description of how the potential environmental impacts or threats will be characterized. This should include

a description of the ecological endpoints that will be considered measurements of potential impact or probability of potential impact (e.g., Water Quality Criteria).

- g. An explanation of how the uncertainty analysis will be conducted.

G. FEASIBILITY STUDY WORK PLAN

The Feasibility Study portion of the Work Plan shall be developed in accordance with OAR 340-122-080 and Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, OSWER Directive 9355.3-01, 1988. The Feasibility Study shall develop an appropriate range of alternatives which meet the standards listed in OAR 340-122-040, and 340-122-090. The Feasibility Study shall be developed in parallel with Remedial Investigation activities.

Objective: To present an outline of the Feasibility Study process and identify potential remedial alternatives in order to obtain sufficient analytical data during the RI.

Scope: The purpose of the Feasibility Study is to develop and evaluate remedial alternatives for each contaminated medium, and recommend remedial actions to be taken at the facility

Procedures: A Work Plan shall be submitted which will include, but not be limited to the following:

1. A description of any interim remediation activities which have been implemented to date and the relationship of the interim measures to the ultimate corrective action.
2. The remedial action objectives.
3. A discussion of how volumes or areas of media to which response actions may be applied will be identified.
4. A discussion of how screening criteria will be developed to identify and select treatment technologies and process options.
5. A description of how process options will be evaluated.
6. The criteria for and selection of remedial action alternatives.
7. A preliminary screening of remedial technologies and alternatives based on available data.

H. MAPS

The Work Plan shall include maps of the facility which clearly show:

1. Site topography and surface drainage.
2. On-site structures, including tanks, sumps, catch basins, utilities, and pipelines.

3. The location of past spills, disposal areas, and all other waste and product management areas.
4. All pertinent structures adjacent to or nearby the site such as drainage ditches, pipelines, roadways, wells and utility corridors.
5. The location of all existing and proposed surface soil sample points, soil borings, monitoring wells, surface drainage, sediment, surface water, and air sample points.
6. The locations of hydrogeologic cross-sections.
7. The drawing date, orientation, and scale.

IV. REPORTS

- A. **MONTHLY REPORTS:** Monthly reports shall be submitted to DEQ by the 10th day of the month following the reporting period. These reports shall include, but shall not be limited to, the following:
 1. Activities that occurred during the past month.
 2. Description of data results collected during the past month.
 3. Description of any problems or difficulties experienced during the past month.
 4. Description of activities planned for the coming month.
- B. **LETTER REPORTS:** Letter Reports are to be submitted to DEQ within 30 days following the completion of each phase of the remedial investigation. These reports shall include, but shall not be limited to, the following:
 1. Introduction.
 2. Summary of work completed to date.
 3. A presentation of all data collected during the investigation.
 4. Conclusions and recommendations.
- C. **REMEDIAL INVESTIGATION REPORT:** The results of the Remedial Investigation shall be submitted to the DEQ as draft and final report in accordance with the following format:
 1. Executive Summary
 2. Introduction
 - a. Purpose
 - b. Report Organization
 3. Site Background
 - a. Site Description
 - i. Location

- ii. Physical features, such as building, roads, utilities, wells, etc., include map
 - iii. Site History
 - b. Facility Operations
 - i. Past production processes, waste identification, location of hazardous materials handling and storage areas
 - ii. Location, time, volume of releases of hazardous substances, include map
 - iii. Past and present waste treatment/disposal practices and areas
 - c. Site Setting
 - i. Regional land use and history
 - ii. Geology
 - iii. Hydrogeology
 - iv. Surface water
 - v. Climatology
 - d. Previous Investigations
 - i. Summary of previous investigations
 - ii. List of reports referenced
- 4. Study Area Investigation
 - a. Soil
 - i. A map and description of the location of soil borings or surface samples including depth of borings, sampling interval, sampling methods, analytical parameters, analytical methods, as well as quality assurance and quality control procedures
 - ii. Description of soil samples; all boring and lithologic logs
 - iii. A map showing the locations of hydrogeologic cross-sections
 - iv. An evaluation and analysis of all data submitted; use tabular and graphic presentation; include discussion of data limitations
 - b. Groundwater
 - i. The well installation plan including well locations (provide map), well depth, length of

- screened intervals, drilling methods, construction materials, and installation methods, well development and completion methods
 - ii. All boring and lithologic logs; including well construction diagrams with surveyed location, elevation of top of casing, size and depth of well, screened interval
 - iii. A characterization of the hydrogeology including a description of formation materials, the hydrogeology, and hydrogeologic properties of each pertinent aquifer
 - iv. A description of the hydraulic influence from groundwater wells, and surface water bodies
 - v. All areas of recharge/discharge
 - vi. Results of the well inventory to identify all active and inactive water wells within a one-mile radius of the facility
 - vii. Results and data analysis including data limitations; tabular and graphic presentations
- c. Surface Water and Sediments
- i. A map with all relevant surface water bodies within 2 miles of the site
 - ii. A map with past and present surface drainage patterns and the stormwater collection system
 - iii. A map with all sample locations
 - iv. Results and data analysis including data limitations; tabular and graphic presentations
- d. Air
- i. A wind rose and discussion of predominant wind direction
 - ii. A map indicating all sample locations and elevations of sample points
 - iii. Results and data analysis including data limitations; tabular and graphic presentations
5. Summary and Conclusions
- a. A discussion of the nature and extent of contamination; discuss the data limitations
 - b. A discussion of the fate and transport of the contaminants of concern
 - c. Recommendations for further action

As part of the Remedial Investigation Report to DEQ, NWNG may incorporate existing data, reports or information, including data from any investigation activity conducted prior to the effective date of this Agreement, to the extent that such data is consistent with the procedures and quality assurance/quality control criteria approved by DEQ.

