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September 15, 2016

Mr. Glenn Mitzel
Project Officer
Pennsylvania Department of Environmental Protection
Division of Hazardous Waste Management
400 Market Street
Harrisburg, PA 17106

Re: Phase II Environmental Site Assessment Report - FINAL
RCRA/Former Union Switch & Signal Division
1789 Braddock Avenue, Pittsburgh, Pennsylvania 15218
Contract No. SAP #4000018583
Requisition Number GTAC6-0-416
AECOM Project No. 60397721

Dear Mr. Mitzel:

AECOM is pleased to present this report documenting the activities and results of the Phase II Environmental Site Assessment (ESA) recently completed at the former Union Switch and Signal Division (USSD) facility located at 1789 Braddock Avenue in Pittsburgh, Pennsylvania (herein referred to as the Subject Property). The Phase II ESA was conducted to establish current conditions of the soil, groundwater and soil gas at the Subject Property. **Figure 1** depicts the location of the Subject Property.

PROJECT BACKGROUND

The former USSD facility was situated on a triangular, 40-acre property located in the Pittsburgh area, more specifically in the Boroughs of Swissvale and Edgewood in Allegheny County, Pennsylvania and can be located on the United States Geological Survey (USGS) Pittsburgh East, Pennsylvania 7.5-minute Topographic Quadrangle (**Figure 1**). The USSD site is bordered to the north by the Parkway East (I-376), by Braddock Avenue to the southwest and by Conrail railroad tracks to the southeast. Beyond the railroad tracks are Edgewood Avenue and the Green Belt. Land use in the surrounding area appears to be mainly retail and residential as indicated by the topographic map. The site is located in a populated, residential area, approximately one mile north of the Monongahela River. The operating facilities were located on a plateau along the western portion of the property at an approximate elevation of 920 feet above mean sea level (amsl). An area used for employee parking was located in the western portion of the site approximately 60 feet below the facility.

Information presented in the Environmental Indicator Inspection Report (URS, 2009) shows that USSD was founded in 1881 by George Westinghouse and was a company that pioneered closed

track circuits and interlockings. The 40 acre property was formed through the purchase of several private properties and was in operation until the late 1970's. Historic information indicates that the triangular-shaped site consisted of 13 buildings including a metal plating facility, a water treatment facility and a spray booth building. A hazardous waste storage pad was also located on the property. Building demolition and site cleanup occurred in 1987 following the approval of the Closure Plan submitted to PADEP in 1985. During the decommissioning of the USSD site, 37 underground storage tanks (USTs) were removed. At the time of the NUS FIT 3 site inspection in May 1989, demolition was occurring on-site and site access was restricted to the surrounding fence line. As per historic documents, no evidence of the hazardous waste storage pad was observed and numerous debris piles were scattered throughout the property. Development of the Edgewood Towne Center began in 1988 following demolition.

PHASE II FIELD INVESTIGATION

Prior to completing the field investigation, a site walk of the former USSD facility was performed on May 20, 2016 to confirm sampling locations. The purpose of these borings was to target the former spray paint booths (S-1, GW-1, SG-1, S-2, SG-2) and hazardous waste storage areas (S-3, SG-3, S-4, SG-4, S-5, S-6, S-7, S-8). Downgradient sample locations were also determined (GW-2, GW-3, S-9 and S-10). Present at the site walk were representatives from the EPA (Kevin Bilash), PADEP (Diane McDaniel, Scott McDougall), Philips Edison (Gina Sonnik), Borough of Edgewood (Julie Bastianini), Allied Well Drilling (Kurt Roth) and AECOM (Ellen McGuiness, Rebecca Walsh).

On July 19th through 21st, 2016, AECOM implemented the limited Phase II ESA activities to establish current conditions of the soil, soil gas and groundwater at the Subject Property. Prior to the commencement of field activities, PA One Call was contacted by the drilling subcontractor, Allied Well Drilling (Allied). In addition to public utility clearance by PA One Call, an independent utility locating survey was performed by Letterlee Associates at each proposed boring location using electromagnetic (EM) survey techniques. Following completion of the EM survey, the borings were completed via track-mounted Geoprobe™ by Allied. In addition, the first two feet of boring S-3 and the first three feet of boring S-4 were advanced by soft digging to assist in utility clearance.

All recovered soil samples were field-screened for visual/olfactory evidence of impact. No obvious evidence of staining was observed in the soil borings although S-10 had atypical mottled grey green/pink silty clay at 11 to 13 feet below ground surface (bgs). A strong petroleum odor was encountered in S-9 from two to ten feet bgs and S-1 from nine to 18 feet bgs. AECOM field-screened the soil samples for vapor-phase evidence of impact and the presence of gross

volatile organic compounds (VOCs) using a photoionization detector (PID). Each boring was screened at various intervals and PID readings ranging from 0.2 parts per million (ppm) to 58 ppm were detected in the soil borings. The highest PID reading of 58 ppm was also observed in S-1 at 14 feet bgs. Soil samples were collected from the interval showing greatest evidence of impact, from approximately one foot above the soil groundwater interface, or from the bottom of the boring, depending on the conditions encountered during the advancement of each boring. Soil recovered from the borings generally consisted of fill with sand, gravel and brick fragments followed by red-brown silty clay in several locations.

Measureable groundwater was encountered in borings S-1, S-9 and S-10 and groundwater samples GW-1, GW-2 and GW-3, respectively were collected. A one-inch temporary monitoring well was installed at each location. Groundwater samples were collected via disposable tubing and a peristaltic pump. A duplicate groundwater sample was collected for sample GW-3.

Soil gas samples were collected at four predetermined locations (SG-1, SG-2, SG-3 and SG-4) for laboratory analysis in 6-liter stainless steel Summa canisters provided by Eurofins Laboratory (Eurofins). All vapor points were purged prior to sampling for one to three times the well volume of the sampling point (tubing and screened area combined). During purging and sampling activities, the atmosphere surrounding the soil vapor points was enriched with helium to verify the integrity of the soil vapor probe seal using a helium shroud. Following vapor point purging, a laboratory cleaned and blanked 6-liter Summa canister was attached to each soil vapor point for sampling using tubing connected to the quick-connect air valve via the sample port regulator. Sample collection occurred over a thirty minute period with a finish collection pressure of negative 2 to negative 7 pounds per square inch (psi). The Summa canisters were then shipped under a vacuum to Eurofins/Air-Toxics for analysis.

Upon completion of sampling activities, the temporary wells were removed and the borings were backfilled with soil cuttings. No soils were staged/containerized onsite for disposal, and other investigation derived waste (personal protective equipment, PVC temporary wells and tubing) was disposed as non-hazardous solid waste. Sampling locations were identified using a handheld global positioning system (GPS).

A summary of the soil boring field logs, depth to groundwater (where present), and identification of the depth interval where the sample was retained for laboratory analyses are provided in the following table. **Figure 2** depicts the layout of the Subject Property and locations of the borings/temporary monitoring wells/soil vapor sampling points, which were plotted using the coordinates provided below. Due to the limited depth to groundwater information obtained during sample collection, groundwater contours are not included in this report.

Sample ID	Latitude	Longitude	Boring Depth (feet)	Highest PID Reading (ppm)	Depth to Groundwater (feet)*	Sample Depth (feet)
S-1, GW-1	40.42649559	-79.88612655	18	58.2	15.0	14-15
S-2	40.42726065	-79.88584654	14	0	NA	7-8
S-3	40.42595756	-79.88780960	20	0.2	NA	12-13
S-4	40.42581945	-79.88828539	13	0.6	NA	12-13
S-5	40.42648146	-79.88804560	14	0	NA	13-14
S-6	40.42635718	-79.88787577	16	1.8	NA	7-8
S-7	40.42807933	-79.88836139	14	1.8	NA	11-12
S-8	40.42790829	-79.88853067	10	11.8	NA	2-3
S-9, GW-2	40.42611001	-79.88869772	20	49.3	14.5	5-6
S-10, GW-3	40.42736100	-79.88994575	13	0	9.8	12-13
SG-1	40.42649495	-79.88613133	NA	NA	NA	12.5
SG-2	40.42726065	-79.88584654	NA	NA	NA	10.0
SG-3	40.42597242	-79.88780697	NA	NA	NA	12.0
SG-4	40.42790751	-79.88853405	NA	NA	NA	8.0

* Depth to groundwater was measured from ground surface.

Copies of the boring logs are included in **Appendix A.** A copy of the Daily Activity Reports (DARs) and field notes are included in **Appendix B**.

Following collection, the soil and groundwater samples were placed in an insulated cooler filled with ice and submitted via courier to Eurofins for analysis of volatile organic compounds (VOCs) via EPA Method 8260B; semivolatile VOCs (SVOCs) via EPA Method 8270C, polyaromatic hydrocarbons (PAHs) via EPA Method 8270C SIM; RCRA Metals via EPA Method 6010B (total metals for groundwater samples), and polychlorinated biphenyls (PCBs) via EPA Method 8082. Soil gas samples were collected and shipped to the Eurofins Air Toxics laboratory in Folsom, California for analysis.

LABORATORY RESULTS

The analytical results were compared to the USEPA Regional Screening Levels (RSLs) of TR=1E-06, HQ=0.1 for industrial soil and tap water with soil screening levels (SSLs). Analytical results for soil were also compared to the USEPA SSL for maximum concentration level from the HQ=1 table where the (MCL)-based and Risk-based values were calculated using a dilution attenuation factor (DAF) of 20. A summary of detected organic analytical results for soil are presented in **Table 1** while the inorganic results for soil are presented in **Table 2**. The organic analytical results for groundwater are presented in **Table 3** while the inorganic results for groundwater are presented in **Table 4**.

For soil gas, the Industrial Air Values listed on the RSL table were adjusted with an applied attenuation factor using the USEPA vapor instruction screening level (VISL) table per the

USEPA RSL User Guide. A summary of detected analytical results for soil gas are presented in **Table 5**. A complete copy of analytical results for soil, groundwater and soil gas is included in **Appendix C**.

Soil Analytical Results

The soil analytical results were compared to the USEPA Industrial Soil screening levels using the more conservative target hazard quotient (THQ) value of 0.1 for commercial/industrial properties. A summary of detected organic analytical results for soil is presented in **Table 1**. Concentrations above the USEPA Industrial SSL using a THQ of 0.1 have been bolded and underlined. Concentrations above the USEPA SSL MCL-based value using a DAF of 20 have been highlighted in pink. Concentrations above the USEPA SSL Risk-based value using a DAF of 20 have been highlighted in yellow while concentrations above both the USEPA SSL MCL-based value and the USEPA SSL Risk-based value have been highlighted in red.

The findings for soil show that no samples were above the USEPA Industrial Soil screening level (THQ=0.1) for any volatile compounds (VOCs). However, VOCs were above the USEPA SSL risk-based value for chloroform (S-7, dup S-7), trichloroethene (S-9) and vinyl chloride (S-9). Soil concentrations were above the USEPA SSL MCL-based value in sample S-8 for both 1,1-dichloroethane and 1,1,1-trichloroethane. Trichloroethene in sample S-8 was above both the above the USEPA SSL risk-based value and the USEPA SSL MCL-based value.

Semi-volatile compounds (SVOCs) analytical results show that benzaldehyde (S-6), benzo(a)anthracene (S-6), benzo(b)fluoranthene (S-8), 1,1'-biphenyl (S-6, S-8), , naphthalene (S-1, S-4, S-6, S-8, S-9), and PCB-1254 (S-9) were above the USEPA SSL risk-based screening levels. The following compounds were above both the USEPA SSL risk-based value and the Industrial SSL value: benzo(a)anthracene (S-8, S-9), benzo (a)pyrene (S-6, S-8, S-9), benzo(b)fluoranthene (S-9), and dibenz(a,h)anthracene (S-8, S-9).

The inorganic results for soil are presented in **Table 2**. Aluminum, antimony, barium, beryllium, cadmium, calcium, chromium, magnesium, nickel, potassium, silver, sodium, vanadium, and zinc were detected in samples at concentrations below all USEPA RSLs.

Arsenic was detected above the Industrial SSLs (3 mg/kg) and the USEPA SSL risk-based value (0.03 mg/kg) in soil samples S-2 (4.63 mg/kg) and S-10 (3.17 mg/kg). Concentrations were above the Industrial SSL, USEPA SSL risk-based value and the EPA SSL MCL-based value (5.8 mg/kg) in S-1 (6.69J mg/kg), S-3 (13.3 mg/kg), S-4 (17.1 mg/kg), S-6 (42.7 mg/kg), S-7 (7.19 mg/kg) dup S-7 (6.23 mg/kg), S-8 (17.5 mg/kg), and S-9 (15.8 mg/kg).

Cobalt was detected in each of the soil samples at concentrations ranging from 4.37 mg/kg (S-8) to 340 mg/kg (S-5). Results in S-1 (20.7 mg/kg), S-3 (11.7 mg/kg), S-4 (17.8 mg/kg), S-7 (17.6

mg/kg), S-8 (11.4 mg/kg), S-9 (9.45 mg/kg) and S-10 (14.2 mg/kg) were all above the USEPA SSL Risk-based value of 5.4 mg/kg. The result in S-5 (340 mg/kg) was above both the USEPA SSL Risk-based value and the Industrial SSL of 35 mg/kg.

Copper was detected in each of the soil samples at concentrations ranging from 8.03 mg/kg (S-2) to 975 mg/kg (S-9). The S-9 result was above the USEPA SSL Risk-based value of 560 mg/kg and the USEPA SSL MCL-based value of 920 mg/kg.

Iron was detected above the USEPA SSL Risk-based value of 7,000 mg/kg in all samples collected. Iron concentrations ranged from 14,500 mg/kg (S-1) to 70,100 mg/kg (S-7).

Lead was detected in each of the soil samples at concentrations ranging from 6.72 mg/kg (S-2) to 3,750 mg/kg (S-9). The S-9 result was above the USEPA SSL MCL-based value of 280 mg/kg and the Industrial SSL of 800 mg/kg.

Manganese was detected in all soil samples at concentrations ranging from 125 mg/kg (S-8) to 28,200 mg/kg (S-5). Results in S-3 (664 mg/kg) S-7 dup (1,310 mg/kg) and S-9 (786 mg/kg) were above the USEPA SSL Risk-based value of 560 mg/kg. Results in S-5 (28,200 mg/kg) and S-7 (2,600 mg/kg) were above the USEPA SSL Risk-based value and the Industrial SSL of 2,600 mg/kg.

Selenium was detected in some samples ranging in concentrations of 1.11J mg/kg (S-7 dup) to 17.9 mg/kg (S-5). The S-5 result was above both the USEPA SSL Risk-based value of 10.4 mg/kg and the MCL-based value of 5.2 mg/kg.

Thallium was detected in all samples in concentrations ranging from 0.0424J mg/kg (S-2) to 0.384 mg/kg (S-6). The S-6 result was above the USEPA SSL Risk-based value of 0.28 mg/kg.

Mercury was detected in all samples ranging in concentrations of 0.0134 mg/kg (S-2) to 2.6 mg/kg (S-9). The S-9 result was above both the USEPA SSL Risk-based value of 0.66 mg/kg and the USEPA MCL-based value of 2 mg/kg.

Total cyanide was detected in three samples which ranged in concentration from 0.23J mg/kg (S10) to 36.3 mg/kg (S-5). The S-9 result (2.6 mg/kg) was above the USEPA SSL Risk-based value of 0.3 mg/kg. The S-5 result (36.3 mg/kg) was above both the USEPA SSL Risk-based value of 0.3 mg/kg and the Industrial SSL of 15 mg/kg.

Groundwater Analytical Results

Groundwater analytical results were compared to the USEPA THQ of 0.1 for tapwater. Benzo(a) anthracene, benzo(b)fluoranthene, dibenz(a,h)anthracene and indeno(1,2,3-cd)pyrene were analyzed using both USEPA Method 2870 and USEPA Method 8270 SIM for water to meet the

requested reporting limits. A summary of detected groundwater organic analytical results is presented in **Table 3**. Only the USEPA Method 8270 SIM results for benzo(a)anthracene, benzo(b)fluoranthene, dibenz(a,h)anthracene and indeno(1,2,3-cd)pyrene are included in the summary table. Concentrations above the USEPA THQ of 0.1 for tapwater have been highlighted.

For sample GW-1 and GW-3 there were no VOCs above the target limits. In sample GW-2 the VOCs benzene (0.6 ug/l), cis-1,2-dichloroethene (6.9 ug/l), and trichloroethene (62 ug/l) were above the USEPA tapwater screening value. Dup-GW-3 had tricholoroethene (0.5 ug/l), above the USEPA tapwater screening value.

For the SVOCS there were no compounds above the target limits for GW-1. For GW-2 benzo(a)anthracene (0.47 ug/l), benzo(b)fluroanthene (0.71 ug/l), dibenz(a,h)anthracene (0.092 ug/l), indeno(1,2,3-cd)pyrene (0.33 ug/l), benzo(a)pyrene (0.5J ug/l), and naphthalene (0.7 ug/l) were all above the USEPA tapwater screening value for a THQ of 0.1. The GW-3 sample had SVOCs benzo(a)anthracene (0.030J ug/l) and benzo(b)fluroanthene (0.055 ug/l) above the USEPA values while Dup-GW-3 had benzo(a)anthracene (0.056 ug/l) and benzo(b)flouranthene (0.090 ug/l) above the USEPA tapwater screening values.

The inorganic analytical results for groundwater are presented in **Table 4**. Aluminum, barium, calcium, chromium, copper, magnesium, potassium, sodium, arsenic, and beryllium were detected in most of the samples but below the USEPA tapwater screening values for a THQ of 0.1. Lead, silver, vanadium, thallium and mercury were all below the laboratory method detection limits (MDLs) for these analytes. Cadmium was detected above the USEPA tapwater screening value of 0.00092 mg/l in GW-1 (0.0040J mg/l), GW-2 (0.113 mg/l), GW-3 (0.0016J mg/l) and Dup GW-3 (0.0016J mg/l). Iron was detected above the USEPA tapwater screening value of 1.4 mg/l in GW-1 (83.8 mg/l) while manganese is above the USEPA tapwater screening value of 0.043 mg/l in GW-1 (37.4 mg/l), GW-2 (4.78 mg/l, GW-3 (10.5 mg/l) and Dup GW-3 (10.1 mg/l). Nickel was detected in GW-1 (0.104 mg/l) and GW-2 (0.143 mg/l) above the USEPA tapwater screening value of 0.039 mg/l. Selenium was detected above the USEPA tapwater screening value of 0.01 mg/l in GW-1 (0.0175J mg/l) but below the laboratory MDLs in all other samples. Antimony was detected above the USEPA tapwater screening value of 0.00078 mg/l in GW-2 (0.0036 mg/l) but below laboratory MDLs in all other samples. Cobalt was detected above USEPA tapwater screening value of 0.0006 mg/l in GW-1 (0.0403 mg/l), GW-2 (0.0267 mg/l), GW-3 (0.0060 mg/l) and Dup GW-3 (0.0058 mg/l). Total cyanide was detected above the USEPA tapwater screening level of 0.00015 mg/l in GW-2 (1.2 mg/l) and dup-GW-3 (0.0050J mg/l).

Soil Gas Analytical Results

Soil gas analytical results were compared to the calculated USEPA vapor intrusion screening levels (VISLs) for commercial/industrial properties using a target carcinogen risk (TCR) of 1 x 10^{-6} and a THQ of 0.1. A summary of detected soil gas analytical results is presented in **Table 5** and concentrations above the VISLs have been highlighted. The VISL calculation tables for each soil gas sample are included as **Appendix D**.

Sample SG-1 had 1,3-butadiene (52 ug/m^3) above the VISL of 14 ug/m^3. Sample SG-2 had 1,3-butadiene (22 ug/m^3) and trichloroethene (230 ug/m^3) above the VISL for trichloroethene of 29 ug/m^3. SG-3 had trichloroethene (42 ug/m^3) detected above the VISL. SG-4 reported trichloroethene (490 ug/m^3), chloroform (98 ug/m^3) and carbon tetrachloride (260 ug/m^3) above the VISL. The VISL for chloroform is 18 ug/m^3 while the VISL for carbon tetrachloride is 68 ug/m^3.

CONCLUSION

AECOM completed the Phase II site assessment of the former Union Switch and Signal Division facility per the PADEP approved Work Order issued on July 17, 2015 under the GTAC6 contract requisition number GTAC6-0-416. AECOM appreciates the opportunity to assist the USEPA and PADEP with this important project. If you have any questions or comments pertaining to this report, please contact the undersigned at your convenience.

Sincerely,
AECOM

Rebecca H. Walsh

Randy Crispino

Rebecca Walsh, P.G.
Project Manager

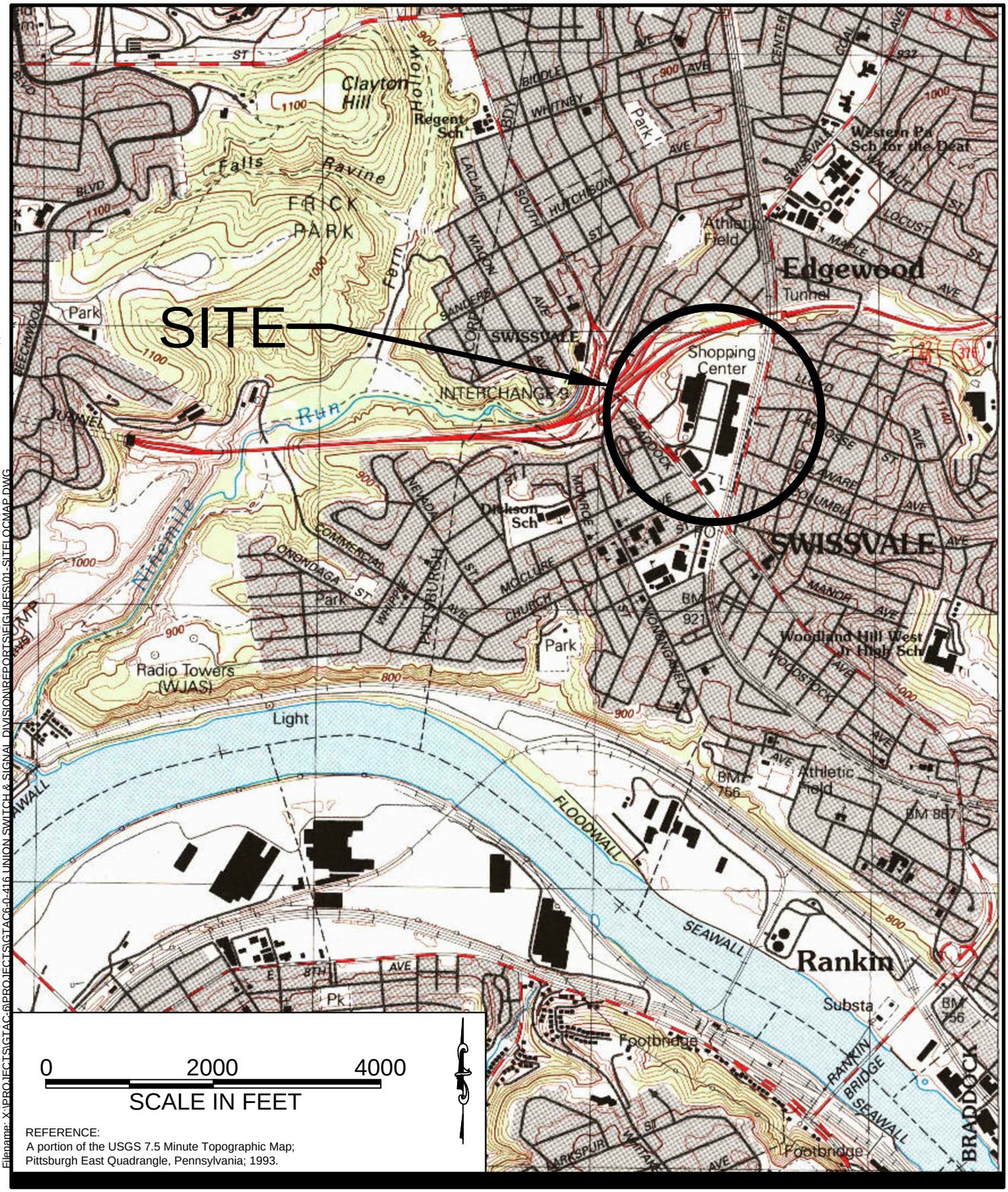
Randy Crispino
Program Manager

Attachments:

- Figure 1 – Site Location Map
- Figure 2 – Overlay of Current and Historic Map with Sampling Locations
- Table 1 – Organic Soil Analytical Results
- Table 2 – Inorganic Soil Analytical Results
- Table 3 – Organic Groundwater Analytical Results
- Table 4 – Inorganic Groundwater Analytical Results
- Table 5 – Soil Gas Analytical Results
- Appendix A – Boring Logs
- Appendix B – Daily Activity Reports and Field Notes
- Appendix C – Soil, Groundwater and Soil Gas Analytical Results
- Appendix D – VISL Calculation Tables

cc: Kevin Bilash – USEPA, Region 3

Figures



REFERENCE:
A portion of the USGS 7.5 Minute Topographic Map;
Pittsburgh East Quadrangle, Pennsylvania; 1993.

Last saved by: BACHMANA1(2016-08-10) Last Plotted: 2016-08-10 Project Management Initials: Designer: ACB Checked: Approved: ANSI A 8.5" x 11"
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Site Location Map
Former Union Switch & Signal Division Facility
Pittsburgh, PA
Project No.: 60397721 Date: 08-10-16

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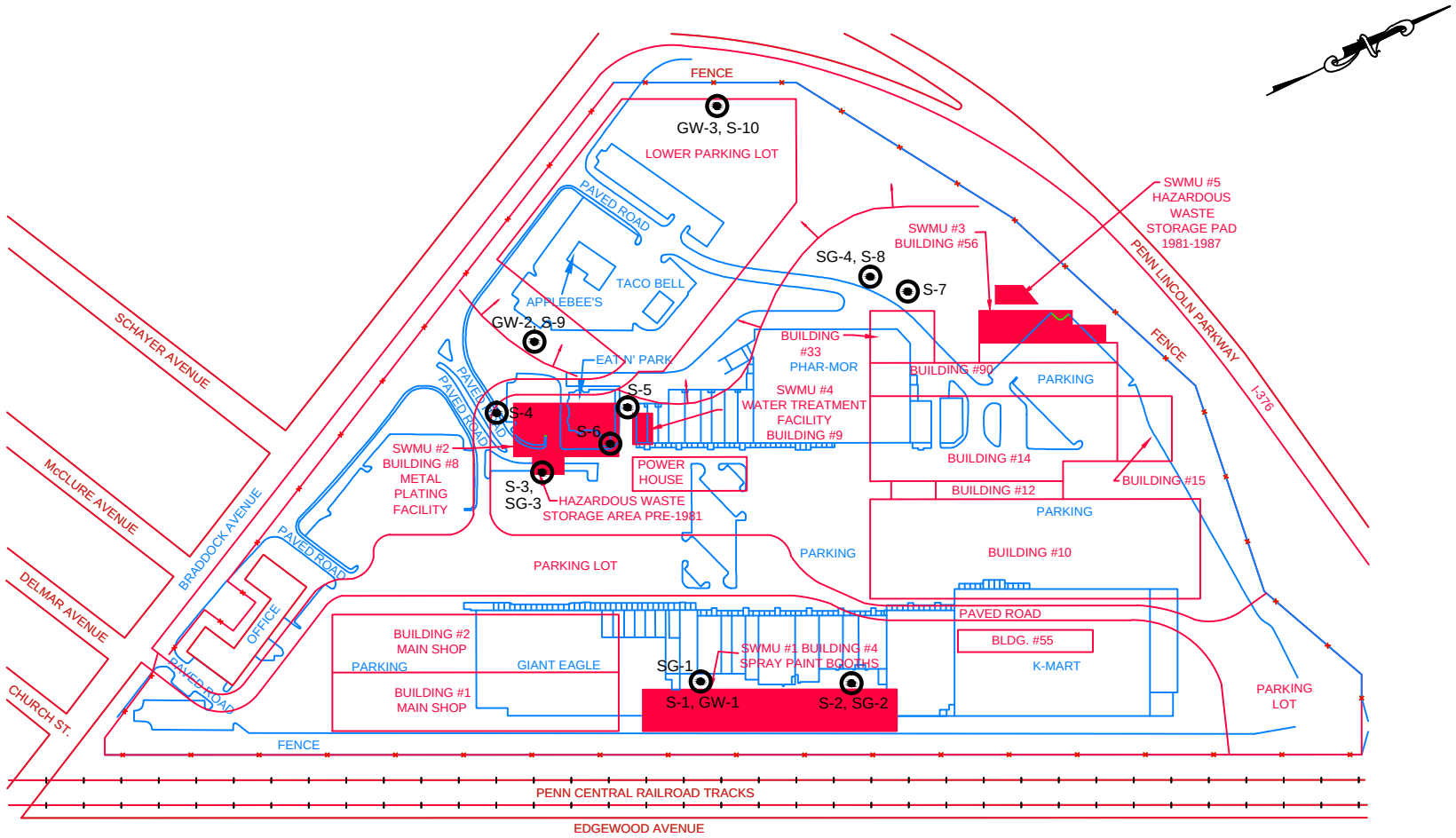
Figure: 1



Legend

Current Site

Historic Site

Sample Location

Reference:
Environmental Properties Initiative Preliminary Assessment.
NUS Corporation, October 24, 1989.

*Note: This drawing is not to scale

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Figure:2

Overlay of Current and Historic Map with Sampling Locations
Former Union Switch & Signal Division Facility
Pittsburgh, Pa
Project No.: 60397721 Date: 08-24-16

Tables

Table 1
Organic Soil Analytical Results
Former Union Switch and Signal Divsion Facility
Pittsburgh, Pennsylvania
July 19 and 20, 2016

Analyte	Chemical Abstract Number	USEPA Regional Screening Levels (RSL)			Units	8488097		8488098		8488099		8488100		8488101		8488102		8488103		8488107		8488104		8488105		8488106	
		EPA Industrial Soil Screening Levels (SSL) (THQ=0.1)	EPA SSL MCL-Based DAF=20	EPA SSL Risk-Based DAF = 20		S-1 (14-15)		S-2 (7-8)		S-3 (12-13)		S-4 (12-13)		S-5 (13-14)		S-6 (7-8)		S-7 (11-12)		DUP S-7 (11-12)		S-8 (2-3)		S-9 (5-6)		S-10 (12-13)	
	(CAS)	ug/kg	ug/kg	ug/kg		Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL
VOLATILES																											
Acetone	67-64-1	67,000,000	NS	58,000	ug/kg	59	5	N.D.	7	N.D.	6	14 J	6	N.D.	12	37	9	N.D.	6	N.D.	6	N.D.	290	290 E	7	62	6
Benzene	71-43-2	5,100	52	4.6	ug/kg	N.D.	0.4	N.D.	0.5	N.D.	0.4	N.D.	0.5	N.D.	0.8	N.D.	0.6	N.D.	0.4	N.D.	0.4	N.D.	21	1 J	0.5	N.D.	0.4
2-Butanone	78-93-3	19,000,000	NS	24,000	ug/kg	19	3	N.D.	4	N.D.	3	N.D.	4	N.D.	7	N.D.	5	N.D.	4	N.D.	3	N.D.	170	44	4	14	3
Carbon Disulfide	75-15-0	350,000	NS	4,800	ug/kg	4 J	0.8	N.D.	1	N.D.	0.8	N.D.	0.9	N.D.	2	N.D.	1	N.D.	0.9	N.D.	0.9	N.D.	41	10	1	6	0.8
Chloroform	67-66-3	1,400	440	1.22	ug/kg	N.D.	0.8	N.D.	1	N.D.	0.8	N.D.	0.9	N.D.	2	N.D.	1	4 J	0.9	2 J	0.9	N.D.	41	N.D.	1	N.D.	0.8
Cyclohexane	110-82-7	2,700,000	NS	260,000	ug/kg	N.D.	0.8	N.D.	1	N.D.	0.8	N.D.	0.9	N.D.	2	2 J	1	N.D.	0.9	N.D.	0.9	N.D.	41	N.D.	1	N.D.	0.8
1,1-Dichloroethane	75-34-3	16,000	NS	15.6	ug/kg	N.D.	0.8	N.D.	1	N.D.	0.8	N.D.	0.9	N.D.	2	N.D.	1	2 J	0.9	1 J	0.9	N.D.	41	N.D.	1	N.D.	0.8
1,1-Dichloroethene	75-35-4	100,000	50	2,000	ug/kg	N.D.	0.8	N.D.	1	N.D.	0.8	N.D.	0.9	N.D.	2	N.D.	1	N.D.	0.9	N.D.	0.9	140 J	41	1 J	1	N.D.	0.8
cis-1,2-Dichloroethene	156-59-2	230,000	420	220	ug/kg	N.D.	0.8	N.D.	1	N.D.	0.8	N.D.	0.9	N.D.	2	N.D.	1	N.D.	0.9	N.D.	0.9	N.D.	41	8	1	N.D.	0.8
Ethylbenzene	100-41-4	25,000	15,600	34	ug/kg	N.D.	0.8	N.D.	1	N.D.	0.8	N.D.	0.9	N.D.	2	N.D.	1	N.D.	0.9	N.D.	0.9	N.D.	41	2 J	1	N.D.	0.8
Isopropylbenzene	98-82-8	990,000	NS	14,800	ug/kg	N.D.	0.8	N.D.	1	N.D.	0.8	N.D.	0.9	N.D.	2	N.D.	1	N.D.	0.9	N.D.	0.9	N.D.	41	16	1	N.D.	0.8
Methylcyclohexane	108-87-2	NS	NS	NS	ug/kg	N.D.	0.8	N.D.	1	N.D.	0.8	N.D.	0.9	N.D.	2	3 J	1	N.D.	0.9	N.D.	0.9	N.D.	41	21	1	N.D.	0.8
1,1,1-Trichloroethane	71-55-6	3,600,000	1,400	5,600	ug/kg	N.D.	0.8	N.D.	1	N.D.	0.8	N.D.	0.9	N.D.	2	N.D.	1	N.D.	0.9	N.D.	0.9	1,900	41	N.D.	1	N.D.	0.8
Trichloroethene	79-01-6	1,900	36	3.6	ug/kg	N.D.	0.8	2 J	1	2 J	0.8	N.D.	0.9	N.D.	2	N.D.	1	N.D.	0.9	N.D.	0.9	470	41	30	1	N.D.	0.8
Vinyl Chloride	75-01-4	1,700	13.8	0.13	ug/kg	N.D.	0.8	N.D.	1	N.D.	0.8	N.D.	0.9	N.D.	2	N.D.	1	N.D.	0.9	N.D.	0.9	N.D.	41	4 J	1	N.D.	0.8
Xylene (Total)	1330-20-7	250,000	198,000	3,800	ug/kg	N.D.	0.8	N.D.	1	N.D.	0.8	N.D.	0.9	N.D.	2	N.D.	1	N.D.	0.9	N.D.	0.9	N.D.	41	7	1	N.D.	0.8

Value greater than the EPA soil screening level (SSL) Risk-Based number for target hazard quotient (THQ)=1 multiplied times the dilution attentuation factor (DAF) = 20

Value greater than the EPA SSL maximum concentration level (MCL) -Based number for THQ=1 multiplied times the DAF=20

Value greater than the EPA SSL Risk-Based number for THQ=1 multiplied times the DAF = 20 and the EPA SSL MCL-Based number for THQ=1 multiplied times the DAF=20

28,000 Value greater than the Industrial Soil Screening levels (THQ=0.1)

- This summary table includes detected compounds in at least one sample.

Footnotes:
ug/kg = microgram per kilogram
E = Concentration exceeds the calibration range
J = Estimated value > or = the Method Detection Limit
N.D. = Not Detected
NS = No Standard
MDL = Method Detection Limit

Table 1
Organic Soil Analytical Results
Former Union Switch and Signal Divsion Facility
Pittsburgh, Pennsylvania
July 19 and 20, 2016

Analyte	Chemical Abstract Number	USEPA Regional Screening Levels (RSL)			Units	8488097		8488098		8488099		8488100		8488101		8488102		8488103		8488107		8488104		8488105		8488106	
		EPA Industrial Soil Screening Levels (SSL) (THQ=0.1)	EPA SSL MCL-Based DAF=20	EPA SSL Risk-Based DAF = 20		S-1 (14-15)		S-2 (7-8)		S-3 (12-13)		S-4 (12-13)		S-5 (13-14)		S-6 (7-8)		S-7 (11-12)		DUP S-7 (11-12)		S-8 (2-3)		S-9 (5-6)		S-10 (12-13)	
	(CAS)	ug/kg	ug/kg	ug/kg		Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL
SEMIVOLATILES																											
Acenaphthene	83-32-9	4,500,000	NS	110,000	ug/kg	N.D.	4	N.D.	4	N.D.	4	N.D.	4	N.D.	5	29	4	N.D.	4	N.D.	4	250	38	91 J	41	N.D.	4
Acenaphthylene	208-96-8	NS	NS	NS	ug/kg	N.D.	4	N.D.	4	N.D.	4	N.D.	4	N.D.	5	130	4	N.D.	4	N.D.	4	130 J	38	87 J	41	N.D.	4
Anthracene	120-12-7	23,000,000	NS	1,160,000	ug/kg	20	4	N.D.	4	N.D.	4	13 J	4	N.D.	5	140	4	N.D.	4	N.D.	4	2,200	38	440	41	N.D.	4
Benzaldehyde	100-52-7	820,000	NS	82	ug/kg	N.D.	75	N.D.	73	N.D.	79	N.D.	80	N.D.	110	160 J	75	N.D.	78	N.D.	76	N.D.	760	N.D.	820	N.D.	76
Benzo(a)anthracene	56-55-3	2,900	NS	84	ug/kg	16 J	4	N.D.	4	4 J	4	39	4	N.D.	5	490	4	4 J	4	N.D.	4	**3,700**	38	**2,900**	41	4 J	4
Benzo(a)pyrene	50-32-8	290	4,800	80	ug/kg	7 J	4	N.D.	4	6 J	4	33	4	N.D.	5	**300**	4	N.D.	4	N.D.	4	**2,300**	38	**3,400**	41	4 J	4
Benzo(b)fluoranthene	205-99-2	2,900	NS	820	ug/kg	63	4	N.D.	4	8 J	4	46	4	N.D.	5	610	4	4 J	4	N.D.	4	2,600	38	**5,000**	41	7 J	4
Benzo(g,h,i)perylene	191-24-2	NS	NS	NS	ug/kg	19 J	4	N.D.	4	N.D.	4	28	4	N.D.	5	230	4	N.D.	4	N.D.	4	1,900	38	2,500	41	4 J	4
Benzo(k)fluoranthene	207-08-9	29,000	NS	8,000	ug/kg	6 J	4	N.D.	4	N.D.	4	18 J	4	N.D.	5	260	4	4 J	4	N.D.	4	960	38	1,900	41	6 J	4
1,1'-Biphenyl	92-52-4	20,000	NS	174	ug/kg	22 J	19	N.D.	18	N.D.	20	N.D.	20	N.D.	26	320	19	N.D.	20	N.D.	19	200 J	190	N.D.	210	N.D.	19
Carbazole	86-74-8	NS	NS	NS	ug/kg	N.D.	19	N.D.	18	N.D.	20	N.D.	20	N.D.	26	140	19	N.D.	20	N.D.	19	310 J	190	210 J	210	N.D.	19
Chrysene	218-01-9	290,000	NS	24,000	ug/kg	150	4	N.D.	4	8 J	4	54	4	N.D.	5	660	4	4 J	4	N.D.	4	4,300	38	3,400	41	6 J	4
Dibenz(a,h)anthracene	53-70-3	290	NS	260	ug/kg	20	4	N.D.	4	N.D.	4	8 J	4	N.D.	5	76	4	N.D.	4	N.D.	4	**420**	38	**660**	41	N.D.	4
Dibenzofuran	132-64-9	100,000	NS	3,000	ug/kg	31 J	19	N.D.	18	N.D.	20	22 J	20	N.D.	26	710	19	N.D.	20	N.D.	19	770	190	270 J	210	N.D.	19
2,4-Dimethylphenol	105-67-9	1,600,000	NS	8,400	ug/kg	N.D.	19	N.D.	18	N.D.	20	N.D.	20	N.D.	26	26 J	19	N.D.	20	N.D.	19	N.D.	190	N.D.	210	N.D.	19
Fluoranthene	206-44-0	3,000,000	NS	1,780,000	ug/kg	24	4	N.D.	4	6 J	4	62	4	N.D.	5	1,100	4	N.D.	4	N.D.	4	6,100	38	4,900	41	5 J	4
Fluorene	86-73-7	3,000,000	NS	108,000	ug/kg	18 J	4	N.D.	4	N.D.	4	6 J	4	N.D.	5	83	4	N.D.	4	N.D.	4	690	38	170 J	41	N.D.	4

Value greater than the EPA soil screening level (SSL) Risk-Based number for target hazard quotient (THQ)=1 multiplied times the dilution attentuation factor (DAF) = 20

Value greater than the EPA SSL maximum concentration level (MCL) -Based number for THQ=1 multiplied times the DAF=20

Value greater than the EPA SSL Risk-Based number for THQ=1 multiplied times the DAF = 20 and the EPA SSL MCL-Based number for THQ=1 multiplied times the DAF=20

28,000 Value greater than the Industrial Soil Screening levels (THQ=0.1)

- This summary table includes detected compounds in at least one sample.

Footnotes:
ug/kg = microgram per kilogram
E = Concentration exceeds the calibration range
J = Estimated value > or = the Method Detection Limit
N.D. = Not Detected
NS = No Standard
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Table 1
Organic Soil Analytical Results
Former Union Switch and Signal Divsion Facility
Pittsburgh, Pennsylvania
July 19 and 20, 2016

Analyte	Chemical Abstract Number	USEPA Regional Screening Levels (RSL)			Units	8488097		8488098		8488099		8488100		8488101		8488102		8488103		8488107		8488104		8488105		8488106	
		EPA Industrial Soil Screening Levels (SSL) (THQ=0.1)	EPA SSL MCL-Based DAF=20	EPA SSL Risk-Based DAF = 20		S-1 (14-15)		S-2 (7-8)		S-3 (12-13)		S-4 (12-13)		S-5 (13-14)		S-6 (7-8)		S-7 (11-12)		DUP S-7 (11-12)		S-8 (2-3)		S-9 (5-6)		S-10 (12-13)	
	(CAS)	ug/kg	ug/kg	ug/kg		Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL
Indeno(1,2,3-cd)pyrene	193-39-5	2,900	NS	2600	ug/kg	11 J	4	N.D.	4	N.D.	4	25	4	N.D.	5	210	4	N.D.	4	N.D.	4	1,200	38	2,300	41	6 J	4
Isophorone	78-59-1	2,400,000	NS	520	ug/kg	N.D.	19	N.D.	18	N.D.	20	N.D.	20	N.D.	26	N.D.	19	N.D.	20	N.D.	19	N.D.	190	N.D.	210	N.D.	19
2-Methylnaphthalene	91-57-6	300,000	NS	3,800	ug/kg	32	4	N.D.	4	7 J	4	50	4	N.D.	5	1,900	4	14 J	4	17 J	4	2,100	38	500	41	N.D.	4
2-Methylphenol	95-48-7	4,100,000	NS	15,000	ug/kg	N.D.	19	N.D.	18	N.D.	20	N.D.	20	N.D.	26	23 J	19	N.D.	20	N.D.	19	N.D.	190	N.D.	210	N.D.	19
4-Methylphenol	106-44-5	8,200,000	NS	30,000	ug/kg	N.D.	19	N.D.	18	N.D.	20	N.D.	20	N.D.	26	24 J	19	N.D.	20	N.D.	19	N.D.	190	N.D.	210	N.D.	19
Naphthalene	91-20-3	17,000	NS	10.8	ug/kg	17 J	4	N.D.	4	6 J	4	30	4	5 J	5	1,400	4	N.D.	4	N.D.	4	480	38	720	41	N.D.	4
Phenanthrene	85-01-8	NS	NS	NS	ug/kg	100	4	N.D.	4	10 J	4	58	4	N.D.	5	1,500	4	14 J	4	11 J	4	8,800	38	1,700	41	N.D.	4
Pyrene	129-00-0	2,300,000	NS	260,000	ug/kg	44	4	N.D.	4	8 J	4	67	4	N.D.	5	910	4	5 J	4	N.D.	4	18,000	38	5,800	41	4 J	4
PCB-1254	11097-69-1	970	NS	40	ug/kg	N.D.	22	N.D.	3.6	N.D.	3.9	N.D.	3.9	N.D.	5.2	N.D.	3.7	N.D.	3.9	N.D.	3.8	N.D.	3.8	180	4.1	N.D.	3.8
PCB-1260	11096-82-5	990	NS	110	ug/kg	N.D.	33	N.D.	5.3	N.D.	5.8	N.D.	5.8	N.D.	7.7	11 J	5.5	N.D.	5.7	N.D.	5.6	N.D.	5.6	N.D.	6.0	N.D.	5.6
Total PCBs	1336-36-3	NS	NS	NS	ug/kg	N.D.	22	N.D.	3.6	N.D.	3.9	N.D.	3.9	N.D.	5.2	11 J	3.7	N.D.	3.9	N.D.	3.8	N.D.	3.8	180	4.1	N.D.	3.8

Value greater than the EPA soil screening level (SSL) Risk-Based number for target hazard quotient (THQ)=1 multiplied times the dilution attentuation factor (DAF) = 20

Value greater than the EPA SSL maximum concentration level (MCL) -Based number for THQ=1 multiplied times the DAF=20

Value greater than the EPA SSL Risk-Based number for THQ=1 multiplied times the DAF = 20 and the EPA SSL MCL-Based number for THQ=1 multiplied times the DAF=20

28,000 Value greater than the Industrial Soil Screening levels (THQ=0.1)

- This summary table includes detected compounds in at least one sample.

Footnotes:
ug/kg = microgram per kilogram
E = Concentration exceeds the calibration range
J = Estimated value > or = the Method Detection Limit
N.D. = Not Detected
NS = No Standard
MDL = Method Detection Limit

Table 2
Inorganic Soil Analytical Results
Former Union Switch and Signal Division Facility
Pittsburg, Pennsylvania
July 19 and 20, 2016

Analyte	Chemical Abstract Number	USEPA Regional Screening Levels (RSL)			Units	8488097		8488098		8488099		8488100		8488101		8488102		8488103		8488107		8488104		8488105		8488106	
		Industrial Soil Screening levels (THQ=0.1)	EPA SSL MCL-Based DAF=20	EPA SSL Risk-Based DAF = 20		S-1 (14-15)		S-2 (7-8)		S-3 (12-13)		S-4 (12-13)		S-5 (13-14)		S-6 (7-8)		S-7 (11-12)		DUP S-7 (11-12)		S-8 (2-3)		S-9 (5-6)		S-10 (12-13)	
	(CAS)	mg/kg	mg/kg	mg/kg		Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL
INORGANICS																											
Aluminum	7429-90-5	110,000	NS	600,000	mg/kg	4,630	39.7	3,970	8.89	14,900	7.36	19,800	9.73	63,800	56.5	3,970	9.67	15,400	50.9	8,610	7.47	14,800	8.89	6,060	37.0	14,400	7.03
Antimony	7440-36-0	47	5.4	7	mg/kg	N.D.	3.20	N.D.	0.717	1.15 J	0.594	1.22 J	0.784	N.D.	4.55	1.33 J	0.780	N.D.	4.10	1.48 J	0.602	1.04 J	0.717	22.8	2.98	0.964 J	0.567
Arsenic	7440-38-2	3	5.8	0.03	mg/kg	**6.69 J**	4.44	**4.63**	0.994	**13.3**	0.823	**17.1**	1.09	N.D.	6.31	**42.7**	1.08	**7.19 J**	5.68	**6.23**	0.834	**17.5**	0.993	**15.8**	4.13	**3.17**	0.786
Barium	7440-39-3	22,000	1,640	3,200	mg/kg	115	0.151	32.7	0.0338	80.9	0.0280	137	0.0370	527	0.215	61.7	0.0368	146	0.0387	103	0.0284	103	0.0338	193	0.0281	67.6	0.0267
Beryllium	7440-41-7	230	380	64	mg/kg	1.93 J	0.307	0.510 J	0.0686	0.905	0.0568	1.27	0.0751	18.0	0.436	0.626	0.0746	1.03 J	0.393	0.675	0.0576	0.644	0.0686	0.826 J	0.285	0.985	0.0543
Cadmium	7440-43-9	98	NS	NS	mg/kg	0.751 J	0.224	N.D.	0.0502	0.544	0.0416	0.715	0.0549	55.3	0.319	0.360 J	0.0546	1.30 J	0.287	0.923	0.0422	0.833	0.0502	54.8	0.209	N.D.	0.0397
Calcium	7440-70-2	NS	NS	NS	mg/kg	2,260	25.9	158	5.80	583	4.80	5,520	6.34	81,300	36.8	2,940	6.31	255	6.63	139	4.87	1,350	5.80	11,200	4.82	1,320	4.59
Chromium	7440-47-3	NS	3,600,000	NS	mg/kg	13.4	0.641	10.5	0.143	26.6	0.119	26.0	0.157	35.9	0.911	13.1	0.156	33.8	0.820	19.6	0.120	21.1	0.143	104	0.596	30.1	0.113
Cobalt	7440-48-4	35	NS	5.4	mg/kg	20.7	0.549	5.03	0.123	11.7	0.102	17.8	0.134	**340**	0.780	4.48	0.134	17.6	0.703	11.4	0.103	4.37	0.123	9.45	0.511	14.2	0.0972
Copper	7440-50-8	4,700	920	560	mg/kg	9.63	1.05	8.03	0.236	61.7	0.195	58.0	0.258	152	1.50	45.9	0.256	19.6	1.35	17.6	0.198	41.9	0.236	975	0.979	25.9	0.186
Iron	7439-89-6	82,000	NS	7,000	mg/kg	14,500	18.9	18,100	4.22	35,900	17.5	43,900	23.1	35,500	26.8	31,300	23.0	70,100	24.1	43,200	17.7	36,800	21.1	48,000	17.5	24,900	16.7
Lead	7439-92-1	800	280	NS	mg/kg	11.1	2.52	6.72	0.563	36.2	0.467	70.4	0.616	7.64 J	3.58	55.3	0.613	19.6	3.22	10.4	0.473	26.7	0.563	**3,750**	2.34	12.2	0.446
Magnesium	7439-95-4	NS	NS	NS	mg/kg	404	8.70	319	1.95	1,560	1.61	4,350	2.13	14,300	12.4	753	2.12	3,620	11.1	1,730	1.63	1,900	1.95	1,610	8.09	3,400	1.54
Manganese	7439-96-5	2,600	NS	560	mg/kg	351	0.380	142	0.0850	664	0.0704	484	0.0930	**28,200**	5.40	151	0.0925	**2,600**	0.486	1,310	0.0714	125	0.0850	786	0.0707	198	0.0673
Nickel	7440-02-0	2,200	NS	520	mg/kg	52.0	1.37	5.12	0.307	15.7	0.254	35.3	0.336	429	1.95	9.76	0.334	21.1	1.76	16.7	0.258	16.2	0.307	82.7	1.28	28.5	0.243
Potassium	7440-09-7	NS	NS	NS	mg/kg	533	109	724	24.5	1,050	20.3	3,370	26.8	1,580	155	674	26.6	1,500	28.0	1,070	20.6	1,250	24.5	700	20.3	1,270	19.4
Selenium	7782-49-2	580	5.2	10.4	mg/kg	N.D.	4.12	N.D.	0.922	1.65 J	0.763	1.51 J	1.01	17.9	5.85	3.13	1.00	N.D.	5.27	1.11 J	0.774	1.28 J	0.922	N.D.	3.83	0.849 J	0.729
Silver	7440-22-4	580	NS	16	mg/kg	N.D.	0.687	N.D.	0.154	N.D.	0.127	N.D.	0.168	9.32	0.976	N.D.	0.167	N.D.	0.879	0.405 J	0.129	N.D.	0.154	N.D.	0.639	N.D.	0.122
Sodium	7440-23-5	NS	NS	NS	mg/kg	674	109	425	24.5	537	20.3	397	26.8	957	155	369	26.6	75.8 J	28.0	57.8 J	20.6	72.9 J	24.5	126	20.3	84.9	19.4
Vanadium	7440-62-2	580	NS	1,720	mg/kg	10.9	0.641	11.6	0.143	34.5	0.119	35.0	0.157	4.76	0.911	20.4	0.156	33.3	0.820	19.4	0.120	32.1	0.143	18.5	0.596	33.4	0.113
Zinc	7440-66-6	35,000	NS	7,400	mg/kg	177	3.11	21.4	0.696	46.6	0.577	111	0.762	453	4.42	74.9	0.758	65.1	3.98	39.5	0.585	56.8	0.696	898	2.89	73.7	0.551
Thallium	7440-28-0	1.2	2.8	0.28	mg/kg	0.0615 J	0.0265	0.0424 J	0.0297	0.221	0.0246	0.231	0.0325	0.0447 J	0.0377	0.384	0.0323	0.191	0.0340	0.110	0.0249	0.259	0.0297	0.0804 J	0.0247	0.0997	0.0235
Mercury	7439-97-6	4.6	2	0.66	mg/kg	0.0295 J	0.0106	0.0134 J	0.0111	0.0271 J	0.0110	0.0442 J	0.0114	0.0485 J	0.0148	0.0892 J	0.0105	0.0241 J	0.0115	0.0180 J	0.0106	0.0146 J	0.0108	1.41	0.0606	0.0145 J	0.0115
Total Cyanide (solid)	57-12-5	15.0	40	0.3	mg/kg	N.D.	0.20	N.D.	0.19	N.D.	0.20	N.D.	0.21	**36.3**	2.9	0.28 J	0.20	N.D.	0.21	N.D.	0.20	N.D.	0.20	2.6	0.23	0.23 J	0.21
Moisture		NS	NS	NS	%	11.9	0.50	9.6	0.50	15.8	0.50	16.6	0.50	37.5	0.50	12.0	0.50	15.5	0.50	12.6	0.50	12.8	0.50	20.1	0.50	13.1	0.50

Value greater than the EPA soil screening level (SSL) Risk-Based number for target hazard quotient (THQ) =1 multiplied times the dilution attentuation factor (DAF) = 20

Value greater than the EPA SSL maximum concentration level (MCL) -Based number for HQ=1 multiplied times the DAF=20

Value greater than the EPA SSL Risk-Based number for HQ=1 multiplied times the DAF = 20 and the EPA SSL MCL-Based number for HQ=1 multiplied times the DAF=20

28,000 Value greater than the Industrial Soil Screening levels (HQ=0.1)

- This summary table includes detected compounds in at least one sample.

Footnotes:

mg/kg = milligram per kilogram
E = Concentration exceeds the calibration range
J = Estimated value > or = the Method Detection Limit
N.D. = Not Detected
NS = No Standard
MDL = Method Detection Limit

Table 3
Organic Groundwater Analytical Results
Former Union Switch and Signal Division Facility
Pittsburgh, Pennsylvania
July 19 and 20, 2016

Analysis Name	Chemical Abstract Number	USEPA THQ = 0.1 Tapwater	Units	8488108		8488109		8488110		8488111	
				GW-1		GW-2		GW-3		DUP-GW-3	
	(CAS)	ug/l		Result	MDL	Result	MDL	Result	MDL	Result	MDL
VOLATILES											
Acetone	67-64-1	1,400	ug/l	5.0	3.0	6.1	3.0	8.4	3.0	12	3.0
Benzene	71-43-2	0.46	ug/l	N.D.	0.1	0.6	0.1	N.D.	0.1	0.2 J	0.1
2-Butanone	78-93-3	560	ug/l	N.D.	1.0	N.D.	1.0	N.D.	1.0	1.8 J	1.0
1,1-Dichloroethene	75-35-4	28	ug/l	N.D.	0.1	0.2 J	0.1	N.D.	0.1	N.D.	0.1
cis-1,2-Dichloroethene	156-59-2	3.6	ug/l	N.D.	0.1	6.9	0.1	N.D.	0.1	N.D.	0.1
trans-1,2-Dichloroethene	156-60-5	36	ug/l	N.D.	0.1	3.8	0.1	N.D.	0.1	N.D.	0.1
Isopropylbenzene	98-82-8	45	ug/l	N.D.	0.1	0.1 J	0.1	N.D.	0.1	N.D.	0.1
Tetrachloroethene	127-18-4	4.1	ug/l	N.D.	0.1	0.4 J	0.1	N.D.	0.1	N.D.	0.1
Toluene	108-88-3	110	ug/l	N.D.	0.1	0.4 J	0.1	N.D.	0.1	N.D.	0.1
Trichloroethene	79-01-6	0.28	ug/l	N.D.	0.1	62	1.0	0.1 J	0.1	0.5	0.1
m+p-Xylene	179601-23-1	NS	ug/l	N.D.	0.1	0.1 J	0.1	N.D.	0.1	N.D.	0.1
o-Xylene	95-47-6	19	ug/l	N.D.	0.1	0.1 J	0.1	N.D.	0.1	N.D.	0.1
Xylene (Total)	1330-20-7	19	ug/l	N.D.	0.1	0.2 J	0.1	N.D.	0.1	N.D.	0.1
SEMIVOLATILES											
Acetophenone	98-86-2	190	ug/l	0.7 J	0.5	N.D.	0.5	N.D.	0.5	N.D.	0.5
Anthracene	120-12-7	180	ug/l	N.D.	0.1	0.1 J	0.1	N.D.	0.1	N.D.	0.1
Benzo(a)pyrene	50-32-8	0.0034	ug/l	N.D.	0.1	0.5 J	0.1	N.D.	0.1	N.D.	0.1
Benzo(g,h,i)perylene	191-24-2	NS	ug/l	N.D.	0.1	0.3 J	0.1	N.D.	0.1	N.D.	0.1
Benzo(k)fluoranthene	207-08-9	0.34	ug/l	N.D.	0.1	0.2 J	0.1	N.D.	0.1	N.D.	0.1
Chrysene	218-01-9	3.4	ug/l	N.D.	0.1	0.6	0.1	N.D.	0.1	N.D.	0.1
Diethylphthalate	84-66-2	1,500	ug/l	N.D.	2	N.D.	2	2 J	2	5 J	2
Fluoranthene	206-44-0	80	ug/l	N.D.	0.1	0.9	0.1	0.1 J	0.1	0.2 J	0.1
Fluorene	86-73-7	29	ug/l	N.D.	0.1	0.1 J	0.1	N.D.	0.1	N.D.	0.1
2-Methylnaphthalene	91-57-6	3.6	ug/l	N.D.	0.1	0.4 J	0.1	N.D.	0.1	N.D.	0.1
Naphthalene	91-20-3	0.17	ug/l	N.D.	0.1	0.7	0.1	N.D.	0.1	N.D.	0.1
Phenanthrene	85-01-8	NS	ug/l	N.D.	0.1	1	0.1	0.2 J	0.1	0.2 J	0.1
Pyrene	129-00-0	12	ug/l	N.D.	0.1	0.8	0.1	N.D.	0.1	0.1 J	0.1
Benzo(a)anthracene*	56-55-3	0.012	ug/l	N.D.	0.011	0.47	0.010	0.030 J	0.010	0.056	0.010
Benzo(b)fluoranthene*	205-99-2	0.034	ug/l	N.D.	0.011	0.71	0.010	0.055	0.010	0.090	0.010
Dibenz(a,h)anthracene*	53-70-3	0.0034	ug/l	N.D.	0.011	0.092	0.010	N.D.	0.010	N.D.	0.010
Indeno(1,2,3-cd)pyrene*	193-39-5	0.034	ug/l	N.D.	0.011	0.33	0.010	0.017 J	0.010	0.032 J	0.010

Value above the USEPA Target Hazard Quotient (THQ) = 0.1 for Tapwater

* Analysis performed using Method 8270 SIM for water to meet the requested reporting limits.

- This summary table includes detected compounds in at least one sample.

Footnotes:
ug/L = microgram per liter
E = Concentration exceeds the calibration range
J = Estimated value > or = the Method Detection Limit
N.D. = Not Detected
NS = No Standard
MDL = Method Detection Limit

Table 4
Inorganic Groundwater Analytical Results
Former Union Switch and Signal Division Facility
Pittsburg, Pennsylvania
July 19 and 20, 2016

Analysis Name	Chemical Abstract Number	USEPA THQ = 0.1 Tapwater	Units	8488108		8488109		8488110		8488111	
				GW-1		GW-2		GW-3		DUP-GW-3	
	(CAS)	mg/l		Result	MDL	Result	MDL	Result	MDL	Result	MDL
INORGANICS											
Aluminum	7429-90-5	2	mg/l	0.612	0.0868	N.D.	0.0868	0.0882 J	0.0868	0.155 J	0.0868
Barium	7440-39-3	0.38	mg/l	0.0856	0.0011	0.144	0.0011	0.345	0.0011	0.324	0.0011
Cadmium	7440-43-9	0.00092	mg/l	0.0040 J	0.00049	0.113	0.00049	0.0016 J	0.00049	0.0016 J	0.00049
Calcium	7440-70-2	NS	mg/l	780	0.191	234	0.0382	244	0.0382	235	0.0382
Chromium	7440-47-3	NS	mg/l	N.D.	0.0018	0.0022 J	0.0018	N.D.	0.0018	N.D.	0.0018
Copper	7440-50-8	0.08	mg/l	0.0062 J	0.0041	0.0125	0.0041	0.0047 J	0.0041	0.0048 J	0.0041
Iron	7439-89-6	1.4	mg/l	83.8	0.0747	N.D.	0.0747	N.D.	0.0747	N.D.	0.0747
Lead	7439-92-1	0.015	mg/l	N.D.	0.0310	N.D.	0.0310	N.D.	0.0062	N.D.	0.0062
Magnesium	7439-95-4	NS	mg/l	134	0.0190	29.7	0.0190	77.9	0.0190	75.2	0.0190
Manganese	7439-96-5	0.043	mg/l	37.4	0.0090	4.78	0.0018	10.5	0.0018	10.1	0.0018
Nickel	7440-02-0	0.039	mg/l	0.104	0.0028	0.143	0.0028	0.0072 J	0.0028	0.0067 J	0.0028
Potassium	7440-09-7	NS	mg/l	25.5	0.160	15.6	0.160	12.1	0.160	11.7	0.160
Selenium	7782-49-2	0.01	mg/l	0.0175 J	0.0097	N.D.	0.0097	N.D.	0.0097	N.D.	0.0097
Silver	7440-22-4	0.0094	mg/l	N.D.	0.0019	N.D.	0.0019	N.D.	0.0019	N.D.	0.0019
Sodium	7440-23-5	NS	mg/l	1,770	0.865	1,310	0.865	64.7	0.173	62.7	0.173
Vanadium	7440-62-2	0.0086	mg/l	N.D.	0.0016	N.D.	0.0016	N.D.	0.0016	N.D.	0.0016
Zinc	7440-66-6	0.6	mg/l	1.10	0.0054	1.12	0.0054	0.0109 J	0.0054	0.0106 J	0.0054
Antimony	7440-36-0	0.00078	mg/l	N.D.	0.00048	0.0036	0.00048	N.D.	0.00048	N.D.	0.00048
Arsenic	7440-38-2	0.000052	mg/l	0.0017 J	0.00068	0.0014 J	0.00068	0.0028	0.00068	0.0024	0.00068
Beryllium	7440-41-7	0.0025	mg/l	0.0014	0.00011	N.D.	0.00011	N.D.	0.00011	N.D.	0.00011
Cobalt	7440-48-4	0.0006	mg/l	0.0403	0.00020	0.0267	0.00020	0.0060	0.00020	0.0058	0.00020
Thallium	7440-28-0	0.00002	mg/l	N.D.	0.00016	N.D.	0.00016	N.D.	0.00016	N.D.	0.00016
Mercury	7439-97-6	0.000063	mg/l	N.D.	0.000050	N.D.	0.000050	N.D.	0.000050	N.D.	0.000050
Total Cyanide (water)	57-12-5	0.00015	mg/l	N.D.	0.025	1.2	0.025	N.D.	0.025	0.0050 J	0.0050

Value above the USEPA target hazard quotient (THQ) = 0.1 for Tapwater

- This summary table includes detected compounds in at least one sample.