- C. **ENDANGERMENT ASSESSMENT REPORT:** The results of the Endangerment Assessment shall include the Human Health Evaluation and the Environmental Evaluation and shall follow the report formats described in the references cited in IV.F. of this Scope of Work. Any data limitations shall be noted in the report. If information is presented in sections of the RI Report, these may be referenced.
- D. **FEASIBILITY STUDY REPORT:** The results of the Feasibility Study shall be submitted to DEQ in a report which, at a minimum, includes a full evaluation of remedial action alternatives, giving a workable number of options which each appear to adequately address site problems and remedial action objectives. These alternatives shall include a no action option, at least one option which will achieve background, and at least one option which will achieve protection of public health, safety, and welfare and the environment. The report shall present the following for each alternative:
1. Description of the remedial action alternative, estimated cost, and rationale for selection.
 2. Performance expectation (i.e., reductions in contaminant concentration levels), reliability, and ability to implement.
 3. Design criteria and rationale.
 4. General operation and maintenance requirements.
 5. Monitoring program to assure both short-term and long-term performance of the alternative.
 6. Financial assurance mechanism to assure performance.
 7. Estimated time for implementation.
 8. Evaluation of the short-term and long-term effectiveness and risks of the alternative.
 9. Recommendation and justification of the remedial action selected from the developed alternatives.
 10. A schedule for implementation of the proposed remedial action.

AUG 08 2006

**FIRST ADDENDUM
TO
VOLUNTARY AGREEMENT
FOR
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
DEQ NO. WMCVC-NWR-94-13**

Schwabe, Williamson & Wyatt

The Oregon Department of Environmental Quality (DEQ) and NW Natural (NWN) agree to amend Voluntary Agreement No. WMCVC-NWR-94-13 dated August 8, 1994 (Agreement), as follows. All other terms of the Agreement remain in effect and apply to this First Addendum.

1. Recital I.B is amended, to read:

“The NWN Site is a “facility” within the meaning of ORS 465.200(13). The NWN Site includes property located at 7540 N.W. St. Helens Road, Portland, Oregon, currently owned by NWN (NWN Property), as well as adjacent property located at 7200 N.W. Front Avenue, Portland, Oregon, currently owned by Siltronic Corporation (Siltronic Property), to the extent the Siltronic Property is the location of or otherwise affected by wastes associated with manufactured gas process (MGP) operations on the NWN Site. This facility is generally referred to in this First Addendum as the “NWN Site”. The general location of the NWN Site is shown on Attachment AA to the First Addendum.”

2. Recital I.C is amended, to add:

“Waste management areas extended onto the northern portion of what is now the Siltronic Property, in areas of low elevation prone to flooding. The tar ponds at the NWN Property were periodically excavated and redeposited onto what is now the Siltronic Property. MGP operations ceased in 1956. NWN’s predecessor sold the Siltronic Property to Victor Rosenfeld and H.A. Anderson in 1962. Thereafter, wastes associated with the MGP operations within the northern Siltronic Property area may have been redistributed across portions of the Siltronic Property when that property was filled between 1966 and 1975. Wastes within tar ponds on the NWN Property were used as fill or redistributed on the NWN Property when the eastern corner of the NWN Property was filled during the 1972/1973 time-frame.”

3. Recital I.D is amended, to add:

“Investigations conducted to date on the Siltronic Property indicate that MGP waste (e.g., tar and oil, lampblack, and spent oxide) are present in subsurface soil and groundwater across the Siltronic Property, with the primary accumulation located on the northern portion of the property in the area of the former Gasco waste effluent ponds and the adjacent lowland. Dense nonaqueous phase liquid (DNAPL) in the vicinity of the former waste effluent ponds has been observed in four groundwater

monitoring wells on the Siltronic Property. Observed thicknesses ranged from two feet in monitoring well WS-10-27 to 12.5 feet in monitoring well WS-15-85. Approximately three to four feet of DNAPL is present in monitoring wells located adjacent to the Willamette River (WS-11-125 and WS-14-125). The location of the referenced monitoring wells is identified on Attachment BB to the First Addendum. Up to 25,000 ug/L benzene, 495,000 ug/L naphthalene, and 4,441 ug/L cyanide have been detected in groundwater at the Siltronic Property. Concentrations in soil have been detected up to: 35,432 mg/kg total PAH; 230 mg/kg dibenzofuran; 218 mg/kg benzene; and 15,000 mg/kg cyanide.

Investigations at the Siltronic Property have further identified elevated concentrations of chlorinated solvents in soil and groundwater. The chlorinated solvent contamination is being addressed by Siltronic Corporation and is outside the scope of this Agreement.”

4. A new Recital I.G is added, reading:

“The NWN Site is located within or adjacent to the Portland Harbor Superfund Site, which site was placed on the federal National Priorities List by the U.S. Environmental Protection Agency (EPA) in December 2000. By memorandum of understanding, EPA is the lead agency for implementing investigation and cleanup of in-water sediments contamination in the Willamette River in the Portland Harbor Superfund Site, and DEQ is the lead agency for implementing investigations and source control at upland facilities. This Agreement as amended is consistent with DEQ’s responsibilities at the Portland Harbor Superfund Site. Evaluation of the portions of the NWN Site located on the Siltronic Property as a potential source of contaminants to the Portland Harbor Superfund Site is also the subject of DEQ Order No. ECVC-NWR-00-27 issued by DEQ to NWN and Wacker Siltronic Corporation on October 4, 2000. DEQ separately issued Order No. VC-NWR-03-16 to Wacker Siltronic Corporation on February 5, 2004. This Agreement as amended does not supersede or affect obligations imposed under DEQ Orders No. ECVC-NWR-00-27 and VC-NWR-03-16.”

5. A new Recital I. H is added, reading:

“By entering into this First Addendum, NWN does not admit liability or responsibility for conditions that may be present at the NWN Site, including hazardous substance releases at or to the Siltronic Property resulting from or exacerbated by the acts or omissions of parties other than NWN.”