Footnotes:
mg/l = milligrams per liter
J = Estimated value > or = the Method Detection Limit
N.D. = Not Detected
NS = No Standard
MDL = Method Detection Limit

Table 5
Soil Gas Analytical Results
Former Union Switch and Signal Division Facility
Pittsburg, Pennsylvania
July 19 and 20, 2016

Analysis Name	Chemical Abstract Number	EPA VISL Com/Ind (1x10-6, HQ=0.1)	UNITS	Sample Results							
				SG-1 Sample depth 12.5'		SG-2 Sample depth 10.0'		SG-3 Sample depth 12.0'		SG-4 Sample depth 8.0'	
	(CAS)	UG/M3		RESULTS	REPLMT	RESULTS	REPLMT	RESULTS	REPLMT	RESULTS	REPLMT
1,3-Butadiene	106-99-0	14	UG/M3	52	0.40	22	0.91	ND	3.2	ND	33
Freon 11	75-69-4	NS	UG/M3	14	1.0	22	2.3	ND	8.1	ND	84
Ethanol	64-17-5	NS	UG/M3	42	1.7	77	3.9	20	14	ND	110
Freon 113	76-13-1	44,000	UG/M3	2.0	1.4	15	3.2	ND	11	ND	120
Acetone	67-64-1	450,000	UG/M3	130	2.2	92	4.9	22	17	ND	360
2-Propanol	67-63-0	2,900	UG/M3	12	2.2	9.8	5.1	ND	18	ND	150
Carbon Disulfide	75-15-0	10,000	UG/M3	14	2.8	9.3	6.4	ND	22	ND	190
Hexane	110-54-3	10,000	UG/M3	65	0.64	17	1.4	ND	5.1	150	53
2-Butanone (Methyl Ethyl Ketone)	78-93-3	73,000	UG/M3	16	2.7	11	6.1	ND	21	ND	180
Cyclohexane	110-82-7	88,000	UG/M3	45	0.63	8.3	1.4	ND	5.0	820	52
Heptane	142-82-5	NS	UG/M3	18	0.74	7.2	1.7	ND	5.9	ND	62
4-Methyl-2-pentanone	108-10-1	44,000	UG/M3	1.2	0.74	ND	1.7	ND	5.9	ND	62
1,3-Dichlorobenzene	541-73-1	NS	UG/M3	7.0	1.1	12	2.5	ND	8.7	ND	90
Freon 12	75-71-8	1,500	UG/M3	4.1	0.18	2.3	0.41	3.0	1.4	ND	74
Chloromethane	74-87-3	1,300	UG/M3	9.0	0.19	4.1	0.43	ND	1.5	ND	310
Vinyl Chloride	75-01-4	93	UG/M3	0.45	0.046	0.49	0.10	ND	0.37	ND	38
Chloroethane	75-00-3	150,000	UG/M3	2.4	0.24	0.72	0.54	ND	1.9	ND	160
1,1-Dichloroethene	75-35-4	2,900	UG/M3	ND	0.072	0.39	0.16	37	0.57	1200	60
1,1-Dichloroethane	75-34-3	260	UG/M3	ND	0.15	ND	0.33	7.3	1.2	140	61
cis-1,2-Dichloroethene	156-59-2	NS	UG/M3	ND	0.14	0.67	0.33	ND	1.1	ND	60
Chloroform	67-66-3	18	UG/M3	1.1	0.18	7.6	0.40	7.4	1.4	98	73
1,1,1-Trichloroethane	71-55-6	73,000	UG/M3	0.85	0.20	1.3	0.45	1,000	1.6	17,000	82
Carbon Tetrachloride	56-23-5	68	UG/M3	0.75	0.23	0.53	0.52	19 J0	1.8	260	95
Benzene	71-43-2	52	UG/M3	20	0.29	14	0.66	2.9	2.3	ND	48
1,2-Dichloroethane	107-06-2	16	UG/M3	0.19	0.15	ND	0.33	ND	1.2	ND	61
Trichloroethene	79-01-6	29	UG/M3	1.2	0.20	230	0.44	42	1.6	490	81
Toluene	108-88-3	73,000	UG/M3	54	0.14	30	0.31	4.0	1.1	ND	57
Tetrachloroethene	127-18-4	580	UG/M3	0.26	0.25	ND	0.56	ND	2.0	ND	100
Ethyl Benzene	100-41-4	160	UG/M3	0.50	0.16	0.40	0.36	ND	1.2	ND	65
m,p-Xylene	108-38-3/106-42-3	1,500	UG/M3	1.4	0.32	1.0	0.72	ND	2.5	ND	65
o-Xylene	95-47-6	1,500	UG/M3	0.56	0.16	0.42	0.36	ND	1.2	ND	65

= Soil gas values above the adjusted Industrial Air limit. An attenuation factor has been applied per the EPA RSL User's Guide using the EPA vapor intrusion screening level (VISL) table. Calculated results are included as Appendix D.

- This summary table includes detected compounds in at least one sample.

Footnotes:
UG/M3 = micrograms per meter cubed
ND = Not Detected
NS = No Standard
J0 = Estimated value due to bias in the CCV
REPLMT = Laboratory Reporting Limit

Appendix A
Boring Logs

AECOM	Client: PA Department of Environmental Protection		**BORING: S-1**
	Project Number: 60397721		
	Site Location: 1789 S. Braddock Ave., Pittsburgh, PA		
	Drilling Method: Geoprobe		Sheet: 1 of 10
	Ground Elevation: 918.462	Borehole Diameter: 2.25"	Lat/Long: 40.42649559, -79.88612655
	Sample Type(s): Soil/GW	Date: 7/20/16	Depth of Boring: 18 ft.
Drilling Contractor: Allied		Logged By: Ellen McGuiness	Water Level: 15.0 ft. bgs

Depth (ft)	Run Number	PID Readings (ppm)	Recovery (ft)	Recovery %	Geologic Description	Remarks
1	1	0	4.5	90	Asphalt and subbase	
2					Grey-green to tan; silty GRAVEL with bricks; dry	
3						
4						
5					Black to medium brown; clayey SAND and GRAVEL, with brick and slag; dry	
6	2		4.5	90		
7		0				
8					Medium brown; fine silty SAND with some clay; moist	Temporary screen set at 8-18' for groundwater sampling (GW-1)
9		17.4				
10		41.3				
11	3	22.6	4.5	90		
12		7.8			Medium brown to grey brown; silty fine SAND with some fine silty gravel; moist to dry	
13		41.9				
14		58.2				
15		9.0			Medium brown to dark grey, black; fine to coarse SAND with some silt and gravel; moist to dry	Soil sampled @ 14 - 15'
16	4	7.5	3.0	100		
17		5.4			Weathered sandstone	
18					Weathered siltstone/shale	
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

NOTES:

Entered by: RYW Date: 8/10/2016
Checked by: EM Date: 8/12/2016

AECOM	Client: PA Department of Environmental Protection		**BORING: S-2**
	Project Number: 60397721		
	Site Location: 1789 S. Braddock Ave., Pittsburgh, PA		
	Drilling Method: Geoprobe		Sheet: 2 of 10
	Ground Elevation: 915.579	Borehole Diameter: 2.25"	Lat/Long: 40.42726065, -79.88584654
	Sample Type(s): Soil	Date: 7/20/16	Depth of Boring: 14 ft.
Drilling Contractor: Allied		Logged By: Ellen McGuiness	Water Level: NA

Depth (ft)	Run Number	PID Readings (ppm)	Recovery (ft)	Recovery %	Geologic Description	Remarks
1	1	0	3.5	70	Asphalt and subbase	Soil sampled @7-8 '
2						
3					Medium orange brown; silty fine to coarse SAND with some fine gravel little slag, brick, concrete; moist	
4						
5						
6	2	0	4.5	95		
7						
8						
9						
10						
11	3	0	4.0	100	Red brown; sandy CLAY grading to grey CLAY	
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

NOTES:

Entered by: RYW Date: 8/10/2016
Checked by: EM Date: 8/10/2016

AECOM	Client: PA Department of Environmental Protection		**BORING: S-3**
	Project Number: 60397721		
	Site Location: 1789 S. Braddock Ave., Pittsburgh, PA		
	Drilling Method: Geoprobe		Sheet: 3 of 10
	Ground Elevation: 905.11	Borehole Diameter: 2.25"	Lat/Long: 40.42595756, -79.88780960
	Sample Type(s): Soil	Date: 7/19/16	Depth of Boring: 20 ft.
Drilling Contractor: Allied		Logged By: Ellen McGuiness	Water Level: NA

Depth (ft)	Run Number	PID Readings (ppm)	Recovery (ft)	Recovery %	Geologic Description	Remarks
1	1	0.1	4.3	85	Light brown; silty SAND with gravel, concrete, brick and slag; dry	
2		0.1				
3		0.2			Black; sandy fine GRAVEL with bricks and concrete; dry	
4		0.1				
5		0.1				
6	2	0.1	4.5	90	Light brown to grey; SAND and GRAVELwith concrete; dry	
7		0				
8		0.2			Black SLAG and GLASS with fine gravel; dry	
9		0.1				
10		0.1				
11	3	0	4.5	90		
12						
13					Medium brown; silty CLAY; light-grey mottled with plastic texture; moist	Soil sampled @ 12-13'
14						
15						
16	4	NA	No recovery	0	No recovery	
17		NA				
18		NA				
19		NA				
20		NA			Light brown SILTSTONE in shoe at refusal	
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

NOTES:

Entered by: RYW Date: 8/10/2016
Checked by: EM Date: 8/12/2016

AECOM	Client: PA Department of Environmental Protection		**BORING: S-4**
	Project Number: 60397721		
	Site Location: 1789 S. Braddock Ave., Pittsburgh, PA		
	Drilling Method: Geoprobe		Sheet: 4 of 10
	Ground Elevation: 902.167	Borehole Diameter: 2.25"	Lat/Long: 40.42581945, -79.88828539
	Sample Type(s): Soil	Date: 7/19/16	Depth of Boring: 13 ft.
Drilling Contractor: Allied		Logged By: Ellen McGuiness	Water Level: NA

Depth (ft)	Run Number	PID Readings (ppm)	Recovery (ft)	Recovery %	Geologic Description	Remarks
1	1	0	4.5	90	Medium brown to light brown; silty SAND and GRAVEL with some organic; dry material; dry	
2						
3		0.2			Black, medium-brown; silty SAND and clay with gravel, slag, concrete and bricks; dry	
4		0.6				
5		2.1				
6	2	0	4.5	90		
7						
8						
9		0.1				
10		0.2				
11	3	0	3.0	100		
12						
13					Light grey SANDSTONE in shoe at refusal	Soil sample collected @ 12-13'
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

NOTES:

Entered by: RYW Date: 8/10/2016
Checked by: EM Date: 8/12/2016

AECOM	Client: PA Department of Environmental Protection		**BORING: S-5**
	Project Number: 60397721		
	Site Location: 1789 S. Braddock Ave., Pittsburgh, PA		
	Drilling Method: Geoprobe		Sheet: 5 of 10
	Ground Elevation: 909.084	Borehole Diameter: 2.25"	Lat/Long: 40.42648146, -79.88804560
	Sample Type(s): Soil	Date: 7/19/16	Depth of Boring: 14 ft.
Drilling Contractor: Allied		Logged By: Ellen McGuiness	Water Level: NA

Depth (ft)	Run Number	PID Readings (ppm)	Recovery (ft)	Recovery %	Geologic Description	Remarks
1					Asphalt and subbase	
2					Medium brown to dark brown; silty clayey SAND with some to little slag, brick, brick and concrete	
3	1	0	3.5	70		
4						
5						
6						
7						
8	2	0	4.5	90		
9						
10					Medium grey to black, orange-grey; silty coarse SAND; slag and brick with some iron staining; moist	
11						
12	3	0	3.6	90		
13						Soil sample collected @ 13-14'
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

NOTES:

Entered by: RYW Date: 8/10/2016
Checked by: EM Date: 8/12/2016

AECOM	Client: PA Department of Environmental Protection		**BORING: S-6**
	Project Number: 60397721		
	Site Location: 1789 S. Braddock Ave., Pittsburgh, PA		
	Drilling Method: Geoprobe		Sheet: 6 of 10
	Ground Elevation: 901.191	Borehole Diameter: 2.25"	Lat/Long: 40.42635718, -79.88787577
	Sample Type(s): Soil	Date: 7/19/16	Depth of Boring: 16 ft.
Drilling Contractor: Allied		Logged By: Ellen McGuiness	Water Level: NA

Depth (ft)	Run Number	PID Readings	Recovery (ft)	Recovery %	Geologic Description	Remarks
1	1	0.1	3.5	70	Asphalt and subbase	
2		0.2			Black to dark-brown; silty SAND and GRAVEL with brick, concrete, slag and pieces of metal; dry	
3		0.2				
4		0.9				
5		1.4				
6	2	0.7	4.8	95		Soil sample collected @ 7-8'
7		1.8				
8		0.4				
9		0.2			Light brown; clayey SAND; slightly moist	
10		0				
11	3	0	4.8	95	Medium-brown, black; silty SAND and GRAVEL with slag and woody debris; wet	
12						
13					Medium, red-brown mottled; sandy CLAY; dry	
14						
15						
16	4	0	1.0	100		
17						
18						
19						
20						
21						
22						
23						
24						
25						

NOTES:

Entered by: RYW Date: 8/10/2016
Checked by: EM Date: 8/12/2016

AECOM	Client: PA Department of Environmental Protection		**BORING: S-7**
	Project Number: 60397721		
	Site Location: 1789 S. Braddock Ave., Pittsburgh, PA		
	Drilling Method: Geoprobe		Sheet: 7 of 10
	Ground Elevation: 909.723	Borehole Diameter: 2.25"	Lat/Long: 40.42807933, -79.88836139
	Sample Type(s): Soil	Date: 7/20/16	Depth of Boring: 14 ft.
Drilling Contractor: Allied		Logged By: Ellen McGuiness	Water Level: NA

Depth (ft)	Run Number	PID Readings (ppm)	Recovery (ft)	Recovery %	Geologic Description	Remarks
1	1	0	4.5	90	Medium brown, organic-rich; silty SAND with little gravel, slag and brick debris	
2						
3					Medium brown, orange-brown; sandy SILT with some to little clay; little gravel, brick and slag debris	
4						
5						
6	2	0	5.0	100		
7		0				
8		0.3				
9		0.1				
10		0.5				
11	3	1.8	4.0	100		Soil sampled @ 11-12'
12		1.5				
13		0			Light grey; weathered SILTSTONE	
14		0				
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

NOTES:

Entered by: RYW Date: 8/10/2016
Checked by: EM Date: 8/12/2016

AECOM	Client: PA Department of Environmental Protection		**BORING: S-8**
	Project Number: 60397721		
	Site Location: 1789 S. Braddock Ave., Pittsburgh, PA		
	Drilling Method: Geoprobe		Sheet: 8 of 10
	Ground Elevation: 907.437	Borehole Diameter: 2.25"	Lat/Long: 40.2790829, -79.88853067
	Sample Type(s): Soil	Date: 7/20/16	Depth of Boring: 10 ft.
Drilling Contractor: Allied		Logged By: Ellen McGuiness	Water Level: NA

Depth (ft)	Run Number	PID Readings (ppm)	Recovery (ft)	Recovery %	Geologic Description	Remarks
1	1	10.7	4.5	90	Black to medium-brown and tan; mottled, sandy SILT with clay; dry	Soil sampled @ 2-3'
2		11.8				
3		10.2				
4		8.7				
5		6.5			Light tan; silty SAND with little gravel; dry	
6	2	0.1	5.0	100	Black coal dust; dry	
7		0.2				
8		0.2			Orange tan; silty SAND and GRAVEL with slag; dry	
9		0				
10		0			Medium grey weathered SILTSTONE	
11						
12						
13						
14						
15						
16						
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NOTES:

Entered by: RYW Date: 8/10/2016
Checked by: EM Date: 8/12/2016

AECOM	Client: PA Department of Environmental Protection		**BORING: S-9**
	Project Number: 60397721		
	Site Location: 1789 S. Braddock Ave., Pittsburgh, PA		
	Drilling Method: Geoprobe		Sheet: 9 of 10
	Ground Elevation: 872.782	Borehole Diameter: 2.25"	Lat/Long: 40.42611001, -79.88869772
	Sample Type(s): Soil/GW	Date: 7/19/16	Depth of Boring: 20 ft.
Drilling Contractor: Allied		Logged By: Ellen McGuiness	Water Level: 14.5

Depth (ft)	Run Number	PID Readings (ppm)	Recovery (ft)	Recovery %	Geologic Description	Remarks
1	1	1.7	4.5	90	Medium brown; silty SAND with gravel; dry	
2		2.1			Medium brown to black brown; silty SAND and GRAVEL with some slag and brick; dry	
3		8.9				
4		25.5				
5		27.3			Black slag; strong odor; dry Red-brown to black-brown; clayey, silty SAND and GRAVEL with slag and brick debris; dry	Soil sampled @ 5-6'
6	2	49.3	4.5	90		
7		5				
8		21.6				
9		1.5				
10		42.6				Temporary screen set at 9-19' for groundwater sampling (GW-2)
11	3	0	4.5	90		
12		0				
13		0.1				
14		0.2				
15		0.5			Red-brown to black-brown; clayey, silty SAND and GRAVEL with slag and brick debris; saturated	
16	4	0	5.0	100		
17					Medium grey-brown; silty CLAY; saturated	
18						
19					Red-brown; silty CLAY; saturated	
20					Red-brown SILTSTONE/CLAYSTONE	
21						
22						
23						
24						
25						

NOTES:

Entered by: RYW Date: 8/10/2016
Checked by: EM Date: 8/12/2016

AECOM	Client: PA Department of Environmental Protection		**BORING: S-10**
	Project Number: 60397721		
	Site Location: 1789 S. Braddock Ave., Pittsburgh, PA		
	Drilling Method: Geoprobe		Sheet: 10 of 10
	Ground Elevation: 839.89	Borehole Diameter: 2.25"	Lat/Long: 40.42736100, -79.88994575
	Sample Type(s): Soil/GW	Date: 7/19/16	Depth of Boring: 13 ft.
Drilling Contractor: Allied		Logged By: Ellen McGuiness	Water Level: 9.8 ft.

Depth (ft)	Run Number	PID Readings (ppm)	Recovery (ft)	Recovery %	Geologic Description	Remarks
1	1	0	4.5	90	Red-brown; silty SAND and GRAVEL; dry	
2					Concrete	
3					Medium brown to orange-brown; silty SAND and GRAVEL; dry	Temporary screen set at 3-13' for groundwater sampling (GW-3)
4						
5						
6	2	0	4.5	90		
7						
8						
9					Black and green-brown; mottled silty CLAY with sand and gravel; dry	
10						
11	3	0	3.0	100		
12					Grey-green and pink; mottled silty CLAY with sand and silt; dry (saturated 11.5-12)	Soil sampled @ 12-13'
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

NOTES:

Entered by: RYW Date: 8/10/2016
Checked by: EM Date: 8/12/2016

Appendix B
Daily Activity Reports and Field Notes

DAILY ACTIVITY REPORT
SHORT FORM

REPORT NO.:		**PROJECT NUMBER:** 60397721.104	**PROJECT NAME:** Union Switch and Signal
DATE:	7/19/2016		**SITE LOCATION:**
PROJ MGR:	Rebecca Walsh	**ON-SITE TECHNICAL REP:**	Ellen McGuiness

Work Phase Description:
Site Investigation

TOTAL FIELD DAYS THIS REPORT: 1

Weather Conditions: Hot and Clear

Personnel On Site: ***(List By Name and Job Title):***	**Name**	**Job Title:**	**ST Hours Worked**	**OT Hours Worked**	**COMMENTS:**
	Ellen McGuiness	**Geoscientist**	**8.0**	**4.0**	
Subcontractor Personnel On-site:	Laura Weir	Letterle			
	Corey Cormican	Allied			
	Eric Wright	Allied			

Equipment On Site:	**Description**	**Equipment Number**	**Days On Site**
	Rental Vehicle		1
	PID		1
	Peristaltic Pump		1
Subcontractor Equipment Onsite	Geoprobe		1
	EM Survey Equipment		1

Narrative Description of Days Activities: (Provide as much detail as possible, attach all pertinent supporting documentation)

Met L. Weir of Letterle onsite at 8am for utility locate using EM. Hold Safety Meeting and then screen location of each boring before clearing each location for drilling.
1100 - Letterle offsite
1115 - Allied onsite hold safety meeting, Drill log and sampled S-3, S-4, S-6, S-5, S-9 and S-10.
Install and Sample temporary well at S-9 (GW-2) screened from 9-19' bgs
Install temporary well at S-10 (GW-3) screened from 3-13' bgs, dry allowed to sit overnight to see if produces water.

Changes to Plans: Moved S-4 to avoid potential underground utility.
GW-3 Dry allowed to sit to see if produces water.

Items Received:

Visitors: Also onsite Kevin Bilash (EPA), Scott McDougall (PADEP)

Contractor Rep: Ellen McGiuiness **Date:** 7/19/2016

Printed on Recycled Paper

DAILY ACTIVITY REPORT
SHORT FORM

REPORT NO.:		**PROJECT NUMBER:** 60397721.104	**PROJECT NAME:** Union Switch and Signal
DATE:	7/20/2016		**SITE LOCATION:**
PROJ MGR:	Rebecca Walsh	**ON-SITE TECHNICAL REP:**	Ellen McGuiness

Work Phase Description:
Site Investigation

TOTAL FIELD DAYS THIS REPORT: 1

Weather Conditions: Hot and Clear

Personnel On Site: ***(List By Name and Job Title):***	**Name**	**Job Title:**	**ST Hours Worked**	**OT Hours Worked**	**COMMENTS:**
	Ellen McGuiness	**Geoscientist**	**8.0**	**3.0**	
Subcontractor Personnel On-site:	Corey Cormican	Allied			
	Eric Wright	Allied			

Equipment On Site:	**Description**	**Equipment Number**	**Days On Site**
	Rental Vehicle		1
	PID		1
	Peristaltic Pump		1
Subcontractor Equipment Onsite	Geoprobe		1

Narrative Description of Days Activities: (Provide as much detail as possible, attach all pertinent supporting documentation)

Met Allied, EPA and PADEP onsite at 800 held safety meeting.
Drilled logged and sampled S-1, S-2, S-7, S-8,
Installed and sampled a temporary Well at S-1 (GW-1) 8-18' bgs
Installed and sampled a temporary vapor point at S-1 (SG-1) screen at 12.5' bgs, at S-2 (SG-2) screen at 10'bgs, at S-8 (SG-4) screen at 8' bgs, at S-3 (SG-3) screen at 12'bgs.

Changes to Plans:

Items Received:

Visitors: Also onsite Kevin Blash (EPA), Scott McDougall (PADEP), Diane McDaniel (PADEP)

Contractor Rep: Ellen McGiuiness **Date:** 7/20/2016

Printed on Recycled Paper

DAILY ACTIVITY REPORT
SHORT FORM

REPORT NO.:		**PROJECT NUMBER:** 60397721.104	**PROJECT NAME:** Union Switch and Signal
DATE:	7/21/2016		**SITE LOCATION:**
PROJ MGR:	Rebecca Walsh	**ON-SITE TECHNICAL REP:**	Ellen McGuiness

Work Phase Description:
Site Investigation

TOTAL FIELD DAYS THIS REPORT: 1

Weather Conditions: Hot and Clear

Personnel On Site:
(List By Name and Job Title):

Name	Job Title:	ST Hours Worked	OT Hours Worked	COMMENTS:
Ellen McGuiness	**Geoscientist**	**5.0**		

Subcontractor Personnel On-site:

Equipment On Site:

Description	Equipment Number	Days On Site
Rental Vehicle		1
PID		1
Peristaltic Pump		1
Hand Held GPS Unit		1

Subcontractor Equipment Onsite

Narrative Description of Days Activities: (Provide as much detail as possible, attach all pertinent supporting documentation)

Sample GW-3 and DUP-072016 slow recharge rate
Pack and relinquish samples to Eurofins Laboratory Driver for sample analysis
Collect GPS coordinates from all locations

Changes to Plans:

Items Received:

Visitors:

Contractor Rep: Ellen McGiuiness **Date:** 7/21/2016

Printed on Recycled Paper

Union Switch & Signal - 07/19/16

Investigative Field Activities

0800 - E. McGuiness (AECOM) onsite; L. Weir (Letterle) hold safety meeting - discuss traffic & heat hazards

0830 - Begin utility locate. No GPR just EM. Shift S-4 from parking space to adjacent grass due to potential for electrical lines running to/from large generator. Will GPS all points prior to leaving site.

1030 - Letterle off site. Calibrate MiniRae 2000 to 100 ppm Benzene. - Passed.

S. McDougall of PADEP onsite.

1115 - Allied on-site hold safety meeting start-dig some @ S-3 0-2' EPA, Kevin Bolish on-site.

0-2' light brown silty SAND, dry w/gravel, concrete, brick & slag.

S-3		PID
0-1	] see above	0.1
1-2		0.1
2-3	black sandy f. GRAVEL w/	0.2
3-4	bricks & concrete	0.1
4-5		0.7
5-6	light brown to grey SAND & GRAVEL	0.1
6-7	with concrete.	0.0

Union Switch & Signal cont. 7/19/16

S-3 cont		PID
7-8	black SLAG & GLASS (f. GRAVEL)	0.2
8-9		0.1
9-10		0.1
10-11		0.0
11-12		0.0
12-13	medium brown silty CLAY, moist	0.0
13-14	light-grey mottled plastic	0.0
14-15		0.0
15-16		NO
16-17	NO RECOVERY	RE
17-18		OV
18-19		ER
19-20	light brown - SILTSTONE in shoe (TRUE REFUSAL)	Y

1200 - S-3 (12-13) for Moisture, Metals, VOCs via terreone, SVOCs, & Total Cyanide, PCBs

1230 - Mob to S-4 offset to grass adjacent to parking space. soft dig 0-3'.

S-4		PID
0-1	medium - light brown silty SAND	0.0
1-2	& GRAVEL w/ some organic material	0.0
2-3	dry.	0.2
3-4	black - medium brown silty SAND & CLAY	0.6
4-5	w/ gravel slag & concrete, & bricks.	

Rite in the Rain

Union Switch & Signal Cont: 7/19/16

S-4 cont.		PID
5-6	SAA	0.0
6-7		0.0
7-8		0.0
8-9		0.1
9-10		0.2
10-11		0.0
11-12		0.0
12-13		0.0

Refusal - light grey SANDSTONE

1300 - S-4 (12-13) for moisture, metals, SVOCs, PCBs, Total Cyanide, & VOCs via Terracore.

1330 - Mob to S-6 core off area & inform Eat-n-Park manager of activities.

S-6		PID
0-1	Asphalt & sub base	0.1
1-2	black - dark brown silty SAND &	0.2
2-3	GRAVEL w/ brick, concrete, slag	0.2
3-4	& pieces of metal, DRY	0.9
4-5		1.4
5-6		0.7
6-7		1.8
7-8		0.4
8-9	lightbrown, clayey SAND, sl. moist	0.2
9-10		0.0

Union Switch & Signal Cont.

S-6		PID
10-11	medium brown-black silty SAND & GRAVEL	0.0
11-12	w/ slag and woody debris, wet.	0.0
12-13		0.0
13-14	medium red brown mottled, sandy CLAY, dry.	0.0
14-15		0.0
15-16		0.0

REFUSAL

1400 - Sample S-6(7-8) for Moisture, Metals, PCBs, Total Cyanide, SVOCs, VOCs via Terra core.

1405 - Mob to S-5 core off area

S-5		PID
0-1	Asphalt & Subbase	0.0
1-2	med-dark brown, silty clayey SANDY	0.0
2-3	some to little slag, brick & concrete	0.0
3-4		0.0
4-5		0.0
5-6		0.0
6-7		0.0
7-8		0.0
8-9		0.0
9-10	medium grey to black and orange grey	0.0
10-11	silty c. SAND moist. w/ slag and	0.0
11-12	brick w/ iron staining.	0.0
12-13		

Rite in the Rain.

S-5 cont. PID

13 - 14 SAA 0.0

Refusal @ 14'

1430 - Sample S-5 (13-14') for moisture, metals, PCBs Total Cyanide SVOCs VOCs & Terraone.

1435 Mob to S-9

S-9 PID

0-1	medium brown silty SAND w/ some gravel, dry	1.7
1-2	medium brown-black brown, silty SAND	2.1
2-3	& GRAVE w/ some slag & brick	8.9
3-4		25.5
4-5	4x0-4.5- black slag, strong odor dry	27.3
5-6	red brown, black brown clayey silty SAND & GRAVEL w/ slag, brick	49.3
6-7	debris.	5.0
7-8		21.6
8-9		1.5
9-10		42.6
10-11		0.0
11-12		0.0
12-13		0.1
13-14		0.2
14-15	(14.5 saturated)	0.5
15-16		0.0

Union Switch & Signal Cont. 7/19/16

S-9 (cont.)		PID
16-17	medium grey brown CLAY, silty CLAY	0.0
17-8		0.0
18-19	red brown silty CLAY	0.0
19-20		0.0

Refusal - redbrown siltstone/claystone.

1500 Sample S-9 (5-6) moisture, metals, PCBs, SVOCs, Total Cyanide, VOCs via Terracore.

Set temporary well (GW-2) in S-9 1" PVC screened 9'-19' ~~#~~ 10 slot. sampled via Peri Pump.

1530 - GW-2 - Total Cyanide, Metals, PCBs, EDBs, PAHs, SVOCs & VOCs.

- SAMPLE HAS SHEEN (Pet. odor)

1540 - S. McDougall off site Mob to S-10/GW-3 clear path using geoprobe

S-10		PID
0-1	red brown silty SAND & GRAVEL	0.0
1-2	concrete	0.0
2-3	medium brown to orange brown	0.0
3-4	silty SAND and GRAVEL	0.0
4-5		0.0

Rite in the Rain

Union South & Signal Cont. 7/19/16

15-10 Cont.		PID.
5-6	SAA	0.0
6-7		0.0
7-8		0.0
8-9	black - green brown mottled	0.0
9-10	silty CLAY w/sand & gravel (dry)	0.0
10-11		0.0
	11.5 - moist - wet	
11-12	grey green / Pink mottled, silty CLAY w/ sand	0.0
12-13	and grey green silt. dry.	0.0

Refusal

1645 - Sample (5-10)(12-13) for Moisture, PCBs, Metals, SVOCs, Total Cyanide, VOCs via Terracore.

Set temporary well GW-3 screened 3'-13'
0.10 slot 1"
No water, will allow to sit overnight to see if temp well produces.

1730 - E. McGuiness & Allied off-site. Drill Rig stored in lower Edgewood lot overnight.

Union Switch & Signal 7/20/16

Investigative Field Activities

0800- E. McGuiness & Allied, EPA & PADEP onsite.
Hold Safety Meeting, Mob to GW-1,
S-1, SG-1

S-1		PID
0-1	Asphalt & subbase	0.0
1-2	grey green / tan, silty GRAVEL w/	0.0
2-3	brick, dry.	0.0
3-4		0.0
4-5	black to medium brown clayey SAND	0.0
5-6	and GRAVEL, with brick & slag.	0.0
6-7		0.0
7-8	medium brown, f. silty SAND w/ some	0.0
8-9	clay, moist.	0.0
9-10		17.4
10-11		41.3
11-12	medium brown, to grey brown, silty f. SAND	22.6
12-13	w/ some f. silty gravel, moist-dry.	7.8
13-14		41.9
14-15	medium brown to dk gry black f-c SAND w/some silt & gravel	58.2
15-16		9.0
16-17	weathered ~~siltstone~~ sandstone	7.5
17-18	weathered siltstone / shale	5.4

0900 - Sampled S-1 (14-15) for Moisture, Metals, PCBs SVOCs, Total Cyanide VOCs via terracore. Rite in the Rain.

Union Scotch & Signal Cont. 7/20/16

0930 - Set screen B-18 for temporary well 1" PVC with 0.10 slot screen.
little flow, intermitant sheen.
Sample for Total Cyanide, Metals PCBs, EDBs, PAHs, SVOCs & VOCs.

1000 - SG-1 drilled & screen set @ 12.5' 6" screen, CAN #34461 under helium shroud.
Start time: 1055 @ 30 PSI (gauge marked)
Finish time: 1126 @ 5 PSI

1215 - Begin drilling S-2

S-2		PID
0-1	Asphalt & Subbase	0.0
1-2		0.0
2-3	medium orange brown, silty SAND w/	0.0
3-4	little slag, brick, concrete,	0.0
4-5	f-c SAND some f. gravel, moist	0.0
5-6		0.0
6-7		0.0
7-8		0.0
8-9		0.0
9-10		0.0
10-11	red brown, sandy CLAY	0.0
11-12	grading to	0.0
12-13		0.0
13-14	grey CLAY Refusal.	0.0

Union Switch & Signal Cont. 7/20/16

1200 - S-2 (7-8) sampled for Moisture metals, PCBs, SVOCs Total Cyanide & VOCs via terracore.

Drill adjacent to S-2 to set SG-2

SG-2 - Can # 34002 @ 10' (6" temp screen)

start time: 1229 @30 PSI

stop time: 1310 @5 PSI

1315 - Stop sampling (Finish) GW-1

- Mob to S-7 & S-8, SG-4.

S-7	Also DUP-072016-2	PID
0-1	medium brown organic rich silty SAND w/ little gravel, slag, brick debris	0.0
1-2		0.0
2-3	medium brown - orange brown sandy	0.0
3-4	SILT w/ some to little clay, little gravel	0.0
4-5	brick & slag debris	0.0
5-6		0.0
6-7		0.0
7-8		0.3
8-9		0.1
9-10		0.5
10-11		1.8
11-12		1.5
12-13	light grey, weathered siltstone	0.0
13-14		

Refusal 14'

Rite in the Rain

Union Switch & Signal cont. 7/20/16.

1345 - Sample S-7 (11-12) for Moisture, Metals PCBs Total Cyanide, SVOCs & VOCs via terracore.

S-8		PID
0-1	black & tan, med. brown mottled	10.7
1-2	sandy SILT w/ clay.	11.8
2-3		10.2
3-4		8.7
4-5	light tan silty SAND w/ little gravel	6.5
5-6	Black coal dust	0.1
6-7		0.2
7-8	orange tan silty SAND & GRAVEL	0.2
8-9	w/ slag.	0.0
9-10	medium GREY weathered SILTSTONE	0.0
	Refusal	

Drill SG-4 set screen @ 8' (6" screen)
SG-4 Can # Z1007
start time: 1448 @ 29 PSI
finish time: 1523 @ 7 PSI

Mob to S-3 to drill SG-3
Set screen @ 12' 6" screen Can # 33917
start time: 1542 @ 28 PSI
finish time: 1607 @ 2 PSI

Union Switch & Signal Cont. 7/20/16

SG-3 flow faster than expected.

1615 - Mob to GW-3 to sample ~~[illegible]~~ 3" of H_2O in 1" temporary well.
purge for 1 - hour before stopping for delay.
will resume tomorrow.

1715 - E. McGuiness & Allied off-site

Rite in the Rain.

Union Switch & Signal 7/21/16

0900 - E. McGuiness on site, held safety meeting, begin purging GW-3 & DUP-072016-1

Organize samples

1150 Finish Purging GW-3 for Sample GW-3 & DUP-072016-1

Pack samples

1220 - Relinquish samples to Eurofins driver.

1230 - Collect GPS coordinates from all sampling locations, ensure site in good condition

1320 - E. Mc Guiness off-site.

Appendix C

Soil, Groundwater, and Soil Gas Analytical Results

eurofins | Lancaster Laboratories Environmental

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Analysis Report

ANALYTICAL RESULTS

Prepared by:

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

Prepared for:

URS Corporation
PO Box 203970
Austin TX 7872019034

Report Date: August 04, 2016

Project: Former Union Switch & Signal Facility

Submittal Date: 07/22/2016
Group Number: 1685925
SDG: USS01
State of Sample Origin: PA

Client Sample Description	Lancaster Labs (LL) #
S-1 (14-15) Grab Soil	8488097
S-2 (7-8) Grab Soil	8488098
S-3 (12-13) Grab Soil	8488099
S-4 (12-13) Grab Soil	8488100
S-5 (13-14) Grab Soil	8488101
S-6 (7-8) Grab Soil	8488102
S-7 (11-12) Grab Soil	8488103
S-8 (2-3) Grab Soil	8488104
S-9 (5-6) Grab Soil	8488105
S-10 (12-13) Grab Soil	8488106
DUP-072016-2 Grab Soil	8488107
GW-1 Grab Groundwater	8488108
GW-2 Grab Groundwater	8488109
GW-3 Grab Groundwater	8488110
DUP-072016-1 Grab Groundwater	8488111
TB-072016-1 Water	8488112
TB-072016-2 Water	8488113
EB-072016 Grab Water	8488114
EB-071916 Grab Water	8488115
FB-071916 Grab Water	8488116
FB-072016 Grab Water	8488117

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

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our scopes of accreditation can be viewed at http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/ .

Electronic Copy To AECOM Attn: Rebecca Walsh

Respectfully Submitted,

Barbara Weyandt

Barbara A. Weyandt
Specialist

(717) 556-7264

Sample Description: S-1 (14-15) Grab Soil
Former Union Switch & Signal Facility

LL Sample # SW 8488097
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/20/2016 09:00 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSS1 SDG#: USS01-01

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		ug/kg		ug/kg	ug/kg	
10237	Acetone	67-64-1	59		5	15	0.68
10237	Benzene	71-43-2	N.D.		0.4	4	0.68
10237	Bromochloromethane	74-97-5	N.D.		0.8	4	0.68
10237	Bromodichloromethane	75-27-4	N.D.		0.8	4	0.68
10237	Bromoform	75-25-2	N.D.		0.8	4	0.68
10237	Bromomethane	74-83-9	N.D.		2	4	0.68
10237	2-Butanone	78-93-3	19		3	8	0.68
10237	Carbon Disulfide	75-15-0	4	J	0.8	4	0.68
10237	Carbon Tetrachloride	56-23-5	N.D.		0.8	4	0.68
10237	Chlorobenzene	108-90-7	N.D.		0.8	4	0.68
10237	Chloroethane	75-00-3	N.D.		2	4	0.68
10237	Chloroform	67-66-3	N.D.		0.8	4	0.68
10237	Chloromethane	74-87-3	N.D.		2	4	0.68
10237	Cyclohexane	110-82-7	N.D.		0.8	4	0.68
10237	1,2-Dibromo-3-chloropropane	96-12-8	N.D.		2	4	0.68
10237	Dibromochloromethane	124-48-1	N.D.		0.8	4	0.68
10237	1,2-Dibromoethane	106-93-4	N.D.		0.8	4	0.68
10237	1,2-Dichlorobenzene	95-50-1	N.D.		0.8	4	0.68
10237	1,3-Dichlorobenzene	541-73-1	N.D.		0.8	4	0.68
10237	1,4-Dichlorobenzene	106-46-7	N.D.		0.8	4	0.68
10237	Dichlorodifluoromethane	75-71-8	N.D.		2	4	0.68
10237	1,1-Dichloroethane	75-34-3	N.D.		0.8	4	0.68
10237	1,2-Dichloroethane	107-06-2	N.D.		0.8	4	0.68
10237	1,1-Dichloroethene	75-35-4	N.D.		0.8	4	0.68
10237	cis-1,2-Dichloroethene	156-59-2	N.D.		0.8	4	0.68
10237	trans-1,2-Dichloroethene	156-60-5	N.D.		0.8	4	0.68
10237	1,2-Dichloropropane	78-87-5	N.D.		0.8	4	0.68
10237	cis-1,3-Dichloropropene	10061-01-5	N.D.		0.8	4	0.68
10237	trans-1,3-Dichloropropene	10061-02-6	N.D.		0.8	4	0.68
10237	Ethylbenzene	100-41-4	N.D.		0.8	4	0.68
10237	Freon 113	76-13-1	N.D.		2	8	0.68
10237	2-Hexanone	591-78-6	N.D.		2	8	0.68
10237	Isopropylbenzene	98-82-8	N.D.		0.8	4	0.68
10237	Methyl Acetate	79-20-9	N.D.		2	4	0.68
10237	Methyl Tertiary Butyl Ether	1634-04-4	N.D.		0.4	4	0.68
10237	4-Methyl-2-pentanone	108-10-1	N.D.		2	8	0.68
10237	Methylcyclohexane	108-87-2	N.D.		0.8	4	0.68
10237	Methylene Chloride	75-09-2	N.D.		2	4	0.68
10237	Styrene	100-42-5	N.D.		0.8	4	0.68
10237	1,1,2,2-Tetrachloroethane	79-34-5	N.D.		0.8	4	0.68
10237	Tetrachloroethene	127-18-4	N.D.		0.8	4	0.68
10237	Toluene	108-88-3	N.D.		0.8	4	0.68
10237	1,2,3-Trichlorobenzene	87-61-6	N.D.		0.8	4	0.68
10237	1,2,4-Trichlorobenzene	120-82-1	N.D.		0.8	4	0.68
10237	1,1,1-Trichloroethane	71-55-6	N.D.		0.8	4	0.68
10237	1,1,2-Trichloroethane	79-00-5	N.D.		0.8	4	0.68
10237	Trichloroethene	79-01-6	N.D.		0.8	4	0.68
10237	Trichlorofluoromethane	75-69-4	N.D.		2	4	0.68
10237	Vinyl Chloride	75-01-4	N.D.		0.8	4	0.68
10237	Xylene (Total)	1330-20-7	N.D.		0.8	4	0.68

The LCS and/or LCSD recoveries are outside the stated QC window but within

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

Sample Description: S-1 (14-15) Grab Soil
Former Union Switch & Signal Facility

LL Sample # SW 8488097
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/20/2016 09:00 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSS1 SDG#: USS01-01

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
	the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: Dibromochloromethane						
	The secondary vial was analyzed and no valid data was collected during re-analysis. Therefore the matrix effects observed in the initial analysis could not be confirmed. The values reported here are from the initial analysis.						
GC/MS Semivolatiles		**SW-846 8270C**	**ug/kg**		**ug/kg**	**ug/kg**	
10727	Acenaphthene	83-32-9	N.D.		4	19	1
10727	Acenaphthylene	208-96-8	N.D.		4	19	1
10727	Acetophenone	98-86-2	N.D.		19	38	1
10727	Anthracene	120-12-7	20		4	19	1
10727	Atrazine	1912-24-9	N.D.		38	190	1
10727	Benzaldehyde	100-52-7	N.D.		75	190	1
10727	Benzo(a)anthracene	56-55-3	16	J	4	19	1
10727	Benzo(a)pyrene	50-32-8	7	J	4	19	1
10727	Benzo(b)fluoranthene	205-99-2	63		4	19	1
10727	Benzo(g,h,i)perylene	191-24-2	19	J	4	19	1
10727	Benzo(k)fluoranthene	207-08-9	6	J	4	19	1
10727	1,1'-Biphenyl	92-52-4	22	J	19	38	1
10727	4-Bromophenyl-phenylether	101-55-3	N.D.		19	38	1
10727	Butylbenzylphthalate	85-68-7	N.D.		75	190	1
10727	Di-n-butylphthalate	84-74-2	N.D.		75	190	1
10727	Caprolactam	105-60-2	N.D.		38	190	1
10727	Carbazole	86-74-8	N.D.		19	38	1
10727	4-Chloro-3-methylphenol	59-50-7	N.D.		19	38	1
10727	4-Chloroaniline	106-47-8	N.D.		38	75	1
10727	bis(2-Chloroethoxy)methane	111-91-1	N.D.		19	38	1
10727	bis(2-Chloroethyl)ether	111-44-4	N.D.		19	38	1
10727	2-Chloronaphthalene	91-58-7	N.D.		8	37	1
10727	2-Chlorophenol	95-57-8	N.D.		19	38	1
10727	4-Chlorophenyl-phenylether	7005-72-3	N.D.		19	38	1
10727	2,2'-oxybis(1-Chloropropane)	108-60-1	N.D.		19	38	1
	Bis(2-chloroisopropyl) ether CAS #39638-32-9 and 2,2'-Oxybis(1-chloropropane) CAS #108-60-1 cannot be separated chromatographically. The reported result represents the combined total of both compounds.						
10727	Chrysene	218-01-9	150		4	19	1
10727	Dibenz(a,h)anthracene	53-70-3	20		4	19	1
10727	Dibenzofuran	132-64-9	31	J	19	38	1
10727	3,3'-Dichlorobenzidine	91-94-1	N.D.		110	380	1
10727	2,4-Dichlorophenol	120-83-2	N.D.		19	38	1
10727	Diethylphthalate	84-66-2	N.D.		75	190	1
10727	2,4-Dimethylphenol	105-67-9	N.D.		19	38	1
10727	Dimethylphthalate	131-11-3	N.D.		75	190	1
10727	4,6-Dinitro-2-methylphenol	534-52-1	N.D.		190	570	1
10727	2,4-Dinitrophenol	51-28-5	N.D.		340	1,100	1
10727	2,4-Dinitrotoluene	121-14-2	N.D.		75	190	1
10727	2,6-Dinitrotoluene	606-20-2	N.D.		19	38	1
10727	1,4-Dioxane	123-91-1	N.D.		110	380	1
10727	bis(2-Ethylhexyl)phthalate	117-81-7	N.D.		75	190	1

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Former Union Switch & Signal Facility

LL Sample # SW 8488097
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/20/2016 09:00 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSS1 SDG#: USS01-01

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C**		**ug/kg**		**ug/kg**	**ug/kg**	
10727	Fluoranthene	206-44-0	24		4	19	1
10727	Fluorene	86-73-7	18	J	4	19	1
10727	Hexachlorobenzene	118-74-1	N.D.		4	19	1
10727	Hexachlorobutadiene	87-68-3	N.D.		19	38	1
10727	Hexachlorocyclopentadiene	77-47-4	N.D.		190	570	1
10727	Hexachloroethane	67-72-1	N.D.		38	190	1
10727	Indeno(1,2,3-cd)pyrene	193-39-5	11	J	4	19	1
10727	Isophorone	78-59-1	N.D.		19	38	1
10727	2-Methylnaphthalene	91-57-6	32		4	19	1
10727	2-Methylphenol	95-48-7	N.D.		19	38	1
10727	4-Methylphenol	106-44-5	N.D.		19	38	1
	3-Methylphenol and 4-methylphenol cannot be resolved under the chromatographic conditions used for sample analysis. The result reported for 4-methylphenol represents the combined total of both compounds.						
10727	Naphthalene	91-20-3	17	J	4	19	1
10727	2-Nitroaniline	88-74-4	N.D.		19	38	1
10727	3-Nitroaniline	99-09-2	N.D.		75	190	1
10727	4-Nitroaniline	100-01-6	N.D.		75	190	1
10727	Nitrobenzene	98-95-3	N.D.		19	38	1
10727	2-Nitrophenol	88-75-5	N.D.		19	38	1
10727	4-Nitrophenol	100-02-7	N.D.		190	570	1
10727	N-Nitroso-di-n-propylamine	621-64-7	N.D.		19	38	1
10727	N-Nitrosodiphenylamine	86-30-6	N.D.		19	38	1
	N-nitrosodiphenylamine decomposes in the GC inlet forming diphenylamine. The result reported for N-nitrosodiphenylamine represents the combined total of both compounds.						
10727	Di-n-octylphthalate	117-84-0	N.D.		75	190	1
10727	Pentachlorophenol	87-86-5	N.D.		38	190	1
10727	Phenanthrene	85-01-8	100		4	19	1
10727	Phenol	108-95-2	N.D.		19	38	1
10727	Pyrene	129-00-0	44		4	19	1
10727	1,2,4,5-Tetrachlorobenzene	95-94-3	N.D.		19	38	1
10727	2,3,4,6-Tetrachlorophenol	58-90-2	N.D.		75	190	1
10727	2,4,5-Trichlorophenol	95-95-4	N.D.		19	38	1
10727	2,4,6-Trichlorophenol	88-06-2	N.D.		19	38	1
Pesticides/PCBs	**SW-846 8082**		**ug/kg**		**ug/kg**	**ug/kg**	
10736	PCB-1016	12674-11-2	N.D.		25	120	1
10736	PCB-1221	11104-28-2	N.D.		31	120	1
10736	PCB-1232	11141-16-5	N.D.		54	120	1
10736	PCB-1242	53469-21-9	N.D.		22	120	1
10736	PCB-1248	12672-29-6	N.D.		22	120	1
10736	PCB-1254	11097-69-1	N.D.		22	120	1
10736	PCB-1260	11096-82-5	N.D.		33	120	1
10736	PCB-1262	37324-23-5	N.D.		22	120	1
10736	PCB-1268	11100-14-4	N.D.		22	120	1
10736	Total PCBs	1336-36-3	N.D.		22	120	1
Metals	**SW-846 6010B**		**mg/kg**		**mg/kg**	**mg/kg**	
01643	Aluminum	7429-90-5	4,630		39.7	91.5	5

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

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Lancaster Laboratories Environmental
2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Analysis Report

Sample Description: S-1 (14-15) Grab Soil
Former Union Switch & Signal Facility

LL Sample # SW 8488097
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/20/2016 09:00 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSS1 SDG#: USS01-01

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010B**		**mg/kg**	**mg/kg**	**mg/kg**	
06944	Antimony	7440-36-0	N.D.	3.20	9.15	5
06935	Arsenic	7440-38-2	6.69 J	4.44	9.15	5
	Reporting limits for ICP metals were raised due to interference from the sample matrix.					
06946	Barium	7440-39-3	115	0.151	2.29	5
06947	Beryllium	7440-41-7	1.93 J	0.307	2.29	5
06949	Cadmium	7440-43-9	0.751 J	0.224	2.29	5
01650	Calcium	7440-70-2	2,260	25.9	91.5	5
06951	Chromium	7440-47-3	13.4	0.641	6.87	5
06952	Cobalt	7440-48-4	20.7	0.549	2.29	5
06953	Copper	7440-50-8	9.63	1.05	4.58	5
01654	Iron	7439-89-6	14,500	18.9	91.5	5
06955	Lead	7439-92-1	11.1	2.52	6.87	5
01657	Magnesium	7439-95-4	404	8.70	45.8	5
06958	Manganese	7439-96-5	351	0.380	2.29	5
06961	Nickel	7440-02-0	52.0	1.37	4.58	5
01662	Potassium	7440-09-7	533	109	229	5
06936	Selenium	7782-49-2	N.D.	4.12	9.15	5
06966	Silver	7440-22-4	N.D.	0.687	2.29	5
01667	Sodium	7440-23-5	674	109	458	5
06971	Vanadium	7440-62-2	10.9	0.641	2.29	5
06972	Zinc	7440-66-6	177	3.11	9.15	5
	SW-846 6020		**mg/kg**	**mg/kg**	**mg/kg**	
06145	Thallium	7440-28-0	0.0615 J	0.0265	0.0915	2
	SW-846 7471A		**mg/kg**	**mg/kg**	**mg/kg**	
00159	Mercury	7439-97-6	0.0295 J	0.0106	0.106	1
Wet Chemistry	**SW-846 9012B**		**mg/kg**	**mg/kg**	**mg/kg**	
05895	Total Cyanide (solid)	57-12-5	N.D.	0.20	0.55	1
Wet Chemistry	**SM 2540 G-1997**		**%**	**%**	**%**	
00111	Moisture	n.a.	11.9	0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.					

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

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

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Sample Description: S-1 (14-15) Grab Soil
Former Union Switch & Signal Facility

LL Sample # SW 8488097
LL Group # 1685925
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USSS1 SDG#: USS01-01

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time		Analyst	Dilution Factor
10237	PPL/TCL Volatiles in Soil	SW-846 8260B	1	B162111AA	07/29/2016	14:12	Jennifer K Howe	0.68
06176	GC/MS - LL Water Prep	SW-846 5035A	1	201620441961	07/22/2016	18:21	Katelyn C Shober	1
06176	GC/MS - LL Water Prep	SW-846 5035A	2	201620441961	07/22/2016	18:21	Katelyn C Shober	1
07579	GC/MS-5g Field Preserv.MeOH-NC	SW-846 5035A	1	201620441961	07/20/2016	09:00	Client Supplied	1
00374	GC/MS - Bulk Soil Prep	SW-846 5035A Modified	1	201620441962	07/22/2016	19:12	Katelyn C Shober	n.a.
00374	GC/MS - Bulk Soil Prep	SW-846 5035A Modified	2	201620441962	07/22/2016	19:12	Katelyn C Shober	n.a.
06646	GC/MS HL Bulk Sample Prep	SW-846 5035A Modified	1	201620441962	07/22/2016	18:40	Katelyn C Shober	n.a.
10727	PPL/TCL SVOCs in Soil	SW-846 8270C	1	16210SLG026	07/30/2016	01:07	Anthony P Bauer	1
10809	BNA Soil Microwave	SW-846 3546	1	16210SLG026	07/29/2016	09:00	Michelle A Newswanger	1
10736	PCBs in Soil (microwave)	SW-846 8082	1	162100026A	07/31/2016	23:22	Jessica L Miller	1
10497	PCB Microwave Soil Extraction	SW-846 3546	1	162100026A	07/29/2016	09:00	David S Schrum	1
01643	Aluminum	SW-846 6010B	1	162095708003	08/01/2016	20:41	Elaine F Stoltzfus	5
06944	Antimony	SW-846 6010B	1	162095708003	08/01/2016	20:41	Elaine F Stoltzfus	5
06935	Arsenic	SW-846 6010B	1	162095708003	08/01/2016	20:41	Elaine F Stoltzfus	5
06946	Barium	SW-846 6010B	1	162095708003	08/01/2016	20:41	Elaine F Stoltzfus	5
06947	Beryllium	SW-846 6010B	1	162095708003	08/01/2016	20:41	Elaine F Stoltzfus	5
06949	Cadmium	SW-846 6010B	1	162095708003	08/01/2016	20:41	Elaine F Stoltzfus	5
01650	Calcium	SW-846 6010B	1	162095708003	08/01/2016	20:41	Elaine F Stoltzfus	5
06951	Chromium	SW-846 6010B	1	162095708003	08/01/2016	20:41	Elaine F Stoltzfus	5
06952	Cobalt	SW-846 6010B	1	162095708003	08/01/2016	20:41	Elaine F Stoltzfus	5
06953	Copper	SW-846 6010B	1	162095708003	08/01/2016	20:41	Elaine F Stoltzfus	5
01654	Iron	SW-846 6010B	1	162095708003	08/01/2016	20:41	Elaine F Stoltzfus	5
06955	Lead	SW-846 6010B	1	162095708003	08/01/2016	20:41	Elaine F Stoltzfus	5
01657	Magnesium	SW-846 6010B	1	162095708003	08/01/2016	20:41	Elaine F Stoltzfus	5
06958	Manganese	SW-846 6010B	1	162095708003	08/01/2016	20:41	Elaine F Stoltzfus	5
06961	Nickel	SW-846 6010B	1	162095708003	08/01/2016	20:41	Elaine F Stoltzfus	5
01662	Potassium	SW-846 6010B	1	162095708003	08/01/2016	20:41	Elaine F Stoltzfus	5

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

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USSS1 SDG#: USS01-01

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06936	Selenium	SW-846 6010B	1	162095708003	08/01/2016 20:41	Elaine F Stoltzfus	5
06966	Silver	SW-846 6010B	1	162095708003	08/02/2016 12:32	Joanne M Gates	5
01667	Sodium	SW-846 6010B	1	162095708003	08/01/2016 20:41	Elaine F Stoltzfus	5
06971	Vanadium	SW-846 6010B	1	162095708003	08/01/2016 20:41	Elaine F Stoltzfus	5
06972	Zinc	SW-846 6010B	1	162095708003	08/01/2016 20:41	Elaine F Stoltzfus	5
06145	Thallium	SW-846 6020	1	162095708003A	07/29/2016 04:57	Choon Y Tian	2
00159	Mercury	SW-846 7471A	1	162105711001	08/01/2016 20:02	Parker D Lindstrom	1
05708	ICP-ICPMS - SW, 3050B - U3	SW-846 3050B	1	162095708003	07/28/2016 07:15	Ann Borg	1
05711	Hg-SW, 7471A - U3	SW-846 7471A	1	162105711001	07/28/2016 19:30	JoElla L Rice	1
05895	Total Cyanide (solid)	SW-846 9012B	1	16213102201B	08/01/2016 12:09	David A Seavey	1
05896	Cyanide Solid Distillation	SW-846 9012B	1	16213102201B	07/31/2016 22:00	Drew M Gerhart	1
00111	Moisture	SM 2540 G-1997	1	16209820004A	07/27/2016 11:39	Larry E Bevins	1

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

Sample Description: S-2 (7-8) Grab Soil
Former Union Switch & Signal Facility

LL Sample # SW 8488098
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/20/2016 12:00 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSS2 SDG#: USS01-02

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**	**ug/kg**	**ug/kg**	
10237	Acetone	67-64-1	N.D.	7	20	0.88
10237	Benzene	71-43-2	N.D.	0.5	5	0.88
10237	Bromochloromethane	74-97-5	N.D.	1	5	0.88
10237	Bromodichloromethane	75-27-4	N.D.	1	5	0.88
10237	Bromoform	75-25-2	N.D.	1	5	0.88
10237	Bromomethane	74-83-9	N.D.	2	5	0.88
10237	2-Butanone	78-93-3	N.D.	4	10	0.88
10237	Carbon Disulfide	75-15-0	N.D.	1	5	0.88
10237	Carbon Tetrachloride	56-23-5	N.D.	1	5	0.88
10237	Chlorobenzene	108-90-7	N.D.	1	5	0.88
10237	Chloroethane	75-00-3	N.D.	2	5	0.88
10237	Chloroform	67-66-3	N.D.	1	5	0.88
10237	Chloromethane	74-87-3	N.D.	2	5	0.88
10237	Cyclohexane	110-82-7	N.D.	1	5	0.88
10237	1,2-Dibromo-3-chloropropane	96-12-8	N.D.	2	5	0.88
10237	Dibromochloromethane	124-48-1	N.D.	1	5	0.88
10237	1,2-Dibromoethane	106-93-4	N.D.	1	5	0.88
10237	1,2-Dichlorobenzene	95-50-1	N.D.	1	5	0.88
10237	1,3-Dichlorobenzene	541-73-1	N.D.	1	5	0.88
10237	1,4-Dichlorobenzene	106-46-7	N.D.	1	5	0.88
10237	Dichlorodifluoromethane	75-71-8	N.D.	2	5	0.88
10237	1,1-Dichloroethane	75-34-3	N.D.	1	5	0.88
10237	1,2-Dichloroethane	107-06-2	N.D.	1	5	0.88
10237	1,1-Dichloroethene	75-35-4	N.D.	1	5	0.88
10237	cis-1,2-Dichloroethene	156-59-2	N.D.	1	5	0.88
10237	trans-1,2-Dichloroethene	156-60-5	N.D.	1	5	0.88
10237	1,2-Dichloropropane	78-87-5	N.D.	1	5	0.88
10237	cis-1,3-Dichloropropene	10061-01-5	N.D.	1	5	0.88
10237	trans-1,3-Dichloropropene	10061-02-6	N.D.	1	5	0.88
10237	Ethylbenzene	100-41-4	N.D.	1	5	0.88
10237	Freon 113	76-13-1	N.D.	2	10	0.88
10237	2-Hexanone	591-78-6	N.D.	3	10	0.88
10237	Isopropylbenzene	98-82-8	N.D.	1	5	0.88
10237	Methyl Acetate	79-20-9	N.D.	2	5	0.88
10237	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.5	5	0.88
10237	4-Methyl-2-pentanone	108-10-1	N.D.	3	10	0.88
10237	Methylcyclohexane	108-87-2	N.D.	1	5	0.88
10237	Methylene Chloride	75-09-2	N.D.	2	5	0.88
10237	Styrene	100-42-5	N.D.	1	5	0.88
10237	1,1,2,2-Tetrachloroethane	79-34-5	N.D.	1	5	0.88
10237	Tetrachloroethene	127-18-4	N.D.	1	5	0.88
10237	Toluene	108-88-3	N.D.	1	5	0.88
10237	1,2,3-Trichlorobenzene	87-61-6	N.D.	1	5	0.88
10237	1,2,4-Trichlorobenzene	120-82-1	N.D.	1	5	0.88
10237	1,1,1-Trichloroethane	71-55-6	N.D.	1	5	0.88
10237	1,1,2-Trichloroethane	79-00-5	N.D.	1	5	0.88
10237	Trichloroethene	79-01-6	2 J	1	5	0.88
10237	Trichlorofluoromethane	75-69-4	N.D.	2	5	0.88
10237	Vinyl Chloride	75-01-4	N.D.	1	5	0.88
10237	Xylene (Total)	1330-20-7	N.D.	1	5	0.88

The LCS and/or LCSD recoveries are outside the stated QC window but within

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

Sample Description: S-2 (7-8) Grab Soil
Former Union Switch & Signal Facility

LL Sample # SW 8488098
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/20/2016 12:00 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSS2 SDG#: USS01-02

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
	the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: Dibromochloromethane					
GC/MS Semivolatiles		**SW-846 8270C**	**ug/kg**	**ug/kg**	**ug/kg**	
10727	Acenaphthene	83-32-9	N.D.	4	19	1
10727	Acenaphthylene	208-96-8	N.D.	4	19	1
10727	Acetophenone	98-86-2	N.D.	18	37	1
10727	Anthracene	120-12-7	N.D.	4	19	1
10727	Atrazine	1912-24-9	N.D.	37	180	1
10727	Benzaldehyde	100-52-7	N.D.	73	180	1
10727	Benzo(a)anthracene	56-55-3	N.D.	4	19	1
10727	Benzo(a)pyrene	50-32-8	N.D.	4	19	1
10727	Benzo(b)fluoranthene	205-99-2	N.D.	4	19	1
10727	Benzo(g,h,i)perylene	191-24-2	N.D.	4	19	1
10727	Benzo(k)fluoranthene	207-08-9	N.D.	4	19	1
10727	1,1'-Biphenyl	92-52-4	N.D.	18	37	1
10727	4-Bromophenyl-phenylether	101-55-3	N.D.	18	37	1
10727	Butylbenzylphthalate	85-68-7	N.D.	73	180	1
10727	Di-n-butylphthalate	84-74-2	N.D.	73	180	1
10727	Caprolactam	105-60-2	N.D.	37	180	1
10727	Carbazole	86-74-8	N.D.	18	37	1
10727	4-Chloro-3-methylphenol	59-50-7	N.D.	18	37	1
10727	4-Chloroaniline	106-47-8	N.D.	37	73	1
10727	bis(2-Chloroethoxy)methane	111-91-1	N.D.	18	37	1
10727	bis(2-Chloroethyl)ether	111-44-4	N.D.	18	37	1
10727	2-Chloronaphthalene	91-58-7	N.D.	7	36	1
10727	2-Chlorophenol	95-57-8	N.D.	18	37	1
10727	4-Chlorophenyl-phenylether	7005-72-3	N.D.	18	37	1
10727	2,2'-oxybis(1-Chloropropane)	108-60-1	N.D.	18	37	1
	Bis(2-chloroisopropyl) ether CAS #39638-32-9 and 2,2'-Oxybis(1-chloropropane) CAS #108-60-1 cannot be separated chromatographically. The reported result represents the combined total of both compounds.					
10727	Chrysene	218-01-9	N.D.	4	19	1
10727	Dibenz(a,h)anthracene	53-70-3	N.D.	4	19	1
10727	Dibenzofuran	132-64-9	N.D.	18	37	1
10727	3,3'-Dichlorobenzidine	91-94-1	N.D.	110	370	1
10727	2,4-Dichlorophenol	120-83-2	N.D.	18	37	1
10727	Diethylphthalate	84-66-2	N.D.	73	180	1
10727	2,4-Dimethylphenol	105-67-9	N.D.	18	37	1
10727	Dimethylphthalate	131-11-3	N.D.	73	180	1
10727	4,6-Dinitro-2-methylphenol	534-52-1	N.D.	180	550	1
10727	2,4-Dinitrophenol	51-28-5	N.D.	330	1,100	1
10727	2,4-Dinitrotoluene	121-14-2	N.D.	73	180	1
10727	2,6-Dinitrotoluene	606-20-2	N.D.	18	37	1
10727	1,4-Dioxane	123-91-1	N.D.	110	370	1
10727	bis(2-Ethylhexyl)phthalate	117-81-7	N.D.	73	190	1
10727	Fluoranthene	206-44-0	N.D.	4	19	1
10727	Fluorene	86-73-7	N.D.	4	19	1
10727	Hexachlorobenzene	118-74-1	N.D.	4	19	1
10727	Hexachlorobutadiene	87-68-3	N.D.	18	37	1
10727	Hexachlorocyclopentadiene	77-47-4	N.D.	180	550	1

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

Sample Description: S-2 (7-8) Grab Soil
Former Union Switch & Signal Facility

LL Sample # SW 8488098
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/20/2016 12:00 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSS2 SDG#: USS01-02

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C**		**ug/kg**	**ug/kg**	**ug/kg**	
10727	Hexachloroethane	67-72-1	N.D.	37	180	1
10727	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	4	19	1
10727	Isophorone	78-59-1	N.D.	18	37	1
10727	2-Methylnaphthalene	91-57-6	N.D.	4	19	1
10727	2-Methylphenol	95-48-7	N.D.	18	37	1
10727	4-Methylphenol	106-44-5	N.D.	18	37	1
	3-Methylphenol and 4-methylphenol cannot be resolved under the chromatographic conditions used for sample analysis. The result reported for 4-methylphenol represents the combined total of both compounds.					
10727	Naphthalene	91-20-3	N.D.	4	19	1
10727	2-Nitroaniline	88-74-4	N.D.	18	37	1
10727	3-Nitroaniline	99-09-2	N.D.	73	180	1
10727	4-Nitroaniline	100-01-6	N.D.	73	180	1
10727	Nitrobenzene	98-95-3	N.D.	18	37	1
10727	2-Nitrophenol	88-75-5	N.D.	18	37	1
10727	4-Nitrophenol	100-02-7	N.D.	180	550	1
10727	N-Nitroso-di-n-propylamine	621-64-7	N.D.	18	37	1
10727	N-Nitrosodiphenylamine	86-30-6	N.D.	18	37	1
	N-nitrosodiphenylamine decomposes in the GC inlet forming diphenylamine. The result reported for N-nitrosodiphenylamine represents the combined total of both compounds.					
10727	Di-n-octylphthalate	117-84-0	N.D.	73	180	1
10727	Pentachlorophenol	87-86-5	N.D.	37	190	1
10727	Phenanthrene	85-01-8	N.D.	4	19	1
10727	Phenol	108-95-2	N.D.	18	37	1
10727	Pyrene	129-00-0	N.D.	4	19	1
10727	1,2,4,5-Tetrachlorobenzene	95-94-3	N.D.	18	37	1
10727	2,3,4,6-Tetrachlorophenol	58-90-2	N.D.	73	180	1
10727	2,4,5-Trichlorophenol	95-95-4	N.D.	18	37	1
10727	2,4,6-Trichlorophenol	88-06-2	N.D.	18	37	1
Pesticides/PCBs	**SW-846 8082**		**ug/kg**	**ug/kg**	**ug/kg**	
10736	PCB-1016	12674-11-2	N.D.	3.9	19	1
10736	PCB-1221	11104-28-2	N.D.	5.0	19	1
10736	PCB-1232	11141-16-5	N.D.	8.7	19	1
10736	PCB-1242	53469-21-9	N.D.	3.6	19	1
10736	PCB-1248	12672-29-6	N.D.	3.6	19	1
10736	PCB-1254	11097-69-1	N.D.	3.6	19	1
10736	PCB-1260	11096-82-5	N.D.	5.3	19	1
10736	PCB-1262	37324-23-5	N.D.	3.6	19	1
10736	PCB-1268	11100-14-4	N.D.	3.6	19	1
10736	Total PCBs	1336-36-3	N.D.	3.6	19	1
Metals	**SW-846 6010B**		**mg/kg**	**mg/kg**	**mg/kg**	
01643	Aluminum	7429-90-5	3,970	8.89	20.5	1
06944	Antimony	7440-36-0	N.D.	0.717	2.05	1
06935	Arsenic	7440-38-2	4.63	0.994	2.05	1
06946	Barium	7440-39-3	32.7	0.0338	0.512	1
06947	Beryllium	7440-41-7	0.510 J	0.0686	0.512	1
06949	Cadmium	7440-43-9	N.D.	0.0502	0.512	1

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

eurofins
Lancaster Laboratories Environmental
2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Analysis Report

Sample Description: S-2 (7-8) Grab Soil
Former Union Switch & Signal Facility

LL Sample # SW 8488098
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/20/2016 12:00 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSS2 SDG#: USS01-02

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010B**		**mg/kg**	**mg/kg**	**mg/kg**	
01650	Calcium	7440-70-2	158	5.80	20.5	1
06951	Chromium	7440-47-3	10.5	0.143	1.54	1
06952	Cobalt	7440-48-4	5.03	0.123	0.512	1
06953	Copper	7440-50-8	8.03	0.236	1.02	1
01654	Iron	7439-89-6	18,100	4.22	20.5	1
06955	Lead	7439-92-1	6.72	0.563	1.54	1
01657	Magnesium	7439-95-4	319	1.95	10.2	1
06958	Manganese	7439-96-5	142	0.0850	0.512	1
06961	Nickel	7440-02-0	5.12	0.307	1.02	1
01662	Potassium	7440-09-7	724	24.5	51.2	1
06936	Selenium	7782-49-2	N.D.	0.922	2.05	1
06966	Silver	7440-22-4	N.D.	0.154	0.512	1
01667	Sodium	7440-23-5	425	24.5	102	1
06971	Vanadium	7440-62-2	11.6	0.143	0.512	1
06972	Zinc	7440-66-6	21.4	0.696	2.05	1
	SW-846 6020		**mg/kg**	**mg/kg**	**mg/kg**	
06145	Thallium	7440-28-0	0.0424 J	0.0297	0.102	2
	SW-846 7471A		**mg/kg**	**mg/kg**	**mg/kg**	
00159	Mercury	7439-97-6	0.0134 J	0.0111	0.111	1
Wet Chemistry	**SW-846 9012B**		**mg/kg**	**mg/kg**	**mg/kg**	
05895	Total Cyanide (solid)	57-12-5	N.D.	0.19	0.53	1
Wet Chemistry	**SM 2540 G-1997**		**%**	**%**	**%**	
00111	Moisture	n.a.	9.6	0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	PPL/TCL Volatiles in Soil	SW-846 8260B	1	B162101AA	07/28/2016 12:15	Jennifer K Howe	0.88
06176	GC/MS - LL Water Prep	SW-846 5035A	1	201620441961	07/22/2016 18:22	Katelyn C Shober	1
06176	GC/MS - LL Water Prep	SW-846 5035A	2	201620441961	07/22/2016 18:22	Katelyn C Shober	1
07579	GC/MS-5g Field Preserv.MeOH-NC	SW-846 5035A	1	201620441961	07/20/2016 12:00	Client Supplied	1

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

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Lancaster Laboratories Environmental
2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Analysis Report

Sample Description: S-2 (7-8) Grab Soil
Former Union Switch & Signal Facility

LL Sample # SW 8488098
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/20/2016 12:00 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSS2 SDG#: USS01-02

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time		Analyst	Dilution Factor
00374	GC/MS - Bulk Soil Prep	SW-846 5035A Modified	1	201620441962	07/22/2016	19:12	Katelyn C Shober	n.a.
00374	GC/MS - Bulk Soil Prep	SW-846 5035A Modified	2	201620441962	07/22/2016	19:12	Katelyn C Shober	n.a.
06646	GC/MS HL Bulk Sample Prep	SW-846 5035A Modified	1	201620441962	07/22/2016	18:43	Katelyn C Shober	n.a.
10727	PPL/TCL SVOCs in Soil	SW-846 8270C	1	16210SLG026	07/30/2016	01:32	Anthony P Bauer	1
10809	BNA Soil Microwave	SW-846 3546	1	16210SLG026	07/29/2016	09:00	Michelle A Newswanger	1
10736	PCBs in Soil (microwave)	SW-846 8082	1	162100026A	07/31/2016	23:34	Jessica L Miller	1
10497	PCB Microwave Soil Extraction	SW-846 3546	1	162100026A	07/29/2016	09:00	David S Schrum	1
01643	Aluminum	SW-846 6010B	1	162095708003	07/29/2016	18:24	Suzanne M Will	1
06944	Antimony	SW-846 6010B	1	162095708003	08/01/2016	21:02	Elaine F Stoltzfus	1
06935	Arsenic	SW-846 6010B	1	162095708003	08/01/2016	21:02	Elaine F Stoltzfus	1
06946	Barium	SW-846 6010B	1	162095708003	07/29/2016	18:24	Suzanne M Will	1
06947	Beryllium	SW-846 6010B	1	162095708003	07/29/2016	18:24	Suzanne M Will	1
06949	Cadmium	SW-846 6010B	1	162095708003	07/29/2016	18:24	Suzanne M Will	1
01650	Calcium	SW-846 6010B	1	162095708003	07/29/2016	18:24	Suzanne M Will	1
06951	Chromium	SW-846 6010B	1	162095708003	07/29/2016	18:24	Suzanne M Will	1
06952	Cobalt	SW-846 6010B	1	162095708003	07/29/2016	18:24	Suzanne M Will	1
06953	Copper	SW-846 6010B	1	162095708003	07/29/2016	18:24	Suzanne M Will	1
01654	Iron	SW-846 6010B	1	162095708003	07/29/2016	18:24	Suzanne M Will	1
06955	Lead	SW-846 6010B	1	162095708003	07/29/2016	18:24	Suzanne M Will	1
01657	Magnesium	SW-846 6010B	1	162095708003	07/29/2016	18:24	Suzanne M Will	1
06958	Manganese	SW-846 6010B	1	162095708003	07/29/2016	18:24	Suzanne M Will	1
06961	Nickel	SW-846 6010B	1	162095708003	07/29/2016	18:24	Suzanne M Will	1
01662	Potassium	SW-846 6010B	1	162095708003	07/29/2016	18:24	Suzanne M Will	1
06936	Selenium	SW-846 6010B	1	162095708003	08/01/2016	21:02	Elaine F Stoltzfus	1
06966	Silver	SW-846 6010B	1	162095708003	07/29/2016	18:24	Suzanne M Will	1
01667	Sodium	SW-846 6010B	1	162095708003	07/29/2016	18:24	Suzanne M Will	1
06971	Vanadium	SW-846 6010B	1	162095708003	07/29/2016	18:24	Suzanne M Will	1
06972	Zinc	SW-846 6010B	1	162095708003	07/29/2016	18:24	Suzanne M Will	1
06145	Thallium	SW-846 6020	1	162095708003A	07/29/2016	05:08	Choon Y Tian	2
00159	Mercury	SW-846 7471A	1	162105711001	08/01/2016	20:16	Parker D Lindstrom	1
05708	ICP-ICPMS - SW, 3050B - U3	SW-846 3050B	1	162095708003	07/28/2016	07:15	Ann Borg	1
05711	Hg-SW, 7471A - U3	SW-846 7471A	1	162105711001	07/28/2016	19:30	JoElla L Rice	1
05895	Total Cyanide (solid)	SW-846 9012B	1	16214102201A	08/01/2016	13:23	David A Seavey	1
05896	Cyanide Solid Distillation	SW-846 9012B	1	16214102201A	08/01/2016	07:30	Nancy J Shoop	1
00111	Moisture	SM 2540 G-1997	1	16209820004A	07/27/2016	11:39	Larry E Bevins	1

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

Sample Description: S-3 (12-13) Grab Soil
Former Union Switch & Signal Facility

LL Sample # SW 8488099
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/19/2016 12:00 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSS3 SDG#: USS01-03

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**	**ug/kg**	**ug/kg**	
10237	Acetone	67-64-1	N.D.	6	17	0.7
10237	Benzene	71-43-2	N.D.	0.4	4	0.7
10237	Bromochloromethane	74-97-5	N.D.	0.8	4	0.7
10237	Bromodichloromethane	75-27-4	N.D.	0.8	4	0.7
10237	Bromoform	75-25-2	N.D.	0.8	4	0.7
10237	Bromomethane	74-83-9	N.D.	2	4	0.7
10237	2-Butanone	78-93-3	N.D.	3	8	0.7
10237	Carbon Disulfide	75-15-0	N.D.	0.8	4	0.7
10237	Carbon Tetrachloride	56-23-5	N.D.	0.8	4	0.7
10237	Chlorobenzene	108-90-7	N.D.	0.8	4	0.7
10237	Chloroethane	75-00-3	N.D.	2	4	0.7
10237	Chloroform	67-66-3	N.D.	0.8	4	0.7
10237	Chloromethane	74-87-3	N.D.	2	4	0.7
10237	Cyclohexane	110-82-7	N.D.	0.8	4	0.7
10237	1,2-Dibromo-3-chloropropane	96-12-8	N.D.	2	4	0.7
10237	Dibromochloromethane	124-48-1	N.D.	0.8	4	0.7
10237	1,2-Dibromoethane	106-93-4	N.D.	0.8	4	0.7
10237	1,2-Dichlorobenzene	95-50-1	N.D.	0.8	4	0.7
10237	1,3-Dichlorobenzene	541-73-1	N.D.	0.8	4	0.7
10237	1,4-Dichlorobenzene	106-46-7	N.D.	0.8	4	0.7
10237	Dichlorodifluoromethane	75-71-8	N.D.	2	4	0.7
10237	1,1-Dichloroethane	75-34-3	N.D.	0.8	4	0.7
10237	1,2-Dichloroethane	107-06-2	N.D.	0.8	4	0.7
10237	1,1-Dichloroethene	75-35-4	N.D.	0.8	4	0.7
10237	cis-1,2-Dichloroethene	156-59-2	N.D.	0.8	4	0.7
10237	trans-1,2-Dichloroethene	156-60-5	N.D.	0.8	4	0.7
10237	1,2-Dichloropropane	78-87-5	N.D.	0.8	4	0.7
10237	cis-1,3-Dichloropropene	10061-01-5	N.D.	0.8	4	0.7
10237	trans-1,3-Dichloropropene	10061-02-6	N.D.	0.8	4	0.7
10237	Ethylbenzene	100-41-4	N.D.	0.8	4	0.7
10237	Freon 113	76-13-1	N.D.	2	8	0.7
10237	2-Hexanone	591-78-6	N.D.	2	8	0.7
10237	Isopropylbenzene	98-82-8	N.D.	0.8	4	0.7
10237	Methyl Acetate	79-20-9	N.D.	2	4	0.7
10237	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.4	4	0.7
10237	4-Methyl-2-pentanone	108-10-1	N.D.	2	8	0.7
10237	Methylcyclohexane	108-87-2	N.D.	0.8	4	0.7
10237	Methylene Chloride	75-09-2	N.D.	2	4	0.7
10237	Styrene	100-42-5	N.D.	0.8	4	0.7
10237	1,1,2,2-Tetrachloroethane	79-34-5	N.D.	0.8	4	0.7
10237	Tetrachloroethene	127-18-4	N.D.	0.8	4	0.7
10237	Toluene	108-88-3	N.D.	0.8	4	0.7
10237	1,2,3-Trichlorobenzene	87-61-6	N.D.	0.8	4	0.7
10237	1,2,4-Trichlorobenzene	120-82-1	N.D.	0.8	4	0.7
10237	1,1,1-Trichloroethane	71-55-6	N.D.	0.8	4	0.7
10237	1,1,2-Trichloroethane	79-00-5	N.D.	0.8	4	0.7
10237	Trichloroethene	79-01-6	2 J	0.8	4	0.7
10237	Trichlorofluoromethane	75-69-4	N.D.	2	4	0.7
10237	Vinyl Chloride	75-01-4	N.D.	0.8	4	0.7
10237	Xylene (Total)	1330-20-7	N.D.	0.8	4	0.7

The LCS and/or LCSD recoveries are outside the stated QC window but within

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

Sample Description: S-3 (12-13) Grab Soil
Former Union Switch & Signal Facility

LL Sample # SW 8488099
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/19/2016 12:00 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSS3 SDG#: USS01-03

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
	the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: Dibromochloromethane						
	The recovery for the sample internal standard is outside the QC acceptance limits. The following corrective action was taken: The sample was re-analyzed and the QC is again outside of the acceptance limits, indicating a matrix effect. The data is reported from the initial trial.						
GC/MS Semivolatiles		**SW-846 8270C**	**ug/kg**		**ug/kg**	**ug/kg**	
10727	Acenaphthene	83-32-9	N.D.		4	20	1
10727	Acenaphthylene	208-96-8	N.D.		4	20	1
10727	Acetophenone	98-86-2	N.D.		20	40	1
10727	Anthracene	120-12-7	N.D.		4	20	1
10727	Atrazine	1912-24-9	N.D.		40	200	1
10727	Benzaldehyde	100-52-7	N.D.		79	200	1
10727	Benzo(a)anthracene	56-55-3	4	J	4	20	1
10727	Benzo(a)pyrene	50-32-8	6	J	4	20	1
10727	Benzo(b)fluoranthene	205-99-2	8	J	4	20	1
10727	Benzo(g,h,i)perylene	191-24-2	N.D.		4	20	1
10727	Benzo(k)fluoranthene	207-08-9	N.D.		4	20	1
10727	1,1'-Biphenyl	92-52-4	N.D.		20	40	1
10727	4-Bromophenyl-phenylether	101-55-3	N.D.		20	40	1
10727	Butylbenzylphthalate	85-68-7	N.D.		79	200	1
10727	Di-n-butylphthalate	84-74-2	N.D.		79	200	1
10727	Caprolactam	105-60-2	N.D.		40	200	1
10727	Carbazole	86-74-8	N.D.		20	40	1
10727	4-Chloro-3-methylphenol	59-50-7	N.D.		20	40	1
10727	4-Chloroaniline	106-47-8	N.D.		40	79	1
10727	bis(2-Chloroethoxy)methane	111-91-1	N.D.		20	40	1
10727	bis(2-Chloroethyl)ether	111-44-4	N.D.		20	40	1
10727	2-Chloronaphthalene	91-58-7	N.D.		8	39	1
10727	2-Chlorophenol	95-57-8	N.D.		20	40	1
10727	4-Chlorophenyl-phenylether	7005-72-3	N.D.		20	40	1
10727	2,2'-oxybis(1-Chloropropane)	108-60-1	N.D.		20	40	1
	Bis(2-chloroisopropyl) ether CAS #39638-32-9 and 2,2'-Oxybis(1-chloropropane) CAS #108-60-1 cannot be separated chromatographically. The reported result represents the combined total of both compounds.						
10727	Chrysene	218-01-9	8	J	4	20	1
10727	Dibenz(a,h)anthracene	53-70-3	N.D.		4	20	1
10727	Dibenzofuran	132-64-9	N.D.		20	40	1
10727	3,3'-Dichlorobenzidine	91-94-1	N.D.		120	400	1
10727	2,4-Dichlorophenol	120-83-2	N.D.		20	40	1
10727	Diethylphthalate	84-66-2	N.D.		79	200	1
10727	2,4-Dimethylphenol	105-67-9	N.D.		20	40	1
10727	Dimethylphthalate	131-11-3	N.D.		79	200	1
10727	4,6-Dinitro-2-methylphenol	534-52-1	N.D.		200	590	1
10727	2,4-Dinitrophenol	51-28-5	N.D.		360	1,200	1
10727	2,4-Dinitrotoluene	121-14-2	N.D.		79	200	1
10727	2,6-Dinitrotoluene	606-20-2	N.D.		20	40	1
10727	1,4-Dioxane	123-91-1	N.D.		120	400	1

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

Sample Description: S-3 (12-13) Grab Soil
Former Union Switch & Signal Facility

LL Sample # SW 8488099
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/19/2016 12:00 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSS3 SDG#: USS01-03

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C**		**ug/kg**		**ug/kg**	**ug/kg**	
10727	bis(2-Ethylhexyl)phthalate	117-81-7	N.D.		79	200	1
10727	Fluoranthene	206-44-0	6	J	4	20	1
10727	Fluorene	86-73-7	N.D.		4	20	1
10727	Hexachlorobenzene	118-74-1	N.D.		4	20	1
10727	Hexachlorobutadiene	87-68-3	N.D.		20	40	1
10727	Hexachlorocyclopentadiene	77-47-4	N.D.		200	590	1
10727	Hexachloroethane	67-72-1	N.D.		40	200	1
10727	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.		4	20	1
10727	Isophorone	78-59-1	N.D.		20	40	1
10727	2-Methylnaphthalene	91-57-6	7	J	4	20	1
10727	2-Methylphenol	95-48-7	N.D.		20	40	1
10727	4-Methylphenol	106-44-5	N.D.		20	40	1
	3-Methylphenol and 4-methylphenol cannot be resolved under the chromatographic conditions used for sample analysis. The result reported for 4-methylphenol represents the combined total of both compounds.						
10727	Naphthalene	91-20-3	6	J	4	20	1
10727	2-Nitroaniline	88-74-4	N.D.		20	40	1
10727	3-Nitroaniline	99-09-2	N.D.		79	200	1
10727	4-Nitroaniline	100-01-6	N.D.		79	200	1
10727	Nitrobenzene	98-95-3	N.D.		20	40	1
10727	2-Nitrophenol	88-75-5	N.D.		20	40	1
10727	4-Nitrophenol	100-02-7	N.D.		200	590	1
10727	N-Nitroso-di-n-propylamine	621-64-7	N.D.		20	40	1
10727	N-Nitrosodiphenylamine	86-30-6	N.D.		20	40	1
	N-nitrosodiphenylamine decomposes in the GC inlet forming diphenylamine. The result reported for N-nitrosodiphenylamine represents the combined total of both compounds.						
10727	Di-n-octylphthalate	117-84-0	N.D.		79	200	1
10727	Pentachlorophenol	87-86-5	N.D.		40	200	1
10727	Phenanthrene	85-01-8	10	J	4	20	1
10727	Phenol	108-95-2	N.D.		20	40	1
10727	Pyrene	129-00-0	8	J	4	20	1
10727	1,2,4,5-Tetrachlorobenzene	95-94-3	N.D.		20	40	1
10727	2,3,4,6-Tetrachlorophenol	58-90-2	N.D.		79	200	1
10727	2,4,5-Trichlorophenol	95-95-4	N.D.		20	40	1
10727	2,4,6-Trichlorophenol	88-06-2	N.D.		20	40	1
Pesticides/PCBs	**SW-846 8082**		**ug/kg**		**ug/kg**	**ug/kg**	
10736	PCB-1016	12674-11-2	N.D.		4.2	20	1
10736	PCB-1221	11104-28-2	N.D.		5.4	20	1
10736	PCB-1232	11141-16-5	N.D.		9.4	20	1
10736	PCB-1242	53469-21-9	N.D.		3.9	20	1
10736	PCB-1248	12672-29-6	N.D.		3.9	20	1
10736	PCB-1254	11097-69-1	N.D.		3.9	20	1
10736	PCB-1260	11096-82-5	N.D.		5.8	20	1
10736	PCB-1262	37324-23-5	N.D.		3.9	20	1
10736	PCB-1268	11100-14-4	N.D.		3.9	20	1
10736	Total PCBs	1336-36-3	N.D.		3.9	20	1
Metals	**SW-846 6010B**		**mg/kg**		**mg/kg**	**mg/kg**	

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

eurofins
Lancaster Laboratories Environmental
2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Analysis Report

Sample Description: S-3 (12-13) Grab Soil
Former Union Switch & Signal Facility

LL Sample # SW 8488099
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/19/2016 12:00 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSS3 SDG#: USS01-03

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010B**		**mg/kg**	**mg/kg**	**mg/kg**	
01643	Aluminum	7429-90-5	14,900	7.36	17.0	1
06944	Antimony	7440-36-0	1.15 J	0.594	1.70	1
06935	Arsenic	7440-38-2	13.3	0.823	1.70	1
06946	Barium	7440-39-3	80.9	0.0280	0.424	1
06947	Beryllium	7440-41-7	0.905	0.0568	0.424	1
06949	Cadmium	7440-43-9	0.544	0.0416	0.424	1
01650	Calcium	7440-70-2	583	4.80	17.0	1
06951	Chromium	7440-47-3	26.6	0.119	1.27	1
06952	Cobalt	7440-48-4	11.7	0.102	0.424	1
06953	Copper	7440-50-8	61.7	0.195	0.848	1
01654	Iron	7439-89-6	35,900	17.5	84.8	5
06955	Lead	7439-92-1	36.2	0.467	1.27	1
01657	Magnesium	7439-95-4	1,560	1.61	8.48	1
06958	Manganese	7439-96-5	664	0.0704	0.424	1
06961	Nickel	7440-02-0	15.7	0.254	0.848	1
01662	Potassium	7440-09-7	1,050	20.3	42.4	1
06936	Selenium	7782-49-2	1.65 J	0.763	1.70	1
06966	Silver	7440-22-4	N.D.	0.127	0.424	1
01667	Sodium	7440-23-5	537	20.3	84.8	1
06971	Vanadium	7440-62-2	34.5	0.119	0.424	1
06972	Zinc	7440-66-6	46.6	0.577	1.70	1
	SW-846 6020		**mg/kg**	**mg/kg**	**mg/kg**	
06145	Thallium	7440-28-0	0.221	0.0246	0.0848	2
	SW-846 7471A		**mg/kg**	**mg/kg**	**mg/kg**	
00159	Mercury	7439-97-6	0.0271 J	0.0110	0.110	1
Wet Chemistry	**SW-846 9012B**		**mg/kg**	**mg/kg**	**mg/kg**	
05895	Total Cyanide (solid)	57-12-5	N.D.	0.20	0.57	1
Wet Chemistry	**SM 2540 G-1997**		**%**	**%**	**%**	
00111	Moisture	n.a.	15.8	0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor

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

eurofins
Lancaster Laboratories Environmental
2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Analysis Report

Sample Description: S-3 (12-13) Grab Soil
Former Union Switch & Signal Facility

LL Sample # SW 8488099
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/19/2016 12:00 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSS3 SDG#: USS01-03

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	PPL/TCL Volatiles in Soil	SW-846 8260B	1	B162101AA	07/28/2016 12:38	Jennifer K Howe	0.7
06176	GC/MS - LL Water Prep	SW-846 5035A	1	201620441961	07/22/2016 18:21	Katelyn C Shober	1
06176	GC/MS - LL Water Prep	SW-846 5035A	2	201620441961	07/22/2016 18:21	Katelyn C Shober	1
07579	GC/MS-5g Field Preserv.MeOH-NC	SW-846 5035A	1	201620441961	07/19/2016 12:00	Client Supplied	1
00374	GC/MS - Bulk Soil Prep	SW-846 5035A Modified	1	201620441962	07/22/2016 19:12	Katelyn C Shober	n.a.
00374	GC/MS - Bulk Soil Prep	SW-846 5035A Modified	2	201620441962	07/22/2016 19:12	Katelyn C Shober	n.a.
06646	GC/MS HL Bulk Sample Prep	SW-846 5035A Modified	1	201620441962	07/22/2016 18:45	Katelyn C Shober	n.a.
10727	PPL/TCL SVOCs in Soil	SW-846 8270C	1	16210SLG026	07/30/2016 01:56	Anthony P Bauer	1
10809	BNA Soil Microwave	SW-846 3546	1	16210SLG026	07/29/2016 09:00	Michelle A Newswanger	1
10736	PCBs in Soil (microwave)	SW-846 8082	1	162100026A	07/31/2016 23:46	Jessica L Miller	1
10497	PCB Microwave Soil Extraction	SW-846 3546	1	162100026A	07/29/2016 09:00	David S Schrum	1
01643	Aluminum	SW-846 6010B	1	162095708003	07/29/2016 18:27	Suzanne M Will	1
06944	Antimony	SW-846 6010B	1	162095708003	08/01/2016 21:15	Elaine F Stoltzfus	1
06935	Arsenic	SW-846 6010B	1	162095708003	08/01/2016 21:15	Elaine F Stoltzfus	1
06946	Barium	SW-846 6010B	1	162095708003	07/29/2016 18:27	Suzanne M Will	1
06947	Beryllium	SW-846 6010B	1	162095708003	07/29/2016 18:27	Suzanne M Will	1
06949	Cadmium	SW-846 6010B	1	162095708003	08/01/2016 21:15	Elaine F Stoltzfus	1
01650	Calcium	SW-846 6010B	1	162095708003	07/29/2016 18:27	Suzanne M Will	1
06951	Chromium	SW-846 6010B	1	162095708003	07/29/2016 18:27	Suzanne M Will	1
06952	Cobalt	SW-846 6010B	1	162095708003	07/29/2016 18:27	Suzanne M Will	1
06953	Copper	SW-846 6010B	1	162095708003	07/29/2016 18:27	Suzanne M Will	1
01654	Iron	SW-846 6010B	1	162095708003	08/01/2016 21:19	Elaine F Stoltzfus	5
06955	Lead	SW-846 6010B	1	162095708003	07/29/2016 18:27	Suzanne M Will	1
01657	Magnesium	SW-846 6010B	1	162095708003	07/29/2016 18:27	Suzanne M Will	1
06958	Manganese	SW-846 6010B	1	162095708003	07/29/2016 18:27	Suzanne M Will	1
06961	Nickel	SW-846 6010B	1	162095708003	07/29/2016 18:27	Suzanne M Will	1
01662	Potassium	SW-846 6010B	1	162095708003	07/29/2016 18:27	Suzanne M Will	1
06936	Selenium	SW-846 6010B	1	162095708003	08/01/2016 21:15	Elaine F Stoltzfus	1
06966	Silver	SW-846 6010B	1	162095708003	07/29/2016 18:27	Suzanne M Will	1
01667	Sodium	SW-846 6010B	1	162095708003	07/29/2016 18:27	Suzanne M Will	1
06971	Vanadium	SW-846 6010B	1	162095708003	07/29/2016 18:27	Suzanne M Will	1
06972	Zinc	SW-846 6010B	1	162095708003	07/29/2016 18:27	Suzanne M Will	1
06145	Thallium	SW-846 6020	1	162095708003A	07/29/2016 05:09	Choon Y Tian	2
00159	Mercury	SW-846 7471A	1	162105711001	08/01/2016 20:18	Parker D Lindstrom	1
05708	ICP-ICPMS - SW, 3050B - U3	SW-846 3050B	1	162095708003	07/28/2016 07:15	Ann Borg	1
05711	Hg-SW, 7471A - U3	SW-846 7471A	1	162105711001	07/28/2016 19:30	JoElla L Rice	1

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

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Analysis Report

Sample Description: S-3 (12-13) Grab Soil
Former Union Switch & Signal Facility

LL Sample # SW 8488099
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/19/2016 12:00 by EM

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

URS Corporation
PO Box 203970
Austin TX 7872019034

USSS3 SDG#: USS01-03

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
05895	Total Cyanide (solid)	SW-846 9012B	1	16213102201B	08/01/2016 12:10	David A Seavey	1
05896	Cyanide Solid Distillation	SW-846 9012B	1	16213102201B	07/31/2016 22:00	Drew M Gerhart	1
00111	Moisture	SM 2540 G-1997	1	16209820004A	07/27/2016 11:39	Larry E Bevins	1

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

Sample Description: S-4 (12-13) Grab Soil
Former Union Switch & Signal Facility

LL Sample # SW 8488100
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/19/2016 13:00 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSS4 SDG#: USS01-04

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**		**ug/kg**	**ug/kg**	
10237	Acetone	67-64-1	14	J	6	18	0.76
10237	Benzene	71-43-2	N.D.		0.5	5	0.76
10237	Bromochloromethane	74-97-5	N.D.		0.9	5	0.76
10237	Bromodichloromethane	75-27-4	N.D.		0.9	5	0.76
10237	Bromoform	75-25-2	N.D.		0.9	5	0.76
10237	Bromomethane	74-83-9	N.D.		2	5	0.76
10237	2-Butanone	78-93-3	N.D.		4	9	0.76
10237	Carbon Disulfide	75-15-0	N.D.		0.9	5	0.76
10237	Carbon Tetrachloride	56-23-5	N.D.		0.9	5	0.76
10237	Chlorobenzene	108-90-7	N.D.		0.9	5	0.76
10237	Chloroethane	75-00-3	N.D.		2	5	0.76
10237	Chloroform	67-66-3	N.D.		0.9	5	0.76
10237	Chloromethane	74-87-3	N.D.		2	5	0.76
10237	Cyclohexane	110-82-7	N.D.		0.9	5	0.76
10237	1,2-Dibromo-3-chloropropane	96-12-8	N.D.		2	5	0.76
10237	Dibromochloromethane	124-48-1	N.D.		0.9	5	0.76
10237	1,2-Dibromoethane	106-93-4	N.D.		0.9	5	0.76
10237	1,2-Dichlorobenzene	95-50-1	N.D.		0.9	5	0.76
10237	1,3-Dichlorobenzene	541-73-1	N.D.		0.9	5	0.76
10237	1,4-Dichlorobenzene	106-46-7	N.D.		0.9	5	0.76
10237	Dichlorodifluoromethane	75-71-8	N.D.		2	5	0.76
10237	1,1-Dichloroethane	75-34-3	N.D.		0.9	5	0.76
10237	1,2-Dichloroethane	107-06-2	N.D.		0.9	5	0.76
10237	1,1-Dichloroethene	75-35-4	N.D.		0.9	5	0.76
10237	cis-1,2-Dichloroethene	156-59-2	N.D.		0.9	5	0.76
10237	trans-1,2-Dichloroethene	156-60-5	N.D.		0.9	5	0.76
10237	1,2-Dichloropropane	78-87-5	N.D.		0.9	5	0.76
10237	cis-1,3-Dichloropropene	10061-01-5	N.D.		0.9	5	0.76
10237	trans-1,3-Dichloropropene	10061-02-6	N.D.		0.9	5	0.76
10237	Ethylbenzene	100-41-4	N.D.		0.9	5	0.76
10237	Freon 113	76-13-1	N.D.		2	9	0.76
10237	2-Hexanone	591-78-6	N.D.		3	9	0.76
10237	Isopropylbenzene	98-82-8	N.D.		0.9	5	0.76
10237	Methyl Acetate	79-20-9	N.D.		2	5	0.76
10237	Methyl Tertiary Butyl Ether	1634-04-4	N.D.		0.5	5	0.76
10237	4-Methyl-2-pentanone	108-10-1	N.D.		3	9	0.76
10237	Methylcyclohexane	108-87-2	N.D.		0.9	5	0.76
10237	Methylene Chloride	75-09-2	N.D.		2	5	0.76
10237	Styrene	100-42-5	N.D.		0.9	5	0.76
10237	1,1,2,2-Tetrachloroethane	79-34-5	N.D.		0.9	5	0.76
10237	Tetrachloroethene	127-18-4	N.D.		0.9	5	0.76
10237	Toluene	108-88-3	N.D.		0.9	5	0.76
10237	1,2,3-Trichlorobenzene	87-61-6	N.D.		0.9	5	0.76
10237	1,2,4-Trichlorobenzene	120-82-1	N.D.		0.9	5	0.76
10237	1,1,1-Trichloroethane	71-55-6	N.D.		0.9	5	0.76
10237	1,1,2-Trichloroethane	79-00-5	N.D.		0.9	5	0.76
10237	Trichloroethene	79-01-6	N.D.		0.9	5	0.76
10237	Trichlorofluoromethane	75-69-4	N.D.		2	5	0.76
10237	Vinyl Chloride	75-01-4	N.D.		0.9	5	0.76
10237	Xylene (Total)	1330-20-7	N.D.		0.9	5	0.76

The LCS and/or LCSD recoveries are outside the stated QC window but within

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

Sample Description: S-4 (12-13) Grab Soil
Former Union Switch & Signal Facility

LL Sample # SW 8488100
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/19/2016 13:00 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSS4 SDG#: USS01-04

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
	the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: Dibromochloromethane						
GC/MS Semivolatiles		**SW-846 8270C**	**ug/kg**		**ug/kg**	**ug/kg**	
10727	Acenaphthene	83-32-9	N.D.		4	20	1
10727	Acenaphthylene	208-96-8	N.D.		4	20	1
10727	Acetophenone	98-86-2	N.D.		20	40	1
10727	Anthracene	120-12-7	13	J	4	20	1
10727	Atrazine	1912-24-9	N.D.		40	200	1
10727	Benzaldehyde	100-52-7	N.D.		80	200	1
10727	Benzo(a)anthracene	56-55-3	39		4	20	1
10727	Benzo(a)pyrene	50-32-8	33		4	20	1
10727	Benzo(b)fluoranthene	205-99-2	46		4	20	1
10727	Benzo(g,h,i)perylene	191-24-2	28		4	20	1
10727	Benzo(k)fluoranthene	207-08-9	18	J	4	20	1
10727	1,1'-Biphenyl	92-52-4	N.D.		20	40	1
10727	4-Bromophenyl-phenylether	101-55-3	N.D.		20	40	1
10727	Butylbenzylphthalate	85-68-7	N.D.		80	200	1
10727	Di-n-butylphthalate	84-74-2	N.D.		80	200	1
10727	Caprolactam	105-60-2	N.D.		40	200	1
10727	Carbazole	86-74-8	N.D.		20	40	1
10727	4-Chloro-3-methylphenol	59-50-7	N.D.		20	40	1
10727	4-Chloroaniline	106-47-8	N.D.		40	80	1
10727	bis(2-Chloroethoxy)methane	111-91-1	N.D.		20	40	1
10727	bis(2-Chloroethyl)ether	111-44-4	N.D.		20	40	1
10727	2-Chloronaphthalene	91-58-7	N.D.		8	39	1
10727	2-Chlorophenol	95-57-8	N.D.		20	40	1
10727	4-Chlorophenyl-phenylether	7005-72-3	N.D.		20	40	1
10727	2,2'-oxybis(1-Chloropropane)	108-60-1	N.D.		20	40	1
	Bis(2-chloroisopropyl) ether CAS #39638-32-9 and 2,2'-Oxybis(1-chloropropane) CAS #108-60-1 cannot be separated chromatographically. The reported result represents the combined total of both compounds.						
10727	Chrysene	218-01-9	54		4	20	1
10727	Dibenz(a,h)anthracene	53-70-3	8	J	4	20	1
10727	Dibenzofuran	132-64-9	22	J	20	40	1
10727	3,3'-Dichlorobenzidine	91-94-1	N.D.		120	400	1
10727	2,4-Dichlorophenol	120-83-2	N.D.		20	40	1
10727	Diethylphthalate	84-66-2	N.D.		80	200	1
10727	2,4-Dimethylphenol	105-67-9	N.D.		20	40	1
10727	Dimethylphthalate	131-11-3	N.D.		80	200	1
10727	4,6-Dinitro-2-methylphenol	534-52-1	N.D.		200	600	1
10727	2,4-Dinitrophenol	51-28-5	N.D.		360	1,200	1
10727	2,4-Dinitrotoluene	121-14-2	N.D.		80	200	1
10727	2,6-Dinitrotoluene	606-20-2	N.D.		20	40	1
10727	1,4-Dioxane	123-91-1	N.D.		120	400	1
10727	bis(2-Ethylhexyl)phthalate	117-81-7	N.D.		80	200	1
10727	Fluoranthene	206-44-0	62		4	20	1
10727	Fluorene	86-73-7	6	J	4	20	1
10727	Hexachlorobenzene	118-74-1	N.D.		4	20	1
10727	Hexachlorobutadiene	87-68-3	N.D.		20	40	1
10727	Hexachlorocyclopentadiene	77-47-4	N.D.		200	600	1

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

Sample Description: S-4 (12-13) Grab Soil
Former Union Switch & Signal Facility

LL Sample # SW 8488100
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/19/2016 13:00 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSS4 SDG#: USS01-04

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C**		**ug/kg**	**ug/kg**	**ug/kg**	
10727	Hexachloroethane	67-72-1	N.D.	40	200	1
10727	Indeno(1,2,3-cd)pyrene	193-39-5	25	4	20	1
10727	Isophorone	78-59-1	N.D.	20	40	1
10727	2-Methylnaphthalene	91-57-6	50	4	20	1
10727	2-Methylphenol	95-48-7	N.D.	20	40	1
10727	4-Methylphenol	106-44-5	N.D.	20	40	1
	3-Methylphenol and 4-methylphenol cannot be resolved under the chromatographic conditions used for sample analysis. The result reported for 4-methylphenol represents the combined total of both compounds.					
10727	Naphthalene	91-20-3	30	4	20	1
10727	2-Nitroaniline	88-74-4	N.D.	20	40	1
10727	3-Nitroaniline	99-09-2	N.D.	80	200	1
10727	4-Nitroaniline	100-01-6	N.D.	80	200	1
10727	Nitrobenzene	98-95-3	N.D.	20	40	1
10727	2-Nitrophenol	88-75-5	N.D.	20	40	1
10727	4-Nitrophenol	100-02-7	N.D.	200	600	1
10727	N-Nitroso-di-n-propylamine	621-64-7	N.D.	20	40	1
10727	N-Nitrosodiphenylamine	86-30-6	N.D.	20	40	1
	N-nitrosodiphenylamine decomposes in the GC inlet forming diphenylamine. The result reported for N-nitrosodiphenylamine represents the combined total of both compounds.					
10727	Di-n-octylphthalate	117-84-0	N.D.	80	200	1
10727	Pentachlorophenol	87-86-5	N.D.	40	200	1
10727	Phenanthrene	85-01-8	58	4	20	1
10727	Phenol	108-95-2	N.D.	20	40	1
10727	Pyrene	129-00-0	67	4	20	1
10727	1,2,4,5-Tetrachlorobenzene	95-94-3	N.D.	20	40	1
10727	2,3,4,6-Tetrachlorophenol	58-90-2	N.D.	80	200	1
10727	2,4,5-Trichlorophenol	95-95-4	N.D.	20	40	1
10727	2,4,6-Trichlorophenol	88-06-2	N.D.	20	40	1
Pesticides/PCBs	**SW-846 8082**		**ug/kg**	**ug/kg**	**ug/kg**	
10736	PCB-1016	12674-11-2	N.D.	4.3	20	1
10736	PCB-1221	11104-28-2	N.D.	5.5	20	1
10736	PCB-1232	11141-16-5	N.D.	9.5	20	1
10736	PCB-1242	53469-21-9	N.D.	3.9	20	1
10736	PCB-1248	12672-29-6	N.D.	3.9	20	1
10736	PCB-1254	11097-69-1	N.D.	3.9	20	1
10736	PCB-1260	11096-82-5	N.D.	5.8	20	1
10736	PCB-1262	37324-23-5	N.D.	3.9	20	1
10736	PCB-1268	11100-14-4	N.D.	3.9	20	1
10736	Total PCBs	1336-36-3	N.D.	3.9	20	1
Metals	**SW-846 6010B**		**mg/kg**	**mg/kg**	**mg/kg**	
01643	Aluminum	7429-90-5	19,800	9.73	22.4	1
06944	Antimony	7440-36-0	1.22 J	0.784	2.24	1
06935	Arsenic	7440-38-2	17.1	1.09	2.24	1
06946	Barium	7440-39-3	137	0.0370	0.560	1
06947	Beryllium	7440-41-7	1.27	0.0751	0.560	1
06949	Cadmium	7440-43-9	0.715	0.0549	0.560	1

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

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Analysis Report

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Sample Description: S-4 (12-13) Grab Soil
Former Union Switch & Signal Facility

LL Sample # SW 8488100
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/19/2016 13:00 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSS4 SDG#: USS01-04

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010B**		**mg/kg**	**mg/kg**	**mg/kg**	
01650	Calcium	7440-70-2	5,520	6.34	22.4	1
06951	Chromium	7440-47-3	26.0	0.157	1.68	1
06952	Cobalt	7440-48-4	17.8	0.134	0.560	1
06953	Copper	7440-50-8	58.0	0.258	1.12	1
01654	Iron	7439-89-6	43,900	23.1	112	5
06955	Lead	7439-92-1	70.4	0.616	1.68	1
01657	Magnesium	7439-95-4	4,350	2.13	11.2	1
06958	Manganese	7439-96-5	484	0.0930	0.560	1
06961	Nickel	7440-02-0	35.3	0.336	1.12	1
01662	Potassium	7440-09-7	3,370	26.8	56.0	1
06936	Selenium	7782-49-2	1.51 J	1.01	2.24	1
06966	Silver	7440-22-4	N.D.	0.168	0.560	1
01667	Sodium	7440-23-5	397	26.8	112	1
06971	Vanadium	7440-62-2	35.0	0.157	0.560	1
06972	Zinc	7440-66-6	111	0.762	2.24	1
	SW-846 6020		**mg/kg**	**mg/kg**	**mg/kg**	
06145	Thallium	7440-28-0	0.231	0.0325	0.112	2
	SW-846 7471A		**mg/kg**	**mg/kg**	**mg/kg**	
00159	Mercury	7439-97-6	0.0442 J	0.0114	0.114	1
Wet Chemistry	**SW-846 9012B**		**mg/kg**	**mg/kg**	**mg/kg**	
05895	Total Cyanide (solid)	57-12-5	N.D.	0.21	0.58	1
Wet Chemistry	**SM 2540 G-1997**		**%**	**%**	**%**	
00111	Moisture	n.a.	16.6	0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	PPL/TCL Volatiles in Soil	SW-846 8260B	1	B162101AA	07/28/2016 13:03	Jennifer K Howe	0.76
06176	GC/MS - LL Water Prep	SW-846 5035A	1	201620441961	07/22/2016 18:22	Katelyn C Shober	1
06176	GC/MS - LL Water Prep	SW-846 5035A	2	201620441961	07/22/2016 18:22	Katelyn C Shober	1
07579	GC/MS-5g Field Preserv.MeOH-NC	SW-846 5035A	1	201620441961	07/19/2016 13:00	Client Supplied	1

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

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Analysis Report

Sample Description: S-4 (12-13) Grab Soil
Former Union Switch & Signal Facility

LL Sample # SW 8488100
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/19/2016 13:00 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSS4 SDG#: USS01-04

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time		Analyst	Dilution Factor
00374	GC/MS - Bulk Soil Prep	SW-846 5035A Modified	1	201620441962	07/22/2016	19:12	Katelyn C Shober	n.a.
00374	GC/MS - Bulk Soil Prep	SW-846 5035A Modified	2	201620441962	07/22/2016	19:12	Katelyn C Shober	n.a.
06646	GC/MS HL Bulk Sample Prep	SW-846 5035A Modified	1	201620441962	07/22/2016	18:48	Katelyn C Shober	n.a.
10727	PPL/TCL SVOCs in Soil	SW-846 8270C	1	16214SLA026	08/02/2016	13:46	Linda M Hartenstine	1
10809	BNA Soil Microwave	SW-846 3546	2	16214SLA026	08/01/2016	23:30	Nicholas W Shroyer	1
10736	PCBs in Soil (microwave)	SW-846 8082	1	162100026A	07/31/2016	23:57	Jessica L Miller	1
10497	PCB Microwave Soil Extraction	SW-846 3546	1	162100026A	07/29/2016	09:00	David S Schrum	1
01643	Aluminum	SW-846 6010B	1	162095708003	07/29/2016	18:37	Suzanne M Will	1
06944	Antimony	SW-846 6010B	1	162095708003	08/01/2016	21:22	Elaine F Stoltzfus	1
06935	Arsenic	SW-846 6010B	1	162095708003	08/01/2016	21:22	Elaine F Stoltzfus	1
06946	Barium	SW-846 6010B	1	162095708003	07/29/2016	18:37	Suzanne M Will	1
06947	Beryllium	SW-846 6010B	1	162095708003	07/29/2016	18:37	Suzanne M Will	1
06949	Cadmium	SW-846 6010B	1	162095708003	08/01/2016	21:22	Elaine F Stoltzfus	1
01650	Calcium	SW-846 6010B	1	162095708003	07/29/2016	18:37	Suzanne M Will	1
06951	Chromium	SW-846 6010B	1	162095708003	07/29/2016	18:37	Suzanne M Will	1
06952	Cobalt	SW-846 6010B	1	162095708003	07/29/2016	18:37	Suzanne M Will	1
06953	Copper	SW-846 6010B	1	162095708003	07/29/2016	18:37	Suzanne M Will	1
01654	Iron	SW-846 6010B	1	162095708003	08/01/2016	21:26	Elaine F Stoltzfus	5
06955	Lead	SW-846 6010B	1	162095708003	07/29/2016	18:37	Suzanne M Will	1
01657	Magnesium	SW-846 6010B	1	162095708003	07/29/2016	18:37	Suzanne M Will	1
06958	Manganese	SW-846 6010B	1	162095708003	07/29/2016	18:37	Suzanne M Will	1
06961	Nickel	SW-846 6010B	1	162095708003	07/29/2016	18:37	Suzanne M Will	1
01662	Potassium	SW-846 6010B	1	162095708003	07/29/2016	18:37	Suzanne M Will	1
06936	Selenium	SW-846 6010B	1	162095708003	08/01/2016	21:22	Elaine F Stoltzfus	1
06966	Silver	SW-846 6010B	1	162095708003	07/29/2016	18:37	Suzanne M Will	1
01667	Sodium	SW-846 6010B	1	162095708003	07/29/2016	18:37	Suzanne M Will	1
06971	Vanadium	SW-846 6010B	1	162095708003	07/29/2016	18:37	Suzanne M Will	1
06972	Zinc	SW-846 6010B	1	162095708003	07/29/2016	18:37	Suzanne M Will	1
06145	Thallium	SW-846 6020	1	162095708003A	07/29/2016	05:17	Choon Y Tian	2
00159	Mercury	SW-846 7471A	1	162105711001	08/01/2016	20:20	Parker D Lindstrom	1
05708	ICP-ICPMS - SW, 3050B - U3	SW-846 3050B	1	162095708003	07/28/2016	07:15	Ann Borg	1
05711	Hg-SW, 7471A - U3	SW-846 7471A	1	162105711001	07/28/2016	19:30	JoElla L Rice	1
05895	Total Cyanide (solid)	SW-846 9012B	1	16213102201B	08/01/2016	12:11	David A Seavey	1
05896	Cyanide Solid Distillation	SW-846 9012B	1	16213102201B	07/31/2016	22:00	Drew M Gerhart	1
00111	Moisture	SM 2540 G-1997	1	16209820004A	07/27/2016	11:39	Larry E Bevins	1

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

Sample Description: S-5 (13-14) Grab Soil
Former Union Switch & Signal Facility

LL Sample # SW 8488101
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/19/2016 14:30 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSS5 SDG#: USS01-05

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**	**ug/kg**	**ug/kg**	
10237	Acetone	67-64-1	N.D.	12	33	1.04
10237	Benzene	71-43-2	N.D.	0.8	8	1.04
10237	Bromochloromethane	74-97-5	N.D.	2	8	1.04
10237	Bromodichloromethane	75-27-4	N.D.	2	8	1.04
10237	Bromoform	75-25-2	N.D.	2	8	1.04
10237	Bromomethane	74-83-9	N.D.	3	8	1.04
10237	2-Butanone	78-93-3	N.D.	7	17	1.04
10237	Carbon Disulfide	75-15-0	N.D.	2	8	1.04
10237	Carbon Tetrachloride	56-23-5	N.D.	2	8	1.04
10237	Chlorobenzene	108-90-7	N.D.	2	8	1.04
10237	Chloroethane	75-00-3	N.D.	3	8	1.04
10237	Chloroform	67-66-3	N.D.	2	8	1.04
10237	Chloromethane	74-87-3	N.D.	3	8	1.04
10237	Cyclohexane	110-82-7	N.D.	2	8	1.04
10237	1,2-Dibromo-3-chloropropane	96-12-8	N.D.	3	8	1.04
10237	Dibromochloromethane	124-48-1	N.D.	2	8	1.04
10237	1,2-Dibromoethane	106-93-4	N.D.	2	8	1.04
10237	1,2-Dichlorobenzene	95-50-1	N.D.	2	8	1.04
10237	1,3-Dichlorobenzene	541-73-1	N.D.	2	8	1.04
10237	1,4-Dichlorobenzene	106-46-7	N.D.	2	8	1.04
10237	Dichlorodifluoromethane	75-71-8	N.D.	3	8	1.04
10237	1,1-Dichloroethane	75-34-3	N.D.	2	8	1.04
10237	1,2-Dichloroethane	107-06-2	N.D.	2	8	1.04
10237	1,1-Dichloroethene	75-35-4	N.D.	2	8	1.04
10237	cis-1,2-Dichloroethene	156-59-2	N.D.	2	8	1.04
10237	trans-1,2-Dichloroethene	156-60-5	N.D.	2	8	1.04
10237	1,2-Dichloropropane	78-87-5	N.D.	2	8	1.04
10237	cis-1,3-Dichloropropene	10061-01-5	N.D.	2	8	1.04
10237	trans-1,3-Dichloropropene	10061-02-6	N.D.	2	8	1.04
10237	Ethylbenzene	100-41-4	N.D.	2	8	1.04
10237	Freon 113	76-13-1	N.D.	3	17	1.04
10237	2-Hexanone	591-78-6	N.D.	5	17	1.04
10237	Isopropylbenzene	98-82-8	N.D.	2	8	1.04
10237	Methyl Acetate	79-20-9	N.D.	3	8	1.04
10237	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.8	8	1.04
10237	4-Methyl-2-pentanone	108-10-1	N.D.	5	17	1.04
10237	Methylcyclohexane	108-87-2	N.D.	2	8	1.04
10237	Methylene Chloride	75-09-2	N.D.	3	8	1.04
10237	Styrene	100-42-5	N.D.	2	8	1.04
10237	1,1,2,2-Tetrachloroethane	79-34-5	N.D.	2	8	1.04
10237	Tetrachloroethene	127-18-4	N.D.	2	8	1.04
10237	Toluene	108-88-3	N.D.	2	8	1.04
10237	1,2,3-Trichlorobenzene	87-61-6	N.D.	2	8	1.04
10237	1,2,4-Trichlorobenzene	120-82-1	N.D.	2	8	1.04
10237	1,1,1-Trichloroethane	71-55-6	N.D.	2	8	1.04
10237	1,1,2-Trichloroethane	79-00-5	N.D.	2	8	1.04
10237	Trichloroethene	79-01-6	N.D.	2	8	1.04
10237	Trichlorofluoromethane	75-69-4	N.D.	3	8	1.04
10237	Vinyl Chloride	75-01-4	N.D.	2	8	1.04
10237	Xylene (Total)	1330-20-7	N.D.	2	8	1.04

The LCS and/or LCSD recoveries are outside the stated QC window but within

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

Sample Description: S-5 (13-14) Grab Soil
Former Union Switch & Signal Facility

LL Sample # SW 8488101
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/19/2016 14:30 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSS5 SDG#: USS01-05

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
	the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: Dibromochloromethane					
GC/MS Semivolatiles		**SW-846 8270C**	**ug/kg**	**ug/kg**	**ug/kg**	
10727	Acenaphthene	83-32-9	N.D.	5	27	1
10727	Acenaphthylene	208-96-8	N.D.	5	27	1
10727	Acetophenone	98-86-2	N.D.	26	53	1
10727	Anthracene	120-12-7	N.D.	5	27	1
10727	Atrazine	1912-24-9	N.D.	53	260	1
10727	Benzaldehyde	100-52-7	N.D.	110	260	1
10727	Benzo(a)anthracene	56-55-3	N.D.	5	27	1
10727	Benzo(a)pyrene	50-32-8	N.D.	5	27	1
10727	Benzo(b)fluoranthene	205-99-2	N.D.	5	27	1
10727	Benzo(g,h,i)perylene	191-24-2	N.D.	5	27	1
10727	Benzo(k)fluoranthene	207-08-9	N.D.	5	27	1
10727	1,1'-Biphenyl	92-52-4	N.D.	26	53	1
10727	4-Bromophenyl-phenylether	101-55-3	N.D.	26	53	1
10727	Butylbenzylphthalate	85-68-7	N.D.	110	260	1
10727	Di-n-butylphthalate	84-74-2	N.D.	110	260	1
10727	Caprolactam	105-60-2	N.D.	53	260	1
10727	Carbazole	86-74-8	N.D.	26	53	1
10727	4-Chloro-3-methylphenol	59-50-7	N.D.	26	53	1
10727	4-Chloroaniline	106-47-8	N.D.	53	110	1
10727	bis(2-Chloroethoxy)methane	111-91-1	N.D.	26	53	1
10727	bis(2-Chloroethyl)ether	111-44-4	N.D.	26	53	1
10727	2-Chloronaphthalene	91-58-7	N.D.	11	52	1
10727	2-Chlorophenol	95-57-8	N.D.	26	53	1
10727	4-Chlorophenyl-phenylether	7005-72-3	N.D.	26	53	1
10727	2,2'-oxybis(1-Chloropropane)	108-60-1	N.D.	26	53	1
	Bis(2-chloroisopropyl) ether CAS #39638-32-9 and 2,2'-Oxybis(1-chloropropane) CAS #108-60-1 cannot be separated chromatographically. The reported result represents the combined total of both compounds.					
10727	Chrysene	218-01-9	N.D.	5	27	1
10727	Dibenz(a,h)anthracene	53-70-3	N.D.	5	27	1
10727	Dibenzofuran	132-64-9	N.D.	26	53	1
10727	3,3'-Dichlorobenzidine	91-94-1	N.D.	160	530	1
10727	2,4-Dichlorophenol	120-83-2	N.D.	26	53	1
10727	Diethylphthalate	84-66-2	N.D.	110	260	1
10727	2,4-Dimethylphenol	105-67-9	N.D.	26	53	1
10727	Dimethylphthalate	131-11-3	N.D.	110	260	1
10727	4,6-Dinitro-2-methylphenol	534-52-1	N.D.	260	790	1
10727	2,4-Dinitrophenol	51-28-5	N.D.	470	1,600	1
10727	2,4-Dinitrotoluene	121-14-2	N.D.	110	260	1
10727	2,6-Dinitrotoluene	606-20-2	N.D.	26	53	1
10727	1,4-Dioxane	123-91-1	N.D.	160	530	1
10727	bis(2-Ethylhexyl)phthalate	117-81-7	N.D.	110	270	1
10727	Fluoranthene	206-44-0	N.D.	5	27	1
10727	Fluorene	86-73-7	N.D.	5	27	1
10727	Hexachlorobenzene	118-74-1	N.D.	5	27	1
10727	Hexachlorobutadiene	87-68-3	N.D.	26	53	1
10727	Hexachlorocyclopentadiene	77-47-4	N.D.	260	790	1

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

Sample Description: S-5 (13-14) Grab Soil
Former Union Switch & Signal Facility

LL Sample # SW 8488101
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/19/2016 14:30 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSS5 SDG#: USS01-05