6. Section II.A.2 is deleted, and replaced with:

“2. DEQ Review and Approval

(a) Where DEQ review and approval is required for any plan or activity under the Agreement as amended, NWN may not proceed to implement the plan or activity until

DEQ approval is received. Any DEQ delay in granting or denying approval correspondingly extends the time for completion by NWN. For purposes of the Agreement as amended, "day" means calendar day unless otherwise specified.

(b) After review of any plan, report, or other item required to be submitted for DEQ approval under the Agreement as amended, DEQ shall in writing: (1) approve the deliverable in whole or in part; or (2) disapprove the deliverable in whole or in part and notify NWN of deficiencies and/or request modifications to cure the deficiencies.

(c) DEQ approvals, rejections, modifications, or identification of deficiencies shall be given as soon as practicable and state DEQ's reasons with reasonable specificity.

(d) In the event of DEQ disapproval or request for modification, NWN shall correct the deficiencies and resubmit the revised report or other item for approval within 30 days of receipt of the DEQ notice or within such other time as specified in the DEQ notice.

(e) In the event a deficiency identified by DEQ is not addressed by NWN in the revised deliverable, DEQ may modify the deliverable to cure the deficiency.

(f) In the event of approval or modification of the deliverable by DEQ, NWN shall implement the action required by the plan, report, or other item, as so approved or modified, or, as to any DEQ modifications, invoke dispute resolution under Section II.M of the Agreement."

7. Section II.A.3 is deleted, and replaced with:

"3. Additional Measures

(a) NWN may elect at any time during the term of the Agreement as amended to undertake measures, beyond those required under the Agreement and the SOW, necessary to address the release or threatened release of hazardous substances at the facility. Such additional measures (including but not limited to engineering or institutional controls and other removal or remedial measures) are subject to prior approval by DEQ, which approval shall be granted if DEQ determines that the additional measures will not compromise the validity of the RI/FS, will not threaten human health or the environment, and will comply with applicable laws.

(b) DEQ may determine that, in addition to work specified in the SOW or an approved work plan, additional work is necessary to complete the RI/FS in satisfaction of the SOW and OAR Chapter 340 Division 122, or is necessary to address unanticipated threats to human health or the environment. DEQ may require that such additional work be incorporated into the applicable work plan by modification or be performed in accordance with a DEQ-specified schedule. NWN shall modify the work plan or implement the additional work in accordance with DEQ's directions and schedule, or invoke dispute resolution under Section II.M of the Agreement within 14 days of receipt of DEQ's directions."

8. A new Section II.A.4 is added, reading:

"4. Source Control Measures

For any unpermitted discharge or release of hazardous substances at the NWN Property to the Willamette River or river sediments identified in the remedial investigation, NWN shall identify and evaluate source control measures in accordance with the SOW and the terms and schedule of a DEQ-approved work plan. DEQ will review and approve source control measures pursuant to OAR 340-122-0070 and in consultation with EPA. Upon DEQ approval of a source control measure, NWN shall develop a source control work plan in accordance with DEQ's directions and, upon DEQ approval, implement the work plan."

9. Section II. D is amended to update the current DEQ and NWN project managers:

DEQ Project Manager
[To Be Determined]
Department of Environmental Quality
Northwest Region
2020 SW Fourth Avenue, Suite 400
Portland, Oregon 97201

NW Natural Project Manager
Robert J. Wyatt
NW Natural
220 N.W. Second Avenue
Portland, Oregon 97209
(503) 226-4211 Ext. 5425

10. Section II.N.3. is amended, to add:

"Except as expressly provided in this Agreement, NWN reserves all rights, claims, and defenses relating to the NWN Site."

11. A new Section II.S is added, reading:

"S. Stipulated Penalties

1. Subject to Sections II.K and M, upon any violation by NWN of any requirement of this Agreement as amended, and upon NWN's receipt from DEQ of written notice of violation, NWN shall pay the stipulated penalties set forth in the following schedule:

(a) Up to \$5,000 for the first week of violation or delay and up to \$ 2,500 per day of violation or delay thereafter, for failure to provide access or records in accordance with Section II.C or G.

(b) Up to \$ 2,500 for the first week of violation or delay and up to \$ 1,000 per day of violation or delay thereafter, for:

(i) failure to submit a final work plan, addressing DEQ's comments on the draft work plan or incorporating DEQ modifications to the work plan, in accordance with the SOW's schedule and terms;

(ii) failure to perform work in accordance with an approved work plan's schedule and terms;

(iii) failure to perform additional work required by DEQ under Section II.A.3; or

(iv) failure to submit a final report, addressing DEQ's comments on the draft report or incorporating DEQ modifications to the report, in accordance with an approved work plan's schedule and terms.

(c) Up to \$500 for the first week of violation or delay and up to \$500 per day of violation or delay thereafter, for:

(i) failure to submit a draft work plan in accordance with the SOW's schedule and terms;

(ii) failure to submit progress reports in accordance with Section II.H; or

(iii) any other violation of the Agreement as amended, SOW, or an approved work plan.

2. Within 30 days of receipt of DEQ's written notice of violation, NWN either shall pay the amount of such stipulated penalty assessed, by check made payable to the "State of Oregon, Hazardous Substance Remedial Action Fund", or request a contested case regarding the penalty assessment in accordance with Section II.T.3. NWN shall pay simple interest of 9% per annum on the unpaid balance of any stipulated penalties, which interest shall begin to accrue at the end of the 30-day payment period. Any unpaid amounts that are not the subject of a pending contested case, or that have been determined owing after a contested case, are a liquidated debt collectible under ORS 293.250 and other applicable law.

3. In assessing a penalty under this subsection, the Director may consider the factors set forth in OAR 340-12-045. NWN may request a contested case hearing regarding the penalty assessment in accordance with OAR Chapter 340 Division 11. The scope of any such hearing must be consistent with the stipulations set forth in Section 2 of the Agreement, must be limited to the occurrence or non-occurrence of the alleged violation, and may not review the amount of the penalty assessed. Penalties may not accrue pending any contested case regarding the alleged violation. Violations arising out of the same facts or circumstances or based on the same deadline are considered as one violation per day."