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C**		**ug/kg**	**ug/kg**	**ug/kg**	
10727	Hexachloroethane	67-72-1	N.D.	53	260	1
10727	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	5	27	1
10727	Isophorone	78-59-1	N.D.	26	53	1
10727	2-Methylnaphthalene	91-57-6	N.D.	5	27	1
10727	2-Methylphenol	95-48-7	N.D.	26	53	1
10727	4-Methylphenol	106-44-5	N.D.	26	53	1
	3-Methylphenol and 4-methylphenol cannot be resolved under the chromatographic conditions used for sample analysis. The result reported for 4-methylphenol represents the combined total of both compounds.					
10727	Naphthalene	91-20-3	5 J	5	27	1
10727	2-Nitroaniline	88-74-4	N.D.	26	53	1
10727	3-Nitroaniline	99-09-2	N.D.	110	260	1
10727	4-Nitroaniline	100-01-6	N.D.	110	260	1
10727	Nitrobenzene	98-95-3	N.D.	26	53	1
10727	2-Nitrophenol	88-75-5	N.D.	26	53	1
10727	4-Nitrophenol	100-02-7	N.D.	260	790	1
10727	N-Nitroso-di-n-propylamine	621-64-7	N.D.	26	53	1
10727	N-Nitrosodiphenylamine	86-30-6	N.D.	26	53	1
	N-nitrosodiphenylamine decomposes in the GC inlet forming diphenylamine. The result reported for N-nitrosodiphenylamine represents the combined total of both compounds.					
10727	Di-n-octylphthalate	117-84-0	N.D.	110	260	1
10727	Pentachlorophenol	87-86-5	N.D.	53	270	1
10727	Phenanthrene	85-01-8	N.D.	5	27	1
10727	Phenol	108-95-2	N.D.	26	53	1
10727	Pyrene	129-00-0	N.D.	5	27	1
10727	1,2,4,5-Tetrachlorobenzene	95-94-3	N.D.	26	53	1
10727	2,3,4,6-Tetrachlorophenol	58-90-2	N.D.	110	260	1
10727	2,4,5-Trichlorophenol	95-95-4	N.D.	26	53	1
10727	2,4,6-Trichlorophenol	88-06-2	N.D.	26	53	1
Pesticides/PCBs	**SW-846 8082**		**ug/kg**	**ug/kg**	**ug/kg**	
10736	PCB-1016	12674-11-2	N.D.	5.7	27	1
10736	PCB-1221	11104-28-2	N.D.	7.3	27	1
10736	PCB-1232	11141-16-5	N.D.	13	27	1
10736	PCB-1242	53469-21-9	N.D.	5.2	27	1
10736	PCB-1248	12672-29-6	N.D.	5.2	27	1
10736	PCB-1254	11097-69-1	N.D.	5.2	27	1
10736	PCB-1260	11096-82-5	N.D.	7.7	27	1
10736	PCB-1262	37324-23-5	N.D.	5.2	27	1
10736	PCB-1268	11100-14-4	N.D.	5.2	27	1
10736	Total PCBs	1336-36-3	N.D.	5.2	27	1
Metals	**SW-846 6010B**		**mg/kg**	**mg/kg**	**mg/kg**	
01643	Aluminum	7429-90-5	63,800	56.5	130	5
06944	Antimony	7440-36-0	N.D.	4.55	13.0	5
06935	Arsenic	7440-38-2	N.D.	6.31	13.0	5
	Reporting limits for ICP metals were raised due to interference from the sample matrix.					
06946	Barium	7440-39-3	527	0.215	3.25	5

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

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Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: S-5 (13-14) Grab Soil
Former Union Switch & Signal Facility

LL Sample # SW 8488101
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/19/2016 14:30 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSS5 SDG#: USS01-05

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010B**		**mg/kg**	**mg/kg**	**mg/kg**	
06947	Beryllium	7440-41-7	18.0	0.436	3.25	5
06949	Cadmium	7440-43-9	55.3	0.319	3.25	5
01650	Calcium	7440-70-2	81,300	36.8	130	5
06951	Chromium	7440-47-3	35.9	0.911	9.76	5
06952	Cobalt	7440-48-4	340	0.780	3.25	5
06953	Copper	7440-50-8	152	1.50	6.50	5
01654	Iron	7439-89-6	35,500	26.8	130	5
06955	Lead	7439-92-1	7.64 J	3.58	9.76	5
01657	Magnesium	7439-95-4	14,300	12.4	65.0	5
06958	Manganese	7439-96-5	28,200	5.40	32.5	50
06961	Nickel	7440-02-0	429	1.95	6.50	5
01662	Potassium	7440-09-7	1,580	155	325	5
06936	Selenium	7782-49-2	17.9	5.85	13.0	5
06966	Silver	7440-22-4	9.32	0.976	3.25	5
01667	Sodium	7440-23-5	957	155	650	5
06971	Vanadium	7440-62-2	4.76	0.911	3.25	5
06972	Zinc	7440-66-6	453	4.42	13.0	5
	SW-846 6020		**mg/kg**	**mg/kg**	**mg/kg**	
06145	Thallium	7440-28-0	0.0447 J	0.0377	0.130	2
	SW-846 7471A		**mg/kg**	**mg/kg**	**mg/kg**	
00159	Mercury	7439-97-6	0.0485 J	0.0148	0.148	1
Wet Chemistry	**SW-846 9012B**		**mg/kg**	**mg/kg**	**mg/kg**	
05895	Total Cyanide (solid)	57-12-5	36.3	2.9	7.9	10
Wet Chemistry	**SM 2540 G-1997**		**%**	**%**	**%**	
00111	Moisture	n.a.	37.5	0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	PPL/TCL Volatiles in Soil	SW-846 8260B	1	B162101AA	07/28/2016 13:25	Jennifer K Howe	1.04
06176	GC/MS - LL Water Prep	SW-846 5035A	1	201620441961	07/22/2016 18:21	Katelyn C Shober	1
06176	GC/MS - LL Water Prep	SW-846 5035A	2	201620441961	07/22/2016 18:21	Katelyn C Shober	1

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

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Lancaster Laboratories Environmental
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Analysis Report

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Former Union Switch & Signal Facility

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USSS5 SDG#: USS01-05

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time		Analyst	Dilution Factor
07579	GC/MS-5g Field Preserv.MeOH-NC	SW-846 5035A	1	201620441961	07/19/2016	14:30	Client Supplied	1
00374	GC/MS - Bulk Soil Prep	SW-846 5035A Modified	1	201620441962	07/22/2016	19:12	Katelyn C Shober	n.a.
00374	GC/MS - Bulk Soil Prep	SW-846 5035A Modified	2	201620441962	07/22/2016	19:11	Katelyn C Shober	n.a.
06646	GC/MS HL Bulk Sample Prep	SW-846 5035A Modified	1	201620441962	07/22/2016	18:53	Katelyn C Shober	n.a.
10727	PPL/TCL SVOCs in Soil	SW-846 8270C	1	16210SLG026	07/30/2016	02:45	Anthony P Bauer	1
10809	BNA Soil Microwave	SW-846 3546	1	16210SLG026	07/29/2016	09:00	Michelle A Newswanger	1
10736	PCBs in Soil (microwave)	SW-846 8082	1	162100026A	08/01/2016	00:09	Jessica L Miller	1
10497	PCB Microwave Soil Extraction	SW-846 3546	1	162100026A	07/29/2016	09:00	David S Schrum	1
01643	Aluminum	SW-846 6010B	1	162095708003	08/01/2016	21:29	Elaine F Stoltzfus	5
06944	Antimony	SW-846 6010B	1	162095708003	08/01/2016	21:29	Elaine F Stoltzfus	5
06935	Arsenic	SW-846 6010B	1	162095708003	08/01/2016	21:29	Elaine F Stoltzfus	5
06946	Barium	SW-846 6010B	1	162095708003	08/01/2016	21:29	Elaine F Stoltzfus	5
06947	Beryllium	SW-846 6010B	1	162095708003	08/01/2016	21:29	Elaine F Stoltzfus	5
06949	Cadmium	SW-846 6010B	1	162095708003	08/01/2016	21:29	Elaine F Stoltzfus	5
01650	Calcium	SW-846 6010B	1	162095708003	08/01/2016	21:29	Elaine F Stoltzfus	5
06951	Chromium	SW-846 6010B	1	162095708003	08/01/2016	21:29	Elaine F Stoltzfus	5
06952	Cobalt	SW-846 6010B	1	162095708003	08/01/2016	21:29	Elaine F Stoltzfus	5
06953	Copper	SW-846 6010B	1	162095708003	08/01/2016	21:29	Elaine F Stoltzfus	5
01654	Iron	SW-846 6010B	1	162095708003	08/01/2016	21:29	Elaine F Stoltzfus	5
06955	Lead	SW-846 6010B	1	162095708003	08/01/2016	21:29	Elaine F Stoltzfus	5
01657	Magnesium	SW-846 6010B	1	162095708003	08/01/2016	21:29	Elaine F Stoltzfus	5
06958	Manganese	SW-846 6010B	1	162095708003	08/02/2016	12:54	Joanne M Gates	50
06961	Nickel	SW-846 6010B	1	162095708003	08/01/2016	21:29	Elaine F Stoltzfus	5
01662	Potassium	SW-846 6010B	1	162095708003	08/01/2016	21:29	Elaine F Stoltzfus	5
06936	Selenium	SW-846 6010B	1	162095708003	08/01/2016	21:29	Elaine F Stoltzfus	5
06966	Silver	SW-846 6010B	1	162095708003	08/02/2016	12:51	Joanne M Gates	5
01667	Sodium	SW-846 6010B	1	162095708003	08/01/2016	21:29	Elaine F Stoltzfus	5

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

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Lancaster Laboratories Environmental
2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Analysis Report

Sample Description: S-5 (13-14) Grab Soil
Former Union Switch & Signal Facility

LL Sample # SW 8488101
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/19/2016 14:30 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSS5 SDG#: USS01-05

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06971	Vanadium	SW-846 6010B	1	162095708003	08/01/2016 21:29	Elaine F Stoltzfus	5
06972	Zinc	SW-846 6010B	1	162095708003	08/01/2016 21:29	Elaine F Stoltzfus	5
06145	Thallium	SW-846 6020	1	162095708003A	07/29/2016 05:18	Choon Y Tian	2
00159	Mercury	SW-846 7471A	1	162105711001	08/01/2016 20:22	Parker D Lindstrom	1
05708	ICP-ICPMS - SW, 3050B - U3	SW-846 3050B	1	162095708003	07/28/2016 07:15	Ann Borg	1
05711	Hg-SW, 7471A - U3	SW-846 7471A	1	162105711001	07/28/2016 19:30	JoElla L Rice	1
05895	Total Cyanide (solid)	SW-846 9012B	1	16213102201B	08/01/2016 12:52	David A Seavey	10
05896	Cyanide Solid Distillation	SW-846 9012B	1	16213102201B	07/31/2016 22:00	Drew M Gerhart	1
00111	Moisture	SM 2540 G-1997	1	16209820004A	07/27/2016 11:39	Larry E Bevins	1

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

Sample Description: S-6 (7-8) Grab Soil
Former Union Switch & Signal Facility

LL Sample # SW 8488102
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/19/2016 14:00 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSS6 SDG#: USS01-06

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		ug/kg		ug/kg	ug/kg	
10237	Acetone	67-64-1	37		9	25	1.08
10237	Benzene	71-43-2	N.D.		0.6	6	1.08
10237	Bromochloromethane	74-97-5	N.D.		1	6	1.08
10237	Bromodichloromethane	75-27-4	N.D.		1	6	1.08
10237	Bromoform	75-25-2	N.D.		1	6	1.08
10237	Bromomethane	74-83-9	N.D.		2	6	1.08
10237	2-Butanone	78-93-3	N.D.		5	12	1.08
10237	Carbon Disulfide	75-15-0	N.D.		1	6	1.08
10237	Carbon Tetrachloride	56-23-5	N.D.		1	6	1.08
10237	Chlorobenzene	108-90-7	N.D.		1	6	1.08
10237	Chloroethane	75-00-3	N.D.		2	6	1.08
10237	Chloroform	67-66-3	N.D.		1	6	1.08
10237	Chloromethane	74-87-3	N.D.		2	6	1.08
10237	Cyclohexane	110-82-7	2	J	1	6	1.08
10237	1,2-Dibromo-3-chloropropane	96-12-8	N.D.		2	6	1.08
10237	Dibromochloromethane	124-48-1	N.D.		1	6	1.08
10237	1,2-Dibromoethane	106-93-4	N.D.		1	6	1.08
10237	1,2-Dichlorobenzene	95-50-1	N.D.		1	6	1.08
10237	1,3-Dichlorobenzene	541-73-1	N.D.		1	6	1.08
10237	1,4-Dichlorobenzene	106-46-7	N.D.		1	6	1.08
10237	Dichlorodifluoromethane	75-71-8	N.D.		2	6	1.08
10237	1,1-Dichloroethane	75-34-3	N.D.		1	6	1.08
10237	1,2-Dichloroethane	107-06-2	N.D.		1	6	1.08
10237	1,1-Dichloroethene	75-35-4	N.D.		1	6	1.08
10237	cis-1,2-Dichloroethene	156-59-2	N.D.		1	6	1.08
10237	trans-1,2-Dichloroethene	156-60-5	N.D.		1	6	1.08
10237	1,2-Dichloropropane	78-87-5	N.D.		1	6	1.08
10237	cis-1,3-Dichloropropene	10061-01-5	N.D.		1	6	1.08
10237	trans-1,3-Dichloropropene	10061-02-6	N.D.		1	6	1.08
10237	Ethylbenzene	100-41-4	N.D.		1	6	1.08
10237	Freon 113	76-13-1	N.D.		2	12	1.08
10237	2-Hexanone	591-78-6	N.D.		4	12	1.08
10237	Isopropylbenzene	98-82-8	N.D.		1	6	1.08
10237	Methyl Acetate	79-20-9	N.D.		2	6	1.08
10237	Methyl Tertiary Butyl Ether	1634-04-4	N.D.		0.6	6	1.08
10237	4-Methyl-2-pentanone	108-10-1	N.D.		4	12	1.08
10237	Methylcyclohexane	108-87-2	3	J	1	6	1.08
10237	Methylene Chloride	75-09-2	N.D.		2	6	1.08
10237	Styrene	100-42-5	N.D.		1	6	1.08
10237	1,1,2,2-Tetrachloroethane	79-34-5	N.D.		1	6	1.08
10237	Tetrachloroethene	127-18-4	N.D.		1	6	1.08
10237	Toluene	108-88-3	N.D.		1	6	1.08
10237	1,2,3-Trichlorobenzene	87-61-6	N.D.		1	6	1.08
10237	1,2,4-Trichlorobenzene	120-82-1	N.D.		1	6	1.08
10237	1,1,1-Trichloroethane	71-55-6	N.D.		1	6	1.08
10237	1,1,2-Trichloroethane	79-00-5	N.D.		1	6	1.08
10237	Trichloroethene	79-01-6	N.D.		1	6	1.08
10237	Trichlorofluoromethane	75-69-4	N.D.		2	6	1.08
10237	Vinyl Chloride	75-01-4	N.D.		1	6	1.08
10237	Xylene (Total)	1330-20-7	N.D.		1	6	1.08

The LCS and/or LCSD recoveries are outside the stated QC window but within

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

Sample Description: S-6 (7-8) Grab Soil
Former Union Switch & Signal Facility

LL Sample # SW 8488102
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/19/2016 14:00 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSS6 SDG#: USS01-06

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
	the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: Dibromochloromethane						
GC/MS Semivolatiles		**SW-846 8270C**	**ug/kg**		**ug/kg**	**ug/kg**	
10727	Acenaphthene	83-32-9	29		4	19	1
10727	Acenaphthylene	208-96-8	130		4	19	1
10727	Acetophenone	98-86-2	N.D.		19	38	1
10727	Anthracene	120-12-7	140		4	19	1
10727	Atrazine	1912-24-9	N.D.		38	190	1
10727	Benzaldehyde	100-52-7	160	J	75	190	1
10727	Benzo(a)anthracene	56-55-3	490		4	19	1
10727	Benzo(a)pyrene	50-32-8	300		4	19	1
10727	Benzo(b)fluoranthene	205-99-2	610		4	19	1
10727	Benzo(g,h,i)perylene	191-24-2	230		4	19	1
10727	Benzo(k)fluoranthene	207-08-9	260		4	19	1
10727	1,1'-Biphenyl	92-52-4	320		19	38	1
10727	4-Bromophenyl-phenylether	101-55-3	N.D.		19	38	1
10727	Butylbenzylphthalate	85-68-7	N.D.		75	190	1
10727	Di-n-butylphthalate	84-74-2	N.D.		75	190	1
10727	Caprolactam	105-60-2	N.D.		38	190	1
10727	Carbazole	86-74-8	140		19	38	1
10727	4-Chloro-3-methylphenol	59-50-7	N.D.		19	38	1
10727	4-Chloroaniline	106-47-8	N.D.		38	75	1
10727	bis(2-Chloroethoxy)methane	111-91-1	N.D.		19	38	1
10727	bis(2-Chloroethyl)ether	111-44-4	N.D.		19	38	1
10727	2-Chloronaphthalene	91-58-7	N.D.		8	37	1
10727	2-Chlorophenol	95-57-8	N.D.		19	38	1
10727	4-Chlorophenyl-phenylether	7005-72-3	N.D.		19	38	1
10727	2,2'-oxybis(1-Chloropropane)	108-60-1	N.D.		19	38	1
	Bis(2-chloroisopropyl) ether CAS #39638-32-9 and 2,2'-Oxybis(1-chloropropane) CAS #108-60-1 cannot be separated chromatographically. The reported result represents the combined total of both compounds.						
10727	Chrysene	218-01-9	660		4	19	1
10727	Dibenz(a,h)anthracene	53-70-3	76		4	19	1
10727	Dibenzofuran	132-64-9	710		19	38	1
10727	3,3'-Dichlorobenzidine	91-94-1	N.D.		110	380	1
10727	2,4-Dichlorophenol	120-83-2	N.D.		19	38	1
10727	Diethylphthalate	84-66-2	N.D.		75	190	1
10727	2,4-Dimethylphenol	105-67-9	26	J	19	38	1
10727	Dimethylphthalate	131-11-3	N.D.		75	190	1
10727	4,6-Dinitro-2-methylphenol	534-52-1	N.D.		190	560	1
10727	2,4-Dinitrophenol	51-28-5	N.D.		340	1,100	1
10727	2,4-Dinitrotoluene	121-14-2	N.D.		75	190	1
10727	2,6-Dinitrotoluene	606-20-2	N.D.		19	38	1
10727	1,4-Dioxane	123-91-1	N.D.		110	380	1
10727	bis(2-Ethylhexyl)phthalate	117-81-7	N.D.		75	190	1
10727	Fluoranthene	206-44-0	1,100		4	19	1
10727	Fluorene	86-73-7	83		4	19	1
10727	Hexachlorobenzene	118-74-1	N.D.		4	19	1
10727	Hexachlorobutadiene	87-68-3	N.D.		19	38	1
10727	Hexachlorocyclopentadiene	77-47-4	N.D.		190	560	1

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

Sample Description: S-6 (7-8) Grab Soil
Former Union Switch & Signal Facility

LL Sample # SW 8488102
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/19/2016 14:00 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSS6 SDG#: USS01-06

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C**		**ug/kg**		**ug/kg**	**ug/kg**	
10727	Hexachloroethane	67-72-1	N.D.		38	190	1
10727	Indeno(1,2,3-cd)pyrene	193-39-5	210		4	19	1
10727	Isophorone	78-59-1	N.D.		19	38	1
10727	2-Methylnaphthalene	91-57-6	1,900		4	19	1
10727	2-Methylphenol	95-48-7	23	J	19	38	1
10727	4-Methylphenol	106-44-5	24	J	19	38	1
	3-Methylphenol and 4-methylphenol cannot be resolved under the chromatographic conditions used for sample analysis. The result reported for 4-methylphenol represents the combined total of both compounds.						
10727	Naphthalene	91-20-3	1,400		4	19	1
10727	2-Nitroaniline	88-74-4	N.D.		19	38	1
10727	3-Nitroaniline	99-09-2	N.D.		75	190	1
10727	4-Nitroaniline	100-01-6	N.D.		75	190	1
10727	Nitrobenzene	98-95-3	N.D.		19	38	1
10727	2-Nitrophenol	88-75-5	N.D.		19	38	1
10727	4-Nitrophenol	100-02-7	N.D.		190	560	1
10727	N-Nitroso-di-n-propylamine	621-64-7	N.D.		19	38	1
10727	N-Nitrosodiphenylamine	86-30-6	N.D.		19	38	1
	N-nitrosodiphenylamine decomposes in the GC inlet forming diphenylamine. The result reported for N-nitrosodiphenylamine represents the combined total of both compounds.						
10727	Di-n-octylphthalate	117-84-0	N.D.		75	190	1
10727	Pentachlorophenol	87-86-5	N.D.		38	190	1
10727	Phenanthrene	85-01-8	1,500		4	19	1
10727	Phenol	108-95-2	N.D.		19	38	1
10727	Pyrene	129-00-0	910		4	19	1
10727	1,2,4,5-Tetrachlorobenzene	95-94-3	N.D.		19	38	1
10727	2,3,4,6-Tetrachlorophenol	58-90-2	N.D.		75	190	1
10727	2,4,5-Trichlorophenol	95-95-4	N.D.		19	38	1
10727	2,4,6-Trichlorophenol	88-06-2	N.D.		19	38	1
Pesticides/PCBs	**SW-846 8082**		**ug/kg**		**ug/kg**	**ug/kg**	
10736	PCB-1016	12674-11-2	N.D.		4.1	19	1
10736	PCB-1221	11104-28-2	N.D.		5.2	19	1
10736	PCB-1232	11141-16-5	N.D.		9.0	19	1
10736	PCB-1242	53469-21-9	N.D.		3.7	19	1
10736	PCB-1248	12672-29-6	N.D.		3.7	19	1
10736	PCB-1254	11097-69-1	N.D.		3.7	19	1
10736	PCB-1260	11096-82-5	11	J	5.5	19	1
10736	PCB-1262	37324-23-5	N.D.		3.7	19	1
10736	PCB-1268	11100-14-4	N.D.		3.7	19	1
10736	Total PCBs	1336-36-3	11	J	3.7	19	1
Metals	**SW-846 6010B**		**mg/kg**		**mg/kg**	**mg/kg**	
01643	Aluminum	7429-90-5	3,970		9.67	22.3	1
06944	Antimony	7440-36-0	1.33	J	0.780	2.23	1
06935	Arsenic	7440-38-2	42.7		1.08	2.23	1
06946	Barium	7440-39-3	61.7		0.0368	0.557	1
06947	Beryllium	7440-41-7	0.626		0.0746	0.557	1
06949	Cadmium	7440-43-9	0.360	J	0.0546	0.557	1

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

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Analysis Report

Sample Description: S-6 (7-8) Grab Soil
Former Union Switch & Signal Facility

LL Sample # SW 8488102
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/19/2016 14:00 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSS6 SDG#: USS01-06

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010B**		**mg/kg**	**mg/kg**	**mg/kg**	
01650	Calcium	7440-70-2	2,940	6.31	22.3	1
06951	Chromium	7440-47-3	13.1	0.156	1.67	1
06952	Cobalt	7440-48-4	4.48	0.134	0.557	1
06953	Copper	7440-50-8	45.9	0.256	1.11	1
01654	Iron	7439-89-6	31,300	23.0	111	5
06955	Lead	7439-92-1	55.3	0.613	1.67	1
01657	Magnesium	7439-95-4	753	2.12	11.1	1
06958	Manganese	7439-96-5	151	0.0925	0.557	1
06961	Nickel	7440-02-0	9.76	0.334	1.11	1
01662	Potassium	7440-09-7	674	26.6	55.7	1
06936	Selenium	7782-49-2	3.13	1.00	2.23	1
06966	Silver	7440-22-4	N.D.	0.167	0.557	1
01667	Sodium	7440-23-5	369	26.6	111	1
06971	Vanadium	7440-62-2	20.4	0.156	0.557	1
06972	Zinc	7440-66-6	74.9	0.758	2.23	1
	SW-846 6020		**mg/kg**	**mg/kg**	**mg/kg**	
06145	Thallium	7440-28-0	0.384	0.0323	0.111	2
	SW-846 7471A		**mg/kg**	**mg/kg**	**mg/kg**	
00159	Mercury	7439-97-6	0.0892 J	0.0105	0.105	1
Wet Chemistry	**SW-846 9012B**		**mg/kg**	**mg/kg**	**mg/kg**	
05895	Total Cyanide (solid)	57-12-5	0.28 J	0.20	0.56	1
Wet Chemistry	**SM 2540 G-1997**		**%**	**%**	**%**	
00111	Moisture	n.a.	12.0	0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	PPL/TCL Volatiles in Soil	SW-846 8260B	1	B162101AA	07/28/2016 13:48	Jennifer K Howe	1.08
06176	GC/MS - LL Water Prep	SW-846 5035A	1	201620441961	07/22/2016 18:21	Katelyn C Shober	1
06176	GC/MS - LL Water Prep	SW-846 5035A	2	201620441961	07/22/2016 18:21	Katelyn C Shober	1
07579	GC/MS-5g Field Preserv.MeOH-NC	SW-846 5035A	1	201620441961	07/19/2016 14:00	Client Supplied	1

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

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Analysis Report

Sample Description: S-6 (7-8) Grab Soil
Former Union Switch & Signal Facility

LL Sample # SW 8488102
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/19/2016 14:00 by EM

URS Corporation
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Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSS6 SDG#: USS01-06

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time		Analyst	Dilution Factor
00374	GC/MS - Bulk Soil Prep	SW-846 5035A Modified	1	201620441962	07/22/2016	19:11	Katelyn C Shober	n.a.
00374	GC/MS - Bulk Soil Prep	SW-846 5035A Modified	2	201620441962	07/22/2016	19:11	Katelyn C Shober	n.a.
06646	GC/MS HL Bulk Sample Prep	SW-846 5035A Modified	1	201620441962	07/22/2016	18:56	Katelyn C Shober	n.a.
10727	PPL/TCL SVOCs in Soil	SW-846 8270C	1	16214SLA026	08/02/2016	14:11	Linda M Hartenstine	1
10809	BNA Soil Microwave	SW-846 3546	2	16214SLA026	08/01/2016	23:30	Nicholas W Shroyer	1
10736	PCBs in Soil (microwave)	SW-846 8082	1	162100026A	08/01/2016	00:44	Jessica L Miller	1
10497	PCB Microwave Soil Extraction	SW-846 3546	1	162100026A	07/29/2016	09:00	David S Schrum	1
01643	Aluminum	SW-846 6010B	1	162095708003	07/29/2016	18:43	Suzanne M Will	1
06944	Antimony	SW-846 6010B	1	162095708003	08/01/2016	21:33	Elaine F Stoltzfus	1
06935	Arsenic	SW-846 6010B	1	162095708003	08/01/2016	21:33	Elaine F Stoltzfus	1
06946	Barium	SW-846 6010B	1	162095708003	07/29/2016	18:43	Suzanne M Will	1
06947	Beryllium	SW-846 6010B	1	162095708003	07/29/2016	18:43	Suzanne M Will	1
06949	Cadmium	SW-846 6010B	1	162095708003	07/29/2016	18:43	Suzanne M Will	1
01650	Calcium	SW-846 6010B	1	162095708003	07/29/2016	18:43	Suzanne M Will	1
06951	Chromium	SW-846 6010B	1	162095708003	07/29/2016	18:43	Suzanne M Will	1
06952	Cobalt	SW-846 6010B	1	162095708003	07/29/2016	18:43	Suzanne M Will	1
06953	Copper	SW-846 6010B	1	162095708003	07/29/2016	18:43	Suzanne M Will	1
01654	Iron	SW-846 6010B	1	162095708003	08/01/2016	21:37	Elaine F Stoltzfus	5
06955	Lead	SW-846 6010B	1	162095708003	07/29/2016	18:43	Suzanne M Will	1
01657	Magnesium	SW-846 6010B	1	162095708003	07/29/2016	18:43	Suzanne M Will	1
06958	Manganese	SW-846 6010B	1	162095708003	07/29/2016	18:43	Suzanne M Will	1
06961	Nickel	SW-846 6010B	1	162095708003	07/29/2016	18:43	Suzanne M Will	1
01662	Potassium	SW-846 6010B	1	162095708003	07/29/2016	18:43	Suzanne M Will	1
06936	Selenium	SW-846 6010B	1	162095708003	08/01/2016	21:33	Elaine F Stoltzfus	1
06966	Silver	SW-846 6010B	1	162095708003	07/29/2016	18:43	Suzanne M Will	1
01667	Sodium	SW-846 6010B	1	162095708003	07/29/2016	18:43	Suzanne M Will	1
06971	Vanadium	SW-846 6010B	1	162095708003	07/29/2016	18:43	Suzanne M Will	1
06972	Zinc	SW-846 6010B	1	162095708003	07/29/2016	18:43	Suzanne M Will	1
06145	Thallium	SW-846 6020	1	162095708003A	07/29/2016	05:20	Choon Y Tian	2
00159	Mercury	SW-846 7471A	1	162105711001	08/01/2016	20:24	Parker D Lindstrom	1
05708	ICP-ICPMS - SW, 3050B - U3	SW-846 3050B	1	162095708003	07/28/2016	07:15	Ann Borg	1
05711	Hg-SW, 7471A - U3	SW-846 7471A	1	162105711001	07/28/2016	19:30	JoElla L Rice	1
05895	Total Cyanide (solid)	SW-846 9012B	1	16213102201B	08/01/2016	12:18	David A Seavey	1
05896	Cyanide Solid Distillation	SW-846 9012B	1	16213102201B	07/31/2016	22:00	Drew M Gerhart	1
00111	Moisture	SM 2540 G-1997	1	16209820004A	07/27/2016	11:39	Larry E Bevins	1

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

Sample Description: S-7 (11-12) Grab Soil
Former Union Switch & Signal Facility

LL Sample # SW 8488103
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/20/2016 13:45 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSS7 SDG#: USS01-07

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**		**ug/kg**	**ug/kg**	
10237	Acetone	67-64-1	N.D.		6	18	0.74
10237	Benzene	71-43-2	N.D.		0.4	4	0.74
10237	Bromochloromethane	74-97-5	N.D.		0.9	4	0.74
10237	Bromodichloromethane	75-27-4	N.D.		0.9	4	0.74
10237	Bromoform	75-25-2	N.D.		0.9	4	0.74
10237	Bromomethane	74-83-9	N.D.		2	4	0.74
10237	2-Butanone	78-93-3	N.D.		4	9	0.74
10237	Carbon Disulfide	75-15-0	N.D.		0.9	4	0.74
10237	Carbon Tetrachloride	56-23-5	N.D.		0.9	4	0.74
10237	Chlorobenzene	108-90-7	N.D.		0.9	4	0.74
10237	Chloroethane	75-00-3	N.D.		2	4	0.74
10237	Chloroform	67-66-3	4	J	0.9	4	0.74
10237	Chloromethane	74-87-3	N.D.		2	4	0.74
10237	Cyclohexane	110-82-7	N.D.		0.9	4	0.74
10237	1,2-Dibromo-3-chloropropane	96-12-8	N.D.		2	4	0.74
10237	Dibromochloromethane	124-48-1	N.D.		0.9	4	0.74
10237	1,2-Dibromoethane	106-93-4	N.D.		0.9	4	0.74
10237	1,2-Dichlorobenzene	95-50-1	N.D.		0.9	4	0.74
10237	1,3-Dichlorobenzene	541-73-1	N.D.		0.9	4	0.74
10237	1,4-Dichlorobenzene	106-46-7	N.D.		0.9	4	0.74
10237	Dichlorodifluoromethane	75-71-8	N.D.		2	4	0.74
10237	1,1-Dichloroethane	75-34-3	2	J	0.9	4	0.74
10237	1,2-Dichloroethane	107-06-2	N.D.		0.9	4	0.74
10237	1,1-Dichloroethene	75-35-4	N.D.		0.9	4	0.74
10237	cis-1,2-Dichloroethene	156-59-2	N.D.		0.9	4	0.74
10237	trans-1,2-Dichloroethene	156-60-5	N.D.		0.9	4	0.74
10237	1,2-Dichloropropane	78-87-5	N.D.		0.9	4	0.74
10237	cis-1,3-Dichloropropene	10061-01-5	N.D.		0.9	4	0.74
10237	trans-1,3-Dichloropropene	10061-02-6	N.D.		0.9	4	0.74
10237	Ethylbenzene	100-41-4	N.D.		0.9	4	0.74
10237	Freon 113	76-13-1	N.D.		2	9	0.74
10237	2-Hexanone	591-78-6	N.D.		3	9	0.74
10237	Isopropylbenzene	98-82-8	N.D.		0.9	4	0.74
10237	Methyl Acetate	79-20-9	N.D.		2	4	0.74
10237	Methyl Tertiary Butyl Ether	1634-04-4	N.D.		0.4	4	0.74
10237	4-Methyl-2-pentanone	108-10-1	N.D.		3	9	0.74
10237	Methylcyclohexane	108-87-2	N.D.		0.9	4	0.74
10237	Methylene Chloride	75-09-2	N.D.		2	4	0.74
10237	Styrene	100-42-5	N.D.		0.9	4	0.74
10237	1,1,2,2-Tetrachloroethane	79-34-5	N.D.		0.9	4	0.74
10237	Tetrachloroethene	127-18-4	N.D.		0.9	4	0.74
10237	Toluene	108-88-3	N.D.		0.9	4	0.74
10237	1,2,3-Trichlorobenzene	87-61-6	N.D.		0.9	4	0.74
10237	1,2,4-Trichlorobenzene	120-82-1	N.D.		0.9	4	0.74
10237	1,1,1-Trichloroethane	71-55-6	N.D.		0.9	4	0.74
10237	1,1,2-Trichloroethane	79-00-5	N.D.		0.9	4	0.74
10237	Trichloroethene	79-01-6	N.D.		0.9	4	0.74
10237	Trichlorofluoromethane	75-69-4	N.D.		2	4	0.74
10237	Vinyl Chloride	75-01-4	N.D.		0.9	4	0.74
10237	Xylene (Total)	1330-20-7	N.D.		0.9	4	0.74

The LCS and/or LCSD recoveries are outside the stated QC window but within

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

Sample Description: S-7 (11-12) Grab Soil
Former Union Switch & Signal Facility

LL Sample # SW 8488103
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/20/2016 13:45 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSS7 SDG#: USS01-07

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
	the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: Dibromochloromethane						
GC/MS Semivolatiles		**SW-846 8270C**	**ug/kg**		**ug/kg**	**ug/kg**	
10727	Acenaphthene	83-32-9	N.D.		4	20	1
10727	Acenaphthylene	208-96-8	N.D.		4	20	1
10727	Acetophenone	98-86-2	N.D.		20	39	1
10727	Anthracene	120-12-7	N.D.		4	20	1
10727	Atrazine	1912-24-9	N.D.		39	200	1
10727	Benzaldehyde	100-52-7	N.D.		78	200	1
10727	Benzo(a)anthracene	56-55-3	4	J	4	20	1
10727	Benzo(a)pyrene	50-32-8	N.D.		4	20	1
10727	Benzo(b)fluoranthene	205-99-2	4	J	4	20	1
10727	Benzo(g,h,i)perylene	191-24-2	N.D.		4	20	1
10727	Benzo(k)fluoranthene	207-08-9	4	J	4	20	1
10727	1,1'-Biphenyl	92-52-4	N.D.		20	39	1
10727	4-Bromophenyl-phenylether	101-55-3	N.D.		20	39	1
10727	Butylbenzylphthalate	85-68-7	N.D.		78	200	1
10727	Di-n-butylphthalate	84-74-2	N.D.		78	200	1
10727	Caprolactam	105-60-2	N.D.		39	200	1
10727	Carbazole	86-74-8	N.D.		20	39	1
10727	4-Chloro-3-methylphenol	59-50-7	N.D.		20	39	1
10727	4-Chloroaniline	106-47-8	N.D.		39	78	1
10727	bis(2-Chloroethoxy)methane	111-91-1	N.D.		20	39	1
10727	bis(2-Chloroethyl)ether	111-44-4	N.D.		20	39	1
10727	2-Chloronaphthalene	91-58-7	N.D.		8	39	1
10727	2-Chlorophenol	95-57-8	N.D.		20	39	1
10727	4-Chlorophenyl-phenylether	7005-72-3	N.D.		20	39	1
10727	2,2'-oxybis(1-Chloropropane)	108-60-1	N.D.		20	39	1
	Bis(2-chloroisopropyl) ether CAS #39638-32-9 and 2,2'-Oxybis(1-chloropropane) CAS #108-60-1 cannot be separated chromatographically. The reported result represents the combined total of both compounds.						
10727	Chrysene	218-01-9	4	J	4	20	1
10727	Dibenz(a,h)anthracene	53-70-3	N.D.		4	20	1
10727	Dibenzofuran	132-64-9	N.D.		20	39	1
10727	3,3'-Dichlorobenzidine	91-94-1	N.D.		120	390	1
10727	2,4-Dichlorophenol	120-83-2	N.D.		20	39	1
10727	Diethylphthalate	84-66-2	N.D.		78	200	1
10727	2,4-Dimethylphenol	105-67-9	N.D.		20	39	1
10727	Dimethylphthalate	131-11-3	N.D.		78	200	1
10727	4,6-Dinitro-2-methylphenol	534-52-1	N.D.		200	590	1
10727	2,4-Dinitrophenol	51-28-5	N.D.		350	1,200	1
10727	2,4-Dinitrotoluene	121-14-2	N.D.		78	200	1
10727	2,6-Dinitrotoluene	606-20-2	N.D.		20	39	1
10727	1,4-Dioxane	123-91-1	N.D.		120	390	1
10727	bis(2-Ethylhexyl)phthalate	117-81-7	N.D.		78	200	1
10727	Fluoranthene	206-44-0	N.D.		4	20	1
10727	Fluorene	86-73-7	N.D.		4	20	1
10727	Hexachlorobenzene	118-74-1	N.D.		4	20	1
10727	Hexachlorobutadiene	87-68-3	N.D.		20	39	1
10727	Hexachlorocyclopentadiene	77-47-4	N.D.		200	590	1

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

Sample Description: S-7 (11-12) Grab Soil
Former Union Switch & Signal Facility

LL Sample # SW 8488103
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/20/2016 13:45 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSS7 SDG#: USS01-07

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C**		**ug/kg**		**ug/kg**	**ug/kg**	
10727	Hexachloroethane	67-72-1	N.D.		39	200	1
10727	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.		4	20	1
10727	Isophorone	78-59-1	N.D.		20	39	1
10727	2-Methylnaphthalene	91-57-6	14	J	4	20	1
10727	2-Methylphenol	95-48-7	N.D.		20	39	1
10727	4-Methylphenol	106-44-5	N.D.		20	39	1
	3-Methylphenol and 4-methylphenol cannot be resolved under the chromatographic conditions used for sample analysis. The result reported for 4-methylphenol represents the combined total of both compounds.						
10727	Naphthalene	91-20-3	N.D.		4	20	1
10727	2-Nitroaniline	88-74-4	N.D.		20	39	1
10727	3-Nitroaniline	99-09-2	N.D.		78	200	1
10727	4-Nitroaniline	100-01-6	N.D.		78	200	1
10727	Nitrobenzene	98-95-3	N.D.		20	39	1
10727	2-Nitrophenol	88-75-5	N.D.		20	39	1
10727	4-Nitrophenol	100-02-7	N.D.		200	590	1
10727	N-Nitroso-di-n-propylamine	621-64-7	N.D.		20	39	1
10727	N-Nitrosodiphenylamine	86-30-6	N.D.		20	39	1
	N-nitrosodiphenylamine decomposes in the GC inlet forming diphenylamine. The result reported for N-nitrosodiphenylamine represents the combined total of both compounds.						
10727	Di-n-octylphthalate	117-84-0	N.D.		78	200	1
10727	Pentachlorophenol	87-86-5	N.D.		39	200	1
10727	Phenanthrene	85-01-8	14	J	4	20	1
10727	Phenol	108-95-2	N.D.		20	39	1
10727	Pyrene	129-00-0	5	J	4	20	1
10727	1,2,4,5-Tetrachlorobenzene	95-94-3	N.D.		20	39	1
10727	2,3,4,6-Tetrachlorophenol	58-90-2	N.D.		78	200	1
10727	2,4,5-Trichlorophenol	95-95-4	N.D.		20	39	1
10727	2,4,6-Trichlorophenol	88-06-2	N.D.		20	39	1
Pesticides/PCBs	**SW-846 8082**		**ug/kg**		**ug/kg**	**ug/kg**	
10736	PCB-1016	12674-11-2	N.D.		4.2	20	1
10736	PCB-1221	11104-28-2	N.D.		5.4	20	1
10736	PCB-1232	11141-16-5	N.D.		9.3	20	1
10736	PCB-1242	53469-21-9	N.D.		3.9	20	1
10736	PCB-1248	12672-29-6	N.D.		3.9	20	1
10736	PCB-1254	11097-69-1	N.D.		3.9	20	1
10736	PCB-1260	11096-82-5	N.D.		5.7	20	1
10736	PCB-1262	37324-23-5	N.D.		3.9	20	1
10736	PCB-1268	11100-14-4	N.D.		3.9	20	1
10736	Total PCBs	1336-36-3	N.D.		3.9	20	1
Metals	**SW-846 6010B**		**mg/kg**		**mg/kg**	**mg/kg**	
01643	Aluminum	7429-90-5	15,400		50.9	117	5
06944	Antimony	7440-36-0	N.D.		4.10	11.7	5
06935	Arsenic	7440-38-2	7.19	J	5.68	11.7	5
	Reporting limits for ICP metals were raised due to interference from the sample matrix.						
06946	Barium	7440-39-3	146		0.0387	0.586	1

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

eurofins
Lancaster Laboratories Environmental
2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Analysis Report

Sample Description: S-7 (11-12) Grab Soil
Former Union Switch & Signal Facility

LL Sample # SW 8488103
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/20/2016 13:45 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSS7 SDG#: USS01-07

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010B**		**mg/kg**		**mg/kg**	**mg/kg**	
06947	Beryllium	7440-41-7	1.03	J	0.393	2.93	5
06949	Cadmium	7440-43-9	1.30	J	0.287	2.93	5
01650	Calcium	7440-70-2	255		6.63	23.4	1
06951	Chromium	7440-47-3	33.8		0.820	8.79	5
06952	Cobalt	7440-48-4	17.6		0.703	2.93	5
06953	Copper	7440-50-8	19.6		1.35	5.86	5
01654	Iron	7439-89-6	70,100		24.1	117	5
06955	Lead	7439-92-1	19.6		3.22	8.79	5
01657	Magnesium	7439-95-4	3,620		11.1	58.6	5
06958	Manganese	7439-96-5	2,600		0.486	2.93	5
06961	Nickel	7440-02-0	21.1		1.76	5.86	5
01662	Potassium	7440-09-7	1,500		28.0	58.6	1
06936	Selenium	7782-49-2	N.D.		5.27	11.7	5
06966	Silver	7440-22-4	N.D.		0.879	2.93	5
01667	Sodium	7440-23-5	75.8	J	28.0	117	1
06971	Vanadium	7440-62-2	33.3		0.820	2.93	5
06972	Zinc	7440-66-6	65.1		3.98	11.7	5
	SW-846 6020		**mg/kg**		**mg/kg**	**mg/kg**	
06145	Thallium	7440-28-0	0.191		0.0340	0.117	2
	SW-846 7471A		**mg/kg**		**mg/kg**	**mg/kg**	
00159	Mercury	7439-97-6	0.0241	J	0.0115	0.115	1
Wet Chemistry	**SW-846 9012B**		**mg/kg**		**mg/kg**	**mg/kg**	
05895	Total Cyanide (solid)	57-12-5	N.D.		0.21	0.58	1
Wet Chemistry	**SM 2540 G-1997**		**%**		**%**	**%**	
00111	Moisture	n.a.	15.5		0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	PPL/TCL Volatiles in Soil	SW-846 8260B	1	B162101AA	07/28/2016 14:11	Jennifer K Howe	0.74
06176	GC/MS - LL Water Prep	SW-846 5035A	1	201620441961	07/22/2016 18:22	Katelyn C Shober	1
06176	GC/MS - LL Water Prep	SW-846 5035A	2	201620441961	07/22/2016 18:22	Katelyn C Shober	1

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

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Former Union Switch & Signal Facility

LL Sample # SW 8488103
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Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSS7 SDG#: USS01-07

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time		Analyst	Dilution Factor
07579	GC/MS-5g Field Preserv.MeOH-NC	SW-846 5035A	1	201620441961	07/20/2016	13:45	Client Supplied	1
00374	GC/MS - Bulk Soil Prep	SW-846 5035A Modified	1	201620441962	07/22/2016	19:11	Katelyn C Shober	n.a.
00374	GC/MS - Bulk Soil Prep	SW-846 5035A Modified	2	201620441962	07/22/2016	19:11	Katelyn C Shober	n.a.
06646	GC/MS HL Bulk Sample Prep	SW-846 5035A Modified	1	201620441962	07/22/2016	18:58	Katelyn C Shober	n.a.
10727	PPL/TCL SVOCs in Soil	SW-846 8270C	1	16214SLA026	08/02/2016	14:36	Linda M Hartenstine	1
10809	BNA Soil Microwave	SW-846 3546	2	16214SLA026	08/01/2016	23:30	Nicholas W Shroyer	1
10736	PCBs in Soil (microwave)	SW-846 8082	1	162100026A	08/01/2016	00:56	Jessica L Miller	1
10497	PCB Microwave Soil Extraction	SW-846 3546	1	162100026A	07/29/2016	09:00	David S Schrum	1
01643	Aluminum	SW-846 6010B	1	162095708003	08/01/2016	21:40	Elaine F Stoltzfus	5
06944	Antimony	SW-846 6010B	1	162095708003	08/01/2016	21:40	Elaine F Stoltzfus	5
06935	Arsenic	SW-846 6010B	1	162095708003	08/01/2016	21:40	Elaine F Stoltzfus	5
06946	Barium	SW-846 6010B	1	162095708003	07/29/2016	18:46	Suzanne M Will	1
06947	Beryllium	SW-846 6010B	1	162095708003	08/01/2016	21:40	Elaine F Stoltzfus	5
06949	Cadmium	SW-846 6010B	1	162095708003	08/01/2016	21:40	Elaine F Stoltzfus	5
01650	Calcium	SW-846 6010B	1	162095708003	07/29/2016	18:46	Suzanne M Will	1
06951	Chromium	SW-846 6010B	1	162095708003	08/01/2016	21:40	Elaine F Stoltzfus	5
06952	Cobalt	SW-846 6010B	1	162095708003	08/01/2016	21:40	Elaine F Stoltzfus	5
06953	Copper	SW-846 6010B	1	162095708003	08/01/2016	21:40	Elaine F Stoltzfus	5
01654	Iron	SW-846 6010B	1	162095708003	08/01/2016	21:40	Elaine F Stoltzfus	5
06955	Lead	SW-846 6010B	1	162095708003	08/01/2016	21:40	Elaine F Stoltzfus	5
01657	Magnesium	SW-846 6010B	1	162095708003	08/01/2016	21:40	Elaine F Stoltzfus	5
06958	Manganese	SW-846 6010B	1	162095708003	08/01/2016	21:40	Elaine F Stoltzfus	5
06961	Nickel	SW-846 6010B	1	162095708003	08/01/2016	21:40	Elaine F Stoltzfus	5
01662	Potassium	SW-846 6010B	1	162095708003	07/29/2016	18:46	Suzanne M Will	1
06936	Selenium	SW-846 6010B	1	162095708003	08/01/2016	21:40	Elaine F Stoltzfus	5
06966	Silver	SW-846 6010B	1	162095708003	08/01/2016	21:40	Elaine F Stoltzfus	5
01667	Sodium	SW-846 6010B	1	162095708003	07/29/2016	18:46	Suzanne M Will	1

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

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Analysis Report

Sample Description: S-7 (11-12) Grab Soil
Former Union Switch & Signal Facility

LL Sample # SW 8488103
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/20/2016 13:45 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSS7 SDG#: USS01-07

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06971	Vanadium	SW-846 6010B	1	162095708003	08/01/2016 21:40	Elaine F Stoltzfus	5
06972	Zinc	SW-846 6010B	1	162095708003	08/01/2016 21:40	Elaine F Stoltzfus	5
06145	Thallium	SW-846 6020	1	162095708003A	07/29/2016 05:22	Choon Y Tian	2
00159	Mercury	SW-846 7471A	1	162105711001	08/01/2016 20:26	Parker D Lindstrom	1
05708	ICP-ICPMS - SW, 3050B - U3	SW-846 3050B	1	162095708003	07/28/2016 07:15	Ann Borg	1
05711	Hg-SW, 7471A - U3	SW-846 7471A	1	162105711001	07/28/2016 19:30	JoElla L Rice	1
05895	Total Cyanide (solid)	SW-846 9012B	1	16214102201A	08/01/2016 13:24	David A Seavey	1
05896	Cyanide Solid Distillation	SW-846 9012B	1	16214102201A	08/01/2016 07:30	Nancy J Shoop	1
00111	Moisture	SM 2540 G-1997	1	16209820004A	07/27/2016 11:39	Larry E Bevins	1

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

Sample Description: S-8 (2-3) Grab Soil
Former Union Switch & Signal Facility

LL Sample # SW 8488104
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/20/2016 14:30 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSS8 SDG#: USS01-08

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		ug/kg		ug/kg	ug/kg	
10237	Acetone	67-64-1	N.D.		290	830	36.02
10237	Benzene	71-43-2	N.D.		21	210	36.02
10237	Bromochloromethane	74-97-5	N.D.		41	210	36.02
10237	Bromodichloromethane	75-27-4	N.D.		41	210	36.02
10237	Bromoform	75-25-2	N.D.		41	210	36.02
10237	Bromomethane	74-83-9	N.D.		83	210	36.02
10237	2-Butanone	78-93-3	N.D.		170	410	36.02
10237	Carbon Disulfide	75-15-0	N.D.		41	210	36.02
10237	Carbon Tetrachloride	56-23-5	N.D.		41	210	36.02
10237	Chlorobenzene	108-90-7	N.D.		41	210	36.02
10237	Chloroethane	75-00-3	N.D.		83	210	36.02
10237	Chloroform	67-66-3	N.D.		41	210	36.02
10237	Chloromethane	74-87-3	N.D.		83	210	36.02
10237	Cyclohexane	110-82-7	N.D.		41	210	36.02
10237	1,2-Dibromo-3-chloropropane	96-12-8	N.D.		83	210	36.02
10237	Dibromochloromethane	124-48-1	N.D.		41	210	36.02
10237	1,2-Dibromoethane	106-93-4	N.D.		41	210	36.02
10237	1,2-Dichlorobenzene	95-50-1	N.D.		41	210	36.02
10237	1,3-Dichlorobenzene	541-73-1	N.D.		41	210	36.02
10237	1,4-Dichlorobenzene	106-46-7	N.D.		41	210	36.02
10237	Dichlorodifluoromethane	75-71-8	N.D.		83	210	36.02
10237	1,1-Dichloroethane	75-34-3	N.D.		41	210	36.02
10237	1,2-Dichloroethane	107-06-2	N.D.		41	210	36.02
10237	1,1-Dichloroethene	75-35-4	140	J	41	210	36.02
10237	cis-1,2-Dichloroethene	156-59-2	N.D.		41	210	36.02
10237	trans-1,2-Dichloroethene	156-60-5	N.D.		41	210	36.02
10237	1,2-Dichloropropane	78-87-5	N.D.		41	210	36.02
10237	cis-1,3-Dichloropropene	10061-01-5	N.D.		41	210	36.02
10237	trans-1,3-Dichloropropene	10061-02-6	N.D.		41	210	36.02
10237	Ethylbenzene	100-41-4	N.D.		41	210	36.02
10237	Freon 113	76-13-1	N.D.		83	410	36.02
10237	2-Hexanone	591-78-6	N.D.		120	410	36.02
10237	Isopropylbenzene	98-82-8	N.D.		41	210	36.02
10237	Methyl Acetate	79-20-9	N.D.		83	210	36.02
10237	Methyl Tertiary Butyl Ether	1634-04-4	N.D.		21	210	36.02
10237	4-Methyl-2-pentanone	108-10-1	N.D.		120	410	36.02
10237	Methylcyclohexane	108-87-2	N.D.		41	210	36.02
10237	Methylene Chloride	75-09-2	N.D.		83	210	36.02
10237	Styrene	100-42-5	N.D.		41	210	36.02
10237	1,1,2,2-Tetrachloroethane	79-34-5	N.D.		41	210	36.02
10237	Tetrachloroethene	127-18-4	N.D.		41	210	36.02
10237	Toluene	108-88-3	N.D.		41	210	36.02
10237	1,2,3-Trichlorobenzene	87-61-6	N.D.		41	210	36.02
10237	1,2,4-Trichlorobenzene	120-82-1	N.D.		41	210	36.02
10237	1,1,1-Trichloroethane	71-55-6	1,900		41	210	36.02
10237	1,1,2-Trichloroethane	79-00-5	N.D.		41	210	36.02
10237	Trichloroethene	79-01-6	470		41	210	36.02
10237	Trichlorofluoromethane	75-69-4	N.D.		83	210	36.02
10237	Vinyl Chloride	75-01-4	N.D.		41	210	36.02
10237	Xylene (Total)	1330-20-7	N.D.		41	210	36.02

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

Sample Description: S-8 (2-3) Grab Soil
Former Union Switch & Signal Facility

LL Sample # SW 8488104
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/20/2016 14:30 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSS8 SDG#: USS01-08

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C**		**ug/kg**		**ug/kg**	**ug/kg**	
10727	Acenaphthene	83-32-9	250		38	190	10
10727	Acenaphthylene	208-96-8	130	J	38	190	10
10727	Acetophenone	98-86-2	N.D.		190	380	10
10727	Anthracene	120-12-7	2,200		38	190	10
10727	Atrazine	1912-24-9	N.D.		380	1,900	10
10727	Benzaldehyde	100-52-7	N.D.		760	1,900	10
10727	Benzo(a)anthracene	56-55-3	3,700		38	190	10
10727	Benzo(a)pyrene	50-32-8	2,300		38	190	10
10727	Benzo(b)fluoranthene	205-99-2	2,600		38	190	10
10727	Benzo(g,h,i)perylene	191-24-2	1,900		38	190	10
10727	Benzo(k)fluoranthene	207-08-9	960		38	190	10
10727	1,1'-Biphenyl	92-52-4	200	J	190	380	10
10727	4-Bromophenyl-phenylether	101-55-3	N.D.		190	380	10
10727	Butylbenzylphthalate	85-68-7	N.D.		760	1,900	10
10727	Di-n-butylphthalate	84-74-2	N.D.		760	1,900	10
10727	Caprolactam	105-60-2	N.D.		380	1,900	10
10727	Carbazole	86-74-8	310	J	190	380	10
10727	4-Chloro-3-methylphenol	59-50-7	N.D.		190	380	10
10727	4-Chloroaniline	106-47-8	N.D.		380	760	10
10727	bis(2-Chloroethoxy)methane	111-91-1	N.D.		190	380	10
10727	bis(2-Chloroethyl)ether	111-44-4	N.D.		190	380	10
10727	2-Chloronaphthalene	91-58-7	N.D.		76	380	10
10727	2-Chlorophenol	95-57-8	N.D.		190	380	10
10727	4-Chlorophenyl-phenylether	7005-72-3	N.D.		190	380	10
10727	2,2'-oxybis(1-Chloropropane)	108-60-1	N.D.		190	380	10
	Bis(2-chloroisopropyl) ether CAS #39638-32-9 and 2,2'-Oxybis(1-chloropropane) CAS #108-60-1 cannot be separated chromatographically. The reported result represents the combined total of both compounds.						
10727	Chrysene	218-01-9	4,300		38	190	10
10727	Dibenz(a,h)anthracene	53-70-3	420		38	190	10
10727	Dibenzofuran	132-64-9	770		190	380	10
10727	3,3'-Dichlorobenzidine	91-94-1	N.D.		1,100	3,800	10
10727	2,4-Dichlorophenol	120-83-2	N.D.		190	380	10
10727	Diethylphthalate	84-66-2	N.D.		760	1,900	10
10727	2,4-Dimethylphenol	105-67-9	N.D.		190	380	10
10727	Dimethylphthalate	131-11-3	N.D.		760	1,900	10
10727	4,6-Dinitro-2-methylphenol	534-52-1	N.D.		1,900	5,700	10
10727	2,4-Dinitrophenol	51-28-5	N.D.		3,400	11,000	10
10727	2,4-Dinitrotoluene	121-14-2	N.D.		760	1,900	10
10727	2,6-Dinitrotoluene	606-20-2	N.D.		190	380	10
10727	1,4-Dioxane	123-91-1	N.D.		1,100	3,800	10
10727	bis(2-Ethylhexyl)phthalate	117-81-7	N.D.		760	1,900	10
10727	Fluoranthene	206-44-0	6,100		38	190	10
10727	Fluorene	86-73-7	690		38	190	10
10727	Hexachlorobenzene	118-74-1	N.D.		38	190	10
10727	Hexachlorobutadiene	87-68-3	N.D.		190	380	10
10727	Hexachlorocyclopentadiene	77-47-4	N.D.		1,900	5,700	10
10727	Hexachloroethane	67-72-1	N.D.		380	1,900	10
10727	Indeno(1,2,3-cd)pyrene	193-39-5	1,200		38	190	10
10727	Isophorone	78-59-1	N.D.		190	380	10

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

Sample Description: S-8 (2-3) Grab Soil
Former Union Switch & Signal Facility

LL Sample # SW 8488104
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/20/2016 14:30 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSS8 SDG#: USS01-08

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C**		**ug/kg**	**ug/kg**	**ug/kg**	
10727	2-Methylnaphthalene	91-57-6	2,100	38	190	10
10727	2-Methylphenol	95-48-7	N.D.	190	380	10
10727	4-Methylphenol	106-44-5	N.D.	190	380	10
	3-Methylphenol and 4-methylphenol cannot be resolved under the chromatographic conditions used for sample analysis. The result reported for 4-methylphenol represents the combined total of both compounds.					
10727	Naphthalene	91-20-3	480	38	190	10
10727	2-Nitroaniline	88-74-4	N.D.	190	380	10
10727	3-Nitroaniline	99-09-2	N.D.	760	1,900	10
10727	4-Nitroaniline	100-01-6	N.D.	760	1,900	10
10727	Nitrobenzene	98-95-3	N.D.	190	380	10
10727	2-Nitrophenol	88-75-5	N.D.	190	380	10
10727	4-Nitrophenol	100-02-7	N.D.	1,900	5,700	10
10727	N-Nitroso-di-n-propylamine	621-64-7	N.D.	190	380	10
10727	N-Nitrosodiphenylamine	86-30-6	N.D.	190	380	10
	N-nitrosodiphenylamine decomposes in the GC inlet forming diphenylamine. The result reported for N-nitrosodiphenylamine represents the combined total of both compounds.					
10727	Di-n-octylphthalate	117-84-0	N.D.	760	1,900	10
10727	Pentachlorophenol	87-86-5	N.D.	380	1,900	10
10727	Phenanthrene	85-01-8	8,800	38	190	10
10727	Phenol	108-95-2	N.D.	190	380	10
10727	Pyrene	129-00-0	18,000	38	190	10
10727	1,2,4,5-Tetrachlorobenzene	95-94-3	N.D.	190	380	10
10727	2,3,4,6-Tetrachlorophenol	58-90-2	N.D.	760	1,900	10
10727	2,4,5-Trichlorophenol	95-95-4	N.D.	190	380	10
10727	2,4,6-Trichlorophenol	88-06-2	N.D.	190	380	10
Pesticides/PCBs	**SW-846 8082**		**ug/kg**	**ug/kg**	**ug/kg**	
10736	PCB-1016	12674-11-2	N.D.	4.1	19	1
10736	PCB-1221	11104-28-2	N.D.	5.2	19	1
10736	PCB-1232	11141-16-5	N.D.	9.1	19	1
10736	PCB-1242	53469-21-9	N.D.	3.8	19	1
10736	PCB-1248	12672-29-6	N.D.	3.8	19	1
10736	PCB-1254	11097-69-1	N.D.	3.8	19	1
10736	PCB-1260	11096-82-5	N.D.	5.6	19	1
10736	PCB-1262	37324-23-5	N.D.	3.8	19	1
10736	PCB-1268	11100-14-4	N.D.	3.8	19	1
10736	Total PCBs	1336-36-3	N.D.	3.8	19	1
Metals	**SW-846 6010B**		**mg/kg**	**mg/kg**	**mg/kg**	
01643	Aluminum	7429-90-5	14,800	8.89	20.5	1
06944	Antimony	7440-36-0	1.04 J	0.717	2.05	1
06935	Arsenic	7440-38-2	17.5	0.993	2.05	1
06946	Barium	7440-39-3	103	0.0338	0.512	1
06947	Beryllium	7440-41-7	0.644	0.0686	0.512	1
06949	Cadmium	7440-43-9	0.833	0.0502	0.512	1
01650	Calcium	7440-70-2	1,350	5.80	20.5	1
06951	Chromium	7440-47-3	21.1	0.143	1.54	1
06952	Cobalt	7440-48-4	4.37	0.123	0.512	1

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

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Lancaster Laboratories Environmental
2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Analysis Report

Sample Description: S-8 (2-3) Grab Soil
Former Union Switch & Signal Facility

LL Sample # SW 8488104
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/20/2016 14:30 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSS8 SDG#: USS01-08

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010B**		**mg/kg**		**mg/kg**	**mg/kg**	
06953	Copper	7440-50-8	41.9		0.236	1.02	1
01654	Iron	7439-89-6	36,800		21.1	102	5
06955	Lead	7439-92-1	26.7		0.563	1.54	1
01657	Magnesium	7439-95-4	1,900		1.95	10.2	1
06958	Manganese	7439-96-5	125		0.0850	0.512	1
06961	Nickel	7440-02-0	16.2		0.307	1.02	1
01662	Potassium	7440-09-7	1,250		24.5	51.2	1
06936	Selenium	7782-49-2	1.28	J	0.922	2.05	1
06966	Silver	7440-22-4	N.D.		0.154	0.512	1
01667	Sodium	7440-23-5	72.9	J	24.5	102	1
06971	Vanadium	7440-62-2	32.1		0.143	0.512	1
06972	Zinc	7440-66-6	56.8		0.696	2.05	1
	SW-846 6020		**mg/kg**		**mg/kg**	**mg/kg**	
06145	Thallium	7440-28-0	0.259		0.0297	0.102	2
	SW-846 7471A		**mg/kg**		**mg/kg**	**mg/kg**	
00159	Mercury	7439-97-6	0.0146	J	0.0108	0.108	1
Wet Chemistry	**SW-846 9012B**		**mg/kg**		**mg/kg**	**mg/kg**	
05895	Total Cyanide (solid)	57-12-5	N.D.		0.20	0.55	1
Wet Chemistry	**SM 2540 G-1997**		**%**		**%**	**%**	
00111	Moisture	n.a.	12.8		0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	PPL/TCL Volatiles in Soil	SW-846 8260B	1	Q162091AA	07/27/2016 19:06	Anita M Dale	36.02
06176	GC/MS - LL Water Prep	SW-846 5035A	1	201620441961	07/22/2016 18:21	Katelyn C Shober	1
06176	GC/MS - LL Water Prep	SW-846 5035A	2	201620441961	07/22/2016 18:21	Katelyn C Shober	1
07579	GC/MS-5g Field Preserv.MeOH-NC	SW-846 5035A	1	201620441961	07/20/2016 14:30	Client Supplied	1
00374	GC/MS - Bulk Soil Prep	SW-846 5035A Modified	1	201620441962	07/22/2016 19:11	Katelyn C Shober	n.a.

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

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Lancaster Laboratories Environmental
2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Analysis Report

Sample Description: S-8 (2-3) Grab Soil
Former Union Switch & Signal Facility

LL Sample # SW 8488104
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/20/2016 14:30 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSS8 SDG#: USS01-08

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time		Analyst	Dilution Factor
00374	GC/MS - Bulk Soil Prep	SW-846 5035A Modified	2	201620441962	07/22/2016	19:11	Katelyn C Shober	n.a.
06646	GC/MS HL Bulk Sample Prep	SW-846 5035A Modified	1	201620441962	07/22/2016	19:00	Katelyn C Shober	n.a.
10727	PPL/TCL SVOCs in Soil	SW-846 8270C	1	16210SLG026	07/30/2016	03:57	Anthony P Bauer	10
10809	BNA Soil Microwave	SW-846 3546	1	16210SLG026	07/29/2016	09:00	Michelle A Newswanger	1
10736	PCBs in Soil (microwave)	SW-846 8082	1	162100026A	08/01/2016	01:08	Jessica L Miller	1
10497	PCB Microwave Soil Extraction	SW-846 3546	1	162100026A	07/29/2016	09:00	David S Schrum	1
01643	Aluminum	SW-846 6010B	1	162095708003	07/29/2016	18:50	Suzanne M Will	1
06944	Antimony	SW-846 6010B	1	162095708003	08/01/2016	21:44	Elaine F Stoltzfus	1
06935	Arsenic	SW-846 6010B	1	162095708003	08/01/2016	21:44	Elaine F Stoltzfus	1
06946	Barium	SW-846 6010B	1	162095708003	07/29/2016	18:50	Suzanne M Will	1
06947	Beryllium	SW-846 6010B	1	162095708003	07/29/2016	18:50	Suzanne M Will	1
06949	Cadmium	SW-846 6010B	1	162095708003	08/01/2016	21:44	Elaine F Stoltzfus	1
01650	Calcium	SW-846 6010B	1	162095708003	07/29/2016	18:50	Suzanne M Will	1
06951	Chromium	SW-846 6010B	1	162095708003	07/29/2016	18:50	Suzanne M Will	1
06952	Cobalt	SW-846 6010B	1	162095708003	07/29/2016	18:50	Suzanne M Will	1
06953	Copper	SW-846 6010B	1	162095708003	07/29/2016	18:50	Suzanne M Will	1
01654	Iron	SW-846 6010B	1	162095708003	08/01/2016	21:54	Elaine F Stoltzfus	5
06955	Lead	SW-846 6010B	1	162095708003	07/29/2016	18:50	Suzanne M Will	1
01657	Magnesium	SW-846 6010B	1	162095708003	07/29/2016	18:50	Suzanne M Will	1
06958	Manganese	SW-846 6010B	1	162095708003	07/29/2016	18:50	Suzanne M Will	1
06961	Nickel	SW-846 6010B	1	162095708003	07/29/2016	18:50	Suzanne M Will	1
01662	Potassium	SW-846 6010B	1	162095708003	07/29/2016	18:50	Suzanne M Will	1
06936	Selenium	SW-846 6010B	1	162095708003	08/01/2016	21:44	Elaine F Stoltzfus	1
06966	Silver	SW-846 6010B	1	162095708003	07/29/2016	18:50	Suzanne M Will	1
01667	Sodium	SW-846 6010B	1	162095708003	07/29/2016	18:50	Suzanne M Will	1
06971	Vanadium	SW-846 6010B	1	162095708003	07/29/2016	18:50	Suzanne M Will	1
06972	Zinc	SW-846 6010B	1	162095708003	07/29/2016	18:50	Suzanne M Will	1
06145	Thallium	SW-846 6020	1	162095708003A	07/29/2016	05:24	Choon Y Tian	2
00159	Mercury	SW-846 7471A	1	162105711001	08/01/2016	20:28	Parker D Lindstrom	1
05708	ICP-ICPMS - SW, 3050B - U3	SW-846 3050B	1	162095708003	07/28/2016	07:15	Ann Borg	1
05711	Hg-SW, 7471A - U3	SW-846 7471A	1	162105711001	07/28/2016	19:30	JoElla L Rice	1
05895	Total Cyanide (solid)	SW-846 9012B	1	16214102201A	08/01/2016	13:28	David A Seavey	1
05896	Cyanide Solid Distillation	SW-846 9012B	1	16214102201A	08/01/2016	07:30	Nancy J Shoop	1
00111	Moisture	SM 2540 G-1997	1	16209820004A	07/27/2016	11:39	Larry E Bevins	1

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

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Analysis Report

Sample Description: S-9 (5-6) Grab Soil
Former Union Switch & Signal Facility

LL Sample # SW 8488105
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/19/2016 15:00 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSS9 SDG#: USS01-09

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**		**ug/kg**	**ug/kg**	
10237	Acetone	67-64-1	290	E	7	20	0.79
10237	Benzene	71-43-2	1	J	0.5	5	0.79
10237	Bromochloromethane	74-97-5	N.D.		1	5	0.79
10237	Bromodichloromethane	75-27-4	N.D.		1	5	0.79
10237	Bromoform	75-25-2	N.D.		1	5	0.79
10237	Bromomethane	74-83-9	N.D.		2	5	0.79
10237	2-Butanone	78-93-3	44		4	10	0.79
10237	Carbon Disulfide	75-15-0	10		1	5	0.79
10237	Carbon Tetrachloride	56-23-5	N.D.		1	5	0.79
10237	Chlorobenzene	108-90-7	N.D.		1	5	0.79
10237	Chloroethane	75-00-3	N.D.		2	5	0.79
10237	Chloroform	67-66-3	N.D.		1	5	0.79
10237	Chloromethane	74-87-3	N.D.		2	5	0.79
10237	Cyclohexane	110-82-7	N.D.		1	5	0.79
10237	1,2-Dibromo-3-chloropropane	96-12-8	N.D.		2	5	0.79
10237	Dibromochloromethane	124-48-1	N.D.		1	5	0.79
10237	1,2-Dibromoethane	106-93-4	N.D.		1	5	0.79
10237	1,2-Dichlorobenzene	95-50-1	N.D.		1	5	0.79
10237	1,3-Dichlorobenzene	541-73-1	N.D.		1	5	0.79
10237	1,4-Dichlorobenzene	106-46-7	N.D.		1	5	0.79
10237	Dichlorodifluoromethane	75-71-8	N.D.		2	5	0.79
10237	1,1-Dichloroethane	75-34-3	N.D.		1	5	0.79
10237	1,2-Dichloroethane	107-06-2	N.D.		1	5	0.79
10237	1,1-Dichloroethene	75-35-4	1	J	1	5	0.79
10237	cis-1,2-Dichloroethene	156-59-2	8		1	5	0.79
10237	trans-1,2-Dichloroethene	156-60-5	N.D.		1	5	0.79
10237	1,2-Dichloropropane	78-87-5	N.D.		1	5	0.79
10237	cis-1,3-Dichloropropene	10061-01-5	N.D.		1	5	0.79
10237	trans-1,3-Dichloropropene	10061-02-6	N.D.		1	5	0.79
10237	Ethylbenzene	100-41-4	2	J	1	5	0.79
10237	Freon 113	76-13-1	N.D.		2	10	0.79
10237	2-Hexanone	591-78-6	N.D.		3	10	0.79
10237	Isopropylbenzene	98-82-8	16		1	5	0.79
10237	Methyl Acetate	79-20-9	N.D.		2	5	0.79
10237	Methyl Tertiary Butyl Ether	1634-04-4	N.D.		0.5	5	0.79
10237	4-Methyl-2-pentanone	108-10-1	N.D.		3	10	0.79
10237	Methylcyclohexane	108-87-2	21		1	5	0.79
10237	Methylene Chloride	75-09-2	N.D.		2	5	0.79
10237	Styrene	100-42-5	N.D.		1	5	0.79
10237	1,1,2,2-Tetrachloroethane	79-34-5	N.D.		1	5	0.79
10237	Tetrachloroethene	127-18-4	N.D.		1	5	0.79
10237	Toluene	108-88-3	N.D.		1	5	0.79
10237	1,2,3-Trichlorobenzene	87-61-6	N.D.		1	5	0.79
10237	1,2,4-Trichlorobenzene	120-82-1	N.D.		1	5	0.79
10237	1,1,1-Trichloroethane	71-55-6	N.D.		1	5	0.79
10237	1,1,2-Trichloroethane	79-00-5	N.D.		1	5	0.79
10237	Trichloroethene	79-01-6	30		1	5	0.79
10237	Trichlorofluoromethane	75-69-4	N.D.		2	5	0.79
10237	Vinyl Chloride	75-01-4	4	J	1	5	0.79
10237	Xylene (Total)	1330-20-7	7		1	5	0.79

The LCS and/or LCSD recoveries are outside the stated QC window but within

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

Sample Description: S-9 (5-6) Grab Soil
Former Union Switch & Signal Facility

LL Sample # SW 8488105
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/19/2016 15:00 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSS9 SDG#: USS01-09

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
	the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: Dibromochloromethane						
	The concentration reported for Acetone is estimated since it exceeds the calibration range of the instrument when determined by the low level method, but is not detected when determined by the high level method. The result reported is from the low level determination.						
GC/MS Semivolatiles		**SW-846 8270C**	**ug/kg**		**ug/kg**	**ug/kg**	
10727	Acenaphthene	83-32-9	91	J	41	210	10
10727	Acenaphthylene	208-96-8	87	J	41	210	10
10727	Acetophenone	98-86-2	N.D.		210	410	10
10727	Anthracene	120-12-7	440		41	210	10
10727	Atrazine	1912-24-9	N.D.		410	2,100	10
10727	Benzaldehyde	100-52-7	N.D.		820	2,100	10
10727	Benzo(a)anthracene	56-55-3	2,900		41	210	10
10727	Benzo(a)pyrene	50-32-8	3,400		41	210	10
10727	Benzo(b)fluoranthene	205-99-2	5,000		41	210	10
10727	Benzo(g,h,i)perylene	191-24-2	2,500		41	210	10
10727	Benzo(k)fluoranthene	207-08-9	1,900		41	210	10
10727	1,1'-Biphenyl	92-52-4	N.D.		210	410	10
10727	4-Bromophenyl-phenylether	101-55-3	N.D.		210	410	10
10727	Butylbenzylphthalate	85-68-7	N.D.		820	2,100	10
10727	Di-n-butylphthalate	84-74-2	N.D.		820	2,100	10
10727	Caprolactam	105-60-2	N.D.		410	2,100	10
10727	Carbazole	86-74-8	210	J	210	410	10
10727	4-Chloro-3-methylphenol	59-50-7	N.D.		210	410	10
10727	4-Chloroaniline	106-47-8	N.D.		410	820	10
10727	bis(2-Chloroethoxy)methane	111-91-1	N.D.		210	410	10
10727	bis(2-Chloroethyl)ether	111-44-4	N.D.		210	410	10
10727	2-Chloronaphthalene	91-58-7	N.D.		82	410	10
10727	2-Chlorophenol	95-57-8	N.D.		210	410	10
10727	4-Chlorophenyl-phenylether	7005-72-3	N.D.		210	410	10
10727	2,2'-oxybis(1-Chloropropane)	108-60-1	N.D.		210	410	10
	Bis(2-chloroisopropyl) ether CAS #39638-32-9 and 2,2'-Oxybis(1-chloropropane) CAS #108-60-1 cannot be separated chromatographically. The reported result represents the combined total of both compounds.						
10727	Chrysene	218-01-9	3,400		41	210	10
10727	Dibenz(a,h)anthracene	53-70-3	660		41	210	10
10727	Dibenzofuran	132-64-9	270	J	210	410	10
10727	3,3'-Dichlorobenzidine	91-94-1	N.D.		1,200	4,100	10
10727	2,4-Dichlorophenol	120-83-2	N.D.		210	410	10
10727	Diethylphthalate	84-66-2	N.D.		820	2,100	10
10727	2,4-Dimethylphenol	105-67-9	N.D.		210	410	10
10727	Dimethylphthalate	131-11-3	N.D.		820	2,100	10
10727	4,6-Dinitro-2-methylphenol	534-52-1	N.D.		2,100	6,200	10
10727	2,4-Dinitrophenol	51-28-5	N.D.		3,700	12,000	10
10727	2,4-Dinitrotoluene	121-14-2	N.D.		820	2,100	10
10727	2,6-Dinitrotoluene	606-20-2	N.D.		210	410	10
10727	1,4-Dioxane	123-91-1	N.D.		1,200	4,100	10

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

Sample Description: S-9 (5-6) Grab Soil
Former Union Switch & Signal Facility

LL Sample # SW 8488105
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/19/2016 15:00 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSS9 SDG#: USS01-09

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C**		**ug/kg**	**ug/kg**	**ug/kg**	
10727	bis(2-Ethylhexyl)phthalate	117-81-7	N.D.	820	2,100	10
10727	Fluoranthene	206-44-0	4,900	41	210	10
10727	Fluorene	86-73-7	170 J	41	210	10
10727	Hexachlorobenzene	118-74-1	N.D.	41	210	10
10727	Hexachlorobutadiene	87-68-3	N.D.	210	410	10
10727	Hexachlorocyclopentadiene	77-47-4	N.D.	2,100	6,200	10
10727	Hexachloroethane	67-72-1	N.D.	410	2,100	10
10727	Indeno(1,2,3-cd)pyrene	193-39-5	2,300	41	210	10
10727	Isophorone	78-59-1	N.D.	210	410	10
10727	2-Methylnaphthalene	91-57-6	500	41	210	10
10727	2-Methylphenol	95-48-7	N.D.	210	410	10
10727	4-Methylphenol	106-44-5	N.D.	210	410	10
	3-Methylphenol and 4-methylphenol cannot be resolved under the chromatographic conditions used for sample analysis. The result reported for 4-methylphenol represents the combined total of both compounds.					
10727	Naphthalene	91-20-3	720	41	210	10
10727	2-Nitroaniline	88-74-4	N.D.	210	410	10
10727	3-Nitroaniline	99-09-2	N.D.	820	2,100	10
10727	4-Nitroaniline	100-01-6	N.D.	820	2,100	10
10727	Nitrobenzene	98-95-3	N.D.	210	410	10
10727	2-Nitrophenol	88-75-5	N.D.	210	410	10
10727	4-Nitrophenol	100-02-7	N.D.	2,100	6,200	10
10727	N-Nitroso-di-n-propylamine	621-64-7	N.D.	210	410	10
10727	N-Nitrosodiphenylamine	86-30-6	N.D.	210	410	10
	N-nitrosodiphenylamine decomposes in the GC inlet forming diphenylamine. The result reported for N-nitrosodiphenylamine represents the combined total of both compounds.					
10727	Di-n-octylphthalate	117-84-0	N.D.	820	2,100	10
10727	Pentachlorophenol	87-86-5	N.D.	410	2,100	10
10727	Phenanthrene	85-01-8	1,700	41	210	10
10727	Phenol	108-95-2	N.D.	210	410	10
10727	Pyrene	129-00-0	5,800	41	210	10
10727	1,2,4,5-Tetrachlorobenzene	95-94-3	N.D.	210	410	10
10727	2,3,4,6-Tetrachlorophenol	58-90-2	N.D.	820	2,100	10
10727	2,4,5-Trichlorophenol	95-95-4	N.D.	210	410	10
10727	2,4,6-Trichlorophenol	88-06-2	N.D.	210	410	10
Pesticides/PCBs	**SW-846 8082**		**ug/kg**	**ug/kg**	**ug/kg**	
10736	PCB-1016	12674-11-2	N.D.	4.4	21	1
10736	PCB-1221	11104-28-2	N.D.	5.7	21	1
10736	PCB-1232	11141-16-5	N.D.	9.9	21	1
10736	PCB-1242	53469-21-9	N.D.	4.1	21	1
10736	PCB-1248	12672-29-6	N.D.	4.1	21	1
10736	PCB-1254	11097-69-1	180	4.1	21	1
10736	PCB-1260	11096-82-5	N.D.	6.0	21	1
10736	PCB-1262	37324-23-5	N.D.	4.1	21	1
10736	PCB-1268	11100-14-4	N.D.	4.1	21	1
10736	Total PCBs	1336-36-3	180	4.1	21	1
Metals	**SW-846 6010B**		**mg/kg**	**mg/kg**	**mg/kg**	

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

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Analysis Report

Sample Description: S-9 (5-6) Grab Soil
Former Union Switch & Signal Facility

LL Sample # SW 8488105
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/19/2016 15:00 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSS9 SDG#: USS01-09

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010B**		**mg/kg**	**mg/kg**	**mg/kg**	
01643	Aluminum	7429-90-5	6,060	37.0	85.1	5
06944	Antimony	7440-36-0	22.8	2.98	8.51	5
06935	Arsenic	7440-38-2	15.8	4.13	8.51	5
06946	Barium	7440-39-3	193	0.0281	0.426	1
06947	Beryllium	7440-41-7	0.826 J	0.285	2.13	5
06949	Cadmium	7440-43-9	54.8	0.209	2.13	5
01650	Calcium	7440-70-2	11,200	4.82	17.0	1
06951	Chromium	7440-47-3	104	0.596	6.39	5
06952	Cobalt	7440-48-4	9.45	0.511	2.13	5
06953	Copper	7440-50-8	975	0.979	4.26	5
01654	Iron	7439-89-6	48,000	17.5	85.1	5
06955	Lead	7439-92-1	3,750	2.34	6.39	5
01657	Magnesium	7439-95-4	1,610	8.09	42.6	5
06958	Manganese	7439-96-5	786	0.0707	0.426	1
06961	Nickel	7440-02-0	82.7	1.28	4.26	5
01662	Potassium	7440-09-7	700	20.3	42.6	1
06936	Selenium	7782-49-2	N.D.	3.83	8.51	5
	Reporting limits for ICP metals were raised due to interference from the sample matrix.					
06966	Silver	7440-22-4	N.D.	0.639	2.13	5
01667	Sodium	7440-23-5	126	20.3	85.1	1
06971	Vanadium	7440-62-2	18.5	0.596	2.13	5
06972	Zinc	7440-66-6	898	2.89	8.51	5
	SW-846 6020		**mg/kg**	**mg/kg**	**mg/kg**	
06145	Thallium	7440-28-0	0.0804 J	0.0247	0.0851	2
	SW-846 7471A		**mg/kg**	**mg/kg**	**mg/kg**	
00159	Mercury	7439-97-6	1.41	0.0606	0.606	5
Wet Chemistry	**SW-846 9012B**		**mg/kg**	**mg/kg**	**mg/kg**	
05895	Total Cyanide (solid)	57-12-5	2.6	0.23	0.63	1
Wet Chemistry	**SM 2540 G-1997**		**%**	**%**	**%**	
00111	Moisture	n.a.	20.1	0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.					

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

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

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

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Analysis Report

Sample Description: S-9 (5-6) Grab Soil
Former Union Switch & Signal Facility

LL Sample # SW 8488105
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/19/2016 15:00 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSS9 SDG#: USS01-09

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time		Analyst	Dilution Factor
10237	PPL/TCL Volatiles in Soil	SW-846 8260B	1	B162101AA	07/28/2016	19:05	Jennifer K Howe	0.79
06176	GC/MS - LL Water Prep	SW-846 5035A	1	201620441961	07/22/2016	18:21	Katelyn C Shober	1
06176	GC/MS - LL Water Prep	SW-846 5035A	2	201620441961	07/22/2016	18:21	Katelyn C Shober	1
07579	GC/MS-5g Field Preserv.MeOH-NC	SW-846 5035A	1	201620441961	07/19/2016	15:00	Client Supplied	1
00374	GC/MS - Bulk Soil Prep	SW-846 5035A Modified	1	201620441962	07/22/2016	19:11	Katelyn C Shober	n.a.
00374	GC/MS - Bulk Soil Prep	SW-846 5035A Modified	2	201620441962	07/22/2016	19:11	Katelyn C Shober	n.a.
06646	GC/MS HL Bulk Sample Prep	SW-846 5035A Modified	1	201620441962	07/22/2016	19:05	Katelyn C Shober	n.a.
10727	PPL/TCL SVOCs in Soil	SW-846 8270C	1	16210SLG026	07/30/2016	04:22	Anthony P Bauer	10
10809	BNA Soil Microwave	SW-846 3546	1	16210SLG026	07/29/2016	09:00	Michelle A Newswanger	1
10736	PCBs in Soil (microwave)	SW-846 8082	1	162100026A	08/01/2016	01:19	Jessica L Miller	1
10497	PCB Microwave Soil Extraction	SW-846 3546	1	162100026A	07/29/2016	09:00	David S Schrum	1
01643	Aluminum	SW-846 6010B	1	162095708003	08/01/2016	21:57	Elaine F Stoltzfus	5
06944	Antimony	SW-846 6010B	1	162095708003	08/01/2016	21:57	Elaine F Stoltzfus	5
06935	Arsenic	SW-846 6010B	1	162095708003	08/01/2016	21:57	Elaine F Stoltzfus	5
06946	Barium	SW-846 6010B	1	162095708003	07/29/2016	18:53	Suzanne M Will	1
06947	Beryllium	SW-846 6010B	1	162095708003	08/01/2016	21:57	Elaine F Stoltzfus	5
06949	Cadmium	SW-846 6010B	1	162095708003	08/01/2016	21:57	Elaine F Stoltzfus	5
01650	Calcium	SW-846 6010B	1	162095708003	07/29/2016	18:53	Suzanne M Will	1
06951	Chromium	SW-846 6010B	1	162095708003	08/01/2016	21:57	Elaine F Stoltzfus	5
06952	Cobalt	SW-846 6010B	1	162095708003	08/01/2016	21:57	Elaine F Stoltzfus	5
06953	Copper	SW-846 6010B	1	162095708003	08/01/2016	21:57	Elaine F Stoltzfus	5
01654	Iron	SW-846 6010B	1	162095708003	08/01/2016	21:57	Elaine F Stoltzfus	5
06955	Lead	SW-846 6010B	1	162095708003	08/01/2016	21:57	Elaine F Stoltzfus	5
01657	Magnesium	SW-846 6010B	1	162095708003	08/01/2016	21:57	Elaine F Stoltzfus	5
06958	Manganese	SW-846 6010B	1	162095708003	07/29/2016	18:53	Suzanne M Will	1
06961	Nickel	SW-846 6010B	1	162095708003	08/01/2016	21:57	Elaine F Stoltzfus	5
01662	Potassium	SW-846 6010B	1	162095708003	07/29/2016	18:53	Suzanne M Will	1
06936	Selenium	SW-846 6010B	1	162095708003	08/01/2016	21:57	Elaine F Stoltzfus	5
06966	Silver	SW-846 6010B	1	162095708003	08/02/2016	12:57	Joanne M Gates	5
01667	Sodium	SW-846 6010B	1	162095708003	07/29/2016	18:53	Suzanne M Will	1

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

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Analysis Report

Sample Description: S-9 (5-6) Grab Soil
Former Union Switch & Signal Facility

LL Sample # SW 8488105
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/19/2016 15:00 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSS9 SDG#: USS01-09

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06971	Vanadium	SW-846 6010B	1	162095708003	08/01/2016 21:57	Elaine F Stoltzfus	5
06972	Zinc	SW-846 6010B	1	162095708003	08/01/2016 21:57	Elaine F Stoltzfus	5
06145	Thallium	SW-846 6020	1	162095708003A	07/29/2016 05:26	Choon Y Tian	2
00159	Mercury	SW-846 7471A	1	162105711001	08/01/2016 21:30	Parker D Lindstrom	5
05708	ICP-ICPMS - SW, 3050B - U3	SW-846 3050B	1	162095708003	07/28/2016 07:15	Ann Borg	1
05711	Hg-SW, 7471A - U3	SW-846 7471A	1	162105711001	07/28/2016 19:30	JoElla L Rice	1
05895	Total Cyanide (solid)	SW-846 9012B	1	16213102201B	08/01/2016 12:19	David A Seavey	1
05896	Cyanide Solid Distillation	SW-846 9012B	1	16213102201B	07/31/2016 22:00	Drew M Gerhart	1
00111	Moisture	SM 2540 G-1997	1	16209820004A	07/27/2016 11:39	Larry E Bevins	1

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

Sample Description: S-10 (12-13) Grab Soil
Former Union Switch & Signal Facility

LL Sample # SW 8488106
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/19/2016 16:45 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USS10 SDG#: USS01-10

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**	**ug/kg**	**ug/kg**	
10237	Acetone	67-64-1	62	6	17	0.72
10237	Benzene	71-43-2	N.D.	0.4	4	0.72
10237	Bromochloromethane	74-97-5	N.D.	0.8	4	0.72
10237	Bromodichloromethane	75-27-4	N.D.	0.8	4	0.72
10237	Bromoform	75-25-2	N.D.	0.8	4	0.72
10237	Bromomethane	74-83-9	N.D.	2	4	0.72
10237	2-Butanone	78-93-3	14	3	8	0.72
10237	Carbon Disulfide	75-15-0	6	0.8	4	0.72
10237	Carbon Tetrachloride	56-23-5	N.D.	0.8	4	0.72
10237	Chlorobenzene	108-90-7	N.D.	0.8	4	0.72
10237	Chloroethane	75-00-3	N.D.	2	4	0.72
10237	Chloroform	67-66-3	N.D.	0.8	4	0.72
10237	Chloromethane	74-87-3	N.D.	2	4	0.72
10237	Cyclohexane	110-82-7	N.D.	0.8	4	0.72
10237	1,2-Dibromo-3-chloropropane	96-12-8	N.D.	2	4	0.72
10237	Dibromochloromethane	124-48-1	N.D.	0.8	4	0.72
10237	1,2-Dibromoethane	106-93-4	N.D.	0.8	4	0.72
10237	1,2-Dichlorobenzene	95-50-1	N.D.	0.8	4	0.72
10237	1,3-Dichlorobenzene	541-73-1	N.D.	0.8	4	0.72
10237	1,4-Dichlorobenzene	106-46-7	N.D.	0.8	4	0.72
10237	Dichlorodifluoromethane	75-71-8	N.D.	2	4	0.72
10237	1,1-Dichloroethane	75-34-3	N.D.	0.8	4	0.72
10237	1,2-Dichloroethane	107-06-2	N.D.	0.8	4	0.72
10237	1,1-Dichloroethene	75-35-4	N.D.	0.8	4	0.72
10237	cis-1,2-Dichloroethene	156-59-2	N.D.	0.8	4	0.72
10237	trans-1,2-Dichloroethene	156-60-5	N.D.	0.8	4	0.72
10237	1,2-Dichloropropane	78-87-5	N.D.	0.8	4	0.72
10237	cis-1,3-Dichloropropene	10061-01-5	N.D.	0.8	4	0.72
10237	trans-1,3-Dichloropropene	10061-02-6	N.D.	0.8	4	0.72
10237	Ethylbenzene	100-41-4	N.D.	0.8	4	0.72
10237	Freon 113	76-13-1	N.D.	2	8	0.72
10237	2-Hexanone	591-78-6	N.D.	2	8	0.72
10237	Isopropylbenzene	98-82-8	N.D.	0.8	4	0.72
10237	Methyl Acetate	79-20-9	N.D.	2	4	0.72
10237	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.4	4	0.72
10237	4-Methyl-2-pentanone	108-10-1	N.D.	2	8	0.72
10237	Methylcyclohexane	108-87-2	N.D.	0.8	4	0.72
10237	Methylene Chloride	75-09-2	N.D.	2	4	0.72
10237	Styrene	100-42-5	N.D.	0.8	4	0.72
10237	1,1,2,2-Tetrachloroethane	79-34-5	N.D.	0.8	4	0.72
10237	Tetrachloroethene	127-18-4	N.D.	0.8	4	0.72
10237	Toluene	108-88-3	N.D.	0.8	4	0.72
10237	1,2,3-Trichlorobenzene	87-61-6	N.D.	0.8	4	0.72
10237	1,2,4-Trichlorobenzene	120-82-1	N.D.	0.8	4	0.72
10237	1,1,1-Trichloroethane	71-55-6	N.D.	0.8	4	0.72
10237	1,1,2-Trichloroethane	79-00-5	N.D.	0.8	4	0.72
10237	Trichloroethene	79-01-6	N.D.	0.8	4	0.72
10237	Trichlorofluoromethane	75-69-4	N.D.	2	4	0.72
10237	Vinyl Chloride	75-01-4	N.D.	0.8	4	0.72
10237	Xylene (Total)	1330-20-7	N.D.	0.8	4	0.72

The LCS and/or LCSD recoveries are outside the stated QC window but within

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

Sample Description: S-10 (12-13) Grab Soil
Former Union Switch & Signal Facility

LL Sample # SW 8488106
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/19/2016 16:45 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USS10 SDG#: USS01-10

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
	the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: Dibromochloromethane						
GC/MS Semivolatiles		**SW-846 8270C**	**ug/kg**		**ug/kg**	**ug/kg**	
10727	Acenaphthene	83-32-9	N.D.		4	19	1
10727	Acenaphthylene	208-96-8	N.D.		4	19	1
10727	Acetophenone	98-86-2	N.D.		19	38	1
10727	Anthracene	120-12-7	N.D.		4	19	1
10727	Atrazine	1912-24-9	N.D.		38	190	1
10727	Benzaldehyde	100-52-7	N.D.		76	190	1
10727	Benzo(a)anthracene	56-55-3	4	J	4	19	1
10727	Benzo(a)pyrene	50-32-8	4	J	4	19	1
10727	Benzo(b)fluoranthene	205-99-2	7	J	4	19	1
10727	Benzo(g,h,i)perylene	191-24-2	4	J	4	19	1
10727	Benzo(k)fluoranthene	207-08-9	6	J	4	19	1
10727	1,1'-Biphenyl	92-52-4	N.D.		19	38	1
10727	4-Bromophenyl-phenylether	101-55-3	N.D.		19	38	1
10727	Butylbenzylphthalate	85-68-7	N.D.		76	190	1
10727	Di-n-butylphthalate	84-74-2	N.D.		76	190	1
10727	Caprolactam	105-60-2	N.D.		38	190	1
10727	Carbazole	86-74-8	N.D.		19	38	1
10727	4-Chloro-3-methylphenol	59-50-7	N.D.		19	38	1
10727	4-Chloroaniline	106-47-8	N.D.		38	76	1
10727	bis(2-Chloroethoxy)methane	111-91-1	N.D.		19	38	1
10727	bis(2-Chloroethyl)ether	111-44-4	N.D.		19	38	1
10727	2-Chloronaphthalene	91-58-7	N.D.		8	38	1
10727	2-Chlorophenol	95-57-8	N.D.		19	38	1
10727	4-Chlorophenyl-phenylether	7005-72-3	N.D.		19	38	1
10727	2,2'-oxybis(1-Chloropropane)	108-60-1	N.D.		19	38	1
	Bis(2-chloroisopropyl) ether CAS #39638-32-9 and 2,2'-Oxybis(1-chloropropane) CAS #108-60-1 cannot be separated chromatographically. The reported result represents the combined total of both compounds.						
10727	Chrysene	218-01-9	6	J	4	19	1
10727	Dibenz(a,h)anthracene	53-70-3	N.D.		4	19	1
10727	Dibenzofuran	132-64-9	N.D.		19	38	1
10727	3,3'-Dichlorobenzidine	91-94-1	N.D.		110	380	1
10727	2,4-Dichlorophenol	120-83-2	N.D.		19	38	1
10727	Diethylphthalate	84-66-2	N.D.		76	190	1
10727	2,4-Dimethylphenol	105-67-9	N.D.		19	38	1
10727	Dimethylphthalate	131-11-3	N.D.		76	190	1
10727	4,6-Dinitro-2-methylphenol	534-52-1	N.D.		190	570	1
10727	2,4-Dinitrophenol	51-28-5	N.D.		340	1,100	1
10727	2,4-Dinitrotoluene	121-14-2	N.D.		76	190	1
10727	2,6-Dinitrotoluene	606-20-2	N.D.		19	38	1
10727	1,4-Dioxane	123-91-1	N.D.		110	380	1
10727	bis(2-Ethylhexyl)phthalate	117-81-7	N.D.		76	190	1
10727	Fluoranthene	206-44-0	5	J	4	19	1
10727	Fluorene	86-73-7	N.D.		4	19	1
10727	Hexachlorobenzene	118-74-1	N.D.		4	19	1
10727	Hexachlorobutadiene	87-68-3	N.D.		19	38	1
10727	Hexachlorocyclopentadiene	77-47-4	N.D.		190	570	1

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

Sample Description: S-10 (12-13) Grab Soil
Former Union Switch & Signal Facility

LL Sample # SW 8488106
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/19/2016 16:45 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USS10 SDG#: USS01-10

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C**		**ug/kg**	**ug/kg**	**ug/kg**	
10727	Hexachloroethane	67-72-1	N.D.	38	190	1
10727	Indeno(1,2,3-cd)pyrene	193-39-5	6 J	4	19	1
10727	Isophorone	78-59-1	N.D.	19	38	1
10727	2-Methylnaphthalene	91-57-6	N.D.	4	19	1
10727	2-Methylphenol	95-48-7	N.D.	19	38	1
10727	4-Methylphenol	106-44-5	N.D.	19	38	1
	3-Methylphenol and 4-methylphenol cannot be resolved under the chromatographic conditions used for sample analysis. The result reported for 4-methylphenol represents the combined total of both compounds.					
10727	Naphthalene	91-20-3	N.D.	4	19	1
10727	2-Nitroaniline	88-74-4	N.D.	19	38	1
10727	3-Nitroaniline	99-09-2	N.D.	76	190	1
10727	4-Nitroaniline	100-01-6	N.D.	76	190	1
10727	Nitrobenzene	98-95-3	N.D.	19	38	1
10727	2-Nitrophenol	88-75-5	N.D.	19	38	1
10727	4-Nitrophenol	100-02-7	N.D.	190	570	1
10727	N-Nitroso-di-n-propylamine	621-64-7	N.D.	19	38	1
10727	N-Nitrosodiphenylamine	86-30-6	N.D.	19	38	1
	N-nitrosodiphenylamine decomposes in the GC inlet forming diphenylamine. The result reported for N-nitrosodiphenylamine represents the combined total of both compounds.					
10727	Di-n-octylphthalate	117-84-0	N.D.	76	190	1
10727	Pentachlorophenol	87-86-5	N.D.	38	190	1
10727	Phenanthrene	85-01-8	N.D.	4	19	1
10727	Phenol	108-95-2	N.D.	19	38	1
10727	Pyrene	129-00-0	4 J	4	19	1
10727	1,2,4,5-Tetrachlorobenzene	95-94-3	N.D.	19	38	1
10727	2,3,4,6-Tetrachlorophenol	58-90-2	N.D.	76	190	1
10727	2,4,5-Trichlorophenol	95-95-4	N.D.	19	38	1
10727	2,4,6-Trichlorophenol	88-06-2	N.D.	19	38	1
Pesticides/PCBs	**SW-846 8082**		**ug/kg**	**ug/kg**	**ug/kg**	
10736	PCB-1016	12674-11-2	N.D.	4.1	20	1
10736	PCB-1221	11104-28-2	N.D.	5.3	20	1
10736	PCB-1232	11141-16-5	N.D.	9.2	20	1
10736	PCB-1242	53469-21-9	N.D.	3.8	20	1
10736	PCB-1248	12672-29-6	N.D.	3.8	20	1
10736	PCB-1254	11097-69-1	N.D.	3.8	20	1
10736	PCB-1260	11096-82-5	N.D.	5.6	20	1
10736	PCB-1262	37324-23-5	N.D.	3.8	20	1
10736	PCB-1268	11100-14-4	N.D.	3.8	20	1
10736	Total PCBs	1336-36-3	N.D.	3.8	20	1
Metals	**SW-846 6010B**		**mg/kg**	**mg/kg**	**mg/kg**	
01643	Aluminum	7429-90-5	14,400	7.03	16.2	1
06944	Antimony	7440-36-0	0.964 J	0.567	1.62	1
06935	Arsenic	7440-38-2	3.17	0.786	1.62	1
06946	Barium	7440-39-3	67.6	0.0267	0.405	1
06947	Beryllium	7440-41-7	0.985	0.0543	0.405	1
06949	Cadmium	7440-43-9	N.D.	0.0397	0.405	1

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

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Lancaster Laboratories Environmental
2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Analysis Report

Sample Description: S-10 (12-13) Grab Soil
Former Union Switch & Signal Facility

LL Sample # SW 8488106
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/19/2016 16:45 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USS10 SDG#: USS01-10

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010B**		**mg/kg**	**mg/kg**	**mg/kg**	
01650	Calcium	7440-70-2	1,320	4.59	16.2	1
06951	Chromium	7440-47-3	30.1	0.113	1.22	1
06952	Cobalt	7440-48-4	14.2	0.0972	0.405	1
06953	Copper	7440-50-8	25.9	0.186	0.810	1
01654	Iron	7439-89-6	24,900	16.7	81.0	5
06955	Lead	7439-92-1	12.2	0.446	1.22	1
01657	Magnesium	7439-95-4	3,400	1.54	8.10	1
06958	Manganese	7439-96-5	198	0.0673	0.405	1
06961	Nickel	7440-02-0	28.5	0.243	0.810	1
01662	Potassium	7440-09-7	1,270	19.4	40.5	1
06936	Selenium	7782-49-2	0.849 J	0.729	1.62	1
06966	Silver	7440-22-4	N.D.	0.122	0.405	1
01667	Sodium	7440-23-5	84.9	19.4	81.0	1
06971	Vanadium	7440-62-2	33.4	0.113	0.405	1
06972	Zinc	7440-66-6	73.7	0.551	1.62	1
	SW-846 6020		**mg/kg**	**mg/kg**	**mg/kg**	
06145	Thallium	7440-28-0	0.0997	0.0235	0.0810	2
	SW-846 7471A		**mg/kg**	**mg/kg**	**mg/kg**	
00159	Mercury	7439-97-6	0.0145 J	0.0115	0.115	1
Wet Chemistry	**SW-846 9012B**		**mg/kg**	**mg/kg**	**mg/kg**	
05895	Total Cyanide (solid)	57-12-5	0.23 J	0.21	0.58	1
Wet Chemistry	**SM 2540 G-1997**		**%**	**%**	**%**	
00111	Moisture	n.a.	13.1	0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	PPL/TCL Volatiles in Soil	SW-846 8260B	1	B162101AA	07/28/2016 14:33	Jennifer K Howe	0.72
06176	GC/MS - LL Water Prep	SW-846 5035A	1	201620441961	07/22/2016 18:22	Katelyn C Shober	1
06176	GC/MS - LL Water Prep	SW-846 5035A	2	201620441961	07/22/2016 18:22	Katelyn C Shober	1
07579	GC/MS-5g Field Preserv.MeOH-NC	SW-846 5035A	1	201620441961	07/19/2016 16:45	Client Supplied	1

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

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Lancaster Laboratories Environmental
2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Analysis Report

Sample Description: S-10 (12-13) Grab Soil
Former Union Switch & Signal Facility

LL Sample # SW 8488106
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/19/2016 16:45 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USS10 SDG#: USS01-10

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time		Analyst	Dilution Factor
00374	GC/MS - Bulk Soil Prep	SW-846 5035A Modified	1	201620441962	07/22/2016	19:11	Katelyn C Shober	n.a.
00374	GC/MS - Bulk Soil Prep	SW-846 5035A Modified	2	201620441962	07/22/2016	19:11	Katelyn C Shober	n.a.
06646	GC/MS HL Bulk Sample Prep	SW-846 5035A Modified	1	201620441962	07/22/2016	19:08	Katelyn C Shober	n.a.
10727	PPL/TCL SVOCs in Soil	SW-846 8270C	1	16214SLA026	08/02/2016	15:00	Linda M Hartenstine	1
10809	BNA Soil Microwave	SW-846 3546	2	16214SLA026	08/01/2016	23:30	Nicholas W Shroyer	1
10736	PCBs in Soil (microwave)	SW-846 8082	1	162100026A	08/01/2016	01:43	Jessica L Miller	1
10497	PCB Microwave Soil Extraction	SW-846 3546	1	162100026A	07/29/2016	09:00	David S Schrum	1
01643	Aluminum	SW-846 6010B	1	162095708003	07/29/2016	18:56	Suzanne M Will	1
06944	Antimony	SW-846 6010B	1	162095708003	08/01/2016	22:01	Elaine F Stoltzfus	1
06935	Arsenic	SW-846 6010B	1	162095708003	08/01/2016	22:01	Elaine F Stoltzfus	1
06946	Barium	SW-846 6010B	1	162095708003	07/29/2016	18:56	Suzanne M Will	1
06947	Beryllium	SW-846 6010B	1	162095708003	07/29/2016	18:56	Suzanne M Will	1
06949	Cadmium	SW-846 6010B	1	162095708003	07/29/2016	18:56	Suzanne M Will	1
01650	Calcium	SW-846 6010B	1	162095708003	07/29/2016	18:56	Suzanne M Will	1
06951	Chromium	SW-846 6010B	1	162095708003	07/29/2016	18:56	Suzanne M Will	1
06952	Cobalt	SW-846 6010B	1	162095708003	07/29/2016	18:56	Suzanne M Will	1
06953	Copper	SW-846 6010B	1	162095708003	07/29/2016	18:56	Suzanne M Will	1
01654	Iron	SW-846 6010B	1	162095708003	08/01/2016	22:04	Elaine F Stoltzfus	5
06955	Lead	SW-846 6010B	1	162095708003	07/29/2016	18:56	Suzanne M Will	1
01657	Magnesium	SW-846 6010B	1	162095708003	07/29/2016	18:56	Suzanne M Will	1
06958	Manganese	SW-846 6010B	1	162095708003	07/29/2016	18:56	Suzanne M Will	1
06961	Nickel	SW-846 6010B	1	162095708003	07/29/2016	18:56	Suzanne M Will	1
01662	Potassium	SW-846 6010B	1	162095708003	07/29/2016	18:56	Suzanne M Will	1
06936	Selenium	SW-846 6010B	1	162095708003	08/01/2016	22:01	Elaine F Stoltzfus	1
06966	Silver	SW-846 6010B	1	162095708003	07/29/2016	18:56	Suzanne M Will	1
01667	Sodium	SW-846 6010B	1	162095708003	07/29/2016	18:56	Suzanne M Will	1
06971	Vanadium	SW-846 6010B	1	162095708003	07/29/2016	18:56	Suzanne M Will	1
06972	Zinc	SW-846 6010B	1	162095708003	07/29/2016	18:56	Suzanne M Will	1
06145	Thallium	SW-846 6020	1	162095708003A	07/29/2016	05:27	Choon Y Tian	2
00159	Mercury	SW-846 7471A	1	162105711001	08/01/2016	20:36	Parker D Lindstrom	1
05708	ICP-ICPMS - SW, 3050B - U3	SW-846 3050B	1	162095708003	07/28/2016	07:15	Ann Borg	1
05711	Hg-SW, 7471A - U3	SW-846 7471A	1	162105711001	07/28/2016	19:30	JoElla L Rice	1
05895	Total Cyanide (solid)	SW-846 9012B	1	16213102201B	08/01/2016	12:21	David A Seavey	1
05896	Cyanide Solid Distillation	SW-846 9012B	1	16213102201B	07/31/2016	22:00	Drew M Gerhart	1
00111	Moisture	SM 2540 G-1997	1	16209820004A	07/27/2016	11:39	Larry E Bevins	1

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

Sample Description: DUP-072016-2 Grab Soil
Former Union Switch & Signal Facility

LL Sample # SW 8488107
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/20/2016 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSD2 SDG#: USS01-11FD

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**		**ug/kg**	**ug/kg**	
10237	Acetone	67-64-1	N.D.		6	17	0.76
10237	Benzene	71-43-2	N.D.		0.4	4	0.76
10237	Bromochloromethane	74-97-5	N.D.		0.9	4	0.76
10237	Bromodichloromethane	75-27-4	N.D.		0.9	4	0.76
10237	Bromoform	75-25-2	N.D.		0.9	4	0.76
10237	Bromomethane	74-83-9	N.D.		2	4	0.76
10237	2-Butanone	78-93-3	N.D.		3	9	0.76
10237	Carbon Disulfide	75-15-0	N.D.		0.9	4	0.76
10237	Carbon Tetrachloride	56-23-5	N.D.		0.9	4	0.76
10237	Chlorobenzene	108-90-7	N.D.		0.9	4	0.76
10237	Chloroethane	75-00-3	N.D.		2	4	0.76
10237	Chloroform	67-66-3	2	J	0.9	4	0.76
10237	Chloromethane	74-87-3	N.D.		2	4	0.76
10237	Cyclohexane	110-82-7	N.D.		0.9	4	0.76
10237	1,2-Dibromo-3-chloropropane	96-12-8	N.D.		2	4	0.76
10237	Dibromochloromethane	124-48-1	N.D.		0.9	4	0.76
10237	1,2-Dibromoethane	106-93-4	N.D.		0.9	4	0.76
10237	1,2-Dichlorobenzene	95-50-1	N.D.		0.9	4	0.76
10237	1,3-Dichlorobenzene	541-73-1	N.D.		0.9	4	0.76
10237	1,4-Dichlorobenzene	106-46-7	N.D.		0.9	4	0.76
10237	Dichlorodifluoromethane	75-71-8	N.D.		2	4	0.76
10237	1,1-Dichloroethane	75-34-3	1	J	0.9	4	0.76
10237	1,2-Dichloroethane	107-06-2	N.D.		0.9	4	0.76
10237	1,1-Dichloroethene	75-35-4	N.D.		0.9	4	0.76
10237	cis-1,2-Dichloroethene	156-59-2	N.D.		0.9	4	0.76
10237	trans-1,2-Dichloroethene	156-60-5	N.D.		0.9	4	0.76
10237	1,2-Dichloropropane	78-87-5	N.D.		0.9	4	0.76
10237	cis-1,3-Dichloropropene	10061-01-5	N.D.		0.9	4	0.76
10237	trans-1,3-Dichloropropene	10061-02-6	N.D.		0.9	4	0.76
10237	Ethylbenzene	100-41-4	N.D.		0.9	4	0.76
10237	Freon 113	76-13-1	N.D.		2	9	0.76
10237	2-Hexanone	591-78-6	N.D.		3	9	0.76
10237	Isopropylbenzene	98-82-8	N.D.		0.9	4	0.76
10237	Methyl Acetate	79-20-9	N.D.		2	4	0.76
10237	Methyl Tertiary Butyl Ether	1634-04-4	N.D.		0.4	4	0.76
10237	4-Methyl-2-pentanone	108-10-1	N.D.		3	9	0.76
10237	Methylcyclohexane	108-87-2	N.D.		0.9	4	0.76
10237	Methylene Chloride	75-09-2	N.D.		2	4	0.76
10237	Styrene	100-42-5	N.D.		0.9	4	0.76
10237	1,1,2,2-Tetrachloroethane	79-34-5	N.D.		0.9	4	0.76
10237	Tetrachloroethene	127-18-4	N.D.		0.9	4	0.76
10237	Toluene	108-88-3	N.D.		0.9	4	0.76
10237	1,2,3-Trichlorobenzene	87-61-6	N.D.		0.9	4	0.76
10237	1,2,4-Trichlorobenzene	120-82-1	N.D.		0.9	4	0.76
10237	1,1,1-Trichloroethane	71-55-6	N.D.		0.9	4	0.76
10237	1,1,2-Trichloroethane	79-00-5	N.D.		0.9	4	0.76
10237	Trichloroethene	79-01-6	N.D.		0.9	4	0.76
10237	Trichlorofluoromethane	75-69-4	N.D.		2	4	0.76
10237	Vinyl Chloride	75-01-4	N.D.		0.9	4	0.76
10237	Xylene (Total)	1330-20-7	N.D.		0.9	4	0.76

The LCS and/or LCSD recoveries are outside the stated QC window but within

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

Sample Description: DUP-072016-2 Grab Soil
Former Union Switch & Signal Facility

LL Sample # SW 8488107
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/20/2016 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSD2 SDG#: USS01-11FD

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
	the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: Dibromochloromethane					
GC/MS Semivolatiles		**SW-846 8270C**	**ug/kg**	**ug/kg**	**ug/kg**	
10727	Acenaphthene	83-32-9	N.D.	4	19	1
10727	Acenaphthylene	208-96-8	N.D.	4	19	1
10727	Acetophenone	98-86-2	N.D.	19	38	1
10727	Anthracene	120-12-7	N.D.	4	19	1
10727	Atrazine	1912-24-9	N.D.	38	190	1
10727	Benzaldehyde	100-52-7	N.D.	76	190	1
10727	Benzo(a)anthracene	56-55-3	N.D.	4	19	1
10727	Benzo(a)pyrene	50-32-8	N.D.	4	19	1
10727	Benzo(b)fluoranthene	205-99-2	N.D.	4	19	1
10727	Benzo(g,h,i)perylene	191-24-2	N.D.	4	19	1
10727	Benzo(k)fluoranthene	207-08-9	N.D.	4	19	1
10727	1,1'-Biphenyl	92-52-4	N.D.	19	38	1
10727	4-Bromophenyl-phenylether	101-55-3	N.D.	19	38	1
10727	Butylbenzylphthalate	85-68-7	N.D.	76	190	1
10727	Di-n-butylphthalate	84-74-2	N.D.	76	190	1
10727	Caprolactam	105-60-2	N.D.	38	190	1
10727	Carbazole	86-74-8	N.D.	19	38	1
10727	4-Chloro-3-methylphenol	59-50-7	N.D.	19	38	1
10727	4-Chloroaniline	106-47-8	N.D.	38	76	1
10727	bis(2-Chloroethoxy)methane	111-91-1	N.D.	19	38	1
10727	bis(2-Chloroethyl)ether	111-44-4	N.D.	19	38	1
10727	2-Chloronaphthalene	91-58-7	N.D.	8	38	1
10727	2-Chlorophenol	95-57-8	N.D.	19	38	1
10727	4-Chlorophenyl-phenylether	7005-72-3	N.D.	19	38	1
10727	2,2'-oxybis(1-Chloropropane)	108-60-1	N.D.	19	38	1
	Bis(2-chloroisopropyl) ether CAS #39638-32-9 and 2,2'-Oxybis(1-chloropropane) CAS #108-60-1 cannot be separated chromatographically. The reported result represents the combined total of both compounds.					
10727	Chrysene	218-01-9	N.D.	4	19	1
10727	Dibenz(a,h)anthracene	53-70-3	N.D.	4	19	1
10727	Dibenzofuran	132-64-9	N.D.	19	38	1
10727	3,3'-Dichlorobenzidine	91-94-1	N.D.	110	380	1
10727	2,4-Dichlorophenol	120-83-2	N.D.	19	38	1
10727	Diethylphthalate	84-66-2	N.D.	76	190	1
10727	2,4-Dimethylphenol	105-67-9	N.D.	19	38	1
10727	Dimethylphthalate	131-11-3	N.D.	76	190	1
10727	4,6-Dinitro-2-methylphenol	534-52-1	N.D.	190	570	1
10727	2,4-Dinitrophenol	51-28-5	N.D.	340	1,100	1
10727	2,4-Dinitrotoluene	121-14-2	N.D.	76	190	1
10727	2,6-Dinitrotoluene	606-20-2	N.D.	19	38	1
10727	1,4-Dioxane	123-91-1	N.D.	110	380	1
10727	bis(2-Ethylhexyl)phthalate	117-81-7	N.D.	76	190	1
10727	Fluoranthene	206-44-0	N.D.	4	19	1
10727	Fluorene	86-73-7	N.D.	4	19	1
10727	Hexachlorobenzene	118-74-1	N.D.	4	19	1
10727	Hexachlorobutadiene	87-68-3	N.D.	19	38	1
10727	Hexachlorocyclopentadiene	77-47-4	N.D.	190	570	1

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

Sample Description: DUP-072016-2 Grab Soil
Former Union Switch & Signal Facility

LL Sample # SW 8488107
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/20/2016 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSD2 SDG#: USS01-11FD

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C**		**ug/kg**		**ug/kg**	**ug/kg**	
10727	Hexachloroethane	67-72-1	N.D.		38	190	1
10727	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.		4	19	1
10727	Isophorone	78-59-1	N.D.		19	38	1
10727	2-Methylnaphthalene	91-57-6	17	J	4	19	1
10727	2-Methylphenol	95-48-7	N.D.		19	38	1
10727	4-Methylphenol	106-44-5	N.D.		19	38	1
	3-Methylphenol and 4-methylphenol cannot be resolved under the chromatographic conditions used for sample analysis. The result reported for 4-methylphenol represents the combined total of both compounds.						
10727	Naphthalene	91-20-3	N.D.		4	19	1
10727	2-Nitroaniline	88-74-4	N.D.		19	38	1
10727	3-Nitroaniline	99-09-2	N.D.		76	190	1
10727	4-Nitroaniline	100-01-6	N.D.		76	190	1
10727	Nitrobenzene	98-95-3	N.D.		19	38	1
10727	2-Nitrophenol	88-75-5	N.D.		19	38	1
10727	4-Nitrophenol	100-02-7	N.D.		190	570	1
10727	N-Nitroso-di-n-propylamine	621-64-7	N.D.		19	38	1
10727	N-Nitrosodiphenylamine	86-30-6	N.D.		19	38	1
	N-nitrosodiphenylamine decomposes in the GC inlet forming diphenylamine. The result reported for N-nitrosodiphenylamine represents the combined total of both compounds.						
10727	Di-n-octylphthalate	117-84-0	N.D.		76	190	1
10727	Pentachlorophenol	87-86-5	N.D.		38	190	1
10727	Phenanthrene	85-01-8	11	J	4	19	1
10727	Phenol	108-95-2	N.D.		19	38	1
10727	Pyrene	129-00-0	N.D.		4	19	1
10727	1,2,4,5-Tetrachlorobenzene	95-94-3	N.D.		19	38	1
10727	2,3,4,6-Tetrachlorophenol	58-90-2	N.D.		76	190	1
10727	2,4,5-Trichlorophenol	95-95-4	N.D.		19	38	1
10727	2,4,6-Trichlorophenol	88-06-2	N.D.		19	38	1
Pesticides/PCBs	**SW-846 8082**		**ug/kg**		**ug/kg**	**ug/kg**	
10736	PCB-1016	12674-11-2	N.D.		4.1	19	1
10736	PCB-1221	11104-28-2	N.D.		5.3	19	1
10736	PCB-1232	11141-16-5	N.D.		9.1	19	1
10736	PCB-1242	53469-21-9	N.D.		3.8	19	1
10736	PCB-1248	12672-29-6	N.D.		3.8	19	1
10736	PCB-1254	11097-69-1	N.D.		3.8	19	1
10736	PCB-1260	11096-82-5	N.D.		5.6	19	1
10736	PCB-1262	37324-23-5	N.D.		3.8	19	1
10736	PCB-1268	11100-14-4	N.D.		3.8	19	1
10736	Total PCBs	1336-36-3	N.D.		3.8	19	1
Metals	**SW-846 6010B**		**mg/kg**		**mg/kg**	**mg/kg**	
01643	Aluminum	7429-90-5	8,610		7.47	17.2	1
06944	Antimony	7440-36-0	1.48	J	0.602	1.72	1
06935	Arsenic	7440-38-2	6.23		0.834	1.72	1
06946	Barium	7440-39-3	103		0.0284	0.430	1
06947	Beryllium	7440-41-7	0.675		0.0576	0.430	1
06949	Cadmium	7440-43-9	0.923		0.0422	0.430	1

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

eurofins
Lancaster Laboratories Environmental
2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Analysis Report

Sample Description: DUP-072016-2 Grab Soil
Former Union Switch & Signal Facility

LL Sample # SW 8488107
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/20/2016 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSD2 SDG#: USS01-11FD

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010B**		**mg/kg**		**mg/kg**	**mg/kg**	
01650	Calcium	7440-70-2	139		4.87	17.2	1
06951	Chromium	7440-47-3	19.6		0.120	1.29	1
06952	Cobalt	7440-48-4	11.4		0.103	0.430	1
06953	Copper	7440-50-8	17.6		0.198	0.860	1
01654	Iron	7439-89-6	43,200		17.7	86.0	5
06955	Lead	7439-92-1	10.4		0.473	1.29	1
01657	Magnesium	7439-95-4	1,730		1.63	8.60	1
06958	Manganese	7439-96-5	1,310		0.0714	0.430	1
06961	Nickel	7440-02-0	16.7		0.258	0.860	1
01662	Potassium	7440-09-7	1,070		20.6	43.0	1
06936	Selenium	7782-49-2	1.11	J	0.774	1.72	1
06966	Silver	7440-22-4	0.405	J	0.129	0.430	1
01667	Sodium	7440-23-5	57.8	J	20.6	86.0	1
06971	Vanadium	7440-62-2	19.4		0.120	0.430	1
06972	Zinc	7440-66-6	39.5		0.585	1.72	1
	SW-846 6020		**mg/kg**		**mg/kg**	**mg/kg**	
06145	Thallium	7440-28-0	0.110		0.0249	0.0860	2
	SW-846 7471A		**mg/kg**		**mg/kg**	**mg/kg**	
00159	Mercury	7439-97-6	0.0180	J	0.0106	0.106	1
Wet Chemistry	**SW-846 9012B**		**mg/kg**		**mg/kg**	**mg/kg**	
05895	Total Cyanide (solid)	57-12-5	N.D.		0.20	0.54	1
Wet Chemistry	**SM 2540 G-1997**		**%**		**%**	**%**	
00111	Moisture	n.a.	12.6		0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	PPL/TCL Volatiles in Soil	SW-846 8260B	1	B162101AA	07/28/2016 14:56	Jennifer K Howe	0.76
06176	GC/MS - LL Water Prep	SW-846 5035A	1	201620441961	07/22/2016 18:21	Katelyn C Shober	1
06176	GC/MS - LL Water Prep	SW-846 5035A	2	201620441961	07/22/2016 18:21	Katelyn C Shober	1
07579	GC/MS-5g Field Preserv.MeOH-NC	SW-846 5035A	1	201620441961	07/20/2016 00:00	Client Supplied	1

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

eurofins
Lancaster Laboratories Environmental
2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Analysis Report

Sample Description: DUP-072016-2 Grab Soil
Former Union Switch & Signal Facility

LL Sample # SW 8488107
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/20/2016 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSD2 SDG#: USS01-11FD

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time		Analyst	Dilution Factor
00374	GC/MS - Bulk Soil Prep	SW-846 5035A Modified	1	201620441962	07/22/2016	19:11	Katelyn C Shober	n.a.
00374	GC/MS - Bulk Soil Prep	SW-846 5035A Modified	2	201620441962	07/22/2016	19:11	Katelyn C Shober	n.a.
06646	GC/MS HL Bulk Sample Prep	SW-846 5035A Modified	1	201620441962	07/22/2016	19:10	Katelyn C Shober	n.a.
10727	PPL/TCL SVOCs in Soil	SW-846 8270C	1	16210SLG026	07/29/2016	22:41	Anthony P Bauer	1
10809	BNA Soil Microwave	SW-846 3546	1	16210SLG026	07/29/2016	09:00	Michelle A Newswanger	1
10736	PCBs in Soil (microwave)	SW-846 8082	1	162100026A	08/01/2016	02:18	Jessica L Miller	1
10497	PCB Microwave Soil Extraction	SW-846 3546	1	162100026A	07/29/2016	09:00	David S Schrum	1
01643	Aluminum	SW-846 6010B	1	162095708003	07/29/2016	18:59	Suzanne M Will	1
06944	Antimony	SW-846 6010B	1	162095708003	08/01/2016	22:07	Elaine F Stoltzfus	1
06935	Arsenic	SW-846 6010B	1	162095708003	08/01/2016	22:07	Elaine F Stoltzfus	1
06946	Barium	SW-846 6010B	1	162095708003	07/29/2016	18:59	Suzanne M Will	1
06947	Beryllium	SW-846 6010B	1	162095708003	07/29/2016	18:59	Suzanne M Will	1
06949	Cadmium	SW-846 6010B	1	162095708003	08/01/2016	22:07	Elaine F Stoltzfus	1
01650	Calcium	SW-846 6010B	1	162095708003	07/29/2016	18:59	Suzanne M Will	1
06951	Chromium	SW-846 6010B	1	162095708003	07/29/2016	18:59	Suzanne M Will	1
06952	Cobalt	SW-846 6010B	1	162095708003	07/29/2016	18:59	Suzanne M Will	1
06953	Copper	SW-846 6010B	1	162095708003	07/29/2016	18:59	Suzanne M Will	1
01654	Iron	SW-846 6010B	1	162095708003	08/01/2016	22:11	Elaine F Stoltzfus	5
06955	Lead	SW-846 6010B	1	162095708003	07/29/2016	18:59	Suzanne M Will	1
01657	Magnesium	SW-846 6010B	1	162095708003	07/29/2016	18:59	Suzanne M Will	1
06958	Manganese	SW-846 6010B	1	162095708003	07/29/2016	18:59	Suzanne M Will	1
06961	Nickel	SW-846 6010B	1	162095708003	07/29/2016	18:59	Suzanne M Will	1
01662	Potassium	SW-846 6010B	1	162095708003	07/29/2016	18:59	Suzanne M Will	1
06936	Selenium	SW-846 6010B	1	162095708003	08/01/2016	22:07	Elaine F Stoltzfus	1
06966	Silver	SW-846 6010B	1	162095708003	07/29/2016	18:59	Suzanne M Will	1
01667	Sodium	SW-846 6010B	1	162095708003	07/29/2016	18:59	Suzanne M Will	1
06971	Vanadium	SW-846 6010B	1	162095708003	07/29/2016	18:59	Suzanne M Will	1
06972	Zinc	SW-846 6010B	1	162095708003	07/29/2016	18:59	Suzanne M Will	1
06145	Thallium	SW-846 6020	1	162095708003A	07/29/2016	05:29	Choon Y Tian	2
00159	Mercury	SW-846 7471A	1	162105711001	08/01/2016	20:39	Parker D Lindstrom	1
05708	ICP-ICPMS - SW, 3050B - U3	SW-846 3050B	1	162095708003	07/28/2016	07:15	Ann Borg	1
05711	Hg-SW, 7471A - U3	SW-846 7471A	1	162105711001	07/28/2016	19:30	JoElla L Rice	1
05895	Total Cyanide (solid)	SW-846 9012B	1	16214102201A	08/01/2016	13:29	David A Seavey	1
05896	Cyanide Solid Distillation	SW-846 9012B	1	16214102201A	08/01/2016	07:30	Nancy J Shoop	1
00111	Moisture	SM 2540 G-1997	1	16209820004A	07/27/2016	11:39	Larry E Bevins	1

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

Sample Description: GW-1 Grab Groundwater
Former Union Switch & Signal Facility

LL Sample # WW 8488108
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/20/2016 09:30 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSG1 SDG#: USS01-12