12. The Scope of Work (Attachment B to the Agreement) is amended in Section I.A.1.i., by revising the first sentence to read:

“Determine the magnitude, nature, and extent of apparent MGP waste-related contamination at the NW Natural (NWN) Site.”

13. The Scope of Work is amended in Section I.A.2, by adding the following objective:

”viii. Identify hot spots of contamination, if any, at the facility.”

14. The Scope of Work is amended in Section I.B, by adding:

“This schedule is applicable to the RI/FS for the portion of the NWN Site on the Siltronic Property. NWN shall compile and evaluate existing data on MGP-related constituents and provide to DEQ an outline of data needs to complete the remedial investigation for the portion of the NWN Site on the Siltronic Property including an RI proposal and schedule for the RI, within 120 days of execution of the First Addendum.”

15. The Scope of Work is amended in Section I.B, by adding:

“NWN shall provide DEQ with a work plan to identify and evaluate source control measures at the NWN Property. The work described in the work plan shall be consistent with the source control approach described in the December 2005 Portland Harbor Joint Source Control Strategy”.

16. For deliverables submitted after the date of execution of this First Addendum, the Scope of Work is amended in Section III.F, by deleting the entire section and replacing it with:

“F. Endangerment Assessment Work Plan

1. HUMAN HEALTH RISK ASSESSMENT PLAN

Objective: To evaluate the collective demographic, geographic, physical, chemical, and biological factors at the site, for the purposes of characterizing current and reasonably likely future risks to human health as a result of a threatened or actual release(s) of a hazardous substance. To document the magnitude of the potential risk at the site; support risk management decisions; and establish remedial action goals, if necessary.

Scope: The Human Health Risk Assessment shall evaluate risk in the context of current and reasonably likely future land and water uses, and in the absence of any actions to control or mitigate these risks (i.e., under an assumption of no action). The human health risk assessment portion of the work plan shall be developed based on the requirements specified in OAR 340-122-0084; DEQ guidance; and, as appropriate, the Risk Assessment Guidance for Superfund - Human Health Evaluation Manual Part A, United States Environmental Protection Agency (EPA), Interim Final, July 1989, (RAGS-HHEM); Human Health Evaluation Manual, Supplemental Guidance:

"Standard Default Exposure Factors", EPA, March 1991,(HHE-SG); and the Exposure Factors Handbook, EPA, 1996. A suggested outline for the human health evaluation is given in Exhibit 9-1 of the RAGS-HHEM. The work plan shall use this outline as a framework for discussing the methodologies and assumptions to be used in assessing the potential human health risks at the site.

Procedure: The work plan shall describe the different tasks involved in preparing the Human Health Risk Assessment. The Human Health Risk Assessment can be completed using either deterministic or probabilistic methodologies. If probabilistic methodologies are to be used, NWN shall discuss risk protocol with DEQ before the commencement of a probabilistic risk assessment. If deterministic methodologies will be used, then the Human Health Risk Assessment shall include an estimate of both the central tendency exposure (CTE) and the reasonable maximum exposure (RME) expected to occur under both current and future land use conditions. In general, RME exposures shall be based on the 90th percentile exposure case. Additional guidance on quantifying the RME is given in Chapter 6 of the RAGS-HHEM, SRAGS, and HHE-SG. Quantifying the potential risks associated with the RME shall be the overall goal of the risk assessment.

2. ECOLOGICAL RISK ASSESSMENT PLAN

Objective: To evaluate the collective demographic, geographic, physical, chemical, and biological factors at the site, for the purposes of characterizing current and reasonably likely future risks to the environment as a result of a threatened or actual release(s) of a hazardous substance; document the magnitude of the potential risk at a site; support risk management decisions; and establish remedial action goals, if necessary.

Scope: The Ecological Risk Assessment shall evaluate risk in the context of current and reasonably likely future land and water uses in the absence of any actions to control or mitigate these risks (i.e., under an assumption of no action). The Ecological Risk Assessment shall use a tiered approach (with four levels) to produce a focused and cost-effective assessment of risk. The Ecological Risk Assessment Work Plan shall be developed based on the requirements specified in OAR 340-122-0084; DEQ guidance; and, as appropriate, Proposed Guidelines for Ecological Risk Assessment, EPA, September 1996; Framework for Ecological Risk Assessment, EPA, February 1992; and Risk Assessment Guidance for Superfund, Volume II, Environmental Evaluation Manual, Interim Final, EPA, March 1989 (RAGS-EEM).

Procedure: The plan shall describe the different tasks involved in preparing the ecological risk assessment. Ecological risk assessments may include a Level I Scoping plan; a Level II Screening plan; and a Level III Baseline plan or Level IV Field Baseline plan. The Level III and Level IV baseline plans shall include an exposure analysis, an ecological response analysis, a risk characterization and an uncertainty analysis as required by OAR 340-122-0084(3). The ecological risk assessment can be completed using either deterministic or probabilistic methodologies. If probabilistic methodologies are to be used, NWN shall discuss risk protocol with DEQ before the

commencement of a probabilistic risk assessment. If deterministic methodologies are to be used, then the ecological risk assessment shall include an estimate of both the central tendency exposure (CTE) and the reasonable maximum exposure (RME) expected to occur. Estimating the potential risks associated with the RME shall be the overall goal of the risk assessment."