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B 25mL purge**		**ug/l**	**ug/l**	**ug/l**	
02898	Acetone	67-64-1	5.0	3.0	5.0	1
02898	Benzene	71-43-2	N.D.	0.1	0.5	1
02898	Bromochloromethane	74-97-5	N.D.	0.1	0.5	1
02898	Bromodichloromethane	75-27-4	N.D.	0.1	0.5	1
02898	Bromoform	75-25-2	N.D.	0.1	0.5	1
02898	Bromomethane	74-83-9	N.D.	0.1	0.5	1
02898	2-Butanone	78-93-3	N.D.	1.0	5.0	1
02898	Carbon Disulfide	75-15-0	N.D.	0.4	1.0	1
02898	Carbon Tetrachloride	56-23-5	N.D.	0.1	0.5	1
02898	Chlorobenzene	108-90-7	N.D.	0.1	0.5	1
02898	Chloroethane	75-00-3	N.D.	0.1	0.5	1
02898	Chloroform	67-66-3	N.D.	0.1	0.5	1
02898	Chloromethane	74-87-3	N.D.	0.2	0.5	1
02898	Cyclohexane	110-82-7	N.D.	0.1	0.5	1
02898	1,2-Dibromo-3-chloropropane	96-12-8	N.D.	0.2	0.5	1
02898	Dibromochloromethane	124-48-1	N.D.	0.1	0.5	1
02898	1,2-Dibromoethane	106-93-4	N.D.	0.1	0.5	1
02898	1,2-Dichlorobenzene	95-50-1	N.D.	0.1	0.5	1
02898	1,3-Dichlorobenzene	541-73-1	N.D.	0.1	0.5	1
02898	1,4-Dichlorobenzene	106-46-7	N.D.	0.1	0.5	1
02898	Dichlorodifluoromethane	75-71-8	N.D.	0.1	0.5	1
02898	1,1-Dichloroethane	75-34-3	N.D.	0.1	0.5	1
02898	1,2-Dichloroethane	107-06-2	N.D.	0.1	0.5	1
02898	1,1-Dichloroethene	75-35-4	N.D.	0.1	0.5	1
02898	cis-1,2-Dichloroethene	156-59-2	N.D.	0.1	0.5	1
02898	trans-1,2-Dichloroethene	156-60-5	N.D.	0.1	0.5	1
02898	1,2-Dichloropropane	78-87-5	N.D.	0.1	0.5	1
02898	cis-1,3-Dichloropropene	10061-01-5	N.D.	0.1	0.5	1
02898	trans-1,3-Dichloropropene	10061-02-6	N.D.	0.1	0.5	1
02898	Ethylbenzene	100-41-4	N.D.	0.1	0.5	1
02898	Freon 113	76-13-1	N.D.	0.2	0.5	1
02898	2-Hexanone	591-78-6	N.D.	1.0	5.0	1
02898	Isopropylbenzene	98-82-8	N.D.	0.1	0.5	1
02898	Methyl Acetate	79-20-9	N.D.	0.3	1.0	1
02898	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.1	0.5	1
02898	4-Methyl-2-pentanone	108-10-1	N.D.	1.0	5.0	1
02898	Methylcyclohexane	108-87-2	N.D.	0.1	0.5	1
02898	Methylene Chloride	75-09-2	N.D.	0.2	0.5	1
02898	Styrene	100-42-5	N.D.	0.1	0.5	1
02898	1,1,2,2-Tetrachloroethane	79-34-5	N.D.	0.1	0.5	1
02898	Tetrachloroethene	127-18-4	N.D.	0.1	0.5	1
02898	Toluene	108-88-3	N.D.	0.1	0.5	1
02898	1,2,3-Trichlorobenzene	87-61-6	N.D.	0.1	0.5	1
02898	1,2,4-Trichlorobenzene	120-82-1	N.D.	0.1	0.5	1
02898	1,1,1-Trichloroethane	71-55-6	N.D.	0.1	0.5	1
02898	1,1,2-Trichloroethane	79-00-5	N.D.	0.1	0.5	1
02898	Trichloroethene	79-01-6	N.D.	0.1	0.5	1
02898	Trichlorofluoromethane	75-69-4	N.D.	0.1	0.5	1
02898	Vinyl Chloride	75-01-4	N.D.	0.1	0.5	1
02898	m+p-Xylene	179601-23-1	N.D.	0.1	0.5	1

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

Sample Description: GW-1 Grab Groundwater
Former Union Switch & Signal Facility

LL Sample # WW 8488108
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/20/2016 09:30 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSG1 SDG#: USS01-12

CAT No.	Analysis Name	CAS Number	Result		Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B 25mL purge**		**ug/l**		**ug/l**	**ug/l**	
02898	o-Xylene	95-47-6	N.D.		0.1	0.5	1
02898	Xylene (Total)	1330-20-7	N.D.		0.1	0.5	1
GC/MS Semivolatiles	**SW-846 8270C**		**ug/l**		**ug/l**	**ug/l**	
04678	Acenaphthene	83-32-9	N.D.		0.1	0.5	1
04678	Acenaphthylene	208-96-8	N.D.		0.1	0.5	1
04678	Acetophenone	98-86-2	0.7	J	0.5	1	1
04678	Anthracene	120-12-7	N.D.		0.1	0.5	1
04678	Atrazine	1912-24-9	N.D.		2	5	1
04678	Benzaldehyde	100-52-7	N.D.		1	5	1
04678	Benzo(a)anthracene	56-55-3	N.D.		0.1	0.5	1
04678	Benzo(a)pyrene	50-32-8	N.D.		0.1	0.5	1
04678	Benzo(b)fluoranthene	205-99-2	N.D.		0.1	0.5	1
04678	Benzo(g,h,i)perylene	191-24-2	N.D.		0.1	0.5	1
04678	Benzo(k)fluoranthene	207-08-9	N.D.		0.1	0.5	1
04678	1,1'-Biphenyl	92-52-4	N.D.		0.5	1	1
04678	4-Bromophenyl-phenylether	101-55-3	N.D.		0.5	1	1
04678	Butylbenzylphthalate	85-68-7	N.D.		2	5	1
04678	Di-n-butylphthalate	84-74-2	N.D.		2	5	1
04678	Caprolactam	105-60-2	N.D.		5	16	1
04678	Carbazole	86-74-8	N.D.		0.5	1	1
04678	4-Chloro-3-methylphenol	59-50-7	N.D.		0.5	1	1
04678	4-Chloroaniline	106-47-8	N.D.		2	4	1
04678	bis(2-Chloroethoxy)methane	111-91-1	N.D.		0.5	1	1
04678	bis(2-Chloroethyl)ether	111-44-4	N.D.		0.5	1	1
04678	2-Chloronaphthalene	91-58-7	N.D.		0.4	1	1
04678	2-Chlorophenol	95-57-8	N.D.		0.5	1	1
04678	4-Chlorophenyl-phenylether	7005-72-3	N.D.		0.5	1	1
04678	2,2'-oxybis(1-Chloropropane)	108-60-1	N.D.		0.5	1	1
	Bis(2-chloroisopropyl) ether CAS #39638-32-9 and 2,2'-Oxybis(1-chloropropane) CAS #108-60-1 cannot be separated chromatographically. The reported result represents the combined total of both compounds.						
04678	Chrysene	218-01-9	N.D.		0.1	0.5	1
04678	Dibenz(a,h)anthracene	53-70-3	N.D.		0.1	0.5	1
04678	Dibenzofuran	132-64-9	N.D.		0.5	1	1
04678	3,3'-Dichlorobenzidine	91-94-1	N.D.		2	5	1
04678	2,4-Dichlorophenol	120-83-2	N.D.		0.5	1	1
04678	Diethylphthalate	84-66-2	N.D.		2	5	1
04678	2,4-Dimethylphenol	105-67-9	N.D.		0.5	1	1
04678	Dimethylphthalate	131-11-3	N.D.		2	5	1
04678	4,6-Dinitro-2-methylphenol	534-52-1	N.D.		5	16	1
04678	2,4-Dinitrophenol	51-28-5	N.D.		11	32	1
04678	2,4-Dinitrotoluene	121-14-2	N.D.		1	5	1
04678	2,6-Dinitrotoluene	606-20-2	N.D.		0.5	1	1
04678	1,4-Dioxane	123-91-1	N.D.		1	5	1
04678	bis(2-Ethylhexyl)phthalate	117-81-7	N.D.		2	5	1
04678	Fluoranthene	206-44-0	N.D.		0.1	0.5	1
04678	Fluorene	86-73-7	N.D.		0.1	0.5	1

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

Sample Description: GW-1 Grab Groundwater
Former Union Switch & Signal Facility

LL Sample # WW 8488108
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/20/2016 09:30 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSG1 SDG#: USS01-12

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C**		**ug/l**	**ug/l**	**ug/l**	
04678	Hexachlorobenzene	118-74-1	N.D.	0.1	0.5	1
04678	Hexachlorobutadiene	87-68-3	N.D.	0.5	1	1
04678	Hexachlorocyclopentadiene	77-47-4	N.D.	5	16	1
04678	Hexachloroethane	67-72-1	N.D.	1	5	1
04678	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.1	0.5	1
04678	Isophorone	78-59-1	N.D.	0.5	1	1
04678	2-Methylnaphthalene	91-57-6	N.D.	0.1	0.5	1
04678	2-Methylphenol	95-48-7	N.D.	0.5	1	1
04678	4-Methylphenol	106-44-5	N.D.	0.5	1	1
	3-Methylphenol and 4-methylphenol cannot be resolved under the chromatographic conditions used for sample analysis. The result reported for 4-methylphenol represents the combined total of both compounds.					
04678	Naphthalene	91-20-3	N.D.	0.1	0.5	1
04678	2-Nitroaniline	88-74-4	N.D.	0.5	1	1
04678	3-Nitroaniline	99-09-2	N.D.	0.5	1	1
04678	4-Nitroaniline	100-01-6	N.D.	0.5	1	1
04678	Nitrobenzene	98-95-3	N.D.	0.5	1	1
04678	2-Nitrophenol	88-75-5	N.D.	0.5	1	1
04678	4-Nitrophenol	100-02-7	N.D.	11	32	1
04678	N-Nitroso-di-n-propylamine	621-64-7	N.D.	0.5	1	1
04678	N-Nitrosodiphenylamine	86-30-6	N.D.	0.5	1	1
	N-nitrosodiphenylamine decomposes in the GC inlet forming diphenylamine. The result reported for N-nitrosodiphenylamine represents the combined total of both compounds.					
04678	Di-n-octylphthalate	117-84-0	N.D.	2	5	1
04678	Pentachlorophenol	87-86-5	N.D.	1	5	1
04678	Phenanthrene	85-01-8	N.D.	0.1	0.5	1
04678	Phenol	108-95-2	N.D.	0.5	1	1
04678	Pyrene	129-00-0	N.D.	0.1	0.5	1
04678	1,2,4,5-Tetrachlorobenzene	95-94-3	N.D.	0.5	1	1
04678	2,3,4,6-Tetrachlorophenol	58-90-2	N.D.	0.5	1	1
04678	2,4,5-Trichlorophenol	95-95-4	N.D.	0.5	1	1
04678	2,4,6-Trichlorophenol	88-06-2	N.D.	0.5	1	1
GC/MS Semivolatiles	**SW-846 8270C SIM**		**ug/l**	**ug/l**	**ug/l**	
08357	Benzo(a)anthracene	56-55-3	N.D.	0.011	0.053	1
08357	Benzo(b)fluoranthene	205-99-2	N.D.	0.011	0.053	1
08357	Dibenz(a,h)anthracene	53-70-3	N.D.	0.011	0.053	1
08357	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.011	0.053	1
Pesticides/PCBs	**SW-846 8082**		**ug/l**	**ug/l**	**ug/l**	
12013	PCB-1016	12674-11-2	N.D.	0.0059	0.0099	1
12013	PCB-1221	11104-28-2	N.D.	0.0059	0.0099	1
12013	PCB-1232	11141-16-5	N.D.	0.0069	0.0099	1
12013	PCB-1242	53469-21-9	N.D.	0.0059	0.0099	1
12013	PCB-1248	12672-29-6	N.D.	0.0049	0.0099	1
12013	PCB-1254	11097-69-1	N.D.	0.0049	0.0099	1
12013	PCB-1260	11096-82-5	N.D.	0.0049	0.0099	1
12013	PCB-1262	37324-23-5	N.D.	0.0049	0.0099	1
12013	PCB-1268	11100-14-4	N.D.	0.0049	0.0099	1

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

eurofins
Lancaster Laboratories Environmental
2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Analysis Report

Sample Description: GW-1 Grab Groundwater
Former Union Switch & Signal Facility

LL Sample # WW 8488108
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/20/2016 09:30 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSG1 SDG#: USS01-12

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
Pesticides/PCBs	**SW-846 8082**		**ug/l**	**ug/l**	**ug/l**	
12013	Total PCBs	1336-36-3	N.D.	0.0049	0.0099	1
Volatiles by Extraction	**SW-846 8011**		**ug/l**	**ug/l**	**ug/l**	
10398	Ethylene dibromide	106-93-4	N.D.	0.0093	0.028	1
Metals Dissolved	**SW-846 6010B**		**mg/l**	**mg/l**	**mg/l**	
01743	Aluminum	7429-90-5	0.612	0.0868	0.200	1
07046	Barium	7440-39-3	0.0856	0.0011	0.0050	1
07049	Cadmium	7440-43-9	0.0040 J	0.00049	0.0050	1
01750	Calcium	7440-70-2	780	0.191	1.00	5
07051	Chromium	7440-47-3	N.D.	0.0018	0.0150	1
07053	Copper	7440-50-8	0.0062 J	0.0041	0.0100	1
01754	Iron	7439-89-6	83.8	0.0747	0.200	1
07055	Lead	7439-92-1	N.D.	0.0310	0.0750	5
	Reporting limits were raised due to interference from the sample matrix.					
01757	Magnesium	7439-95-4	134	0.0190	0.100	1
07058	Manganese	7439-96-5	37.4	0.0090	0.0250	5
07061	Nickel	7440-02-0	0.104	0.0028	0.0100	1
01762	Potassium	7440-09-7	25.5	0.160	0.500	1
07036	Selenium	7782-49-2	0.0175 J	0.0097	0.0200	1
07066	Silver	7440-22-4	N.D.	0.0019	0.0050	1
01767	Sodium	7440-23-5	1,770	0.865	5.00	5
07071	Vanadium	7440-62-2	N.D.	0.0016	0.0050	1
07072	Zinc	7440-66-6	1.10	0.0054	0.0200	1
	SW-846 6020		**mg/l**	**mg/l**	**mg/l**	
06024	Antimony	7440-36-0	N.D.	0.00048	0.0010	1
06025	Arsenic	7440-38-2	0.0017 J	0.00068	0.0020	1
06027	Beryllium	7440-41-7	0.0014	0.00011	0.00050	1
06032	Cobalt	7440-48-4	0.0403	0.00020	0.00050	1
06045	Thallium	7440-28-0	N.D.	0.00016	0.00050	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000050	0.00020	1
Wet Chemistry	**SW-846 9012B**		**mg/l**	**mg/l**	**mg/l**	
08255	Total Cyanide (water)	57-12-5	N.D.	0.025	0.050	1
	Reporting limits were raised due to interference from the sample matrix.					

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.
This sample was filtered in the lab for dissolved metals.

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

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

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Analysis Report

Sample Description: GW-1 Grab Groundwater
Former Union Switch & Signal Facility

LL Sample # WW 8488108
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/20/2016 09:30 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSG1 SDG#: USS01-12

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time		Analyst	Dilution Factor
02898	VOCs- 25ml Water by 8260B	SW-846 8260B 25mL purge	1	I162082AA	07/27/2016	00:51	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	I162082AA	07/27/2016	00:51	Matthew S Krause	1
04678	TCL SW846 8270C Water	SW-846 8270C	1	16205WAJ026	07/28/2016	13:27	Edward Monborne	1
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	16205WAI026	07/26/2016	23:46	Catherine E Bachman	1
00813	BNA Water Extraction	SW-846 3510C	1	16205WAJ026	07/26/2016	08:00	Bradley W VanLeuven	1
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	16205WAI026	07/26/2016	08:00	Bradley W VanLeuven	1
12013	PCBs in Water - Low Level	SW-846 8082	1	162050017A	07/26/2016	20:30	Jessica L Miller	1
10398	EDB 8011	SW-846 8011	1	162050001A	07/27/2016	18:19	Heather M Miller	1
12026	PCB Waters Ext. - Low Level	SW-846 3510C	1	162050017A	07/25/2016	17:00	Ryan A Schafran	1
07786	EDB Extraction (8011)	SW-846 8011	1	162050001A	07/24/2016	19:00	Edwin Ortiz	1
01743	Aluminum	SW-846 6010B	1	162091848007	07/28/2016	16:47	Suzanne M Will	1
07046	Barium	SW-846 6010B	1	162091848007	07/28/2016	16:47	Suzanne M Will	1
07049	Cadmium	SW-846 6010B	1	162091848007	07/28/2016	16:47	Suzanne M Will	1
01750	Calcium	SW-846 6010B	1	162091848007	08/01/2016	12:10	Joanne M Gates	5
07051	Chromium	SW-846 6010B	1	162091848007	07/28/2016	16:47	Suzanne M Will	1
07053	Copper	SW-846 6010B	1	162091848007	07/28/2016	16:47	Suzanne M Will	1
01754	Iron	SW-846 6010B	1	162091848007	07/28/2016	16:47	Suzanne M Will	1
07055	Lead	SW-846 6010B	1	162091848007	08/01/2016	12:10	Joanne M Gates	5
01757	Magnesium	SW-846 6010B	1	162091848007	07/28/2016	16:47	Suzanne M Will	1
07058	Manganese	SW-846 6010B	1	162091848007	08/01/2016	12:10	Joanne M Gates	5
07061	Nickel	SW-846 6010B	1	162091848007	07/28/2016	16:47	Suzanne M Will	1
01762	Potassium	SW-846 6010B	1	162091848007	07/28/2016	16:47	Suzanne M Will	1
07036	Selenium	SW-846 6010B	1	162091848007	07/28/2016	16:47	Suzanne M Will	1
07066	Silver	SW-846 6010B	1	162091848007	07/29/2016	18:07	Suzanne M Will	1
01767	Sodium	SW-846 6010B	1	162091848007	08/01/2016	12:10	Joanne M Gates	5
07071	Vanadium	SW-846 6010B	1	162091848007	07/28/2016	16:47	Suzanne M Will	1
07072	Zinc	SW-846 6010B	1	162091848007	07/28/2016	16:47	Suzanne M Will	1
06024	Antimony	SW-846 6020	1	162096050008A	07/28/2016	17:11	Patrick J Engle	1
06025	Arsenic	SW-846 6020	1	162096050008A	07/28/2016	17:11	Patrick J Engle	1
06027	Beryllium	SW-846 6020	1	162096050008A	07/30/2016	14:08	Patrick J Engle	1
06032	Cobalt	SW-846 6020	1	162096050008A	07/29/2016	18:43	Patrick J Engle	1
06045	Thallium	SW-846 6020	1	162096050008A	07/28/2016	17:11	Patrick J Engle	1
00259	Mercury	SW-846 7470A	1	162095713009	07/28/2016	11:53	Damary Valentin	1
01848	ICP-WW, 3005A (tot rec) - U3	SW-846 3005A	1	162091848007	07/28/2016	05:52	James L Mertz	1
06050	ICPMS-Water, 3020A - U3	SW-846 3020A	1	162096050008	07/28/2016	06:21	James L Mertz	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	162095713009	07/28/2016	07:30	James L Mertz	1
08255	Total Cyanide (water)	SW-846 9012B	1	16210117101B	07/29/2016	02:42	Drew M Gerhart	1
08256	Cyanide Water Distillation	SW-846 9012B	1	16210117101B	07/28/2016	17:15	Barbara A Washington	1

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

Sample Description: GW-2 Grab Groundwater
Former Union Switch & Signal Facility

LL Sample # WW 8488109
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/19/2016 15:30 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSG2 SDG#: USS01-13

CAT No.	Analysis Name	CAS Number	Result		Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B 25mL purge**		**ug/l**		**ug/l**	**ug/l**	
02898	Acetone	67-64-1	6.1		3.0	5.0	1
02898	Benzene	71-43-2	0.6		0.1	0.5	1
02898	Bromochloromethane	74-97-5	N.D.		0.1	0.5	1
02898	Bromodichloromethane	75-27-4	N.D.		0.1	0.5	1
02898	Bromoform	75-25-2	N.D.		0.1	0.5	1
02898	Bromomethane	74-83-9	N.D.		0.1	0.5	1
02898	2-Butanone	78-93-3	N.D.		1.0	5.0	1
02898	Carbon Disulfide	75-15-0	N.D.		0.4	1.0	1
02898	Carbon Tetrachloride	56-23-5	N.D.		0.1	0.5	1
02898	Chlorobenzene	108-90-7	N.D.		0.1	0.5	1
02898	Chloroethane	75-00-3	N.D.		0.1	0.5	1
02898	Chloroform	67-66-3	N.D.		0.1	0.5	1
02898	Chloromethane	74-87-3	N.D.		0.2	0.5	1
02898	Cyclohexane	110-82-7	N.D.		0.1	0.5	1
02898	1,2-Dibromo-3-chloropropane	96-12-8	N.D.		0.2	0.5	1
02898	Dibromochloromethane	124-48-1	N.D.		0.1	0.5	1
02898	1,2-Dibromoethane	106-93-4	N.D.		0.1	0.5	1
02898	1,2-Dichlorobenzene	95-50-1	N.D.		0.1	0.5	1
02898	1,3-Dichlorobenzene	541-73-1	N.D.		0.1	0.5	1
02898	1,4-Dichlorobenzene	106-46-7	N.D.		0.1	0.5	1
02898	Dichlorodifluoromethane	75-71-8	N.D.		0.1	0.5	1
02898	1,1-Dichloroethane	75-34-3	N.D.		0.1	0.5	1
02898	1,2-Dichloroethane	107-06-2	N.D.		0.1	0.5	1
02898	1,1-Dichloroethene	75-35-4	0.2	J	0.1	0.5	1
02898	cis-1,2-Dichloroethene	156-59-2	6.9		0.1	0.5	1
02898	trans-1,2-Dichloroethene	156-60-5	3.8		0.1	0.5	1
02898	1,2-Dichloropropane	78-87-5	N.D.		0.1	0.5	1
02898	cis-1,3-Dichloropropene	10061-01-5	N.D.		0.1	0.5	1
02898	trans-1,3-Dichloropropene	10061-02-6	N.D.		0.1	0.5	1
02898	Ethylbenzene	100-41-4	N.D.		0.1	0.5	1
02898	Freon 113	76-13-1	N.D.		0.2	0.5	1
02898	2-Hexanone	591-78-6	N.D.		1.0	5.0	1
02898	Isopropylbenzene	98-82-8	0.1	J	0.1	0.5	1
02898	Methyl Acetate	79-20-9	N.D.		0.3	1.0	1
02898	Methyl Tertiary Butyl Ether	1634-04-4	N.D.		0.1	0.5	1
02898	4-Methyl-2-pentanone	108-10-1	N.D.		1.0	5.0	1
02898	Methylcyclohexane	108-87-2	N.D.		0.1	0.5	1
02898	Methylene Chloride	75-09-2	N.D.		0.2	0.5	1
02898	Styrene	100-42-5	N.D.		0.1	0.5	1
02898	1,1,2,2-Tetrachloroethane	79-34-5	N.D.		0.1	0.5	1
02898	Tetrachloroethene	127-18-4	0.4	J	0.1	0.5	1
02898	Toluene	108-88-3	0.4	J	0.1	0.5	1
02898	1,2,3-Trichlorobenzene	87-61-6	N.D.		0.1	0.5	1
02898	1,2,4-Trichlorobenzene	120-82-1	N.D.		0.1	0.5	1
02898	1,1,1-Trichloroethane	71-55-6	N.D.		0.1	0.5	1
02898	1,1,2-Trichloroethane	79-00-5	N.D.		0.1	0.5	1
02898	Trichloroethene	79-01-6	62		1.0	5.0	10
02898	Trichlorofluoromethane	75-69-4	N.D.		0.1	0.5	1
02898	Vinyl Chloride	75-01-4	N.D.		0.1	0.5	1
02898	m+p-Xylene	179601-23-1	0.1	J	0.1	0.5	1

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

Sample Description: GW-2 Grab Groundwater
Former Union Switch & Signal Facility

LL Sample # WW 8488109
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/19/2016 15:30 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSG2 SDG#: USS01-13

CAT No.	Analysis Name	CAS Number	Result		Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B 25mL purge**		**ug/l**		**ug/l**	**ug/l**	
02898	o-Xylene	95-47-6	0.1	J	0.1	0.5	1
02898	Xylene (Total)	1330-20-7	0.2	J	0.1	0.5	1
GC/MS Semivolatiles	**SW-846 8270C**		**ug/l**		**ug/l**	**ug/l**	
04678	Acenaphthene	83-32-9	N.D.		0.1	0.5	1
04678	Acenaphthylene	208-96-8	N.D.		0.1	0.5	1
04678	Acetophenone	98-86-2	N.D.		0.5	1	1
04678	Anthracene	120-12-7	0.1	J	0.1	0.5	1
04678	Atrazine	1912-24-9	N.D.		2	5	1
04678	Benzaldehyde	100-52-7	N.D.		1	5	1
04678	Benzo(a)anthracene	56-55-3	0.5	J	0.1	0.5	1
04678	Benzo(a)pyrene	50-32-8	0.5	J	0.1	0.5	1
04678	Benzo(b)fluoranthene	205-99-2	0.6		0.1	0.5	1
04678	Benzo(g,h,i)perylene	191-24-2	0.3	J	0.1	0.5	1
04678	Benzo(k)fluoranthene	207-08-9	0.2	J	0.1	0.5	1
04678	1,1'-Biphenyl	92-52-4	N.D.		0.5	1	1
04678	4-Bromophenyl-phenylether	101-55-3	N.D.		0.5	1	1
04678	Butylbenzylphthalate	85-68-7	N.D.		2	5	1
04678	Di-n-butylphthalate	84-74-2	N.D.		2	5	1
04678	Caprolactam	105-60-2	N.D.		5	15	1
04678	Carbazole	86-74-8	N.D.		0.5	1	1
04678	4-Chloro-3-methylphenol	59-50-7	N.D.		0.5	1	1
04678	4-Chloroaniline	106-47-8	N.D.		2	4	1
04678	bis(2-Chloroethoxy)methane	111-91-1	N.D.		0.5	1	1
04678	bis(2-Chloroethyl)ether	111-44-4	N.D.		0.5	1	1
04678	2-Chloronaphthalene	91-58-7	N.D.		0.4	1	1
04678	2-Chlorophenol	95-57-8	N.D.		0.5	1	1
04678	4-Chlorophenyl-phenylether	7005-72-3	N.D.		0.5	1	1
04678	2,2'-oxybis(1-Chloropropane)	108-60-1	N.D.		0.5	1	1
	Bis(2-chloroisopropyl) ether CAS #39638-32-9 and 2,2'-Oxybis(1-chloropropane) CAS #108-60-1 cannot be separated chromatographically. The reported result represents the combined total of both compounds.						
04678	Chrysene	218-01-9	0.6		0.1	0.5	1
04678	Dibenz(a,h)anthracene	53-70-3	N.D.		0.1	0.5	1
04678	Dibenzofuran	132-64-9	N.D.		0.5	1	1
04678	3,3'-Dichlorobenzidine	91-94-1	N.D.		2	5	1
04678	2,4-Dichlorophenol	120-83-2	N.D.		0.5	1	1
04678	Diethylphthalate	84-66-2	N.D.		2	5	1
04678	2,4-Dimethylphenol	105-67-9	N.D.		0.5	1	1
04678	Dimethylphthalate	131-11-3	N.D.		2	5	1
04678	4,6-Dinitro-2-methylphenol	534-52-1	N.D.		5	15	1
04678	2,4-Dinitrophenol	51-28-5	N.D.		10	30	1
04678	2,4-Dinitrotoluene	121-14-2	N.D.		1	5	1
04678	2,6-Dinitrotoluene	606-20-2	N.D.		0.5	1	1
04678	1,4-Dioxane	123-91-1	N.D.		1	5	1
04678	bis(2-Ethylhexyl)phthalate	117-81-7	N.D.		2	5	1
04678	Fluoranthene	206-44-0	0.9		0.1	0.5	1
04678	Fluorene	86-73-7	0.1	J	0.1	0.5	1

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

Sample Description: GW-2 Grab Groundwater
Former Union Switch & Signal Facility

LL Sample # WW 8488109
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/19/2016 15:30 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSG2 SDG#: USS01-13

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C**		**ug/l**	**ug/l**	**ug/l**	
04678	Hexachlorobenzene	118-74-1	N.D.	0.1	0.5	1
04678	Hexachlorobutadiene	87-68-3	N.D.	0.5	1	1
04678	Hexachlorocyclopentadiene	77-47-4	N.D.	5	15	1
04678	Hexachloroethane	67-72-1	N.D.	1	5	1
04678	Indeno(1,2,3-cd)pyrene	193-39-5	0.2 J	0.1	0.5	1
04678	Isophorone	78-59-1	N.D.	0.5	1	1
04678	2-Methylnaphthalene	91-57-6	0.4 J	0.1	0.5	1
04678	2-Methylphenol	95-48-7	N.D.	0.5	1	1
04678	4-Methylphenol	106-44-5	N.D.	0.5	1	1
	3-Methylphenol and 4-methylphenol cannot be resolved under the chromatographic conditions used for sample analysis. The result reported for 4-methylphenol represents the combined total of both compounds.					
04678	Naphthalene	91-20-3	0.7	0.1	0.5	1
04678	2-Nitroaniline	88-74-4	N.D.	0.5	1	1
04678	3-Nitroaniline	99-09-2	N.D.	0.5	1	1
04678	4-Nitroaniline	100-01-6	N.D.	0.5	1	1
04678	Nitrobenzene	98-95-3	N.D.	0.5	1	1
04678	2-Nitrophenol	88-75-5	N.D.	0.5	1	1
04678	4-Nitrophenol	100-02-7	N.D.	10	30	1
04678	N-Nitroso-di-n-propylamine	621-64-7	N.D.	0.5	1	1
04678	N-Nitrosodiphenylamine	86-30-6	N.D.	0.5	1	1
	N-nitrosodiphenylamine decomposes in the GC inlet forming diphenylamine. The result reported for N-nitrosodiphenylamine represents the combined total of both compounds.					
04678	Di-n-octylphthalate	117-84-0	N.D.	2	5	1
04678	Pentachlorophenol	87-86-5	N.D.	1	5	1
04678	Phenanthrene	85-01-8	1	0.1	0.5	1
04678	Phenol	108-95-2	N.D.	0.5	1	1
04678	Pyrene	129-00-0	0.8	0.1	0.5	1
04678	1,2,4,5-Tetrachlorobenzene	95-94-3	N.D.	0.5	1	1
04678	2,3,4,6-Tetrachlorophenol	58-90-2	N.D.	0.5	1	1
04678	2,4,5-Trichlorophenol	95-95-4	N.D.	0.5	1	1
04678	2,4,6-Trichlorophenol	88-06-2	N.D.	0.5	1	1
GC/MS Semivolatiles	**SW-846 8270C SIM**		**ug/l**	**ug/l**	**ug/l**	
08357	Benzo(a)anthracene	56-55-3	0.47	0.010	0.051	1
08357	Benzo(b)fluoranthene	205-99-2	0.71	0.010	0.051	1
08357	Dibenz(a,h)anthracene	53-70-3	0.092	0.010	0.051	1
08357	Indeno(1,2,3-cd)pyrene	193-39-5	0.33	0.010	0.051	1
Pesticides/PCBs	**SW-846 8082**		**ug/l**	**ug/l**	**ug/l**	
12013	PCB-1016	12674-11-2	N.D.	0.59	0.98	100
12013	PCB-1221	11104-28-2	N.D.	0.59	0.98	100
12013	PCB-1232	11141-16-5	N.D.	0.69	0.98	100
12013	PCB-1242	53469-21-9	N.D.	0.59	0.98	100
12013	PCB-1248	12672-29-6	N.D.	0.49	0.98	100
12013	PCB-1254	11097-69-1	N.D.	0.49	0.98	100
12013	PCB-1260	11096-82-5	N.D.	0.49	0.98	100
12013	PCB-1262	37324-23-5	N.D.	0.49	0.98	100
12013	PCB-1268	11100-14-4	N.D.	0.49	0.98	100

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

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Lancaster Laboratories Environmental
2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Analysis Report

Sample Description: GW-2 Grab Groundwater
Former Union Switch & Signal Facility

LL Sample # WW 8488109
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/19/2016 15:30 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSG2 SDG#: USS01-13

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
Pesticides/PCBs	**SW-846 8082**		**ug/l**	**ug/l**	**ug/l**	
12013	Total PCBs	1336-36-3	N.D.	0.49	0.98	100
Reporting limits were raised due to interference from the sample matrix.						
Volatiles by Extraction	**SW-846 8011**		**ug/l**	**ug/l**	**ug/l**	
10398	Ethylene dibromide	106-93-4	N.D.	0.0094	0.028	1
Metals Dissolved	**SW-846 6010B**		**mg/l**	**mg/l**	**mg/l**	
01743	Aluminum	7429-90-5	N.D.	0.0868	0.200	1
07046	Barium	7440-39-3	0.144	0.0011	0.0050	1
07049	Cadmium	7440-43-9	0.113	0.00049	0.0050	1
01750	Calcium	7440-70-2	234	0.0382	0.200	1
07051	Chromium	7440-47-3	0.0022 J	0.0018	0.0150	1
07053	Copper	7440-50-8	0.0125	0.0041	0.0100	1
01754	Iron	7439-89-6	N.D.	0.0747	0.200	1
07055	Lead	7439-92-1	N.D.	0.0310	0.0750	5
01757	Magnesium	7439-95-4	29.7	0.0190	0.100	1
07058	Manganese	7439-96-5	4.78	0.0018	0.0050	1
07061	Nickel	7440-02-0	0.143	0.0028	0.0100	1
01762	Potassium	7440-09-7	15.6	0.160	0.500	1
07036	Selenium	7782-49-2	N.D.	0.0097	0.0200	1
07066	Silver	7440-22-4	N.D.	0.0019	0.0050	1
01767	Sodium	7440-23-5	1,310	0.865	5.00	5
07071	Vanadium	7440-62-2	N.D.	0.0016	0.0050	1
07072	Zinc	7440-66-6	1.12	0.0054	0.0200	1
	SW-846 6020		**mg/l**	**mg/l**	**mg/l**	
06024	Antimony	7440-36-0	0.0036	0.00048	0.0010	1
06025	Arsenic	7440-38-2	0.0014 J	0.00068	0.0020	1
06027	Beryllium	7440-41-7	N.D.	0.00011	0.00050	1
06032	Cobalt	7440-48-4	0.0267	0.00020	0.00050	1
06045	Thallium	7440-28-0	N.D.	0.00016	0.00050	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000050	0.00020	1
Wet Chemistry	**SW-846 9012B**		**mg/l**	**mg/l**	**mg/l**	
08255	Total Cyanide (water)	57-12-5	1.2	0.025	0.050	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.
This sample was filtered in the lab for dissolved metals.

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

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

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Lancaster Laboratories Environmental
2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Analysis Report

Sample Description: GW-2 Grab Groundwater
Former Union Switch & Signal Facility

LL Sample # WW 8488109
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/19/2016 15:30 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSG2 SDG#: USS01-13

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time		Analyst	Dilution Factor
02898	VOCs- 25ml Water by 8260B	SW-846 8260B 25mL purge	1	I162082AA	07/27/2016	01:12	Matthew S Krause	1
02898	VOCs- 25ml Water by 8260B	SW-846 8260B 25mL purge	1	C162151AA	08/02/2016	18:29	Angela D Sneeringer	10
01163	GC/MS VOA Water Prep	SW-846 5030B	1	I162082AA	07/27/2016	01:12	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	2	C162151AA	08/02/2016	18:29	Angela D Sneeringer	10
04678	TCL SW846 8270C Water	SW-846 8270C	1	16205WAJ026	07/28/2016	13:55	Edward Monborne	1
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	16205WAI026	07/27/2016	00:17	Catherine E Bachman	1
00813	BNA Water Extraction	SW-846 3510C	1	16205WAJ026	07/26/2016	08:00	Bradley W VanLeuven	1
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	16205WAI026	07/26/2016	08:00	Bradley W VanLeuven	1
12013	PCBs in Water - Low Level	SW-846 8082	1	162050017A	07/26/2016	23:02	Jessica L Miller	100
10398	EDB 8011	SW-846 8011	1	162050001A	07/27/2016	18:34	Heather M Miller	1
12026	PCB Waters Ext. - Low Level	SW-846 3510C	1	162050017A	07/25/2016	17:00	Ryan A Schafran	1
07786	EDB Extraction (8011)	SW-846 8011	1	162050001A	07/24/2016	19:00	Edwin Ortiz	1
01743	Aluminum	SW-846 6010B	1	162091848007	07/28/2016	16:51	Suzanne M Will	1
07046	Barium	SW-846 6010B	1	162091848007	07/28/2016	16:51	Suzanne M Will	1
07049	Cadmium	SW-846 6010B	1	162091848007	07/28/2016	16:51	Suzanne M Will	1
01750	Calcium	SW-846 6010B	1	162091848007	07/28/2016	16:51	Suzanne M Will	1
07051	Chromium	SW-846 6010B	1	162091848007	07/28/2016	16:51	Suzanne M Will	1
07053	Copper	SW-846 6010B	1	162091848007	07/28/2016	16:51	Suzanne M Will	1
01754	Iron	SW-846 6010B	1	162091848007	07/28/2016	16:51	Suzanne M Will	1
07055	Lead	SW-846 6010B	1	162091848007	08/01/2016	12:14	Joanne M Gates	5
01757	Magnesium	SW-846 6010B	1	162091848007	07/28/2016	16:51	Suzanne M Will	1
07058	Manganese	SW-846 6010B	1	162091848007	07/28/2016	16:51	Suzanne M Will	1
07061	Nickel	SW-846 6010B	1	162091848007	07/28/2016	16:51	Suzanne M Will	1
01762	Potassium	SW-846 6010B	1	162091848007	07/28/2016	16:51	Suzanne M Will	1
07036	Selenium	SW-846 6010B	1	162091848007	07/28/2016	16:51	Suzanne M Will	1
07066	Silver	SW-846 6010B	1	162091848007	07/29/2016	18:18	Suzanne M Will	1
01767	Sodium	SW-846 6010B	1	162091848007	07/29/2016	18:21	Suzanne M Will	5
07071	Vanadium	SW-846 6010B	1	162091848007	07/28/2016	16:51	Suzanne M Will	1
07072	Zinc	SW-846 6010B	1	162091848007	07/28/2016	16:51	Suzanne M Will	1
06024	Antimony	SW-846 6020	1	162096050008A	07/28/2016	17:14	Patrick J Engle	1
06025	Arsenic	SW-846 6020	1	162096050008A	07/28/2016	17:14	Patrick J Engle	1
06027	Beryllium	SW-846 6020	1	162096050008A	07/29/2016	18:55	Patrick J Engle	1
06032	Cobalt	SW-846 6020	1	162096050008A	07/29/2016	18:55	Patrick J Engle	1
06045	Thallium	SW-846 6020	1	162096050008A	07/28/2016	17:14	Patrick J Engle	1
00259	Mercury	SW-846 7470A	1	162095713009	07/28/2016	11:45	Damary Valentin	1
01848	ICP-WW, 3005A (tot rec) - U3	SW-846 3005A	1	162091848007	07/28/2016	05:52	James L Mertz	1
06050	ICPMS-Water, 3020A - U3	SW-846 3020A	1	162096050008	07/28/2016	06:21	James L Mertz	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	162095713009	07/28/2016	07:30	James L Mertz	1
08255	Total Cyanide (water)	SW-846 9012B	1	16210117101B	07/29/2016	02:44	Drew M Gerhart	1
08256	Cyanide Water Distillation	SW-846 9012B	1	16210117101B	07/28/2016	17:15	Barbara A Washington	1

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

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Analysis Report

Sample Description: GW-3 Grab Groundwater
Former Union Switch & Signal Facility

LL Sample # WW 8488110
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/20/2016 16:30 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSG3 SDG#: USS01-14

CAT No.	Analysis Name	CAS Number	Result		Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B 25mL purge**		ug/l		ug/l	ug/l	
02898	Acetone	67-64-1	8.4		3.0	5.0	1
02898	Benzene	71-43-2	N.D.		0.1	0.5	1
02898	Bromochloromethane	74-97-5	N.D.		0.1	0.5	1
02898	Bromodichloromethane	75-27-4	N.D.		0.1	0.5	1
02898	Bromoform	75-25-2	N.D.		0.1	0.5	1
02898	Bromomethane	74-83-9	N.D.		0.1	0.5	1
02898	2-Butanone	78-93-3	N.D.		1.0	5.0	1
02898	Carbon Disulfide	75-15-0	N.D.		0.4	1.0	1
02898	Carbon Tetrachloride	56-23-5	N.D.		0.1	0.5	1
02898	Chlorobenzene	108-90-7	N.D.		0.1	0.5	1
02898	Chloroethane	75-00-3	N.D.		0.1	0.5	1
02898	Chloroform	67-66-3	N.D.		0.1	0.5	1
02898	Chloromethane	74-87-3	N.D.		0.2	0.5	1
02898	Cyclohexane	110-82-7	N.D.		0.1	0.5	1
02898	1,2-Dibromo-3-chloropropane	96-12-8	N.D.		0.2	0.5	1
02898	Dibromochloromethane	124-48-1	N.D.		0.1	0.5	1
02898	1,2-Dibromoethane	106-93-4	N.D.		0.1	0.5	1
02898	1,2-Dichlorobenzene	95-50-1	N.D.		0.1	0.5	1
02898	1,3-Dichlorobenzene	541-73-1	N.D.		0.1	0.5	1
02898	1,4-Dichlorobenzene	106-46-7	N.D.		0.1	0.5	1
02898	Dichlorodifluoromethane	75-71-8	N.D.		0.1	0.5	1
02898	1,1-Dichloroethane	75-34-3	N.D.		0.1	0.5	1
02898	1,2-Dichloroethane	107-06-2	N.D.		0.1	0.5	1
02898	1,1-Dichloroethene	75-35-4	N.D.		0.1	0.5	1
02898	cis-1,2-Dichloroethene	156-59-2	N.D.		0.1	0.5	1
02898	trans-1,2-Dichloroethene	156-60-5	N.D.		0.1	0.5	1
02898	1,2-Dichloropropane	78-87-5	N.D.		0.1	0.5	1
02898	cis-1,3-Dichloropropene	10061-01-5	N.D.		0.1	0.5	1
02898	trans-1,3-Dichloropropene	10061-02-6	N.D.		0.1	0.5	1
02898	Ethylbenzene	100-41-4	N.D.		0.1	0.5	1
02898	Freon 113	76-13-1	N.D.		0.2	0.5	1
02898	2-Hexanone	591-78-6	N.D.		1.0	5.0	1
02898	Isopropylbenzene	98-82-8	N.D.		0.1	0.5	1
02898	Methyl Acetate	79-20-9	N.D.		0.3	1.0	1
02898	Methyl Tertiary Butyl Ether	1634-04-4	N.D.		0.1	0.5	1
02898	4-Methyl-2-pentanone	108-10-1	N.D.		1.0	5.0	1
02898	Methylcyclohexane	108-87-2	N.D.		0.1	0.5	1
02898	Methylene Chloride	75-09-2	N.D.		0.2	0.5	1
02898	Styrene	100-42-5	N.D.		0.1	0.5	1
02898	1,1,2,2-Tetrachloroethane	79-34-5	N.D.		0.1	0.5	1
02898	Tetrachloroethene	127-18-4	N.D.		0.1	0.5	1
02898	Toluene	108-88-3	N.D.		0.1	0.5	1
02898	1,2,3-Trichlorobenzene	87-61-6	N.D.		0.1	0.5	1
02898	1,2,4-Trichlorobenzene	120-82-1	N.D.		0.1	0.5	1
02898	1,1,1-Trichloroethane	71-55-6	N.D.		0.1	0.5	1
02898	1,1,2-Trichloroethane	79-00-5	N.D.		0.1	0.5	1
02898	Trichloroethene	79-01-6	0.1	J	0.1	0.5	1
02898	Trichlorofluoromethane	75-69-4	N.D.		0.1	0.5	1
02898	Vinyl Chloride	75-01-4	N.D.		0.1	0.5	1
02898	m+p-Xylene	179601-23-1	N.D.		0.1	0.5	1

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

Sample Description: GW-3 Grab Groundwater
Former Union Switch & Signal Facility

LL Sample # WW 8488110
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/20/2016 16:30 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSG3 SDG#: USS01-14

CAT No.	Analysis Name	CAS Number	Result		Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B 25mL purge**		**ug/l**		**ug/l**	**ug/l**	
02898	o-Xylene	95-47-6	N.D.		0.1	0.5	1
02898	Xylene (Total)	1330-20-7	N.D.		0.1	0.5	1
GC/MS Semivolatiles	**SW-846 8270C**		**ug/l**		**ug/l**	**ug/l**	
04678	Acenaphthene	83-32-9	N.D.		0.1	0.5	1
04678	Acenaphthylene	208-96-8	N.D.		0.1	0.5	1
04678	Acetophenone	98-86-2	N.D.		0.5	1	1
04678	Anthracene	120-12-7	N.D.		0.1	0.5	1
04678	Atrazine	1912-24-9	N.D.		2	5	1
04678	Benzaldehyde	100-52-7	N.D.		1	5	1
04678	Benzo(a)anthracene	56-55-3	N.D.		0.1	0.5	1
04678	Benzo(a)pyrene	50-32-8	N.D.		0.1	0.5	1
04678	Benzo(b)fluoranthene	205-99-2	N.D.		0.1	0.5	1
04678	Benzo(g,h,i)perylene	191-24-2	N.D.		0.1	0.5	1
04678	Benzo(k)fluoranthene	207-08-9	N.D.		0.1	0.5	1
04678	1,1'-Biphenyl	92-52-4	N.D.		0.5	1	1
04678	4-Bromophenyl-phenylether	101-55-3	N.D.		0.5	1	1
04678	Butylbenzylphthalate	85-68-7	N.D.		2	5	1
04678	Di-n-butylphthalate	84-74-2	N.D.		2	5	1
04678	Caprolactam	105-60-2	N.D.		5	15	1
04678	Carbazole	86-74-8	N.D.		0.5	1	1
04678	4-Chloro-3-methylphenol	59-50-7	N.D.		0.5	1	1
04678	4-Chloroaniline	106-47-8	N.D.		2	4	1
04678	bis(2-Chloroethoxy)methane	111-91-1	N.D.		0.5	1	1
04678	bis(2-Chloroethyl)ether	111-44-4	N.D.		0.5	1	1
04678	2-Chloronaphthalene	91-58-7	N.D.		0.4	1	1
04678	2-Chlorophenol	95-57-8	N.D.		0.5	1	1
04678	4-Chlorophenyl-phenylether	7005-72-3	N.D.		0.5	1	1
04678	2,2'-oxybis(1-Chloropropane)	108-60-1	N.D.		0.5	1	1
	Bis(2-chloroisopropyl) ether CAS #39638-32-9 and 2,2'-Oxybis(1-chloropropane) CAS #108-60-1 cannot be separated chromatographically. The reported result represents the combined total of both compounds.						
04678	Chrysene	218-01-9	N.D.		0.1	0.5	1
04678	Dibenz(a,h)anthracene	53-70-3	N.D.		0.1	0.5	1
04678	Dibenzofuran	132-64-9	N.D.		0.5	1	1
04678	3,3'-Dichlorobenzidine	91-94-1	N.D.		2	5	1
04678	2,4-Dichlorophenol	120-83-2	N.D.		0.5	1	1
04678	Diethylphthalate	84-66-2	2	J	2	5	1
04678	2,4-Dimethylphenol	105-67-9	N.D.		0.5	1	1
04678	Dimethylphthalate	131-11-3	N.D.		2	5	1
04678	4,6-Dinitro-2-methylphenol	534-52-1	N.D.		5	15	1
04678	2,4-Dinitrophenol	51-28-5	N.D.		10	30	1
04678	2,4-Dinitrotoluene	121-14-2	N.D.		1	5	1
04678	2,6-Dinitrotoluene	606-20-2	N.D.		0.5	1	1
04678	1,4-Dioxane	123-91-1	N.D.		1	5	1
04678	bis(2-Ethylhexyl)phthalate	117-81-7	N.D.		2	5	1
04678	Fluoranthene	206-44-0	0.1	J	0.1	0.5	1
04678	Fluorene	86-73-7	N.D.		0.1	0.5	1

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

Sample Description: GW-3 Grab Groundwater
Former Union Switch & Signal Facility

LL Sample # WW 8488110
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/20/2016 16:30 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSG3 SDG#: USS01-14

CAT No.	Analysis Name	CAS Number	Result		Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C**		**ug/l**		**ug/l**	**ug/l**	
04678	Hexachlorobenzene	118-74-1	N.D.		0.1	0.5	1
04678	Hexachlorobutadiene	87-68-3	N.D.		0.5	1	1
04678	Hexachlorocyclopentadiene	77-47-4	N.D.		5	15	1
04678	Hexachloroethane	67-72-1	N.D.		1	5	1
04678	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.		0.1	0.5	1
04678	Isophorone	78-59-1	N.D.		0.5	1	1
04678	2-Methylnaphthalene	91-57-6	N.D.		0.1	0.5	1
04678	2-Methylphenol	95-48-7	N.D.		0.5	1	1
04678	4-Methylphenol	106-44-5	N.D.		0.5	1	1
	3-Methylphenol and 4-methylphenol cannot be resolved under the chromatographic conditions used for sample analysis. The result reported for 4-methylphenol represents the combined total of both compounds.						
04678	Naphthalene	91-20-3	N.D.		0.1	0.5	1
04678	2-Nitroaniline	88-74-4	N.D.		0.5	1	1
04678	3-Nitroaniline	99-09-2	N.D.		0.5	1	1
04678	4-Nitroaniline	100-01-6	N.D.		0.5	1	1
04678	Nitrobenzene	98-95-3	N.D.		0.5	1	1
04678	2-Nitrophenol	88-75-5	N.D.		0.5	1	1
04678	4-Nitrophenol	100-02-7	N.D.		10	30	1
04678	N-Nitroso-di-n-propylamine	621-64-7	N.D.		0.5	1	1
04678	N-Nitrosodiphenylamine	86-30-6	N.D.		0.5	1	1
	N-nitrosodiphenylamine decomposes in the GC inlet forming diphenylamine. The result reported for N-nitrosodiphenylamine represents the combined total of both compounds.						
04678	Di-n-octylphthalate	117-84-0	N.D.		2	5	1
04678	Pentachlorophenol	87-86-5	N.D.		1	5	1
04678	Phenanthrene	85-01-8	0.2	J	0.1	0.5	1
04678	Phenol	108-95-2	N.D.		0.5	1	1
04678	Pyrene	129-00-0	N.D.		0.1	0.5	1
04678	1,2,4,5-Tetrachlorobenzene	95-94-3	N.D.		0.5	1	1
04678	2,3,4,6-Tetrachlorophenol	58-90-2	N.D.		0.5	1	1
04678	2,4,5-Trichlorophenol	95-95-4	N.D.		0.5	1	1
04678	2,4,6-Trichlorophenol	88-06-2	N.D.		0.5	1	1
GC/MS Semivolatiles	**SW-846 8270C SIM**		**ug/l**		**ug/l**	**ug/l**	
08357	Benzo(a)anthracene	56-55-3	0.030	J	0.010	0.050	1
08357	Benzo(b)fluoranthene	205-99-2	0.055		0.010	0.050	1
08357	Dibenz(a,h)anthracene	53-70-3	N.D.		0.010	0.050	1
08357	Indeno(1,2,3-cd)pyrene	193-39-5	0.017	J	0.010	0.050	1
Pesticides/PCBs	**SW-846 8082**		**ug/l**		**ug/l**	**ug/l**	
12013	PCB-1016	12674-11-2	N.D.		0.0059	0.0099	1
12013	PCB-1221	11104-28-2	N.D.		0.0059	0.0099	1
12013	PCB-1232	11141-16-5	N.D.		0.0069	0.0099	1
12013	PCB-1242	53469-21-9	N.D.		0.0059	0.0099	1
12013	PCB-1248	12672-29-6	N.D.		0.0050	0.0099	1
12013	PCB-1254	11097-69-1	N.D.		0.0050	0.0099	1
12013	PCB-1260	11096-82-5	N.D.		0.0050	0.0099	1
12013	PCB-1262	37324-23-5	N.D.		0.0050	0.0099	1
12013	PCB-1268	11100-14-4	N.D.		0.0050	0.0099	1

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

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Analysis Report

Sample Description: GW-3 Grab Groundwater
Former Union Switch & Signal Facility

LL Sample # WW 8488110
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/20/2016 16:30 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSG3 SDG#: USS01-14

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
Pesticides/PCBs	**SW-846 8082**		**ug/l**	**ug/l**	**ug/l**	
12013	Total PCBs	1336-36-3	N.D.	0.0050	0.0099	1
Volatiles by Extraction	**SW-846 8011**		**ug/l**	**ug/l**	**ug/l**	
10398	Ethylene dibromide	106-93-4	N.D.	0.0094	0.028	1
Metals Dissolved	**SW-846 6010B**		**mg/l**	**mg/l**	**mg/l**	
01743	Aluminum	7429-90-5	0.0882 J	0.0868	0.200	1
07046	Barium	7440-39-3	0.345	0.0011	0.0050	1
07049	Cadmium	7440-43-9	0.0016 J	0.00049	0.0050	1
01750	Calcium	7440-70-2	244	0.0382	0.200	1
07051	Chromium	7440-47-3	N.D.	0.0018	0.0150	1
07053	Copper	7440-50-8	0.0047 J	0.0041	0.0100	1
01754	Iron	7439-89-6	N.D.	0.0747	0.200	1
07055	Lead	7439-92-1	N.D.	0.0062	0.0150	1
01757	Magnesium	7439-95-4	77.9	0.0190	0.100	1
07058	Manganese	7439-96-5	10.5	0.0018	0.0050	1
07061	Nickel	7440-02-0	0.0072 J	0.0028	0.0100	1
01762	Potassium	7440-09-7	12.1	0.160	0.500	1
07036	Selenium	7782-49-2	N.D.	0.0097	0.0200	1
07066	Silver	7440-22-4	N.D.	0.0019	0.0050	1
01767	Sodium	7440-23-5	64.7	0.173	1.00	1
07071	Vanadium	7440-62-2	N.D.	0.0016	0.0050	1
07072	Zinc	7440-66-6	0.0109 J	0.0054	0.0200	1
	SW-846 6020		**mg/l**	**mg/l**	**mg/l**	
06024	Antimony	7440-36-0	N.D.	0.00048	0.0010	1
06025	Arsenic	7440-38-2	0.0028	0.00068	0.0020	1
06027	Beryllium	7440-41-7	N.D.	0.00011	0.00050	1
06032	Cobalt	7440-48-4	0.0060	0.00020	0.00050	1
06045	Thallium	7440-28-0	N.D.	0.00016	0.00050	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000050	0.00020	1
Wet Chemistry	**SW-846 9012B**		**mg/l**	**mg/l**	**mg/l**	
08255	Total Cyanide (water)	57-12-5	N.D.	0.025	0.050	1

Reporting limits were raised due to interference from the sample matrix.

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.
This sample was filtered in the lab for dissolved metals.