STIPULATED, AGREED, AND APPROVED FOR ISSUANCE:

NW Natural

By: Sandra K. Hart Date: 7-13-06
(Signature)

Sandra K. Hart
(Name)

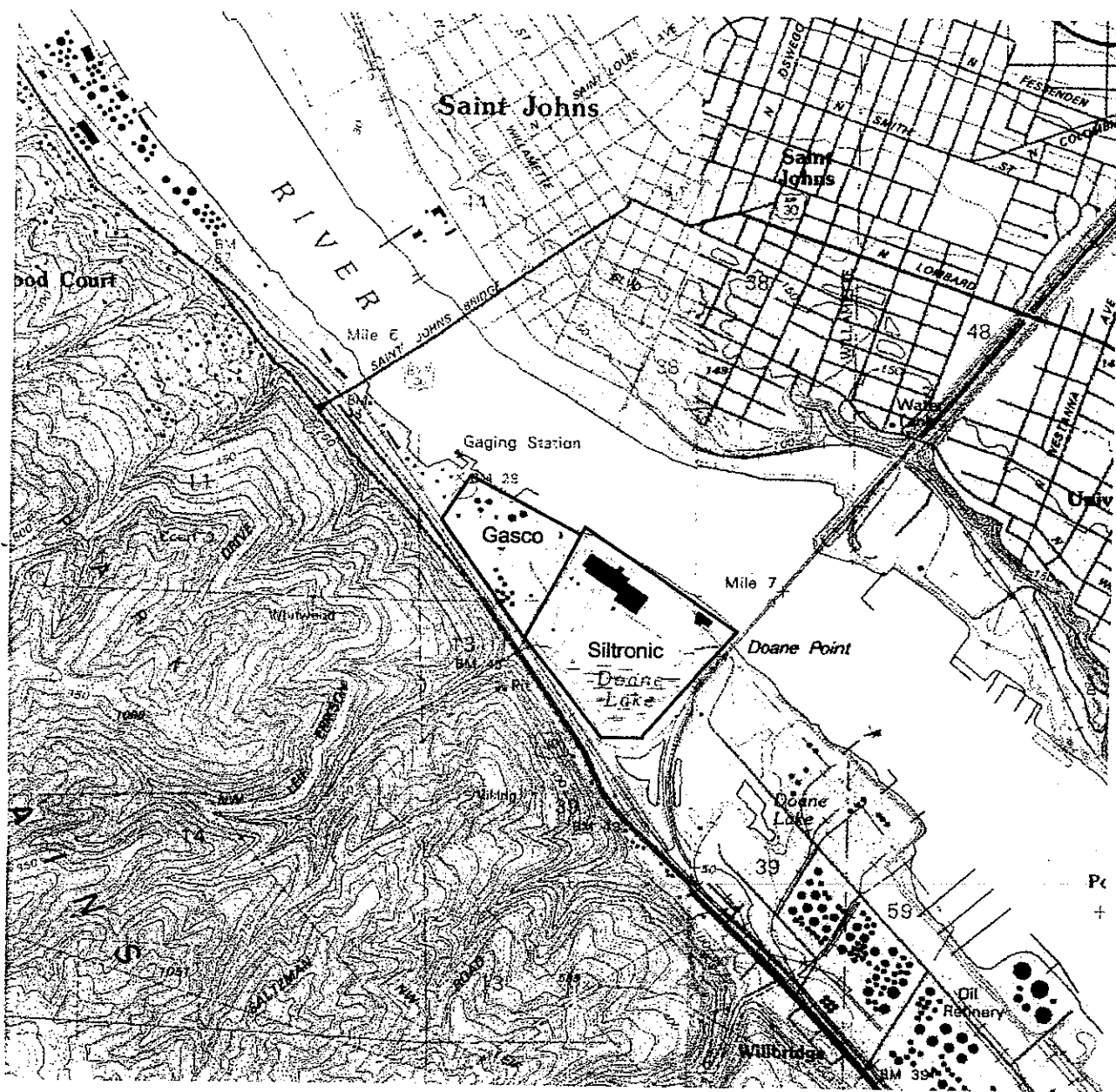
Director Risk Environment & Land
(Title)

OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY

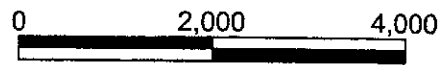
By: Dick Pedersen Date: 7/19/06
(Signature)

Dick PEDERSEN
(Name)

REGIONAL ADMINISTRATOR
(Title)



Note: Base Map from Linnton (1990) and Portland (1990), Oregon, USGS 7.5-Minute Quadrangles



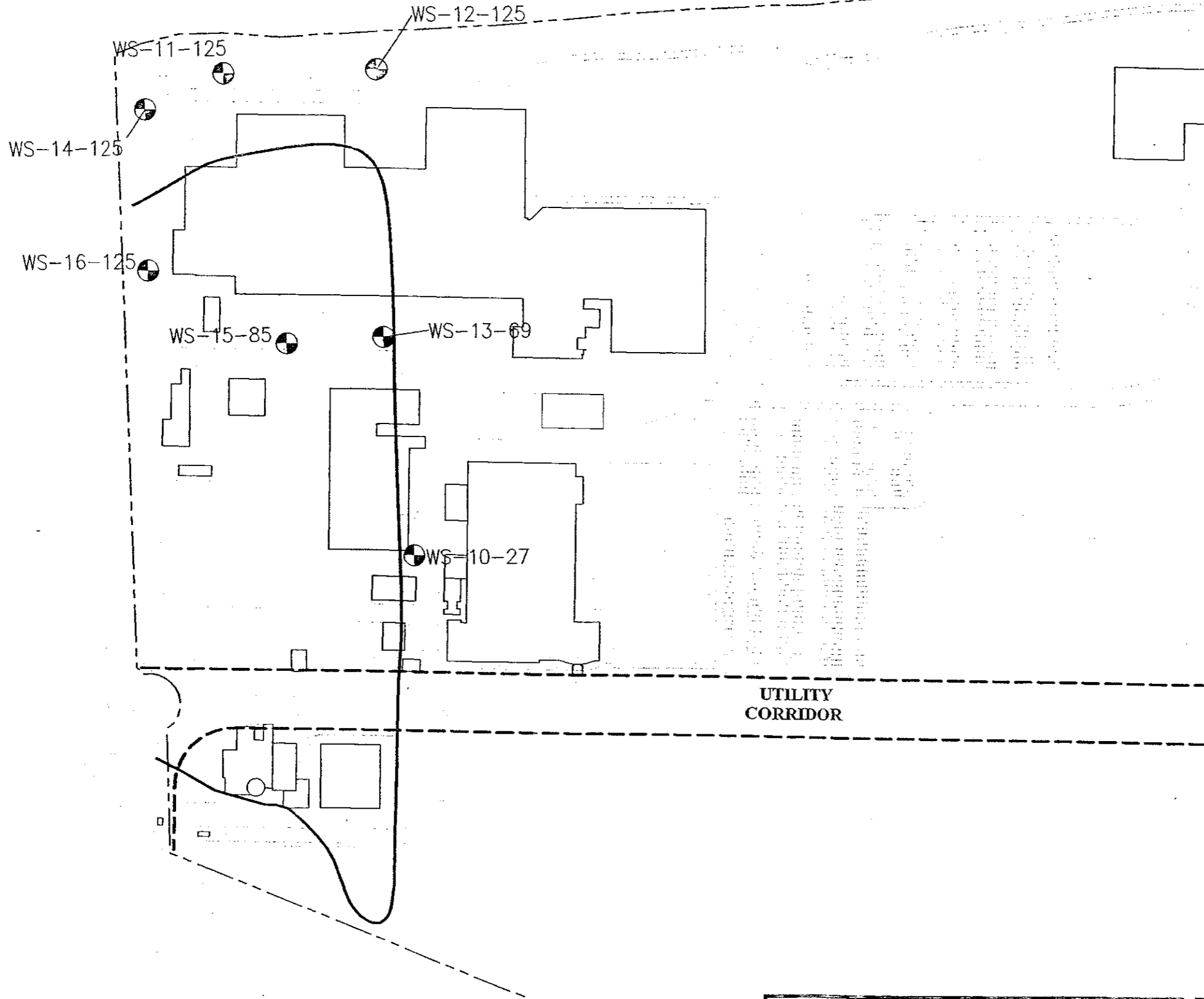
Approximate Scale in Feet
Contour Interval = 10 feet

Attachment AA
NW Natural Site Location Map
Site Includes

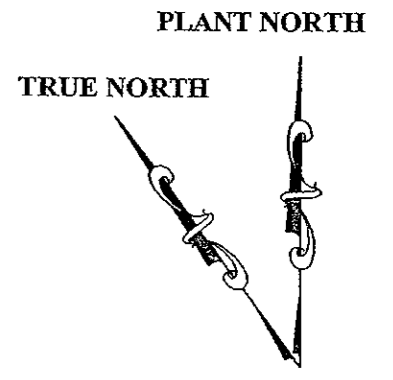
NW Natural Gasco Facility
7540 N.W. St. Helens Road

Siltronic Corporation Property
7200 N.W. Front Avenue
Portland, Oregon

File: G:\8128.01 SILTRONIC CORPORATION\08_MGP_DNAPL\FIG_02_FORMER DISPOSAL AND MW.DWG Last edited: OCT. 04, 2005 @ 4:50 p.m. by: djlgais Xrefs: 01