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

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

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2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Analysis Report

Sample Description: GW-3 Grab Groundwater
Former Union Switch & Signal Facility

LL Sample # WW 8488110
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/20/2016 16:30 by EM

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

URS Corporation
PO Box 203970
Austin TX 7872019034

USSG3 SDG#: USS01-14

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time		Analyst	Dilution Factor
02898	VOCs- 25ml Water by 8260B	SW-846 8260B 25mL purge	1	I162082AA	07/27/2016	01:33	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	I162082AA	07/27/2016	01:33	Matthew S Krause	1
04678	TCL SW846 8270C Water	SW-846 8270C	1	16205WAJ026	07/28/2016	14:23	Edward Monborne	1
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	16205WAI026	07/27/2016	00:48	Catherine E Bachman	1
00813	BNA Water Extraction	SW-846 3510C	1	16205WAJ026	07/26/2016	08:00	Bradley W VanLeuven	1
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	16205WAI026	07/26/2016	08:00	Bradley W VanLeuven	1
12013	PCBs in Water - Low Level	SW-846 8082	1	162050017A	07/26/2016	20:53	Jessica L Miller	1
10398	EDB 8011	SW-846 8011	1	162050001A	07/27/2016	18:50	Heather M Miller	1
12026	PCB Waters Ext. - Low Level	SW-846 3510C	1	162050017A	07/25/2016	17:00	Ryan A Schafran	1
07786	EDB Extraction (8011)	SW-846 8011	1	162050001A	07/24/2016	19:00	Edwin Ortiz	1
01743	Aluminum	SW-846 6010B	1	162091848007	07/28/2016	17:02	Suzanne M Will	1
07046	Barium	SW-846 6010B	1	162091848007	07/28/2016	17:02	Suzanne M Will	1
07049	Cadmium	SW-846 6010B	1	162091848007	07/28/2016	17:02	Suzanne M Will	1
01750	Calcium	SW-846 6010B	1	162091848007	07/28/2016	17:02	Suzanne M Will	1
07051	Chromium	SW-846 6010B	1	162091848007	07/28/2016	17:02	Suzanne M Will	1
07053	Copper	SW-846 6010B	1	162091848007	07/28/2016	17:02	Suzanne M Will	1
01754	Iron	SW-846 6010B	1	162091848007	07/28/2016	17:02	Suzanne M Will	1
07055	Lead	SW-846 6010B	1	162091848007	08/01/2016	12:24	Joanne M Gates	1
01757	Magnesium	SW-846 6010B	1	162091848007	07/28/2016	17:02	Suzanne M Will	1
07058	Manganese	SW-846 6010B	1	162091848007	07/28/2016	17:02	Suzanne M Will	1
07061	Nickel	SW-846 6010B	1	162091848007	07/28/2016	17:02	Suzanne M Will	1
01762	Potassium	SW-846 6010B	1	162091848007	07/28/2016	17:02	Suzanne M Will	1
07036	Selenium	SW-846 6010B	1	162091848007	07/28/2016	17:02	Suzanne M Will	1
07066	Silver	SW-846 6010B	1	162091848007	07/29/2016	18:25	Suzanne M Will	1
01767	Sodium	SW-846 6010B	1	162091848007	07/29/2016	18:25	Suzanne M Will	1
07071	Vanadium	SW-846 6010B	1	162091848007	07/28/2016	17:02	Suzanne M Will	1
07072	Zinc	SW-846 6010B	1	162091848007	07/28/2016	17:02	Suzanne M Will	1
06024	Antimony	SW-846 6020	1	162096050008A	07/28/2016	17:23	Patrick J Engle	1
06025	Arsenic	SW-846 6020	1	162096050008A	07/28/2016	17:23	Patrick J Engle	1
06027	Beryllium	SW-846 6020	1	162096050008A	07/29/2016	19:04	Patrick J Engle	1
06032	Cobalt	SW-846 6020	1	162096050008A	07/29/2016	19:04	Patrick J Engle	1
06045	Thallium	SW-846 6020	1	162096050008A	07/28/2016	17:23	Patrick J Engle	1
00259	Mercury	SW-846 7470A	1	162095713009	07/28/2016	11:55	Damary Valentin	1
01848	ICP-WW, 3005A (tot rec) - U3	SW-846 3005A	1	162091848007	07/28/2016	05:52	James L Mertz	1
06050	ICPMS-Water, 3020A - U3	SW-846 3020A	1	162096050008	07/28/2016	06:21	James L Mertz	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	162095713009	07/28/2016	07:30	James L Mertz	1
08255	Total Cyanide (water)	SW-846 9012B	1	16210117101B	07/29/2016	02:45	Drew M Gerhart	1
08256	Cyanide Water Distillation	SW-846 9012B	1	16210117101B	07/28/2016	17:15	Barbara A Washington	1

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

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Analysis Report

Sample Description: DUP-072016-1 Grab Groundwater
Former Union Switch & Signal Facility

LL Sample # WW 8488111
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/20/2016 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSD1 SDG#: USS01-15FD

CAT No.	Analysis Name	CAS Number	Result		Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B 25mL purge**		ug/l		ug/l	ug/l	
02898	Acetone	67-64-1	12		3.0	5.0	1
02898	Benzene	71-43-2	0.2	J	0.1	0.5	1
02898	Bromochloromethane	74-97-5	N.D.		0.1	0.5	1
02898	Bromodichloromethane	75-27-4	N.D.		0.1	0.5	1
02898	Bromoform	75-25-2	N.D.		0.1	0.5	1
02898	Bromomethane	74-83-9	N.D.		0.1	0.5	1
02898	2-Butanone	78-93-3	1.8	J	1.0	5.0	1
02898	Carbon Disulfide	75-15-0	N.D.		0.4	1.0	1
02898	Carbon Tetrachloride	56-23-5	N.D.		0.1	0.5	1
02898	Chlorobenzene	108-90-7	N.D.		0.1	0.5	1
02898	Chloroethane	75-00-3	N.D.		0.1	0.5	1
02898	Chloroform	67-66-3	N.D.		0.1	0.5	1
02898	Chloromethane	74-87-3	N.D.		0.2	0.5	1
02898	Cyclohexane	110-82-7	N.D.		0.1	0.5	1
02898	1,2-Dibromo-3-chloropropane	96-12-8	N.D.		0.2	0.5	1
02898	Dibromochloromethane	124-48-1	N.D.		0.1	0.5	1
02898	1,2-Dibromoethane	106-93-4	N.D.		0.1	0.5	1
02898	1,2-Dichlorobenzene	95-50-1	N.D.		0.1	0.5	1
02898	1,3-Dichlorobenzene	541-73-1	N.D.		0.1	0.5	1
02898	1,4-Dichlorobenzene	106-46-7	N.D.		0.1	0.5	1
02898	Dichlorodifluoromethane	75-71-8	N.D.		0.1	0.5	1
02898	1,1-Dichloroethane	75-34-3	N.D.		0.1	0.5	1
02898	1,2-Dichloroethane	107-06-2	N.D.		0.1	0.5	1
02898	1,1-Dichloroethene	75-35-4	N.D.		0.1	0.5	1
02898	cis-1,2-Dichloroethene	156-59-2	N.D.		0.1	0.5	1
02898	trans-1,2-Dichloroethene	156-60-5	N.D.		0.1	0.5	1
02898	1,2-Dichloropropane	78-87-5	N.D.		0.1	0.5	1
02898	cis-1,3-Dichloropropene	10061-01-5	N.D.		0.1	0.5	1
02898	trans-1,3-Dichloropropene	10061-02-6	N.D.		0.1	0.5	1
02898	Ethylbenzene	100-41-4	N.D.		0.1	0.5	1
02898	Freon 113	76-13-1	N.D.		0.2	0.5	1
02898	2-Hexanone	591-78-6	N.D.		1.0	5.0	1
02898	Isopropylbenzene	98-82-8	N.D.		0.1	0.5	1
02898	Methyl Acetate	79-20-9	N.D.		0.3	1.0	1
02898	Methyl Tertiary Butyl Ether	1634-04-4	N.D.		0.1	0.5	1
02898	4-Methyl-2-pentanone	108-10-1	N.D.		1.0	5.0	1
02898	Methylcyclohexane	108-87-2	N.D.		0.1	0.5	1
02898	Methylene Chloride	75-09-2	N.D.		0.2	0.5	1
02898	Styrene	100-42-5	N.D.		0.1	0.5	1
02898	1,1,2,2-Tetrachloroethane	79-34-5	N.D.		0.1	0.5	1
02898	Tetrachloroethene	127-18-4	N.D.		0.1	0.5	1
02898	Toluene	108-88-3	N.D.		0.1	0.5	1
02898	1,2,3-Trichlorobenzene	87-61-6	N.D.		0.1	0.5	1
02898	1,2,4-Trichlorobenzene	120-82-1	N.D.		0.1	0.5	1
02898	1,1,1-Trichloroethane	71-55-6	N.D.		0.1	0.5	1
02898	1,1,2-Trichloroethane	79-00-5	N.D.		0.1	0.5	1
02898	Trichloroethene	79-01-6	0.5		0.1	0.5	1
02898	Trichlorofluoromethane	75-69-4	N.D.		0.1	0.5	1
02898	Vinyl Chloride	75-01-4	N.D.		0.1	0.5	1
02898	m+p-Xylene	179601-23-1	N.D.		0.1	0.5	1

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

Sample Description: DUP-072016-1 Grab Groundwater
Former Union Switch & Signal Facility

LL Sample # WW 8488111
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/20/2016 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSD1 SDG#: USS01-15FD

CAT No.	Analysis Name	CAS Number	Result		Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B 25mL purge**		**ug/l**		**ug/l**	**ug/l**	
02898	o-Xylene	95-47-6	N.D.		0.1	0.5	1
02898	Xylene (Total)	1330-20-7	N.D.		0.1	0.5	1
GC/MS Semivolatiles	**SW-846 8270C**		**ug/l**		**ug/l**	**ug/l**	
04678	Acenaphthene	83-32-9	N.D.		0.1	0.5	1
04678	Acenaphthylene	208-96-8	N.D.		0.1	0.5	1
04678	Acetophenone	98-86-2	N.D.		0.5	1	1
04678	Anthracene	120-12-7	N.D.		0.1	0.5	1
04678	Atrazine	1912-24-9	N.D.		2	5	1
04678	Benzaldehyde	100-52-7	N.D.		1	5	1
04678	Benzo(a)anthracene	56-55-3	N.D.		0.1	0.5	1
04678	Benzo(a)pyrene	50-32-8	N.D.		0.1	0.5	1
04678	Benzo(b)fluoranthene	205-99-2	0.1	J	0.1	0.5	1
04678	Benzo(g,h,i)perylene	191-24-2	N.D.		0.1	0.5	1
04678	Benzo(k)fluoranthene	207-08-9	N.D.		0.1	0.5	1
04678	1,1'-Biphenyl	92-52-4	N.D.		0.5	1	1
04678	4-Bromophenyl-phenylether	101-55-3	N.D.		0.5	1	1
04678	Butylbenzylphthalate	85-68-7	N.D.		2	5	1
04678	Di-n-butylphthalate	84-74-2	N.D.		2	5	1
04678	Caprolactam	105-60-2	N.D.		5	15	1
04678	Carbazole	86-74-8	N.D.		0.5	1	1
04678	4-Chloro-3-methylphenol	59-50-7	N.D.		0.5	1	1
04678	4-Chloroaniline	106-47-8	N.D.		2	4	1
04678	bis(2-Chloroethoxy)methane	111-91-1	N.D.		0.5	1	1
04678	bis(2-Chloroethyl)ether	111-44-4	N.D.		0.5	1	1
04678	2-Chloronaphthalene	91-58-7	N.D.		0.4	1	1
04678	2-Chlorophenol	95-57-8	N.D.		0.5	1	1
04678	4-Chlorophenyl-phenylether	7005-72-3	N.D.		0.5	1	1
04678	2,2'-oxybis(1-Chloropropane)	108-60-1	N.D.		0.5	1	1
	Bis(2-chloroisopropyl) ether CAS #39638-32-9 and 2,2'-Oxybis(1-chloropropane) CAS #108-60-1 cannot be separated chromatographically. The reported result represents the combined total of both compounds.						
04678	Chrysene	218-01-9	N.D.		0.1	0.5	1
04678	Dibenz(a,h)anthracene	53-70-3	N.D.		0.1	0.5	1
04678	Dibenzofuran	132-64-9	N.D.		0.5	1	1
04678	3,3'-Dichlorobenzidine	91-94-1	N.D.		2	5	1
04678	2,4-Dichlorophenol	120-83-2	N.D.		0.5	1	1
04678	Diethylphthalate	84-66-2	5	J	2	5	1
04678	2,4-Dimethylphenol	105-67-9	N.D.		0.5	1	1
04678	Dimethylphthalate	131-11-3	N.D.		2	5	1
04678	4,6-Dinitro-2-methylphenol	534-52-1	N.D.		5	15	1
04678	2,4-Dinitrophenol	51-28-5	N.D.		10	30	1
04678	2,4-Dinitrotoluene	121-14-2	N.D.		1	5	1
04678	2,6-Dinitrotoluene	606-20-2	N.D.		0.5	1	1
04678	1,4-Dioxane	123-91-1	N.D.		1	5	1
04678	bis(2-Ethylhexyl)phthalate	117-81-7	N.D.		2	5	1
04678	Fluoranthene	206-44-0	0.2	J	0.1	0.5	1
04678	Fluorene	86-73-7	N.D.		0.1	0.5	1

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

Sample Description: DUP-072016-1 Grab Groundwater
Former Union Switch & Signal Facility

LL Sample # WW 8488111
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/20/2016 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSD1 SDG#: USS01-15FD

CAT No.	Analysis Name	CAS Number	Result		Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C**		**ug/l**		**ug/l**	**ug/l**	
04678	Hexachlorobenzene	118-74-1	N.D.		0.1	0.5	1
04678	Hexachlorobutadiene	87-68-3	N.D.		0.5	1	1
04678	Hexachlorocyclopentadiene	77-47-4	N.D.		5	15	1
04678	Hexachloroethane	67-72-1	N.D.		1	5	1
04678	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.		0.1	0.5	1
04678	Isophorone	78-59-1	N.D.		0.5	1	1
04678	2-Methylnaphthalene	91-57-6	N.D.		0.1	0.5	1
04678	2-Methylphenol	95-48-7	N.D.		0.5	1	1
04678	4-Methylphenol	106-44-5	N.D.		0.5	1	1
	3-Methylphenol and 4-methylphenol cannot be resolved under the chromatographic conditions used for sample analysis. The result reported for 4-methylphenol represents the combined total of both compounds.						
04678	Naphthalene	91-20-3	N.D.		0.1	0.5	1
04678	2-Nitroaniline	88-74-4	N.D.		0.5	1	1
04678	3-Nitroaniline	99-09-2	N.D.		0.5	1	1
04678	4-Nitroaniline	100-01-6	N.D.		0.5	1	1
04678	Nitrobenzene	98-95-3	N.D.		0.5	1	1
04678	2-Nitrophenol	88-75-5	N.D.		0.5	1	1
04678	4-Nitrophenol	100-02-7	N.D.		10	30	1
04678	N-Nitroso-di-n-propylamine	621-64-7	N.D.		0.5	1	1
04678	N-Nitrosodiphenylamine	86-30-6	N.D.		0.5	1	1
	N-nitrosodiphenylamine decomposes in the GC inlet forming diphenylamine. The result reported for N-nitrosodiphenylamine represents the combined total of both compounds.						
04678	Di-n-octylphthalate	117-84-0	N.D.		2	5	1
04678	Pentachlorophenol	87-86-5	N.D.		1	5	1
04678	Phenanthrene	85-01-8	0.2	J	0.1	0.5	1
04678	Phenol	108-95-2	N.D.		0.5	1	1
04678	Pyrene	129-00-0	0.1	J	0.1	0.5	1
04678	1,2,4,5-Tetrachlorobenzene	95-94-3	N.D.		0.5	1	1
04678	2,3,4,6-Tetrachlorophenol	58-90-2	N.D.		0.5	1	1
04678	2,4,5-Trichlorophenol	95-95-4	N.D.		0.5	1	1
04678	2,4,6-Trichlorophenol	88-06-2	N.D.		0.5	1	1
GC/MS Semivolatiles	**SW-846 8270C SIM**		**ug/l**		**ug/l**	**ug/l**	
08357	Benzo(a)anthracene	56-55-3	0.056		0.010	0.050	1
08357	Benzo(b)fluoranthene	205-99-2	0.090		0.010	0.050	1
08357	Dibenz(a,h)anthracene	53-70-3	N.D.		0.010	0.050	1
08357	Indeno(1,2,3-cd)pyrene	193-39-5	0.032	J	0.010	0.050	1
Pesticides/PCBs	**SW-846 8082**		**ug/l**		**ug/l**	**ug/l**	
12013	PCB-1016	12674-11-2	N.D.		0.0060	0.010	1
12013	PCB-1221	11104-28-2	N.D.		0.0060	0.010	1
12013	PCB-1232	11141-16-5	N.D.		0.0070	0.010	1
12013	PCB-1242	53469-21-9	N.D.		0.0060	0.010	1
12013	PCB-1248	12672-29-6	N.D.		0.0050	0.010	1
12013	PCB-1254	11097-69-1	N.D.		0.0050	0.010	1
12013	PCB-1260	11096-82-5	N.D.		0.0050	0.010	1
12013	PCB-1262	37324-23-5	N.D.		0.0050	0.010	1
12013	PCB-1268	11100-14-4	N.D.		0.0050	0.010	1

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

eurofins
Lancaster Laboratories Environmental
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Analysis Report

Sample Description: DUP-072016-1 Grab Groundwater
Former Union Switch & Signal Facility

LL Sample # WW 8488111
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/20/2016 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSD1 SDG#: USS01-15FD

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
Pesticides/PCBs	**SW-846 8082**		**ug/l**	**ug/l**	**ug/l**	
12013	Total PCBs	1336-36-3	N.D.	0.0050	0.010	1
Volatiles by Extraction	**SW-846 8011**		**ug/l**	**ug/l**	**ug/l**	
10398	Ethylene dibromide	106-93-4	N.D.	0.0094	0.028	1
Metals Dissolved	**SW-846 6010B**		**mg/l**	**mg/l**	**mg/l**	
01743	Aluminum	7429-90-5	0.155 J	0.0868	0.200	1
07046	Barium	7440-39-3	0.324	0.0011	0.0050	1
07049	Cadmium	7440-43-9	0.0016 J	0.00049	0.0050	1
01750	Calcium	7440-70-2	235	0.0382	0.200	1
07051	Chromium	7440-47-3	N.D.	0.0018	0.0150	1
07053	Copper	7440-50-8	0.0048 J	0.0041	0.0100	1
01754	Iron	7439-89-6	N.D.	0.0747	0.200	1
07055	Lead	7439-92-1	N.D.	0.0062	0.0150	1
01757	Magnesium	7439-95-4	75.2	0.0190	0.100	1
07058	Manganese	7439-96-5	10.1	0.0018	0.0050	1
07061	Nickel	7440-02-0	0.0067 J	0.0028	0.0100	1
01762	Potassium	7440-09-7	11.7	0.160	0.500	1
07036	Selenium	7782-49-2	N.D.	0.0097	0.0200	1
07066	Silver	7440-22-4	N.D.	0.0019	0.0050	1
01767	Sodium	7440-23-5	62.7	0.173	1.00	1
07071	Vanadium	7440-62-2	N.D.	0.0016	0.0050	1
07072	Zinc	7440-66-6	0.0106 J	0.0054	0.0200	1
	SW-846 6020		**mg/l**	**mg/l**	**mg/l**	
06024	Antimony	7440-36-0	N.D.	0.00048	0.0010	1
06025	Arsenic	7440-38-2	0.0024	0.00068	0.0020	1
06027	Beryllium	7440-41-7	N.D.	0.00011	0.00050	1
06032	Cobalt	7440-48-4	0.0058	0.00020	0.00050	1
06045	Thallium	7440-28-0	N.D.	0.00016	0.00050	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000050	0.00020	1
Wet Chemistry	**SW-846 9012B**		**mg/l**	**mg/l**	**mg/l**	
08255	Total Cyanide (water)	57-12-5	0.0050 J	0.0050	0.010	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.
This sample was filtered in the lab for dissolved metals.

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

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

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Analysis Report

Sample Description: DUP-072016-1 Grab Groundwater
Former Union Switch & Signal Facility

LL Sample # WW 8488111
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/20/2016 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSD1 SDG#: USS01-15FD

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02898	VOCs- 25ml Water by 8260B	SW-846 8260B 25mL purge	1	C162143AA	08/01/2016 23:19	Kevin A Sposito	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	C162143AA	08/01/2016 23:19	Kevin A Sposito	1
04678	TCL SW846 8270C Water	SW-846 8270C	1	16205WAJ026	07/28/2016 14:51	Edward Monborne	1
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	16205WAI026	07/27/2016 01:19	Catherine E Bachman	1
00813	BNA Water Extraction	SW-846 3510C	1	16205WAJ026	07/26/2016 08:00	Bradley W VanLeuven	1
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	16205WAI026	07/26/2016 08:00	Bradley W VanLeuven	1
12013	PCBs in Water - Low Level	SW-846 8082	1	162050017A	07/26/2016 21:05	Jessica L Miller	1
10398	EDB 8011	SW-846 8011	1	162050001A	07/27/2016 19:06	Heather M Miller	1
12026	PCB Waters Ext. - Low Level	SW-846 3510C	1	162050017A	07/25/2016 17:00	Ryan A Schafran	1
07786	EDB Extraction (8011)	SW-846 8011	1	162050001A	07/24/2016 19:00	Edwin Ortiz	1
01743	Aluminum	SW-846 6010B	1	162091848007	07/28/2016 17:05	Suzanne M Will	1
07046	Barium	SW-846 6010B	1	162091848007	07/28/2016 17:05	Suzanne M Will	1
07049	Cadmium	SW-846 6010B	1	162091848007	07/28/2016 17:05	Suzanne M Will	1
01750	Calcium	SW-846 6010B	1	162091848007	07/28/2016 17:05	Suzanne M Will	1
07051	Chromium	SW-846 6010B	1	162091848007	07/28/2016 17:05	Suzanne M Will	1
07053	Copper	SW-846 6010B	1	162091848007	07/28/2016 17:05	Suzanne M Will	1
01754	Iron	SW-846 6010B	1	162091848007	07/28/2016 17:05	Suzanne M Will	1
07055	Lead	SW-846 6010B	1	162091848007	08/01/2016 12:28	Joanne M Gates	1
01757	Magnesium	SW-846 6010B	1	162091848007	07/28/2016 17:05	Suzanne M Will	1
07058	Manganese	SW-846 6010B	1	162091848007	07/28/2016 17:05	Suzanne M Will	1
07061	Nickel	SW-846 6010B	1	162091848007	07/28/2016 17:05	Suzanne M Will	1
01762	Potassium	SW-846 6010B	1	162091848007	07/28/2016 17:05	Suzanne M Will	1
07036	Selenium	SW-846 6010B	1	162091848007	07/28/2016 17:05	Suzanne M Will	1
07066	Silver	SW-846 6010B	1	162091848007	07/29/2016 18:28	Suzanne M Will	1
01767	Sodium	SW-846 6010B	1	162091848007	07/29/2016 18:28	Suzanne M Will	1
07071	Vanadium	SW-846 6010B	1	162091848007	07/28/2016 17:05	Suzanne M Will	1
07072	Zinc	SW-846 6010B	1	162091848007	07/28/2016 17:05	Suzanne M Will	1
06024	Antimony	SW-846 6020	1	162096050008A	07/28/2016 17:26	Patrick J Engle	1
06025	Arsenic	SW-846 6020	1	162096050008A	07/28/2016 17:26	Patrick J Engle	1
06027	Beryllium	SW-846 6020	1	162096050008A	07/29/2016 19:07	Patrick J Engle	1
06032	Cobalt	SW-846 6020	1	162096050008A	07/29/2016 19:07	Patrick J Engle	1
06045	Thallium	SW-846 6020	1	162096050008A	07/28/2016 17:26	Patrick J Engle	1
00259	Mercury	SW-846 7470A	1	162095713009	07/28/2016 11:57	Damary Valentin	1
01848	ICP-WW, 3005A (tot rec) - U3	SW-846 3005A	1	162091848007	07/28/2016 05:52	James L Mertz	1
06050	ICPMS-Water, 3020A - U3	SW-846 3020A	1	162096050008	07/28/2016 06:21	James L Mertz	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	162095713009	07/28/2016 07:30	James L Mertz	1
08255	Total Cyanide (water)	SW-846 9012B	1	16210117101B	07/29/2016 02:46	Drew M Gerhart	1
08256	Cyanide Water Distillation	SW-846 9012B	1	16210117101B	07/28/2016 17:15	Barbara A Washington	1

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

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Analysis Report

Sample Description: TB-072016-1 Water
Former Union Switch & Signal Facility

LL Sample # WW 8488112
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/20/2016

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USST1 SDG#: USS01-16TB

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B 25mL purge**		ug/l	ug/l	ug/l	
02898	Acetone	67-64-1	N.D.	3.0	5.0	1
02898	Benzene	71-43-2	N.D.	0.1	0.5	1
02898	Bromochloromethane	74-97-5	N.D.	0.1	0.5	1
02898	Bromodichloromethane	75-27-4	N.D.	0.1	0.5	1
02898	Bromoform	75-25-2	N.D.	0.1	0.5	1
02898	Bromomethane	74-83-9	N.D.	0.1	0.5	1
02898	2-Butanone	78-93-3	N.D.	1.0	5.0	1
02898	Carbon Disulfide	75-15-0	N.D.	0.4	1.0	1
02898	Carbon Tetrachloride	56-23-5	N.D.	0.1	0.5	1
02898	Chlorobenzene	108-90-7	N.D.	0.1	0.5	1
02898	Chloroethane	75-00-3	N.D.	0.1	0.5	1
02898	Chloroform	67-66-3	N.D.	0.1	0.5	1
02898	Chloromethane	74-87-3	N.D.	0.2	0.5	1
02898	Cyclohexane	110-82-7	N.D.	0.1	0.5	1
02898	1,2-Dibromo-3-chloropropane	96-12-8	N.D.	0.2	0.5	1
02898	Dibromochloromethane	124-48-1	N.D.	0.1	0.5	1
02898	1,2-Dibromoethane	106-93-4	N.D.	0.1	0.5	1
02898	1,2-Dichlorobenzene	95-50-1	N.D.	0.1	0.5	1
02898	1,3-Dichlorobenzene	541-73-1	N.D.	0.1	0.5	1
02898	1,4-Dichlorobenzene	106-46-7	N.D.	0.1	0.5	1
02898	Dichlorodifluoromethane	75-71-8	N.D.	0.1	0.5	1
02898	1,1-Dichloroethane	75-34-3	N.D.	0.1	0.5	1
02898	1,2-Dichloroethane	107-06-2	N.D.	0.1	0.5	1
02898	1,1-Dichloroethene	75-35-4	N.D.	0.1	0.5	1
02898	cis-1,2-Dichloroethene	156-59-2	N.D.	0.1	0.5	1
02898	trans-1,2-Dichloroethene	156-60-5	N.D.	0.1	0.5	1
02898	1,2-Dichloropropane	78-87-5	N.D.	0.1	0.5	1
02898	cis-1,3-Dichloropropene	10061-01-5	N.D.	0.1	0.5	1
02898	trans-1,3-Dichloropropene	10061-02-6	N.D.	0.1	0.5	1
02898	Ethylbenzene	100-41-4	N.D.	0.1	0.5	1
02898	Freon 113	76-13-1	N.D.	0.2	0.5	1
02898	2-Hexanone	591-78-6	N.D.	1.0	5.0	1
02898	Isopropylbenzene	98-82-8	N.D.	0.1	0.5	1
02898	Methyl Acetate	79-20-9	N.D.	0.3	1.0	1
02898	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.1	0.5	1
02898	4-Methyl-2-pentanone	108-10-1	N.D.	1.0	5.0	1
02898	Methylcyclohexane	108-87-2	N.D.	0.1	0.5	1
02898	Methylene Chloride	75-09-2	N.D.	0.2	0.5	1
02898	Styrene	100-42-5	N.D.	0.1	0.5	1
02898	1,1,2,2-Tetrachloroethane	79-34-5	N.D.	0.1	0.5	1
02898	Tetrachloroethene	127-18-4	N.D.	0.1	0.5	1
02898	Toluene	108-88-3	N.D.	0.1	0.5	1
02898	1,2,3-Trichlorobenzene	87-61-6	N.D.	0.1	0.5	1
02898	1,2,4-Trichlorobenzene	120-82-1	N.D.	0.1	0.5	1
02898	1,1,1-Trichloroethane	71-55-6	N.D.	0.1	0.5	1
02898	1,1,2-Trichloroethane	79-00-5	N.D.	0.1	0.5	1
02898	Trichloroethene	79-01-6	N.D.	0.1	0.5	1
02898	Trichlorofluoromethane	75-69-4	N.D.	0.1	0.5	1
02898	Vinyl Chloride	75-01-4	N.D.	0.1	0.5	1
02898	m+p-Xylene	179601-23-1	N.D.	0.1	0.5	1

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

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Analysis Report

Sample Description: TB-072016-1 Water
Former Union Switch & Signal Facility

LL Sample # WW 8488112
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/20/2016

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

URS Corporation
PO Box 203970
Austin TX 7872019034

USST1 SDG#: USS01-16TB

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B 25mL purge**		**ug/l**	**ug/l**	**ug/l**	
02898	o-Xylene	95-47-6	N.D.	0.1	0.5	1
02898	Xylene (Total)	1330-20-7	N.D.	0.1	0.5	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02898	VOCs- 25ml Water by 8260B	SW-846 8260B 25mL purge	1	I162082AA	07/26/2016 22:42	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	I162082AA	07/26/2016 22:42	Matthew S Krause	1

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

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Analysis Report

Sample Description: TB-072016-2 Water
Former Union Switch & Signal Facility

LL Sample # WW 8488113
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/20/2016

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USST2 SDG#: USS01-17TB

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B 25mL purge**		ug/l	ug/l	ug/l	
02898	Acetone	67-64-1	N.D.	3.0	5.0	1
02898	Benzene	71-43-2	N.D.	0.1	0.5	1
02898	Bromochloromethane	74-97-5	N.D.	0.1	0.5	1
02898	Bromodichloromethane	75-27-4	N.D.	0.1	0.5	1
02898	Bromoform	75-25-2	N.D.	0.1	0.5	1
02898	Bromomethane	74-83-9	N.D.	0.1	0.5	1
02898	2-Butanone	78-93-3	N.D.	1.0	5.0	1
02898	Carbon Disulfide	75-15-0	N.D.	0.4	1.0	1
02898	Carbon Tetrachloride	56-23-5	N.D.	0.1	0.5	1
02898	Chlorobenzene	108-90-7	N.D.	0.1	0.5	1
02898	Chloroethane	75-00-3	N.D.	0.1	0.5	1
02898	Chloroform	67-66-3	N.D.	0.1	0.5	1
02898	Chloromethane	74-87-3	N.D.	0.2	0.5	1
02898	Cyclohexane	110-82-7	N.D.	0.1	0.5	1
02898	1,2-Dibromo-3-chloropropane	96-12-8	N.D.	0.2	0.5	1
02898	Dibromochloromethane	124-48-1	N.D.	0.1	0.5	1
02898	1,2-Dibromoethane	106-93-4	N.D.	0.1	0.5	1
02898	1,2-Dichlorobenzene	95-50-1	N.D.	0.1	0.5	1
02898	1,3-Dichlorobenzene	541-73-1	N.D.	0.1	0.5	1
02898	1,4-Dichlorobenzene	106-46-7	N.D.	0.1	0.5	1
02898	Dichlorodifluoromethane	75-71-8	N.D.	0.1	0.5	1
02898	1,1-Dichloroethane	75-34-3	N.D.	0.1	0.5	1
02898	1,2-Dichloroethane	107-06-2	N.D.	0.1	0.5	1
02898	1,1-Dichloroethene	75-35-4	N.D.	0.1	0.5	1
02898	cis-1,2-Dichloroethene	156-59-2	N.D.	0.1	0.5	1
02898	trans-1,2-Dichloroethene	156-60-5	N.D.	0.1	0.5	1
02898	1,2-Dichloropropane	78-87-5	N.D.	0.1	0.5	1
02898	cis-1,3-Dichloropropene	10061-01-5	N.D.	0.1	0.5	1
02898	trans-1,3-Dichloropropene	10061-02-6	N.D.	0.1	0.5	1
02898	Ethylbenzene	100-41-4	N.D.	0.1	0.5	1
02898	Freon 113	76-13-1	N.D.	0.2	0.5	1
02898	2-Hexanone	591-78-6	N.D.	1.0	5.0	1
02898	Isopropylbenzene	98-82-8	N.D.	0.1	0.5	1
02898	Methyl Acetate	79-20-9	N.D.	0.3	1.0	1
02898	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.1	0.5	1
02898	4-Methyl-2-pentanone	108-10-1	N.D.	1.0	5.0	1
02898	Methylcyclohexane	108-87-2	N.D.	0.1	0.5	1
02898	Methylene Chloride	75-09-2	N.D.	0.2	0.5	1
02898	Styrene	100-42-5	N.D.	0.1	0.5	1
02898	1,1,2,2-Tetrachloroethane	79-34-5	N.D.	0.1	0.5	1
02898	Tetrachloroethene	127-18-4	N.D.	0.1	0.5	1
02898	Toluene	108-88-3	N.D.	0.1	0.5	1
02898	1,2,3-Trichlorobenzene	87-61-6	N.D.	0.1	0.5	1
02898	1,2,4-Trichlorobenzene	120-82-1	N.D.	0.1	0.5	1
02898	1,1,1-Trichloroethane	71-55-6	N.D.	0.1	0.5	1
02898	1,1,2-Trichloroethane	79-00-5	N.D.	0.1	0.5	1
02898	Trichloroethene	79-01-6	N.D.	0.1	0.5	1
02898	Trichlorofluoromethane	75-69-4	N.D.	0.1	0.5	1
02898	Vinyl Chloride	75-01-4	N.D.	0.1	0.5	1
02898	m+p-Xylene	179601-23-1	N.D.	0.1	0.5	1

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

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Analysis Report

Sample Description: TB-072016-2 Water
Former Union Switch & Signal Facility

LL Sample # WW 8488113
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/20/2016

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

URS Corporation
PO Box 203970
Austin TX 7872019034

USST2 SDG#: USS01-17TB

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B 25mL purge**		**ug/l**	**ug/l**	**ug/l**	
02898	o-Xylene	95-47-6	N.D.	0.1	0.5	1
02898	Xylene (Total)	1330-20-7	N.D.	0.1	0.5	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02898	VOCs- 25ml Water by 8260B	SW-846 8260B 25mL purge	1	I162082AA	07/26/2016 23:03	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	I162082AA	07/26/2016 23:03	Matthew S Krause	1

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

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Analysis Report

Sample Description: EB-072016 Grab Water
Former Union Switch & Signal Facility

LL Sample # WW 8488114
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/20/2016 17:00 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSE1 SDG#: USS01-18EB

CAT No.	Analysis Name	CAS Number	Result		Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B 25mL purge**		ug/l		ug/l	ug/l	
02898	Acetone	67-64-1	N.D.		3.0	5.0	1
02898	Benzene	71-43-2	N.D.		0.1	0.5	1
02898	Bromochloromethane	74-97-5	N.D.		0.1	0.5	1
02898	Bromodichloromethane	75-27-4	N.D.		0.1	0.5	1
02898	Bromoform	75-25-2	N.D.		0.1	0.5	1
02898	Bromomethane	74-83-9	N.D.		0.1	0.5	1
02898	2-Butanone	78-93-3	N.D.		1.0	5.0	1
02898	Carbon Disulfide	75-15-0	N.D.		0.4	1.0	1
02898	Carbon Tetrachloride	56-23-5	N.D.		0.1	0.5	1
02898	Chlorobenzene	108-90-7	N.D.		0.1	0.5	1
02898	Chloroethane	75-00-3	N.D.		0.1	0.5	1
02898	Chloroform	67-66-3	N.D.		0.1	0.5	1
02898	Chloromethane	74-87-3	N.D.		0.2	0.5	1
02898	Cyclohexane	110-82-7	N.D.		0.1	0.5	1
02898	1,2-Dibromo-3-chloropropane	96-12-8	N.D.		0.2	0.5	1
02898	Dibromochloromethane	124-48-1	N.D.		0.1	0.5	1
02898	1,2-Dibromoethane	106-93-4	N.D.		0.1	0.5	1
02898	1,2-Dichlorobenzene	95-50-1	N.D.		0.1	0.5	1
02898	1,3-Dichlorobenzene	541-73-1	N.D.		0.1	0.5	1
02898	1,4-Dichlorobenzene	106-46-7	N.D.		0.1	0.5	1
02898	Dichlorodifluoromethane	75-71-8	N.D.		0.1	0.5	1
02898	1,1-Dichloroethane	75-34-3	N.D.		0.1	0.5	1
02898	1,2-Dichloroethane	107-06-2	N.D.		0.1	0.5	1
02898	1,1-Dichloroethene	75-35-4	N.D.		0.1	0.5	1
02898	cis-1,2-Dichloroethene	156-59-2	N.D.		0.1	0.5	1
02898	trans-1,2-Dichloroethene	156-60-5	N.D.		0.1	0.5	1
02898	1,2-Dichloropropane	78-87-5	N.D.		0.1	0.5	1
02898	cis-1,3-Dichloropropene	10061-01-5	N.D.		0.1	0.5	1
02898	trans-1,3-Dichloropropene	10061-02-6	N.D.		0.1	0.5	1
02898	Ethylbenzene	100-41-4	N.D.		0.1	0.5	1
02898	Freon 113	76-13-1	N.D.		0.2	0.5	1
02898	2-Hexanone	591-78-6	N.D.		1.0	5.0	1
02898	Isopropylbenzene	98-82-8	N.D.		0.1	0.5	1
02898	Methyl Acetate	79-20-9	N.D.		0.3	1.0	1
02898	Methyl Tertiary Butyl Ether	1634-04-4	N.D.		0.1	0.5	1
02898	4-Methyl-2-pentanone	108-10-1	N.D.		1.0	5.0	1
02898	Methylcyclohexane	108-87-2	N.D.		0.1	0.5	1
02898	Methylene Chloride	75-09-2	0.3	J	0.2	0.5	1
02898	Styrene	100-42-5	N.D.		0.1	0.5	1
02898	1,1,2,2-Tetrachloroethane	79-34-5	N.D.		0.1	0.5	1
02898	Tetrachloroethene	127-18-4	N.D.		0.1	0.5	1
02898	Toluene	108-88-3	N.D.		0.1	0.5	1
02898	1,2,3-Trichlorobenzene	87-61-6	N.D.		0.1	0.5	1
02898	1,2,4-Trichlorobenzene	120-82-1	N.D.		0.1	0.5	1
02898	1,1,1-Trichloroethane	71-55-6	N.D.		0.1	0.5	1
02898	1,1,2-Trichloroethane	79-00-5	N.D.		0.1	0.5	1
02898	Trichloroethene	79-01-6	N.D.		0.1	0.5	1
02898	Trichlorofluoromethane	75-69-4	N.D.		0.1	0.5	1
02898	Vinyl Chloride	75-01-4	N.D.		0.1	0.5	1
02898	m+p-Xylene	179601-23-1	N.D.		0.1	0.5	1

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

Sample Description: EB-072016 Grab Water
Former Union Switch & Signal Facility

LL Sample # WW 8488114
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/20/2016 17:00 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSE1 SDG#: USS01-18EB

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B 25mL purge**		**ug/l**	**ug/l**	**ug/l**	
02898	o-Xylene	95-47-6	N.D.	0.1	0.5	1
02898	Xylene (Total)	1330-20-7	N.D.	0.1	0.5	1
GC/MS Semivolatiles	**SW-846 8270C**		**ug/l**	**ug/l**	**ug/l**	
04678	Acenaphthene	83-32-9	N.D.	0.1	0.5	1
04678	Acenaphthylene	208-96-8	N.D.	0.1	0.5	1
04678	Acetophenone	98-86-2	N.D.	0.5	1	1
04678	Anthracene	120-12-7	N.D.	0.1	0.5	1
04678	Atrazine	1912-24-9	N.D.	2	5	1
04678	Benzaldehyde	100-52-7	N.D.	1	5	1
04678	Benzo(a)anthracene	56-55-3	N.D.	0.1	0.5	1
04678	Benzo(a)pyrene	50-32-8	N.D.	0.1	0.5	1
04678	Benzo(b)fluoranthene	205-99-2	N.D.	0.1	0.5	1
04678	Benzo(g,h,i)perylene	191-24-2	N.D.	0.1	0.5	1
04678	Benzo(k)fluoranthene	207-08-9	N.D.	0.1	0.5	1
04678	1,1'-Biphenyl	92-52-4	N.D.	0.5	1	1
04678	4-Bromophenyl-phenylether	101-55-3	N.D.	0.5	1	1
04678	Butylbenzylphthalate	85-68-7	N.D.	2	5	1
04678	Di-n-butylphthalate	84-74-2	N.D.	2	5	1
04678	Caprolactam	105-60-2	N.D.	5	15	1
04678	Carbazole	86-74-8	N.D.	0.5	1	1
04678	4-Chloro-3-methylphenol	59-50-7	N.D.	0.5	1	1
04678	4-Chloroaniline	106-47-8	N.D.	2	4	1
04678	bis(2-Chloroethoxy)methane	111-91-1	N.D.	0.5	1	1
04678	bis(2-Chloroethyl)ether	111-44-4	N.D.	0.5	1	1
04678	2-Chloronaphthalene	91-58-7	N.D.	0.4	1	1
04678	2-Chlorophenol	95-57-8	N.D.	0.5	1	1
04678	4-Chlorophenyl-phenylether	7005-72-3	N.D.	0.5	1	1
04678	2,2'-oxybis(1-Chloropropane)	108-60-1	N.D.	0.5	1	1
	Bis(2-chloroisopropyl) ether CAS #39638-32-9 and 2,2'-Oxybis(1-chloropropane) CAS #108-60-1 cannot be separated chromatographically. The reported result represents the combined total of both compounds.					
04678	Chrysene	218-01-9	N.D.	0.1	0.5	1
04678	Dibenz(a,h)anthracene	53-70-3	N.D.	0.1	0.5	1
04678	Dibenzofuran	132-64-9	N.D.	0.5	1	1
04678	3,3'-Dichlorobenzidine	91-94-1	N.D.	2	5	1
04678	2,4-Dichlorophenol	120-83-2	N.D.	0.5	1	1
04678	Diethylphthalate	84-66-2	N.D.	2	5	1
04678	2,4-Dimethylphenol	105-67-9	N.D.	0.5	1	1
04678	Dimethylphthalate	131-11-3	N.D.	2	5	1
04678	4,6-Dinitro-2-methylphenol	534-52-1	N.D.	5	15	1
04678	2,4-Dinitrophenol	51-28-5	N.D.	10	31	1
04678	2,4-Dinitrotoluene	121-14-2	N.D.	1	5	1
04678	2,6-Dinitrotoluene	606-20-2	N.D.	0.5	1	1
04678	1,4-Dioxane	123-91-1	N.D.	1	5	1
04678	bis(2-Ethylhexyl)phthalate	117-81-7	N.D.	2	5	1
04678	Fluoranthene	206-44-0	N.D.	0.1	0.5	1
04678	Fluorene	86-73-7	N.D.	0.1	0.5	1

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

Sample Description: EB-072016 Grab Water
Former Union Switch & Signal Facility

LL Sample # WW 8488114
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/20/2016 17:00 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSE1 SDG#: USS01-18EB

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C**		**ug/l**	**ug/l**	**ug/l**	
04678	Hexachlorobenzene	118-74-1	N.D.	0.1	0.5	1
04678	Hexachlorobutadiene	87-68-3	N.D.	0.5	1	1
04678	Hexachlorocyclopentadiene	77-47-4	N.D.	5	15	1
04678	Hexachloroethane	67-72-1	N.D.	1	5	1
04678	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.1	0.5	1
04678	Isophorone	78-59-1	N.D.	0.5	1	1
04678	2-Methylnaphthalene	91-57-6	N.D.	0.1	0.5	1
04678	2-Methylphenol	95-48-7	N.D.	0.5	1	1
04678	4-Methylphenol	106-44-5	N.D.	0.5	1	1
	3-Methylphenol and 4-methylphenol cannot be resolved under the chromatographic conditions used for sample analysis. The result reported for 4-methylphenol represents the combined total of both compounds.					
04678	Naphthalene	91-20-3	N.D.	0.1	0.5	1
04678	2-Nitroaniline	88-74-4	N.D.	0.5	1	1
04678	3-Nitroaniline	99-09-2	N.D.	0.5	1	1
04678	4-Nitroaniline	100-01-6	N.D.	0.5	1	1
04678	Nitrobenzene	98-95-3	N.D.	0.5	1	1
04678	2-Nitrophenol	88-75-5	N.D.	0.5	1	1
04678	4-Nitrophenol	100-02-7	N.D.	10	31	1
04678	N-Nitroso-di-n-propylamine	621-64-7	N.D.	0.5	1	1
04678	N-Nitrosodiphenylamine	86-30-6	N.D.	0.5	1	1
	N-nitrosodiphenylamine decomposes in the GC inlet forming diphenylamine. The result reported for N-nitrosodiphenylamine represents the combined total of both compounds.					
04678	Di-n-octylphthalate	117-84-0	N.D.	2	5	1
04678	Pentachlorophenol	87-86-5	N.D.	1	5	1
04678	Phenanthrene	85-01-8	N.D.	0.1	0.5	1
04678	Phenol	108-95-2	N.D.	0.5	1	1
04678	Pyrene	129-00-0	N.D.	0.1	0.5	1
04678	1,2,4,5-Tetrachlorobenzene	95-94-3	N.D.	0.5	1	1
04678	2,3,4,6-Tetrachlorophenol	58-90-2	N.D.	0.5	1	1
04678	2,4,5-Trichlorophenol	95-95-4	N.D.	0.5	1	1
04678	2,4,6-Trichlorophenol	88-06-2	N.D.	0.5	1	1
GC/MS Semivolatiles	**SW-846 8270C SIM**		**ug/l**	**ug/l**	**ug/l**	
08357	Benzo(a)anthracene	56-55-3	N.D.	0.010	0.051	1
08357	Benzo(b)fluoranthene	205-99-2	N.D.	0.010	0.051	1
08357	Dibenz(a,h)anthracene	53-70-3	N.D.	0.010	0.051	1
08357	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.010	0.051	1
Pesticides/PCBs	**SW-846 8082**		**ug/l**	**ug/l**	**ug/l**	
12013	PCB-1016	12674-11-2	N.D.	0.0060	0.0099	1
12013	PCB-1221	11104-28-2	N.D.	0.0060	0.0099	1
12013	PCB-1232	11141-16-5	N.D.	0.0070	0.0099	1
12013	PCB-1242	53469-21-9	N.D.	0.0060	0.0099	1
12013	PCB-1248	12672-29-6	N.D.	0.0050	0.0099	1
12013	PCB-1254	11097-69-1	N.D.	0.0050	0.0099	1
12013	PCB-1260	11096-82-5	N.D.	0.0050	0.0099	1
12013	PCB-1262	37324-23-5	N.D.	0.0050	0.0099	1
12013	PCB-1268	11100-14-4	N.D.	0.0050	0.0099	1

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

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Analysis Report

Sample Description: EB-072016 Grab Water
Former Union Switch & Signal Facility

LL Sample # WW 8488114
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/20/2016 17:00 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSE1 SDG#: USS01-18EB

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
Pesticides/PCBs	**SW-846 8082**		**ug/l**	**ug/l**	**ug/l**	
12013	Total PCBs	1336-36-3	N.D.	0.0050	0.0099	1
Volatiles by Extraction	**SW-846 8011**		**ug/l**	**ug/l**	**ug/l**	
10398	Ethylene dibromide	106-93-4	N.D.	0.0095	0.028	1
Metals Dissolved	**SW-846 6010B**		**mg/l**	**mg/l**	**mg/l**	
01743	Aluminum	7429-90-5	0.0925 J	0.0868	0.200	1
07046	Barium	7440-39-3	N.D.	0.0011	0.0050	1
07049	Cadmium	7440-43-9	N.D.	0.00049	0.0050	1
01750	Calcium	7440-70-2	0.274	0.0382	0.200	1
07051	Chromium	7440-47-3	N.D.	0.0018	0.0150	1
07053	Copper	7440-50-8	N.D.	0.0041	0.0100	1
01754	Iron	7439-89-6	N.D.	0.0747	0.200	1
07055	Lead	7439-92-1	N.D.	0.0062	0.0150	1
01757	Magnesium	7439-95-4	0.0236 J	0.0190	0.100	1
07058	Manganese	7439-96-5	0.0020 J	0.0018	0.0050	1
07061	Nickel	7440-02-0	N.D.	0.0028	0.0100	1
01762	Potassium	7440-09-7	N.D.	0.160	0.500	1
07036	Selenium	7782-49-2	N.D.	0.0097	0.0200	1
07066	Silver	7440-22-4	N.D.	0.0019	0.0050	1
01767	Sodium	7440-23-5	N.D.	0.173	1.00	1
07071	Vanadium	7440-62-2	N.D.	0.0016	0.0050	1
07072	Zinc	7440-66-6	N.D.	0.0054	0.0200	1
	SW-846 6020		**mg/l**	**mg/l**	**mg/l**	
06024	Antimony	7440-36-0	N.D.	0.00048	0.0010	1
06025	Arsenic	7440-38-2	N.D.	0.00068	0.0020	1
06027	Beryllium	7440-41-7	N.D.	0.00011	0.00050	1
06032	Cobalt	7440-48-4	N.D.	0.00020	0.00050	1
06045	Thallium	7440-28-0	N.D.	0.00016	0.00050	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000050	0.00020	1
Wet Chemistry	**SW-846 9012B**		**mg/l**	**mg/l**	**mg/l**	
08255	Total Cyanide (water)	57-12-5	N.D.	0.0050	0.010	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.
This sample was filtered in the lab for dissolved metals.

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

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

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2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Analysis Report

Sample Description: EB-072016 Grab Water
Former Union Switch & Signal Facility

LL Sample # WW 8488114
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/20/2016 17:00 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSE1 SDG#: USS01-18EB

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time		Analyst	Dilution Factor
02898	VOCs- 25ml Water by 8260B	SW-846 8260B 25mL purge	1	I162082AA	07/26/2016	23:25	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	I162082AA	07/26/2016	23:25	Matthew S Krause	1
04678	TCL SW846 8270C Water	SW-846 8270C	1	16205WAJ026	07/28/2016	15:19	Edward Monborne	1
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	16205WAI026	07/27/2016	01:50	Catherine E Bachman	1
00813	BNA Water Extraction	SW-846 3510C	1	16205WAJ026	07/26/2016	08:00	Bradley W VanLeuven	1
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	16205WAI026	07/26/2016	08:00	Bradley W VanLeuven	1
12013	PCBs in Water - Low Level	SW-846 8082	1	162050017A	07/26/2016	21:17	Jessica L Miller	1
10398	EDB 8011	SW-846 8011	1	162050001A	07/27/2016	19:21	Heather M Miller	1
12026	PCB Waters Ext. - Low Level	SW-846 3510C	1	162050017A	07/25/2016	17:00	Ryan A Schafran	1
07786	EDB Extraction (8011)	SW-846 8011	1	162050001A	07/24/2016	19:00	Edwin Ortiz	1
01743	Aluminum	SW-846 6010B	1	162091848007	07/28/2016	17:09	Suzanne M Will	1
07046	Barium	SW-846 6010B	1	162091848007	07/28/2016	17:09	Suzanne M Will	1
07049	Cadmium	SW-846 6010B	1	162091848007	07/28/2016	17:09	Suzanne M Will	1
01750	Calcium	SW-846 6010B	1	162091848007	07/28/2016	17:09	Suzanne M Will	1
07051	Chromium	SW-846 6010B	1	162091848007	07/28/2016	17:09	Suzanne M Will	1
07053	Copper	SW-846 6010B	1	162091848007	07/28/2016	17:09	Suzanne M Will	1
01754	Iron	SW-846 6010B	1	162091848007	07/28/2016	17:09	Suzanne M Will	1
07055	Lead	SW-846 6010B	1	162091848007	08/01/2016	12:32	Joanne M Gates	1
01757	Magnesium	SW-846 6010B	1	162091848007	07/28/2016	17:09	Suzanne M Will	1
07058	Manganese	SW-846 6010B	1	162091848007	07/29/2016	18:32	Suzanne M Will	1
07061	Nickel	SW-846 6010B	1	162091848007	07/28/2016	17:09	Suzanne M Will	1
01762	Potassium	SW-846 6010B	1	162091848007	07/28/2016	17:09	Suzanne M Will	1
07036	Selenium	SW-846 6010B	1	162091848007	07/28/2016	17:09	Suzanne M Will	1
07066	Silver	SW-846 6010B	1	162091848007	07/29/2016	18:32	Suzanne M Will	1
01767	Sodium	SW-846 6010B	1	162091848007	07/29/2016	18:32	Suzanne M Will	1
07071	Vanadium	SW-846 6010B	1	162091848007	07/28/2016	17:09	Suzanne M Will	1
07072	Zinc	SW-846 6010B	1	162091848007	07/28/2016	17:09	Suzanne M Will	1
06024	Antimony	SW-846 6020	1	162096050008A	07/28/2016	17:29	Patrick J Engle	1
06025	Arsenic	SW-846 6020	1	162096050008A	07/28/2016	17:29	Patrick J Engle	1
06027	Beryllium	SW-846 6020	1	162096050008A	07/29/2016	19:10	Patrick J Engle	1
06032	Cobalt	SW-846 6020	1	162096050008A	07/28/2016	17:29	Patrick J Engle	1
06045	Thallium	SW-846 6020	1	162096050008A	07/28/2016	17:29	Patrick J Engle	1
00259	Mercury	SW-846 7470A	1	162095713009	07/28/2016	12:03	Damary Valentin	1
01848	ICP-WW, 3005A (tot rec) - U3	SW-846 3005A	1	162091848007	07/28/2016	05:52	James L Mertz	1
06050	ICPMS-Water, 3020A - U3	SW-846 3020A	1	162096050008	07/28/2016	06:21	James L Mertz	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	162095713009	07/28/2016	07:30	James L Mertz	1
08255	Total Cyanide (water)	SW-846 9012B	1	16215117101A	08/03/2016	12:46	David A Seavey	1
08256	Cyanide Water Distillation	SW-846 9012B	1	16215117101A	08/02/2016	07:45	Nancy J Shoop	1

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

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Analysis Report

Sample Description: EB-071916 Grab Water
Former Union Switch & Signal Facility

LL Sample # WW 8488115
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/19/2016 16:00 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSE2 SDG#: USS01-19EB

CAT No.	Analysis Name	CAS Number	Result		Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B 25mL purge**		ug/l		ug/l	ug/l	
02898	Acetone	67-64-1	N.D.		3.0	5.0	1
02898	Benzene	71-43-2	N.D.		0.1	0.5	1
02898	Bromochloromethane	74-97-5	N.D.		0.1	0.5	1
02898	Bromodichloromethane	75-27-4	N.D.		0.1	0.5	1
02898	Bromoform	75-25-2	N.D.		0.1	0.5	1
02898	Bromomethane	74-83-9	N.D.		0.1	0.5	1
02898	2-Butanone	78-93-3	N.D.		1.0	5.0	1
02898	Carbon Disulfide	75-15-0	N.D.		0.4	1.0	1
02898	Carbon Tetrachloride	56-23-5	N.D.		0.1	0.5	1
02898	Chlorobenzene	108-90-7	N.D.		0.1	0.5	1
02898	Chloroethane	75-00-3	N.D.		0.1	0.5	1
02898	Chloroform	67-66-3	N.D.		0.1	0.5	1
02898	Chloromethane	74-87-3	N.D.		0.2	0.5	1
02898	Cyclohexane	110-82-7	2.8		0.1	0.5	1
02898	1,2-Dibromo-3-chloropropane	96-12-8	N.D.		0.2	0.5	1
02898	Dibromochloromethane	124-48-1	N.D.		0.1	0.5	1
02898	1,2-Dibromoethane	106-93-4	N.D.		0.1	0.5	1
02898	1,2-Dichlorobenzene	95-50-1	N.D.		0.1	0.5	1
02898	1,3-Dichlorobenzene	541-73-1	N.D.		0.1	0.5	1
02898	1,4-Dichlorobenzene	106-46-7	N.D.		0.1	0.5	1
02898	Dichlorodifluoromethane	75-71-8	N.D.		0.1	0.5	1
02898	1,1-Dichloroethane	75-34-3	N.D.		0.1	0.5	1
02898	1,2-Dichloroethane	107-06-2	N.D.		0.1	0.5	1
02898	1,1-Dichloroethene	75-35-4	N.D.		0.1	0.5	1
02898	cis-1,2-Dichloroethene	156-59-2	N.D.		0.1	0.5	1
02898	trans-1,2-Dichloroethene	156-60-5	N.D.		0.1	0.5	1
02898	1,2-Dichloropropane	78-87-5	N.D.		0.1	0.5	1
02898	cis-1,3-Dichloropropene	10061-01-5	N.D.		0.1	0.5	1
02898	trans-1,3-Dichloropropene	10061-02-6	N.D.		0.1	0.5	1
02898	Ethylbenzene	100-41-4	N.D.		0.1	0.5	1
02898	Freon 113	76-13-1	N.D.		0.2	0.5	1
02898	2-Hexanone	591-78-6	N.D.		1.0	5.0	1
02898	Isopropylbenzene	98-82-8	N.D.		0.1	0.5	1
02898	Methyl Acetate	79-20-9	N.D.		0.3	1.0	1
02898	Methyl Tertiary Butyl Ether	1634-04-4	N.D.		0.1	0.5	1
02898	4-Methyl-2-pentanone	108-10-1	N.D.		1.0	5.0	1
02898	Methylcyclohexane	108-87-2	N.D.		0.1	0.5	1
02898	Methylene Chloride	75-09-2	0.3	J	0.2	0.5	1
02898	Styrene	100-42-5	N.D.		0.1	0.5	1
02898	1,1,2,2-Tetrachloroethane	79-34-5	N.D.		0.1	0.5	1
02898	Tetrachloroethene	127-18-4	N.D.		0.1	0.5	1
02898	Toluene	108-88-3	N.D.		0.1	0.5	1
02898	1,2,3-Trichlorobenzene	87-61-6	N.D.		0.1	0.5	1
02898	1,2,4-Trichlorobenzene	120-82-1	N.D.		0.1	0.5	1
02898	1,1,1-Trichloroethane	71-55-6	N.D.		0.1	0.5	1
02898	1,1,2-Trichloroethane	79-00-5	N.D.		0.1	0.5	1
02898	Trichloroethene	79-01-6	N.D.		0.1	0.5	1
02898	Trichlorofluoromethane	75-69-4	N.D.		0.1	0.5	1
02898	Vinyl Chloride	75-01-4	N.D.		0.1	0.5	1
02898	m+p-Xylene	179601-23-1	N.D.		0.1	0.5	1

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

Sample Description: EB-071916 Grab Water
Former Union Switch & Signal Facility

LL Sample # WW 8488115
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/19/2016 16:00 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSE2 SDG#: USS01-19EB

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B 25mL purge**		**ug/l**	**ug/l**	**ug/l**	
02898	o-Xylene	95-47-6	N.D.	0.1	0.5	1
02898	Xylene (Total)	1330-20-7	N.D.	0.1	0.5	1
GC/MS Semivolatiles	**SW-846 8270C**		**ug/l**	**ug/l**	**ug/l**	
04678	Acenaphthene	83-32-9	N.D.	0.1	0.5	1
04678	Acenaphthylene	208-96-8	N.D.	0.1	0.5	1
04678	Acetophenone	98-86-2	N.D.	0.5	1	1
04678	Anthracene	120-12-7	N.D.	0.1	0.5	1
04678	Atrazine	1912-24-9	N.D.	2	5	1
04678	Benzaldehyde	100-52-7	N.D.	1	5	1
04678	Benzo(a)anthracene	56-55-3	N.D.	0.1	0.5	1
04678	Benzo(a)pyrene	50-32-8	N.D.	0.1	0.5	1
04678	Benzo(b)fluoranthene	205-99-2	N.D.	0.1	0.5	1
04678	Benzo(g,h,i)perylene	191-24-2	N.D.	0.1	0.5	1
04678	Benzo(k)fluoranthene	207-08-9	N.D.	0.1	0.5	1
04678	1,1'-Biphenyl	92-52-4	N.D.	0.5	1	1
04678	4-Bromophenyl-phenylether	101-55-3	N.D.	0.5	1	1
04678	Butylbenzylphthalate	85-68-7	N.D.	2	5	1
04678	Di-n-butylphthalate	84-74-2	N.D.	2	5	1
04678	Caprolactam	105-60-2	N.D.	5	15	1
04678	Carbazole	86-74-8	N.D.	0.5	1	1
04678	4-Chloro-3-methylphenol	59-50-7	N.D.	0.5	1	1
04678	4-Chloroaniline	106-47-8	N.D.	2	4	1
04678	bis(2-Chloroethoxy)methane	111-91-1	N.D.	0.5	1	1
04678	bis(2-Chloroethyl)ether	111-44-4	N.D.	0.5	1	1
04678	2-Chloronaphthalene	91-58-7	N.D.	0.4	1	1
04678	2-Chlorophenol	95-57-8	N.D.	0.5	1	1
04678	4-Chlorophenyl-phenylether	7005-72-3	N.D.	0.5	1	1
04678	2,2'-oxybis(1-Chloropropane)	108-60-1	N.D.	0.5	1	1
	Bis(2-chloroisopropyl) ether CAS #39638-32-9 and 2,2'-Oxybis(1-chloropropane) CAS #108-60-1 cannot be separated chromatographically. The reported result represents the combined total of both compounds.					
04678	Chrysene	218-01-9	N.D.	0.1	0.5	1
04678	Dibenz(a,h)anthracene	53-70-3	N.D.	0.1	0.5	1
04678	Dibenzofuran	132-64-9	N.D.	0.5	1	1
04678	3,3'-Dichlorobenzidine	91-94-1	N.D.	2	5	1
04678	2,4-Dichlorophenol	120-83-2	N.D.	0.5	1	1
04678	Diethylphthalate	84-66-2	N.D.	2	5	1
04678	2,4-Dimethylphenol	105-67-9	N.D.	0.5	1	1
04678	Dimethylphthalate	131-11-3	N.D.	2	5	1
04678	4,6-Dinitro-2-methylphenol	534-52-1	N.D.	5	15	1
04678	2,4-Dinitrophenol	51-28-5	N.D.	10	31	1
04678	2,4-Dinitrotoluene	121-14-2	N.D.	1	5	1
04678	2,6-Dinitrotoluene	606-20-2	N.D.	0.5	1	1
04678	1,4-Dioxane	123-91-1	N.D.	1	5	1
04678	bis(2-Ethylhexyl)phthalate	117-81-7	N.D.	2	5	1
04678	Fluoranthene	206-44-0	N.D.	0.1	0.5	1
04678	Fluorene	86-73-7	N.D.	0.1	0.5	1

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

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Analysis Report

Sample Description: EB-071916 Grab Water
Former Union Switch & Signal Facility

LL Sample # WW 8488115
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/19/2016 16:00 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSE2 SDG#: USS01-19EB

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C**		**ug/l**	**ug/l**	**ug/l**	
04678	Hexachlorobenzene	118-74-1	N.D.	0.1	0.5	1
04678	Hexachlorobutadiene	87-68-3	N.D.	0.5	1	1
04678	Hexachlorocyclopentadiene	77-47-4	N.D.	5	15	1
04678	Hexachloroethane	67-72-1	N.D.	1	5	1
04678	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.1	0.5	1
04678	Isophorone	78-59-1	N.D.	0.5	1	1
04678	2-Methylnaphthalene	91-57-6	N.D.	0.1	0.5	1
04678	2-Methylphenol	95-48-7	N.D.	0.5	1	1
04678	4-Methylphenol	106-44-5	N.D.	0.5	1	1
	3-Methylphenol and 4-methylphenol cannot be resolved under the chromatographic conditions used for sample analysis. The result reported for 4-methylphenol represents the combined total of both compounds.					
04678	Naphthalene	91-20-3	N.D.	0.1	0.5	1
04678	2-Nitroaniline	88-74-4	N.D.	0.5	1	1
04678	3-Nitroaniline	99-09-2	N.D.	0.5	1	1
04678	4-Nitroaniline	100-01-6	N.D.	0.5	1	1
04678	Nitrobenzene	98-95-3	N.D.	0.5	1	1
04678	2-Nitrophenol	88-75-5	N.D.	0.5	1	1
04678	4-Nitrophenol	100-02-7	N.D.	10	31	1
04678	N-Nitroso-di-n-propylamine	621-64-7	N.D.	0.5	1	1
04678	N-Nitrosodiphenylamine	86-30-6	N.D.	0.5	1	1
	N-nitrosodiphenylamine decomposes in the GC inlet forming diphenylamine. The result reported for N-nitrosodiphenylamine represents the combined total of both compounds.					
04678	Di-n-octylphthalate	117-84-0	N.D.	2	5	1
04678	Pentachlorophenol	87-86-5	N.D.	1	5	1
04678	Phenanthrene	85-01-8	N.D.	0.1	0.5	1
04678	Phenol	108-95-2	N.D.	0.5	1	1
04678	Pyrene	129-00-0	N.D.	0.1	0.5	1
04678	1,2,4,5-Tetrachlorobenzene	95-94-3	N.D.	0.5	1	1
04678	2,3,4,6-Tetrachlorophenol	58-90-2	N.D.	0.5	1	1
04678	2,4,5-Trichlorophenol	95-95-4	N.D.	0.5	1	1
04678	2,4,6-Trichlorophenol	88-06-2	N.D.	0.5	1	1
GC/MS Semivolatiles	**SW-846 8270C SIM**		**ug/l**	**ug/l**	**ug/l**	
08357	Benzo(a)anthracene	56-55-3	N.D.	0.010	0.051	1
08357	Benzo(b)fluoranthene	205-99-2	N.D.	0.010	0.051	1
08357	Dibenz(a,h)anthracene	53-70-3	N.D.	0.010	0.051	1
08357	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.010	0.051	1
Pesticides/PCBs	**SW-846 8082**		**ug/l**	**ug/l**	**ug/l**	
12013	PCB-1016	12674-11-2	N.D.	0.0059	0.0098	1
12013	PCB-1221	11104-28-2	N.D.	0.0059	0.0098	1
12013	PCB-1232	11141-16-5	N.D.	0.0069	0.0098	1
12013	PCB-1242	53469-21-9	N.D.	0.0059	0.0098	1
12013	PCB-1248	12672-29-6	N.D.	0.0049	0.0098	1
12013	PCB-1254	11097-69-1	N.D.	0.0049	0.0098	1
12013	PCB-1260	11096-82-5	N.D.	0.0049	0.0098	1
12013	PCB-1262	37324-23-5	N.D.	0.0049	0.0098	1
12013	PCB-1268	11100-14-4	N.D.	0.0049	0.0098	1

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

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Analysis Report

Sample Description: EB-071916 Grab Water
Former Union Switch & Signal Facility

LL Sample # WW 8488115
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/19/2016 16:00 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSE2 SDG#: USS01-19EB

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
Pesticides/PCBs	**SW-846 8082**		**ug/l**	**ug/l**	**ug/l**	
12013	Total PCBs	1336-36-3	N.D.	0.0049	0.0098	1
Volatiles by Extraction	**SW-846 8011**		**ug/l**	**ug/l**	**ug/l**	
10398	Ethylene dibromide	106-93-4	N.D.	0.0095	0.028	1
Metals Dissolved	**SW-846 6010B**		**mg/l**	**mg/l**	**mg/l**	
01743	Aluminum	7429-90-5	0.0957 J	0.0868	0.200	1
07046	Barium	7440-39-3	N.D.	0.0011	0.0050	1
07049	Cadmium	7440-43-9	N.D.	0.00049	0.0050	1
01750	Calcium	7440-70-2	0.266	0.0382	0.200	1
07051	Chromium	7440-47-3	N.D.	0.0018	0.0150	1
07053	Copper	7440-50-8	N.D.	0.0041	0.0100	1
01754	Iron	7439-89-6	N.D.	0.0747	0.200	1
07055	Lead	7439-92-1	N.D.	0.0062	0.0150	1
01757	Magnesium	7439-95-4	N.D.	0.0190	0.100	1
07058	Manganese	7439-96-5	N.D.	0.0018	0.0050	1
07061	Nickel	7440-02-0	N.D.	0.0028	0.0100	1
01762	Potassium	7440-09-7	N.D.	0.160	0.500	1
07036	Selenium	7782-49-2	N.D.	0.0097	0.0200	1
07066	Silver	7440-22-4	N.D.	0.0019	0.0050	1
01767	Sodium	7440-23-5	N.D.	0.173	1.00	1
07071	Vanadium	7440-62-2	N.D.	0.0016	0.0050	1
07072	Zinc	7440-66-6	N.D.	0.0054	0.0200	1
	SW-846 6020		**mg/l**	**mg/l**	**mg/l**	
06024	Antimony	7440-36-0	N.D.	0.00048	0.0010	1
06025	Arsenic	7440-38-2	N.D.	0.00068	0.0020	1
06027	Beryllium	7440-41-7	N.D.	0.00011	0.00050	1
06032	Cobalt	7440-48-4	N.D.	0.00020	0.00050	1
06045	Thallium	7440-28-0	N.D.	0.00016	0.00050	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000050	0.00020	1
Wet Chemistry	**SW-846 9012B**		**mg/l**	**mg/l**	**mg/l**	
08255	Total Cyanide (water)	57-12-5	N.D.	0.0050	0.010	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.
This sample was filtered in the lab for dissolved metals.