LEGEND:
 - - - - - PROPERTY BOUNDARY
 ⊕ MONITORING WELL LOCATION
 ~~~~~ FORMER WASTE DISPOSAL LAGOON  
 - - - - - OLYMPIC PIPELINE RIGHT OF WAY



Vancouver: (360) 694-2691  
 Portland: (971) 544-2139

**MAUL  
 FOSTER  
 ALONGI INC.**

DATE 09/29/05  
 DWN. DLG  
 APPR. JGP  
 REVIS.  
 PROJECT NO.  
 8128.01.08

**Attachment BB**  
 Monitoring Well Location Map  
 Siltronic Corporation Property

**SECOND ADDENDUM  
TO  
VOLUNTARY AGREEMENT  
FOR  
REMEDIAL INVESTIGATION/FEASIBILITY STUDY  
DEQ NO. WMCVC-NWR-94-13**

The Oregon Department of Environmental Quality (DEQ) and NW Natural (NWN) agree to amend Voluntary Agreement No. WMCVC-NWR-94-13 dated August 8, 1994, as amended August 8, 2006 (Agreement), as follows. All other terms of the Agreement remain in effect and apply to this Second Addendum.

1. Recital I.B is amended, to read:

“The NWN Site is a “facility” within the meaning of ORS 465.200(13). The NWN Site includes property located at 7540 N.W. St. Helens Road, Portland, Oregon, currently owned by NWN (NWN Property), as well as adjacent property located at 7200 N.W. Front Avenue, Portland, Oregon and currently owned by Siltronic Corporation (Siltronic Property, or Siltronic Site). This facility is generally referred to in this Second Addendum as the “NWN Site”. The general location of the NWN Site is shown on Attachment AA to the First Addendum.”

2. Recital I.C is amended, to read:

“From 1913 until 1956, NWN, then known as the Portland Gas and Coke Company (GASCO) owned and operated an oil manufactured gas plant (MGP) on the NWN Property. GASCO’s property included approximately 40-acres of adjoining property known as the “Allen Tract” that is currently the northern portion of the Siltronic Property. The GASCO MGP produced oil gas. Byproducts of the GASCO MGP operation included lampblack briquettes, light oils, tars and electrode grade coke. Wastes generated at the facility included tar, lampblack, wastewater containing dissolved and suspended hydrocarbons, and spent oxide. These wastes were disposed of on the NWN Property in piles and “tar ponds.”

Spent oxide piles and tar ponds also extended onto the northern portion of the Allen Tract in areas of low elevation prone to flooding. The tar ponds at the NWN Property were periodically excavated and redeposited onto portions of the Allen Tract. GASCO MGP operations ceased in 1956. GASCO sold the Allen Tract to Mr. Victor Rosenfeld, Mr. H.A. Anderson, and Mr. Gilbert Schnitzer in 1962. Thereafter, wastes associated with the GASCO MGP operations within the Allen Tract were redistributed across portions of the current Siltronic Site when that property was filled between 1966 and 1975. Wastes within tar ponds on the NWN Property were used as fill or redistributed on the NWN Property when the southeastern corner of the NWN Property was filled during the 1972/1973 time-frame.

NWN currently operates a liquefied natural gas (LNG) plant on the NWN Property and currently leases portions of the former GASCO MGP to Pacific Terminal Services, Inc. and Koppers Industries Incorporated (Koppers).”

3. The second paragraph of Recital I.D, as shown in Addendum #1 to the agreement, is replaced by:

“In addition to contamination associated with historic MGP operations, investigations completed by Siltronic within the former Allen Tract have identified soil and groundwater contamination due to releases of chlorinated solvents from their former operations. Trichloroethene (TCE) was used by Siltronic for manufacturing purposes and that use ceased in 1988. Historic releases of TCE occurred in the northern Siltronic Site from a former solvent underground storage tank system and from an unknown source beneath the Central Facilities Building. Site investigations confirm that releases of TCE and its breakdown products and TCE DNAPL are commingled with MGP contamination and DNAPL in the Allen Tract. Furthermore, investigations by Rhone Poulenc of the Siltronic Site have detected hazardous substances (e.g., pesticides) in groundwater.”

4. Recital I.G is amended to read:

“The NWN Site is located within or adjacent to the Portland Harbor Superfund Site, which site was placed on the federal National Priorities List by the U.S. Environmental Protection Agency (EPA) in December 2000. By memorandum of understanding, EPA is the lead agency for implementing investigation and cleanup of in-water sediments contamination in the Willamette River in the Portland Harbor Superfund Site, and DEQ is the lead agency for implementing investigations and source control at upland facilities. This Agreement as amended is consistent with DEQ’s responsibilities at the Portland Harbor Superfund Site. Evaluation of the portions of the NWN Site located on the Siltronic Property as a potential source of contaminants to the Portland Harbor Superfund Site is also the subject of DEQ Order No. ECVC-NWR-00-27 (i.e., the “Joint Order) issued by DEQ to NWN and Wacker Siltronic Corporation on October 4, 2000. In situations where potential conflicts arise between this Agreement and the Joint Order, this Agreement takes precedence.

5. A new Recital I.I is added, reading:

“On November 20, 2015, DEQ determined that, in order to expedite remedial action planning of the most contaminated portions of the Siltronic Site, NWN will be responsible for completing integrated RI/FS work for the area of the Siltronic Site historically used by GASCO for MGP operations.

The Former Gasco MGP Operable Unit (i.e., “Gasco OU”) within the NWN Site is defined to include the NWN Property, the approximately 40-acre portion of the current Siltronic Property formerly known as the Allen Tract, and the adjacent area of Doane Creek extending west to St. Helens Road from the southern boundary of the former Allen Tract. The location of the Gasco OU is shown on Attachment CC to

this Second Addendum. The Gasco OU does not include groundwater contamination not originating on the NWN Property or the Siltronic Property or the segment of Doane Creek extending beyond the southern Allen Tract boundary..

This Agreement defines the work NWN will perform within the Gasco OU. Except as expressly provided herein, nothing in this Agreement requires NWN to perform work beyond the boundaries of the Gasco OU. As used in this agreement, the “site” refers to the Gasco OU.”

6. Section II.A.1 is deleted, and replaced with:

“1. Remedial Investigation and Feasibility Study

(a) NWN shall complete a remedial investigation and feasibility study (RI/FS) for the Gasco OU satisfying OAR 340-122-080, the terms and schedule of DEQ approved work plans, and applicable elements of the general Scope of Work contained in Attachment B to this Agreement. NWN may propose in draft work plans, elements of the Scope of Work that NWN considers inapplicable or unnecessary to the RI/FS for the facility.

(b) As described in DEQ’s November 20, 2015 letter to NWN and Siltronic, NWN will complete an RI and human health and ecological risk assessment (HERA) for the Gasco OU. The RI and HERA for the portion of the Gasco OU beyond the NWN Property will be completed as an addendum to the approved *Remedial Investigation Report, NW Natural – Gasco Facility* (April 11, 2011) and *Human Health and Ecological Assessment Report – NW Natural Gasco Site* (December 2014 [ as revised by DEQ’s letter dated May 22, 2015]) for the NWN Property. The results of the RI and HERA will be integrated into a single FS for the Gasco OU.

(c) NWN will submit to DEQ electronic data and backup laboratory reports for investigations on the Siltronic Property beyond the boundaries of the Gasco OU completed subsequent NWN’s submittal of the *Remedial Investigation Data Summary Report, Historical Manufactured Gas Plant Activities, Siltronic Corporation Property* (March 31, 2011).”

7. Section II.A.2(f) is amended to read:

“(f) In the event of approval or modification of the following deliverables by DEQ, NWN shall implement the action required by the deliverable, as so approved or modified, or, as to any DEQ conditions of approval or modification, invoke dispute resolution within 14-days under Section II.M of the Agreement:

- RI/HERA Addendum report
- FS Work Plan
- FS Report
- Other deliverables identified in advance and included as ‘Independent Deliverables’ on the Project Schedule established under Section 1.B.”



8. Section II.A.4 is amended to read:

“4. Source Control Measures

(a) For any unpermitted discharge or release of hazardous substances from the Gasco OU to the Willamette River or river sediments identified in the RI, NWN shall identify and evaluate source control measures in accordance with the SOW and the terms and schedule of a DEQ-approved work plan. DEQ will review and approve source control measures pursuant to OAR 340-122-0070 and in consultation with EPA. Upon DEQ approval of a source control measure, NWN shall develop a source control work plan in accordance with DEQ’s directions and, upon DEQ approval, implement the work plan.

(b) NWN shall continue operation of the hydraulic containment and control system for the Gasco OU as an interim source control measure.

(c) NWN shall complete the ongoing source control evaluation for Doane Creek. Nothing in this Agreement or in DEQ Order No. ECVN-NWR-00-27 shall obligate NWN to implement source control measures for Doane Creek.”

9. Section II. D is amended to update the current DEQ and NWN project managers:

DEQ Project Manager

Dana Bayuk  
Department of Environmental Quality  
Northwest Region  
700 NE Multnomah Street  
Portland, Oregon 97232

NW Natural Project Manager

Robert J. Wyatt  
NW Natural  
220 N.W. Second Avenue  
Portland, Oregon 97209  
(503) 226-4211 Ext. 5425

10. The Scope of Work (Attachment B to the Agreement) is amended in Section I.A.1.i. by revising the first sentence to:

“Determine the magnitude, nature, and extent of contamination at the Gasco OU.”

11. The Scope of Work is amended by revising the last paragraph of Section I.B. to:

"NWN shall propose for DEQ approval a schedule for the Gasco OU RI/FS (the "Project Schedule"). The Project Schedule may be modified by agreement of the parties.

STIPULATED, AGREED, AND APPROVED FOR ISSUANCE:

NW Natural

By:  Date: 7 October 2016  
(Signature)

Thomas Imeson  
(Name)

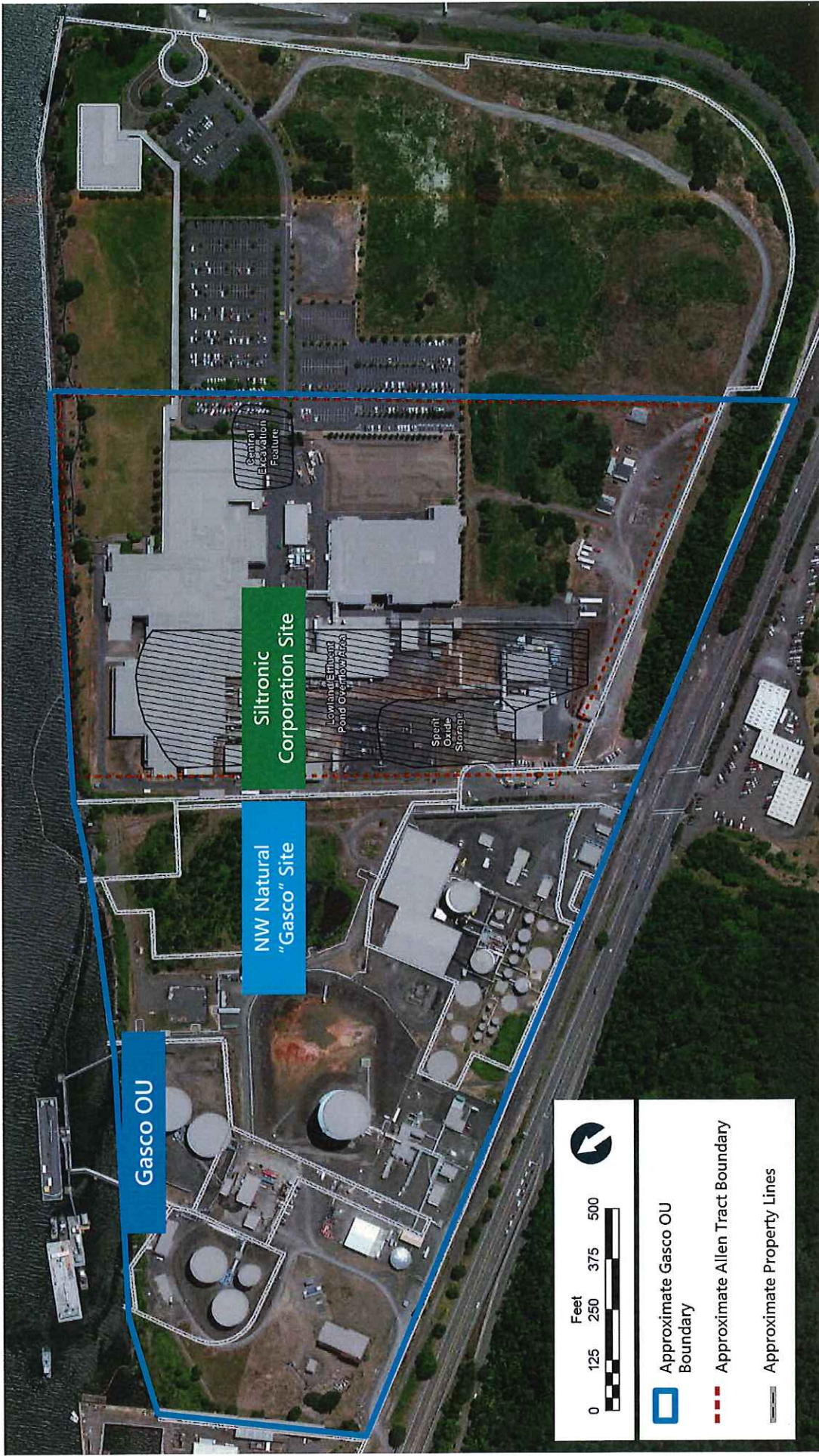
Vice President  
(Title)

OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY

By:  Date: 11 October 2016  
(Signature)

Nina De Concini  
(Name)

NW Region Administrator  
(Title)



**ATTACHMENT CC**  
**Former Gasco Manufactured Gas Plant Operable Unit (Gasco OU)**

DEQ No. *WMCVC-NWR-94-13*



**ATTACHMENT CC**  
**Former Gasco Manufactured Gas Plant Operable Unit (Gasco OU)**