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

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

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Analysis Report

Sample Description: EB-071916 Grab Water
Former Union Switch & Signal Facility

LL Sample # WW 8488115
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/19/2016 16:00 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSE2 SDG#: USS01-19EB

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02898	VOCs- 25ml Water by 8260B	SW-846 8260B 25mL purge	1	I162082AA	07/26/2016 23:46	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	I162082AA	07/26/2016 23:46	Matthew S Krause	1
04678	TCL SW846 8270C Water	SW-846 8270C	1	16205WAJ026	07/28/2016 15:48	Edward Monborne	1
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	16205WAI026	07/27/2016 02:21	Catherine E Bachman	1
00813	BNA Water Extraction	SW-846 3510C	1	16205WAJ026	07/26/2016 08:00	Bradley W VanLeuven	1
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	16205WAI026	07/26/2016 08:00	Bradley W VanLeuven	1
12013	PCBs in Water - Low Level	SW-846 8082	1	162050017A	07/26/2016 21:28	Jessica L Miller	1
10398	EDB 8011	SW-846 8011	1	162050001A	07/27/2016 20:08	Heather M Miller	1
12026	PCB Waters Ext. - Low Level	SW-846 3510C	1	162050017A	07/25/2016 17:00	Ryan A Schafran	1
07786	EDB Extraction (8011)	SW-846 8011	1	162050001A	07/24/2016 19:00	Edwin Ortiz	1
01743	Aluminum	SW-846 6010B	1	162091848007	07/28/2016 17:13	Suzanne M Will	1
07046	Barium	SW-846 6010B	1	162091848007	07/28/2016 17:13	Suzanne M Will	1
07049	Cadmium	SW-846 6010B	1	162091848007	07/28/2016 17:13	Suzanne M Will	1
01750	Calcium	SW-846 6010B	1	162091848007	07/28/2016 17:13	Suzanne M Will	1
07051	Chromium	SW-846 6010B	1	162091848007	07/28/2016 17:13	Suzanne M Will	1
07053	Copper	SW-846 6010B	1	162091848007	07/28/2016 17:13	Suzanne M Will	1
01754	Iron	SW-846 6010B	1	162091848007	07/28/2016 17:13	Suzanne M Will	1
07055	Lead	SW-846 6010B	1	162091848007	08/01/2016 12:35	Joanne M Gates	1
01757	Magnesium	SW-846 6010B	1	162091848007	07/28/2016 17:13	Suzanne M Will	1
07058	Manganese	SW-846 6010B	1	162091848007	07/29/2016 18:36	Suzanne M Will	1
07061	Nickel	SW-846 6010B	1	162091848007	07/28/2016 17:13	Suzanne M Will	1
01762	Potassium	SW-846 6010B	1	162091848007	07/28/2016 17:13	Suzanne M Will	1
07036	Selenium	SW-846 6010B	1	162091848007	07/28/2016 17:13	Suzanne M Will	1
07066	Silver	SW-846 6010B	1	162091848007	07/29/2016 18:36	Suzanne M Will	1
01767	Sodium	SW-846 6010B	1	162091848007	07/29/2016 18:36	Suzanne M Will	1
07071	Vanadium	SW-846 6010B	1	162091848007	07/28/2016 17:13	Suzanne M Will	1
07072	Zinc	SW-846 6010B	1	162091848007	07/28/2016 17:13	Suzanne M Will	1
06024	Antimony	SW-846 6020	1	162096050008A	07/28/2016 17:32	Patrick J Engle	1
06025	Arsenic	SW-846 6020	1	162096050008A	07/28/2016 17:32	Patrick J Engle	1
06027	Beryllium	SW-846 6020	1	162096050008A	07/29/2016 19:13	Patrick J Engle	1
06032	Cobalt	SW-846 6020	1	162096050008A	07/28/2016 17:32	Patrick J Engle	1
06045	Thallium	SW-846 6020	1	162096050008A	07/28/2016 17:32	Patrick J Engle	1
00259	Mercury	SW-846 7470A	1	162095713009	07/28/2016 12:05	Damary Valentin	1
01848	ICP-WW, 3005A (tot rec) - U3	SW-846 3005A	1	162091848007	07/28/2016 05:52	James L Mertz	1
06050	ICPMS-Water, 3020A - U3	SW-846 3020A	1	162096050008	07/28/2016 06:21	James L Mertz	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	162095713009	07/28/2016 07:30	James L Mertz	1
08255	Total Cyanide (water)	SW-846 9012B	1	16210117101B	07/29/2016 02:47	Drew M Gerhart	1
08256	Cyanide Water Distillation	SW-846 9012B	1	16210117101B	07/28/2016 17:15	Barbara A Washington	1

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

Sample Description: FB-071916 Grab Water
Former Union Switch & Signal Facility

LL Sample # WW 8488116
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/19/2016 16:05 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSF1 SDG#: USS01-20FB

CAT No.	Analysis Name	CAS Number	Result		Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B 25mL purge**		ug/l		ug/l	ug/l	
02898	Acetone	67-64-1	N.D.		3.0	5.0	1
02898	Benzene	71-43-2	N.D.		0.1	0.5	1
02898	Bromochloromethane	74-97-5	N.D.		0.1	0.5	1
02898	Bromodichloromethane	75-27-4	N.D.		0.1	0.5	1
02898	Bromoform	75-25-2	N.D.		0.1	0.5	1
02898	Bromomethane	74-83-9	N.D.		0.1	0.5	1
02898	2-Butanone	78-93-3	N.D.		1.0	5.0	1
02898	Carbon Disulfide	75-15-0	N.D.		0.4	1.0	1
02898	Carbon Tetrachloride	56-23-5	N.D.		0.1	0.5	1
02898	Chlorobenzene	108-90-7	N.D.		0.1	0.5	1
02898	Chloroethane	75-00-3	N.D.		0.1	0.5	1
02898	Chloroform	67-66-3	N.D.		0.1	0.5	1
02898	Chloromethane	74-87-3	N.D.		0.2	0.5	1
02898	Cyclohexane	110-82-7	N.D.		0.1	0.5	1
02898	1,2-Dibromo-3-chloropropane	96-12-8	N.D.		0.2	0.5	1
02898	Dibromochloromethane	124-48-1	N.D.		0.1	0.5	1
02898	1,2-Dibromoethane	106-93-4	N.D.		0.1	0.5	1
02898	1,2-Dichlorobenzene	95-50-1	N.D.		0.1	0.5	1
02898	1,3-Dichlorobenzene	541-73-1	N.D.		0.1	0.5	1
02898	1,4-Dichlorobenzene	106-46-7	N.D.		0.1	0.5	1
02898	Dichlorodifluoromethane	75-71-8	N.D.		0.1	0.5	1
02898	1,1-Dichloroethane	75-34-3	N.D.		0.1	0.5	1
02898	1,2-Dichloroethane	107-06-2	N.D.		0.1	0.5	1
02898	1,1-Dichloroethene	75-35-4	N.D.		0.1	0.5	1
02898	cis-1,2-Dichloroethene	156-59-2	N.D.		0.1	0.5	1
02898	trans-1,2-Dichloroethene	156-60-5	N.D.		0.1	0.5	1
02898	1,2-Dichloropropane	78-87-5	N.D.		0.1	0.5	1
02898	cis-1,3-Dichloropropene	10061-01-5	N.D.		0.1	0.5	1
02898	trans-1,3-Dichloropropene	10061-02-6	N.D.		0.1	0.5	1
02898	Ethylbenzene	100-41-4	N.D.		0.1	0.5	1
02898	Freon 113	76-13-1	N.D.		0.2	0.5	1
02898	2-Hexanone	591-78-6	N.D.		1.0	5.0	1
02898	Isopropylbenzene	98-82-8	N.D.		0.1	0.5	1
02898	Methyl Acetate	79-20-9	N.D.		0.3	1.0	1
02898	Methyl Tertiary Butyl Ether	1634-04-4	N.D.		0.1	0.5	1
02898	4-Methyl-2-pentanone	108-10-1	N.D.		1.0	5.0	1
02898	Methylcyclohexane	108-87-2	N.D.		0.1	0.5	1
02898	Methylene Chloride	75-09-2	0.3	J	0.2	0.5	1
02898	Styrene	100-42-5	N.D.		0.1	0.5	1
02898	1,1,2,2-Tetrachloroethane	79-34-5	N.D.		0.1	0.5	1
02898	Tetrachloroethene	127-18-4	N.D.		0.1	0.5	1
02898	Toluene	108-88-3	N.D.		0.1	0.5	1
02898	1,2,3-Trichlorobenzene	87-61-6	N.D.		0.1	0.5	1
02898	1,2,4-Trichlorobenzene	120-82-1	N.D.		0.1	0.5	1
02898	1,1,1-Trichloroethane	71-55-6	N.D.		0.1	0.5	1
02898	1,1,2-Trichloroethane	79-00-5	N.D.		0.1	0.5	1
02898	Trichloroethene	79-01-6	N.D.		0.1	0.5	1
02898	Trichlorofluoromethane	75-69-4	N.D.		0.1	0.5	1
02898	Vinyl Chloride	75-01-4	N.D.		0.1	0.5	1
02898	m+p-Xylene	179601-23-1	N.D.		0.1	0.5	1

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

Sample Description: FB-071916 Grab Water
Former Union Switch & Signal Facility

LL Sample # WW 8488116
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/19/2016 16:05 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSF1 SDG#: USS01-20FB

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B 25mL purge**		**ug/l**	**ug/l**	**ug/l**	
02898	o-Xylene	95-47-6	N.D.	0.1	0.5	1
02898	Xylene (Total)	1330-20-7	N.D.	0.1	0.5	1
GC/MS Semivolatiles	**SW-846 8270C**		**ug/l**	**ug/l**	**ug/l**	
04678	Acenaphthene	83-32-9	N.D.	0.1	0.5	1
04678	Acenaphthylene	208-96-8	N.D.	0.1	0.5	1
04678	Acetophenone	98-86-2	N.D.	0.5	1	1
04678	Anthracene	120-12-7	N.D.	0.1	0.5	1
04678	Atrazine	1912-24-9	N.D.	2	5	1
04678	Benzaldehyde	100-52-7	N.D.	1	5	1
04678	Benzo(a)anthracene	56-55-3	N.D.	0.1	0.5	1
04678	Benzo(a)pyrene	50-32-8	N.D.	0.1	0.5	1
04678	Benzo(b)fluoranthene	205-99-2	N.D.	0.1	0.5	1
04678	Benzo(g,h,i)perylene	191-24-2	N.D.	0.1	0.5	1
04678	Benzo(k)fluoranthene	207-08-9	N.D.	0.1	0.5	1
04678	1,1'-Biphenyl	92-52-4	N.D.	0.5	1	1
04678	4-Bromophenyl-phenylether	101-55-3	N.D.	0.5	1	1
04678	Butylbenzylphthalate	85-68-7	N.D.	2	5	1
04678	Di-n-butylphthalate	84-74-2	N.D.	2	5	1
04678	Caprolactam	105-60-2	N.D.	5	16	1
04678	Carbazole	86-74-8	N.D.	0.5	1	1
04678	4-Chloro-3-methylphenol	59-50-7	N.D.	0.5	1	1
04678	4-Chloroaniline	106-47-8	N.D.	2	4	1
04678	bis(2-Chloroethoxy)methane	111-91-1	N.D.	0.5	1	1
04678	bis(2-Chloroethyl)ether	111-44-4	N.D.	0.5	1	1
04678	2-Chloronaphthalene	91-58-7	N.D.	0.4	1	1
04678	2-Chlorophenol	95-57-8	N.D.	0.5	1	1
04678	4-Chlorophenyl-phenylether	7005-72-3	N.D.	0.5	1	1
04678	2,2'-oxybis(1-Chloropropane)	108-60-1	N.D.	0.5	1	1
	Bis(2-chloroisopropyl) ether CAS #39638-32-9 and 2,2'-Oxybis(1-chloropropane) CAS #108-60-1 cannot be separated chromatographically. The reported result represents the combined total of both compounds.					
04678	Chrysene	218-01-9	N.D.	0.1	0.5	1
04678	Dibenz(a,h)anthracene	53-70-3	N.D.	0.1	0.5	1
04678	Dibenzofuran	132-64-9	N.D.	0.5	1	1
04678	3,3'-Dichlorobenzidine	91-94-1	N.D.	2	5	1
04678	2,4-Dichlorophenol	120-83-2	N.D.	0.5	1	1
04678	Diethylphthalate	84-66-2	N.D.	2	5	1
04678	2,4-Dimethylphenol	105-67-9	N.D.	0.5	1	1
04678	Dimethylphthalate	131-11-3	N.D.	2	5	1
04678	4,6-Dinitro-2-methylphenol	534-52-1	N.D.	5	16	1
04678	2,4-Dinitrophenol	51-28-5	N.D.	11	32	1
04678	2,4-Dinitrotoluene	121-14-2	N.D.	1	5	1
04678	2,6-Dinitrotoluene	606-20-2	N.D.	0.5	1	1
04678	1,4-Dioxane	123-91-1	N.D.	1	5	1
04678	bis(2-Ethylhexyl)phthalate	117-81-7	N.D.	2	5	1
04678	Fluoranthene	206-44-0	N.D.	0.1	0.5	1
04678	Fluorene	86-73-7	N.D.	0.1	0.5	1

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

Sample Description: FB-071916 Grab Water
Former Union Switch & Signal Facility

LL Sample # WW 8488116
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/19/2016 16:05 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSF1 SDG#: USS01-20FB

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C**		**ug/l**	**ug/l**	**ug/l**	
04678	Hexachlorobenzene	118-74-1	N.D.	0.1	0.5	1
04678	Hexachlorobutadiene	87-68-3	N.D.	0.5	1	1
04678	Hexachlorocyclopentadiene	77-47-4	N.D.	5	16	1
04678	Hexachloroethane	67-72-1	N.D.	1	5	1
04678	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.1	0.5	1
04678	Isophorone	78-59-1	N.D.	0.5	1	1
04678	2-Methylnaphthalene	91-57-6	N.D.	0.1	0.5	1
04678	2-Methylphenol	95-48-7	N.D.	0.5	1	1
04678	4-Methylphenol	106-44-5	N.D.	0.5	1	1
	3-Methylphenol and 4-methylphenol cannot be resolved under the chromatographic conditions used for sample analysis. The result reported for 4-methylphenol represents the combined total of both compounds.					
04678	Naphthalene	91-20-3	N.D.	0.1	0.5	1
04678	2-Nitroaniline	88-74-4	N.D.	0.5	1	1
04678	3-Nitroaniline	99-09-2	N.D.	0.5	1	1
04678	4-Nitroaniline	100-01-6	N.D.	0.5	1	1
04678	Nitrobenzene	98-95-3	N.D.	0.5	1	1
04678	2-Nitrophenol	88-75-5	N.D.	0.5	1	1
04678	4-Nitrophenol	100-02-7	N.D.	11	32	1
04678	N-Nitroso-di-n-propylamine	621-64-7	N.D.	0.5	1	1
04678	N-Nitrosodiphenylamine	86-30-6	N.D.	0.5	1	1
	N-nitrosodiphenylamine decomposes in the GC inlet forming diphenylamine. The result reported for N-nitrosodiphenylamine represents the combined total of both compounds.					
04678	Di-n-octylphthalate	117-84-0	N.D.	2	5	1
04678	Pentachlorophenol	87-86-5	N.D.	1	5	1
04678	Phenanthrene	85-01-8	N.D.	0.1	0.5	1
04678	Phenol	108-95-2	N.D.	0.5	1	1
04678	Pyrene	129-00-0	N.D.	0.1	0.5	1
04678	1,2,4,5-Tetrachlorobenzene	95-94-3	N.D.	0.5	1	1
04678	2,3,4,6-Tetrachlorophenol	58-90-2	N.D.	0.5	1	1
04678	2,4,5-Trichlorophenol	95-95-4	N.D.	0.5	1	1
04678	2,4,6-Trichlorophenol	88-06-2	N.D.	0.5	1	1
GC/MS Semivolatiles	**SW-846 8270C SIM**		**ug/l**	**ug/l**	**ug/l**	
08357	Benzo(a)anthracene	56-55-3	N.D.	0.011	0.053	1
08357	Benzo(b)fluoranthene	205-99-2	N.D.	0.011	0.053	1
08357	Dibenz(a,h)anthracene	53-70-3	N.D.	0.011	0.053	1
08357	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.011	0.053	1
Pesticides/PCBs	**SW-846 8082**		**ug/l**	**ug/l**	**ug/l**	
12013	PCB-1016	12674-11-2	N.D.	0.0059	0.0098	1
12013	PCB-1221	11104-28-2	N.D.	0.0059	0.0098	1
12013	PCB-1232	11141-16-5	N.D.	0.0069	0.0098	1
12013	PCB-1242	53469-21-9	N.D.	0.0059	0.0098	1
12013	PCB-1248	12672-29-6	N.D.	0.0049	0.0098	1
12013	PCB-1254	11097-69-1	N.D.	0.0049	0.0098	1
12013	PCB-1260	11096-82-5	N.D.	0.0049	0.0098	1
12013	PCB-1262	37324-23-5	N.D.	0.0049	0.0098	1
12013	PCB-1268	11100-14-4	N.D.	0.0049	0.0098	1

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

eurofins
Lancaster Laboratories Environmental
2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Analysis Report

Sample Description: FB-071916 Grab Water
Former Union Switch & Signal Facility

LL Sample # WW 8488116
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/19/2016 16:05 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSF1 SDG#: USS01-20FB

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
Pesticides/PCBs	**SW-846 8082**		**ug/l**	**ug/l**	**ug/l**	
12013	Total PCBs	1336-36-3	N.D.	0.0049	0.0098	1
Volatiles by Extraction	**SW-846 8011**		**ug/l**	**ug/l**	**ug/l**	
10398	Ethylene dibromide	106-93-4	N.D.	0.0094	0.028	1
Metals Dissolved	**SW-846 6010B**		**mg/l**	**mg/l**	**mg/l**	
01743	Aluminum	7429-90-5	0.0974 J	0.0868	0.200	1
07046	Barium	7440-39-3	N.D.	0.0011	0.0050	1
07049	Cadmium	7440-43-9	N.D.	0.00049	0.0050	1
01750	Calcium	7440-70-2	0.254	0.0382	0.200	1
07051	Chromium	7440-47-3	N.D.	0.0018	0.0150	1
07053	Copper	7440-50-8	N.D.	0.0041	0.0100	1
01754	Iron	7439-89-6	N.D.	0.0747	0.200	1
07055	Lead	7439-92-1	N.D.	0.0062	0.0150	1
01757	Magnesium	7439-95-4	N.D.	0.0190	0.100	1
07058	Manganese	7439-96-5	N.D.	0.0018	0.0050	1
07061	Nickel	7440-02-0	N.D.	0.0028	0.0100	1
01762	Potassium	7440-09-7	N.D.	0.160	0.500	1
07036	Selenium	7782-49-2	N.D.	0.0097	0.0200	1
07066	Silver	7440-22-4	N.D.	0.0019	0.0050	1
01767	Sodium	7440-23-5	N.D.	0.173	1.00	1
07071	Vanadium	7440-62-2	N.D.	0.0016	0.0050	1
07072	Zinc	7440-66-6	N.D.	0.0054	0.0200	1
	SW-846 6020		**mg/l**	**mg/l**	**mg/l**	
06024	Antimony	7440-36-0	N.D.	0.00048	0.0010	1
06025	Arsenic	7440-38-2	N.D.	0.00068	0.0020	1
06027	Beryllium	7440-41-7	N.D.	0.00011	0.00050	1
06032	Cobalt	7440-48-4	N.D.	0.00020	0.00050	1
06045	Thallium	7440-28-0	N.D.	0.00016	0.00050	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000050	0.00020	1
Wet Chemistry	**SW-846 9012B**		**mg/l**	**mg/l**	**mg/l**	
08255	Total Cyanide (water)	57-12-5	N.D.	0.0050	0.010	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.
This sample was filtered in the lab for dissolved metals.

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

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

eurofins
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Analysis Report

Sample Description: FB-071916 Grab Water
Former Union Switch & Signal Facility

LL Sample # WW 8488116
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/19/2016 16:05 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSF1 SDG#: USS01-20FB

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02898	VOCs- 25ml Water by 8260B	SW-846 8260B 25mL purge	1	I162082AA	07/27/2016 00:08	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	I162082AA	07/27/2016 00:08	Matthew S Krause	1
04678	TCL SW846 8270C Water	SW-846 8270C	1	16205WAJ026	07/28/2016 16:16	Edward Monborne	1
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	16205WAI026	07/27/2016 02:52	Catherine E Bachman	1
00813	BNA Water Extraction	SW-846 3510C	1	16205WAJ026	07/26/2016 08:00	Bradley W VanLeuven	1
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	16205WAI026	07/26/2016 08:00	Bradley W VanLeuven	1
12013	PCBs in Water - Low Level	SW-846 8082	1	162050017A	07/26/2016 21:40	Jessica L Miller	1
10398	EDB 8011	SW-846 8011	1	162050001A	07/27/2016 20:24	Heather M Miller	1
12026	PCB Waters Ext. - Low Level	SW-846 3510C	1	162050017A	07/25/2016 17:00	Ryan A Schafran	1
07786	EDB Extraction (8011)	SW-846 8011	1	162050001A	07/24/2016 19:00	Edwin Ortiz	1
01743	Aluminum	SW-846 6010B	1	162091848007	07/28/2016 17:16	Suzanne M Will	1
07046	Barium	SW-846 6010B	1	162091848007	07/28/2016 17:16	Suzanne M Will	1
07049	Cadmium	SW-846 6010B	1	162091848007	07/28/2016 17:16	Suzanne M Will	1
01750	Calcium	SW-846 6010B	1	162091848007	07/28/2016 17:16	Suzanne M Will	1
07051	Chromium	SW-846 6010B	1	162091848007	07/28/2016 17:16	Suzanne M Will	1
07053	Copper	SW-846 6010B	1	162091848007	07/28/2016 17:16	Suzanne M Will	1
01754	Iron	SW-846 6010B	1	162091848007	07/28/2016 17:16	Suzanne M Will	1
07055	Lead	SW-846 6010B	1	162091848007	08/01/2016 12:39	Joanne M Gates	1
01757	Magnesium	SW-846 6010B	1	162091848007	07/28/2016 17:16	Suzanne M Will	1
07058	Manganese	SW-846 6010B	1	162091848007	07/28/2016 17:16	Suzanne M Will	1
07061	Nickel	SW-846 6010B	1	162091848007	07/28/2016 17:16	Suzanne M Will	1
01762	Potassium	SW-846 6010B	1	162091848007	07/28/2016 17:16	Suzanne M Will	1
07036	Selenium	SW-846 6010B	1	162091848007	07/28/2016 17:16	Suzanne M Will	1
07066	Silver	SW-846 6010B	1	162091848007	07/29/2016 18:39	Suzanne M Will	1
01767	Sodium	SW-846 6010B	1	162091848007	07/29/2016 18:39	Suzanne M Will	1
07071	Vanadium	SW-846 6010B	1	162091848007	07/28/2016 17:16	Suzanne M Will	1
07072	Zinc	SW-846 6010B	1	162091848007	07/28/2016 17:16	Suzanne M Will	1
06024	Antimony	SW-846 6020	1	162096050008A	07/28/2016 17:35	Patrick J Engle	1
06025	Arsenic	SW-846 6020	1	162096050008A	07/28/2016 17:35	Patrick J Engle	1
06027	Beryllium	SW-846 6020	1	162096050008A	07/29/2016 19:16	Patrick J Engle	1
06032	Cobalt	SW-846 6020	1	162096050008A	07/28/2016 17:35	Patrick J Engle	1
06045	Thallium	SW-846 6020	1	162096050008A	07/28/2016 17:35	Patrick J Engle	1
00259	Mercury	SW-846 7470A	1	162095713009	07/28/2016 12:07	Damary Valentin	1
01848	ICP-WW, 3005A (tot rec) - U3	SW-846 3005A	1	162091848007	07/28/2016 05:52	James L Mertz	1
06050	ICPMS-Water, 3020A - U3	SW-846 3020A	1	162096050008	07/28/2016 06:21	James L Mertz	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	162095713009	07/28/2016 07:30	James L Mertz	1
08255	Total Cyanide (water)	SW-846 9012B	1	16210117101B	07/29/2016 02:48	Drew M Gerhart	1
08256	Cyanide Water Distillation	SW-846 9012B	1	16210117101B	07/28/2016 17:15	Barbara A Washington	1

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

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Lancaster Laboratories Environmental
2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Analysis Report

Sample Description: FB-072016 Grab Water
Former Union Switch & Signal Facility

LL Sample # WW 8488117
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/20/2016 17:05 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSF2 SDG#: USS01-21FB

CAT No.	Analysis Name	CAS Number	Result		Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B 25mL purge**		ug/l		ug/l	ug/l	
02898	Acetone	67-64-1	N.D.		3.0	5.0	1
02898	Benzene	71-43-2	N.D.		0.1	0.5	1
02898	Bromochloromethane	74-97-5	N.D.		0.1	0.5	1
02898	Bromodichloromethane	75-27-4	N.D.		0.1	0.5	1
02898	Bromoform	75-25-2	N.D.		0.1	0.5	1
02898	Bromomethane	74-83-9	N.D.		0.1	0.5	1
02898	2-Butanone	78-93-3	N.D.		1.0	5.0	1
02898	Carbon Disulfide	75-15-0	N.D.		0.4	1.0	1
02898	Carbon Tetrachloride	56-23-5	N.D.		0.1	0.5	1
02898	Chlorobenzene	108-90-7	N.D.		0.1	0.5	1
02898	Chloroethane	75-00-3	N.D.		0.1	0.5	1
02898	Chloroform	67-66-3	N.D.		0.1	0.5	1
02898	Chloromethane	74-87-3	N.D.		0.2	0.5	1
02898	Cyclohexane	110-82-7	N.D.		0.1	0.5	1
02898	1,2-Dibromo-3-chloropropane	96-12-8	N.D.		0.2	0.5	1
02898	Dibromochloromethane	124-48-1	N.D.		0.1	0.5	1
02898	1,2-Dibromoethane	106-93-4	N.D.		0.1	0.5	1
02898	1,2-Dichlorobenzene	95-50-1	N.D.		0.1	0.5	1
02898	1,3-Dichlorobenzene	541-73-1	N.D.		0.1	0.5	1
02898	1,4-Dichlorobenzene	106-46-7	N.D.		0.1	0.5	1
02898	Dichlorodifluoromethane	75-71-8	N.D.		0.1	0.5	1
02898	1,1-Dichloroethane	75-34-3	N.D.		0.1	0.5	1
02898	1,2-Dichloroethane	107-06-2	N.D.		0.1	0.5	1
02898	1,1-Dichloroethene	75-35-4	N.D.		0.1	0.5	1
02898	cis-1,2-Dichloroethene	156-59-2	N.D.		0.1	0.5	1
02898	trans-1,2-Dichloroethene	156-60-5	N.D.		0.1	0.5	1
02898	1,2-Dichloropropane	78-87-5	N.D.		0.1	0.5	1
02898	cis-1,3-Dichloropropene	10061-01-5	N.D.		0.1	0.5	1
02898	trans-1,3-Dichloropropene	10061-02-6	N.D.		0.1	0.5	1
02898	Ethylbenzene	100-41-4	N.D.		0.1	0.5	1
02898	Freon 113	76-13-1	N.D.		0.2	0.5	1
02898	2-Hexanone	591-78-6	N.D.		1.0	5.0	1
02898	Isopropylbenzene	98-82-8	N.D.		0.1	0.5	1
02898	Methyl Acetate	79-20-9	N.D.		0.3	1.0	1
02898	Methyl Tertiary Butyl Ether	1634-04-4	N.D.		0.1	0.5	1
02898	4-Methyl-2-pentanone	108-10-1	N.D.		1.0	5.0	1
02898	Methylcyclohexane	108-87-2	N.D.		0.1	0.5	1
02898	Methylene Chloride	75-09-2	0.3	J	0.2	0.5	1
02898	Styrene	100-42-5	N.D.		0.1	0.5	1
02898	1,1,2,2-Tetrachloroethane	79-34-5	N.D.		0.1	0.5	1
02898	Tetrachloroethene	127-18-4	N.D.		0.1	0.5	1
02898	Toluene	108-88-3	N.D.		0.1	0.5	1
02898	1,2,3-Trichlorobenzene	87-61-6	N.D.		0.1	0.5	1
02898	1,2,4-Trichlorobenzene	120-82-1	N.D.		0.1	0.5	1
02898	1,1,1-Trichloroethane	71-55-6	N.D.		0.1	0.5	1
02898	1,1,2-Trichloroethane	79-00-5	N.D.		0.1	0.5	1
02898	Trichloroethene	79-01-6	N.D.		0.1	0.5	1
02898	Trichlorofluoromethane	75-69-4	N.D.		0.1	0.5	1
02898	Vinyl Chloride	75-01-4	N.D.		0.1	0.5	1
02898	m+p-Xylene	179601-23-1	N.D.		0.1	0.5	1

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

Sample Description: FB-072016 Grab Water
Former Union Switch & Signal Facility

LL Sample # WW 8488117
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/20/2016 17:05 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSF2 SDG#: USS01-21FB

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B 25mL purge**		**ug/l**	**ug/l**	**ug/l**	
02898	o-Xylene	95-47-6	N.D.	0.1	0.5	1
02898	Xylene (Total)	1330-20-7	N.D.	0.1	0.5	1
GC/MS Semivolatiles	**SW-846 8270C**		**ug/l**	**ug/l**	**ug/l**	
04678	Acenaphthene	83-32-9	N.D.	0.1	0.5	1
04678	Acenaphthylene	208-96-8	N.D.	0.1	0.5	1
04678	Acetophenone	98-86-2	N.D.	0.5	1	1
04678	Anthracene	120-12-7	N.D.	0.1	0.5	1
04678	Atrazine	1912-24-9	N.D.	2	5	1
04678	Benzaldehyde	100-52-7	N.D.	1	5	1
04678	Benzo(a)anthracene	56-55-3	N.D.	0.1	0.5	1
04678	Benzo(a)pyrene	50-32-8	N.D.	0.1	0.5	1
04678	Benzo(b)fluoranthene	205-99-2	N.D.	0.1	0.5	1
04678	Benzo(g,h,i)perylene	191-24-2	N.D.	0.1	0.5	1
04678	Benzo(k)fluoranthene	207-08-9	N.D.	0.1	0.5	1
04678	1,1'-Biphenyl	92-52-4	N.D.	0.5	1	1
04678	4-Bromophenyl-phenylether	101-55-3	N.D.	0.5	1	1
04678	Butylbenzylphthalate	85-68-7	N.D.	2	5	1
04678	Di-n-butylphthalate	84-74-2	N.D.	2	5	1
04678	Caprolactam	105-60-2	N.D.	5	15	1
04678	Carbazole	86-74-8	N.D.	0.5	1	1
04678	4-Chloro-3-methylphenol	59-50-7	N.D.	0.5	1	1
04678	4-Chloroaniline	106-47-8	N.D.	2	4	1
04678	bis(2-Chloroethoxy)methane	111-91-1	N.D.	0.5	1	1
04678	bis(2-Chloroethyl)ether	111-44-4	N.D.	0.5	1	1
04678	2-Chloronaphthalene	91-58-7	N.D.	0.4	1	1
04678	2-Chlorophenol	95-57-8	N.D.	0.5	1	1
04678	4-Chlorophenyl-phenylether	7005-72-3	N.D.	0.5	1	1
04678	2,2'-oxybis(1-Chloropropane)	108-60-1	N.D.	0.5	1	1
	Bis(2-chloroisopropyl) ether CAS #39638-32-9 and 2,2'-Oxybis(1-chloropropane) CAS #108-60-1 cannot be separated chromatographically. The reported result represents the combined total of both compounds.					
04678	Chrysene	218-01-9	N.D.	0.1	0.5	1
04678	Dibenz(a,h)anthracene	53-70-3	N.D.	0.1	0.5	1
04678	Dibenzofuran	132-64-9	N.D.	0.5	1	1
04678	3,3'-Dichlorobenzidine	91-94-1	N.D.	2	5	1
04678	2,4-Dichlorophenol	120-83-2	N.D.	0.5	1	1
04678	Diethylphthalate	84-66-2	N.D.	2	5	1
04678	2,4-Dimethylphenol	105-67-9	N.D.	0.5	1	1
04678	Dimethylphthalate	131-11-3	N.D.	2	5	1
04678	4,6-Dinitro-2-methylphenol	534-52-1	N.D.	5	15	1
04678	2,4-Dinitrophenol	51-28-5	N.D.	10	31	1
04678	2,4-Dinitrotoluene	121-14-2	N.D.	1	5	1
04678	2,6-Dinitrotoluene	606-20-2	N.D.	0.5	1	1
04678	1,4-Dioxane	123-91-1	N.D.	1	5	1
04678	bis(2-Ethylhexyl)phthalate	117-81-7	N.D.	2	5	1
04678	Fluoranthene	206-44-0	N.D.	0.1	0.5	1
04678	Fluorene	86-73-7	N.D.	0.1	0.5	1

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

Sample Description: FB-072016 Grab Water
Former Union Switch & Signal Facility

LL Sample # WW 8488117
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/20/2016 17:05 by EM

URS Corporation
PO Box 203970
Austin TX 7872019034

Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSF2 SDG#: USS01-21FB

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C**		**ug/l**	**ug/l**	**ug/l**	
04678	Hexachlorobenzene	118-74-1	N.D.	0.1	0.5	1
04678	Hexachlorobutadiene	87-68-3	N.D.	0.5	1	1
04678	Hexachlorocyclopentadiene	77-47-4	N.D.	5	15	1
04678	Hexachloroethane	67-72-1	N.D.	1	5	1
04678	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.1	0.5	1
04678	Isophorone	78-59-1	N.D.	0.5	1	1
04678	2-Methylnaphthalene	91-57-6	N.D.	0.1	0.5	1
04678	2-Methylphenol	95-48-7	N.D.	0.5	1	1
04678	4-Methylphenol	106-44-5	N.D.	0.5	1	1
	3-Methylphenol and 4-methylphenol cannot be resolved under the chromatographic conditions used for sample analysis. The result reported for 4-methylphenol represents the combined total of both compounds.					
04678	Naphthalene	91-20-3	N.D.	0.1	0.5	1
04678	2-Nitroaniline	88-74-4	N.D.	0.5	1	1
04678	3-Nitroaniline	99-09-2	N.D.	0.5	1	1
04678	4-Nitroaniline	100-01-6	N.D.	0.5	1	1
04678	Nitrobenzene	98-95-3	N.D.	0.5	1	1
04678	2-Nitrophenol	88-75-5	N.D.	0.5	1	1
04678	4-Nitrophenol	100-02-7	N.D.	10	31	1
04678	N-Nitroso-di-n-propylamine	621-64-7	N.D.	0.5	1	1
04678	N-Nitrosodiphenylamine	86-30-6	N.D.	0.5	1	1
	N-nitrosodiphenylamine decomposes in the GC inlet forming diphenylamine. The result reported for N-nitrosodiphenylamine represents the combined total of both compounds.					
04678	Di-n-octylphthalate	117-84-0	N.D.	2	5	1
04678	Pentachlorophenol	87-86-5	N.D.	1	5	1
04678	Phenanthrene	85-01-8	N.D.	0.1	0.5	1
04678	Phenol	108-95-2	N.D.	0.5	1	1
04678	Pyrene	129-00-0	N.D.	0.1	0.5	1
04678	1,2,4,5-Tetrachlorobenzene	95-94-3	N.D.	0.5	1	1
04678	2,3,4,6-Tetrachlorophenol	58-90-2	N.D.	0.5	1	1
04678	2,4,5-Trichlorophenol	95-95-4	N.D.	0.5	1	1
04678	2,4,6-Trichlorophenol	88-06-2	N.D.	0.5	1	1
GC/MS Semivolatiles	**SW-846 8270C SIM**		**ug/l**	**ug/l**	**ug/l**	
08357	Benzo(a)anthracene	56-55-3	N.D.	0.010	0.051	1
08357	Benzo(b)fluoranthene	205-99-2	N.D.	0.010	0.051	1
08357	Dibenz(a,h)anthracene	53-70-3	N.D.	0.010	0.051	1
08357	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.010	0.051	1
Pesticides/PCBs	**SW-846 8082**		**ug/l**	**ug/l**	**ug/l**	
12013	PCB-1016	12674-11-2	N.D.	0.0059	0.0099	1
12013	PCB-1221	11104-28-2	N.D.	0.0059	0.0099	1
12013	PCB-1232	11141-16-5	N.D.	0.0069	0.0099	1
12013	PCB-1242	53469-21-9	N.D.	0.0059	0.0099	1
12013	PCB-1248	12672-29-6	N.D.	0.0049	0.0099	1
12013	PCB-1254	11097-69-1	N.D.	0.0049	0.0099	1
12013	PCB-1260	11096-82-5	N.D.	0.0049	0.0099	1
12013	PCB-1262	37324-23-5	N.D.	0.0049	0.0099	1
12013	PCB-1268	11100-14-4	N.D.	0.0049	0.0099	1

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Analysis Report

Sample Description: FB-072016 Grab Water
Former Union Switch & Signal Facility

LL Sample # WW 8488117
LL Group # 1685925
Account # 03464

Project Name: Former Union Switch & Signal Facility

Collected: 07/20/2016 17:05 by EM

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Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSF2 SDG#: USS01-21FB

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
Pesticides/PCBs	**SW-846 8082**		**ug/l**	**ug/l**	**ug/l**	
12013	Total PCBs	1336-36-3	N.D.	0.0049	0.0099	1
Volatiles by Extraction	**SW-846 8011**		**ug/l**	**ug/l**	**ug/l**	
10398	Ethylene dibromide	106-93-4	N.D.	0.0094	0.028	1
Metals Dissolved	**SW-846 6010B**		**mg/l**	**mg/l**	**mg/l**	
01743	Aluminum	7429-90-5	N.D.	0.0868	0.200	1
07046	Barium	7440-39-3	N.D.	0.0011	0.0050	1
07049	Cadmium	7440-43-9	N.D.	0.00049	0.0050	1
01750	Calcium	7440-70-2	0.197 J	0.0382	0.200	1
07051	Chromium	7440-47-3	N.D.	0.0018	0.0150	1
07053	Copper	7440-50-8	0.0077 J	0.0041	0.0100	1
01754	Iron	7439-89-6	N.D.	0.0747	0.200	1
07055	Lead	7439-92-1	N.D.	0.0062	0.0150	1
01757	Magnesium	7439-95-4	N.D.	0.0190	0.100	1
07058	Manganese	7439-96-5	N.D.	0.0018	0.0050	1
07061	Nickel	7440-02-0	N.D.	0.0028	0.0100	1
01762	Potassium	7440-09-7	N.D.	0.160	0.500	1
07036	Selenium	7782-49-2	N.D.	0.0097	0.0200	1
07066	Silver	7440-22-4	N.D.	0.0019	0.0050	1
01767	Sodium	7440-23-5	N.D.	0.173	1.00	1
07071	Vanadium	7440-62-2	N.D.	0.0016	0.0050	1
07072	Zinc	7440-66-6	N.D.	0.0054	0.0200	1
	SW-846 6020		**mg/l**	**mg/l**	**mg/l**	
06024	Antimony	7440-36-0	N.D.	0.00048	0.0010	1
06025	Arsenic	7440-38-2	N.D.	0.00068	0.0020	1
06027	Beryllium	7440-41-7	N.D.	0.00011	0.00050	1
06032	Cobalt	7440-48-4	N.D.	0.00020	0.00050	1
06045	Thallium	7440-28-0	N.D.	0.00016	0.00050	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000050	0.00020	1
Wet Chemistry	**SW-846 9012B**		**mg/l**	**mg/l**	**mg/l**	
08255	Total Cyanide (water)	57-12-5	N.D.	0.0050	0.010	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.
This sample was filtered in the lab for dissolved metals.

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

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

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Analysis Report

Sample Description: FB-072016 Grab Water
Former Union Switch & Signal Facility

LL Sample # WW 8488117
LL Group # 1685925
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Project Name: Former Union Switch & Signal Facility

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Submitted: 07/22/2016 09:30
Reported: 08/04/2016 10:43

USSF2 SDG#: USS01-21FB

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02898	VOCs- 25ml Water by 8260B	SW-846 8260B 25mL purge	1	I162082AA	07/27/2016 00:29	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	I162082AA	07/27/2016 00:29	Matthew S Krause	1
04678	TCL SW846 8270C Water	SW-846 8270C	1	16205WAJ026	07/28/2016 16:44	Edward Monborne	1
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	16205WAI026	07/27/2016 03:23	Catherine E Bachman	1
00813	BNA Water Extraction	SW-846 3510C	1	16205WAJ026	07/26/2016 08:00	Bradley W VanLeuven	1
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	16205WAI026	07/26/2016 08:00	Bradley W VanLeuven	1
12013	PCBs in Water - Low Level	SW-846 8082	1	162050017A	07/26/2016 21:52	Jessica L Miller	1
10398	EDB 8011	SW-846 8011	1	162050001A	07/27/2016 20:39	Heather M Miller	1
12026	PCB Waters Ext. - Low Level	SW-846 3510C	1	162050017A	07/25/2016 17:00	Ryan A Schafran	1
07786	EDB Extraction (8011)	SW-846 8011	1	162050001A	07/24/2016 19:00	Edwin Ortiz	1
01743	Aluminum	SW-846 6010B	1	162091848007	07/28/2016 17:20	Suzanne M Will	1
07046	Barium	SW-846 6010B	1	162091848007	07/28/2016 17:20	Suzanne M Will	1
07049	Cadmium	SW-846 6010B	1	162091848007	07/28/2016 17:20	Suzanne M Will	1
01750	Calcium	SW-846 6010B	1	162091848007	07/28/2016 17:20	Suzanne M Will	1
07051	Chromium	SW-846 6010B	1	162091848007	07/28/2016 17:20	Suzanne M Will	1
07053	Copper	SW-846 6010B	1	162091848007	07/28/2016 17:20	Suzanne M Will	1
01754	Iron	SW-846 6010B	1	162091848007	07/28/2016 17:20	Suzanne M Will	1
07055	Lead	SW-846 6010B	1	162091848007	08/01/2016 12:42	Joanne M Gates	1
01757	Magnesium	SW-846 6010B	1	162091848007	07/28/2016 17:20	Suzanne M Will	1
07058	Manganese	SW-846 6010B	1	162091848007	07/28/2016 17:20	Suzanne M Will	1
07061	Nickel	SW-846 6010B	1	162091848007	07/28/2016 17:20	Suzanne M Will	1
01762	Potassium	SW-846 6010B	1	162091848007	07/28/2016 17:20	Suzanne M Will	1
07036	Selenium	SW-846 6010B	1	162091848007	07/28/2016 17:20	Suzanne M Will	1
07066	Silver	SW-846 6010B	1	162091848007	07/29/2016 18:42	Suzanne M Will	1
01767	Sodium	SW-846 6010B	1	162091848007	07/29/2016 18:42	Suzanne M Will	1
07071	Vanadium	SW-846 6010B	1	162091848007	07/28/2016 17:20	Suzanne M Will	1
07072	Zinc	SW-846 6010B	1	162091848007	07/28/2016 17:20	Suzanne M Will	1
06024	Antimony	SW-846 6020	1	162096050008A	07/28/2016 17:38	Patrick J Engle	1
06025	Arsenic	SW-846 6020	1	162096050008A	07/28/2016 17:38	Patrick J Engle	1
06027	Beryllium	SW-846 6020	1	162096050008A	07/29/2016 19:19	Patrick J Engle	1
06032	Cobalt	SW-846 6020	1	162096050008A	07/28/2016 17:38	Patrick J Engle	1
06045	Thallium	SW-846 6020	1	162096050008A	07/28/2016 17:38	Patrick J Engle	1
00259	Mercury	SW-846 7470A	1	162095713009	07/28/2016 12:09	Damary Valentin	1
01848	ICP-WW, 3005A (tot rec) - U3	SW-846 3005A	1	162091848007	07/28/2016 05:52	James L Mertz	1
06050	ICPMS-Water, 3020A - U3	SW-846 3020A	1	162096050008	07/28/2016 06:21	James L Mertz	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	162095713009	07/28/2016 07:30	James L Mertz	1
08255	Total Cyanide (water)	SW-846 9012B	1	16215117101A	08/03/2016 12:48	David A Seavey	1
08256	Cyanide Water Distillation	SW-846 9012B	1	16215117101A	08/02/2016 07:45	Nancy J Shoop	1

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

Quality Control Summary

Client Name: URS Corporation
Reported: 08/04/2016 10:43

Group Number: 1685925

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

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

Method Blank

Analysis Name	Result	MDL**	LOQ
	ug/kg	ug/kg	ug/kg
Batch number: B162101AA	Sample number(s): 8488098-8488103,8488105-8488107		
Acetone	N.D.	7	20
Benzene	N.D.	0.5	5
Bromochloromethane	N.D.	1	5
Bromodichloromethane	N.D.	1	5
Bromoform	N.D.	1	5
Bromomethane	N.D.	2	5
2-Butanone	N.D.	4	10
Carbon Disulfide	N.D.	1	5
Carbon Tetrachloride	N.D.	1	5
Chlorobenzene	N.D.	1	5
Chloroethane	N.D.	2	5
Chloroform	N.D.	1	5
Chloromethane	N.D.	2	5
Cyclohexane	N.D.	1	5
1,2-Dibromo-3-chloropropane	N.D.	2	5
Dibromochloromethane	N.D.	1	5
1,2-Dibromoethane	N.D.	1	5
1,2-Dichlorobenzene	N.D.	1	5
1,3-Dichlorobenzene	N.D.	1	5
1,4-Dichlorobenzene	N.D.	1	5
Dichlorodifluoromethane	N.D.	2	5
1,1-Dichloroethane	N.D.	1	5
1,2-Dichloroethane	N.D.	1	5
1,1-Dichloroethene	N.D.	1	5
cis-1,2-Dichloroethene	N.D.	1	5
trans-1,2-Dichloroethene	N.D.	1	5
1,2-Dichloropropane	N.D.	1	5
cis-1,3-Dichloropropene	N.D.	1	5
trans-1,3-Dichloropropene	N.D.	1	5
Ethylbenzene	N.D.	1	5
Freon 113	N.D.	2	10
2-Hexanone	N.D.	3	10
Isopropylbenzene	N.D.	1	5
Methyl Acetate	N.D.	2	5
Methyl Tertiary Butyl Ether	N.D.	0.5	5
4-Methyl-2-pentanone	N.D.	3	10
Methylcyclohexane	N.D.	1	5
Methylene Chloride	N.D.	2	5
Styrene	N.D.	1	5
1,1,2,2-Tetrachloroethane	N.D.	1	5
Tetrachloroethene	N.D.	1	5
Toluene	N.D.	1	5
1,2,3-Trichlorobenzene	N.D.	1	5

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: URS Corporation
Reported: 08/04/2016 10:43

Group Number: 1685925

Method Blank (continued)

Analysis Name	Result ug/kg	MDL** ug/kg	LOQ ug/kg
1,2,4-Trichlorobenzene	N.D.	1	5
1,1,1-Trichloroethane	N.D.	1	5
1,1,2-Trichloroethane	N.D.	1	5
Trichloroethene	N.D.	1	5
Trichlorofluoromethane	N.D.	2	5
Vinyl Chloride	N.D.	1	5
Xylene (Total)	N.D.	1	5
Batch number: B162111AA	Sample number(s): 8488097		
Acetone	N.D.	7	20
Benzene	N.D.	0.5	5
Bromochloromethane	N.D.	1	5
Bromodichloromethane	N.D.	1	5
Bromoform	N.D.	1	5
Bromomethane	N.D.	2	5
2-Butanone	N.D.	4	10
Carbon Disulfide	N.D.	1	5
Carbon Tetrachloride	N.D.	1	5
Chlorobenzene	N.D.	1	5
Chloroethane	N.D.	2	5
Chloroform	N.D.	1	5
Chloromethane	N.D.	2	5
Cyclohexane	N.D.	1	5
1,2-Dibromo-3-chloropropane	N.D.	2	5
Dibromochloromethane	N.D.	1	5
1,2-Dibromoethane	N.D.	1	5
1,2-Dichlorobenzene	N.D.	1	5
1,3-Dichlorobenzene	N.D.	1	5
1,4-Dichlorobenzene	N.D.	1	5
Dichlorodifluoromethane	N.D.	2	5
1,1-Dichloroethane	N.D.	1	5
1,2-Dichloroethane	N.D.	1	5
1,1-Dichloroethene	N.D.	1	5
cis-1,2-Dichloroethene	N.D.	1	5
trans-1,2-Dichloroethene	N.D.	1	5
1,2-Dichloropropane	N.D.	1	5
cis-1,3-Dichloropropene	N.D.	1	5
trans-1,3-Dichloropropene	N.D.	1	5
Ethylbenzene	N.D.	1	5
Freon 113	N.D.	2	10
2-Hexanone	N.D.	3	10
Isopropylbenzene	N.D.	1	5
Methyl Acetate	N.D.	2	5
Methyl Tertiary Butyl Ether	N.D.	0.5	5
4-Methyl-2-pentanone	N.D.	3	10
Methylcyclohexane	N.D.	1	5
Methylene Chloride	N.D.	2	5
Styrene	N.D.	1	5
1,1,2,2-Tetrachloroethane	N.D.	1	5
Tetrachloroethene	N.D.	1	5
Toluene	N.D.	1	5
1,2,3-Trichlorobenzene	N.D.	1	5

*- Outside of specification
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(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
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Quality Control Summary

Client Name: URS Corporation
Reported: 08/04/2016 10:43

Group Number: 1685925

Method Blank (continued)

Analysis Name	Result ug/kg	MDL** ug/kg	LOQ ug/kg
1,2,4-Trichlorobenzene	N.D.	1	5
1,1,1-Trichloroethane	N.D.	1	5
1,1,2-Trichloroethane	N.D.	1	5
Trichloroethene	N.D.	1	5
Trichlorofluoromethane	N.D.	2	5
Vinyl Chloride	N.D.	1	5
Xylene (Total)	N.D.	1	5
Batch number: Q162091AA	Sample number(s): 8488104		
Acetone	N.D.	350	1,000
Benzene	N.D.	25	250
Bromochloromethane	N.D.	50	250
Bromodichloromethane	N.D.	50	250
Bromoform	N.D.	50	250
Bromomethane	N.D.	100	250
2-Butanone	N.D.	200	500
Carbon Disulfide	N.D.	50	250
Carbon Tetrachloride	N.D.	50	250
Chlorobenzene	N.D.	50	250
Chloroethane	N.D.	100	250
Chloroform	N.D.	50	250
Chloromethane	N.D.	100	250
Cyclohexane	N.D.	50	250
1,2-Dibromo-3-chloropropane	N.D.	100	250
Dibromochloromethane	N.D.	50	250
1,2-Dibromoethane	N.D.	50	250
1,2-Dichlorobenzene	N.D.	50	250
1,3-Dichlorobenzene	N.D.	50	250
1,4-Dichlorobenzene	N.D.	50	250
Dichlorodifluoromethane	N.D.	100	250
1,1-Dichloroethane	N.D.	50	250
1,2-Dichloroethane	N.D.	50	250
1,1-Dichloroethene	N.D.	50	250
cis-1,2-Dichloroethene	N.D.	50	250
trans-1,2-Dichloroethene	N.D.	50	250
1,2-Dichloropropane	N.D.	50	250
cis-1,3-Dichloropropene	N.D.	50	250
trans-1,3-Dichloropropene	N.D.	50	250
Ethylbenzene	N.D.	50	250
Freon 113	N.D.	100	500
2-Hexanone	N.D.	150	500
Isopropylbenzene	N.D.	50	250
Methyl Acetate	N.D.	100	250
Methyl Tertiary Butyl Ether	N.D.	25	250
4-Methyl-2-pentanone	N.D.	150	500
Methylcyclohexane	N.D.	50	250
Methylene Chloride	N.D.	100	250
Styrene	N.D.	50	250
1,1,2,2-Tetrachloroethane	N.D.	50	250
Tetrachloroethene	N.D.	50	250
Toluene	N.D.	50	250
1,2,3-Trichlorobenzene	N.D.	50	250

*- Outside of specification
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(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
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Quality Control Summary

Client Name: URS Corporation
Reported: 08/04/2016 10:43

Group Number: 1685925

Method Blank (continued)

Analysis Name	Result	MDL**	LOQ
	ug/kg	ug/kg	ug/kg
1,2,4-Trichlorobenzene	N.D.	50	250
1,1,1-Trichloroethane	N.D.	50	250
1,1,2-Trichloroethane	N.D.	50	250
Trichloroethene	N.D.	50	250
Trichlorofluoromethane	N.D.	100	250
Vinyl Chloride	N.D.	50	250
Xylene (Total)	N.D.	50	250
	ug/l	ug/l	ug/l
Batch number: C162143AA	Sample number(s): 8488111		
Acetone	N.D.	3.0	5.0
Benzene	N.D.	0.1	0.5
Bromochloromethane	N.D.	0.1	0.5
Bromodichloromethane	N.D.	0.1	0.5
Bromoform	N.D.	0.1	0.5
Bromomethane	N.D.	0.1	0.5
2-Butanone	N.D.	1.0	5.0
Carbon Disulfide	N.D.	0.4	1.0
Carbon Tetrachloride	N.D.	0.1	0.5
Chlorobenzene	N.D.	0.1	0.5
Chloroethane	N.D.	0.1	0.5
Chloroform	N.D.	0.1	0.5
Chloromethane	N.D.	0.2	0.5
Cyclohexane	N.D.	0.1	0.5
1,2-Dibromo-3-chloropropane	N.D.	0.2	0.5
Dibromochloromethane	N.D.	0.1	0.5
1,2-Dibromoethane	N.D.	0.1	0.5
1,2-Dichlorobenzene	N.D.	0.1	0.5
1,3-Dichlorobenzene	N.D.	0.1	0.5
1,4-Dichlorobenzene	N.D.	0.1	0.5
Dichlorodifluoromethane	N.D.	0.1	0.5
1,1-Dichloroethane	N.D.	0.1	0.5
1,2-Dichloroethane	N.D.	0.1	0.5
1,1-Dichloroethene	N.D.	0.1	0.5
cis-1,2-Dichloroethene	N.D.	0.1	0.5
trans-1,2-Dichloroethene	N.D.	0.1	0.5
1,2-Dichloropropane	N.D.	0.1	0.5
cis-1,3-Dichloropropene	N.D.	0.1	0.5
trans-1,3-Dichloropropene	N.D.	0.1	0.5
Ethylbenzene	N.D.	0.1	0.5
Freon 113	N.D.	0.2	0.5
2-Hexanone	N.D.	1.0	5.0
Isopropylbenzene	N.D.	0.1	0.5
Methyl Acetate	N.D.	0.3	1.0
Methyl Tertiary Butyl Ether	N.D.	0.1	0.5
4-Methyl-2-pentanone	N.D.	1.0	5.0
Methylcyclohexane	N.D.	0.1	0.5
Methylene Chloride	N.D.	0.2	0.5
Styrene	N.D.	0.1	0.5
1,1,2,2-Tetrachloroethane	N.D.	0.1	0.5
Tetrachloroethene	N.D.	0.1	0.5

*- Outside of specification
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Quality Control Summary

Client Name: URS Corporation
Reported: 08/04/2016 10:43

Group Number: 1685925

Method Blank (continued)

Analysis Name	Result ug/l	MDL** ug/l	LOQ ug/l
Toluene	N.D.	0.1	0.5
1,2,3-Trichlorobenzene	N.D.	0.1	0.5
1,2,4-Trichlorobenzene	N.D.	0.1	0.5
1,1,1-Trichloroethane	N.D.	0.1	0.5
1,1,2-Trichloroethane	N.D.	0.1	0.5
Trichloroethene	N.D.	0.1	0.5
Trichlorofluoromethane	N.D.	0.1	0.5
Vinyl Chloride	N.D.	0.1	0.5
m+p-Xylene	N.D.	0.1	0.5
o-Xylene	N.D.	0.1	0.5
Xylene (Total)	N.D.	0.1	0.5
Batch number: C162151AA	Sample number(s): 8488109		
Trichloroethene	N.D.	0.1	0.5
Batch number: I162082AA	Sample number(s): 8488108-8488110,8488112-8488117		
Acetone	N.D.	3.0	5.0
Benzene	N.D.	0.1	0.5
Bromochloromethane	N.D.	0.1	0.5
Bromodichloromethane	N.D.	0.1	0.5
Bromoform	N.D.	0.1	0.5
Bromomethane	N.D.	0.1	0.5
2-Butanone	N.D.	1.0	5.0
Carbon Disulfide	N.D.	0.4	1.0
Carbon Tetrachloride	N.D.	0.1	0.5
Chlorobenzene	N.D.	0.1	0.5
Chloroethane	N.D.	0.1	0.5
Chloroform	N.D.	0.1	0.5
Chloromethane	N.D.	0.2	0.5
Cyclohexane	N.D.	0.1	0.5
1,2-Dibromo-3-chloropropane	N.D.	0.2	0.5
Dibromochloromethane	N.D.	0.1	0.5
1,2-Dibromoethane	N.D.	0.1	0.5
1,2-Dichlorobenzene	N.D.	0.1	0.5
1,3-Dichlorobenzene	N.D.	0.1	0.5
1,4-Dichlorobenzene	N.D.	0.1	0.5
Dichlorodifluoromethane	N.D.	0.1	0.5
1,1-Dichloroethane	N.D.	0.1	0.5
1,2-Dichloroethane	N.D.	0.1	0.5
1,1-Dichloroethene	N.D.	0.1	0.5
cis-1,2-Dichloroethene	N.D.	0.1	0.5
trans-1,2-Dichloroethene	N.D.	0.1	0.5
1,2-Dichloropropane	N.D.	0.1	0.5
cis-1,3-Dichloropropene	N.D.	0.1	0.5
trans-1,3-Dichloropropene	N.D.	0.1	0.5
Ethylbenzene	N.D.	0.1	0.5
Freon 113	N.D.	0.2	0.5
2-Hexanone	N.D.	1.0	5.0
Isopropylbenzene	N.D.	0.1	0.5
Methyl Acetate	N.D.	0.3	1.0
Methyl Tertiary Butyl Ether	N.D.	0.1	0.5
4-Methyl-2-pentanone	N.D.	1.0	5.0

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Quality Control Summary

Client Name: URS Corporation
Reported: 08/04/2016 10:43

Group Number: 1685925

Method Blank (continued)

Analysis Name	Result	MDL**	LOQ
	ug/l	ug/l	ug/l
Methylcyclohexane	N.D.	0.1	0.5
Methylene Chloride	N.D.	0.2	0.5
Styrene	N.D.	0.1	0.5
1,1,2,2-Tetrachloroethane	N.D.	0.1	0.5
Tetrachloroethene	N.D.	0.1	0.5
Toluene	N.D.	0.1	0.5
1,2,3-Trichlorobenzene	N.D.	0.1	0.5
1,2,4-Trichlorobenzene	N.D.	0.1	0.5
1,1,1-Trichloroethane	N.D.	0.1	0.5
1,1,2-Trichloroethane	N.D.	0.1	0.5
Trichloroethene	N.D.	0.1	0.5
Trichlorofluoromethane	N.D.	0.1	0.5
Vinyl Chloride	N.D.	0.1	0.5
m+p-Xylene	N.D.	0.1	0.5
o-Xylene	N.D.	0.1	0.5
Xylene (Total)	N.D.	0.1	0.5
	ug/kg	ug/kg	ug/kg
Batch number: 16210SLG026	Sample number(s): 8488097-8488099,8488101,8488104-8488105,8488107		
Acenaphthene	N.D.	3	17
Acenaphthylene	N.D.	3	17
Acetophenone	N.D.	17	33
Anthracene	N.D.	3	17
Atrazine	N.D.	33	170
Benzaldehyde	N.D.	67	170
Benzo(a)anthracene	N.D.	3	17
Benzo(a)pyrene	N.D.	3	17
Benzo(b)fluoranthene	N.D.	3	17
Benzo(g,h,i)perylene	N.D.	3	17
Benzo(k)fluoranthene	N.D.	3	17
1,1'-Biphenyl	N.D.	17	33
4-Bromophenyl-phenylether	N.D.	17	33
Butylbenzylphthalate	N.D.	67	170
Di-n-butylphthalate	N.D.	67	170
Caprolactam	N.D.	33	170
Carbazole	N.D.	17	33
4-Chloro-3-methylphenol	N.D.	17	33
4-Chloroaniline	N.D.	33	67
bis(2-Chloroethoxy)methane	N.D.	17	33
bis(2-Chloroethyl)ether	N.D.	17	33
2-Chloronaphthalene	N.D.	7	33
2-Chlorophenol	N.D.	17	33
4-Chlorophenyl-phenylether	N.D.	17	33
2,2'-oxybis(1-Chloropropane)	N.D.	17	33
Chrysene	N.D.	3	17
Dibenz(a,h)anthracene	N.D.	3	17
Dibenzofuran	N.D.	17	33
3,3'-Dichlorobenzidine	N.D.	100	330
2,4-Dichlorophenol	N.D.	17	33
Diethylphthalate	N.D.	67	170
2,4-Dimethylphenol	N.D.	17	33

*- Outside of specification
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Quality Control Summary

Client Name: URS Corporation
Reported: 08/04/2016 10:43

Group Number: 1685925

Method Blank (continued)

Analysis Name	Result ug/kg	MDL** ug/kg	LOQ ug/kg
Dimethylphthalate	N.D.	67	170
4,6-Dinitro-2-methylphenol	N.D.	170	500
2,4-Dinitrophenol	N.D.	300	1,000
2,4-Dinitrotoluene	N.D.	67	170
2,6-Dinitrotoluene	N.D.	17	33
1,4-Dioxane	N.D.	100	330
bis(2-Ethylhexyl)phthalate	N.D.	67	170
Fluoranthene	N.D.	3	17
Fluorene	N.D.	3	17
Hexachlorobenzene	N.D.	3	17
Hexachlorobutadiene	N.D.	17	33
Hexachlorocyclopentadiene	N.D.	170	500
Hexachloroethane	N.D.	33	170
Indeno(1,2,3-cd)pyrene	N.D.	3	17
Isophorone	N.D.	17	33
2-Methylnaphthalene	N.D.	3	17
2-Methylphenol	N.D.	17	33
4-Methylphenol	N.D.	17	33
Naphthalene	N.D.	3	17
2-Nitroaniline	N.D.	17	33
3-Nitroaniline	N.D.	67	170
4-Nitroaniline	N.D.	67	170
Nitrobenzene	N.D.	17	33
2-Nitrophenol	N.D.	17	33
4-Nitrophenol	N.D.	170	500
N-Nitroso-di-n-propylamine	N.D.	17	33
N-Nitrosodiphenylamine	N.D.	17	33
Di-n-octylphthalate	N.D.	67	170
Pentachlorophenol	N.D.	33	170
Phenanthrene	N.D.	3	17
Phenol	N.D.	17	33
Pyrene	N.D.	3	17
1,2,4,5-Tetrachlorobenzene	N.D.	17	33
2,3,4,6-Tetrachlorophenol	N.D.	67	170
2,4,5-Trichlorophenol	N.D.	17	33
2,4,6-Trichlorophenol	N.D.	17	33
Batch number: 16214SLA026	Sample number(s): 8488100,8488102-8488103,8488106		
Acenaphthene	N.D.	3	17
Acenaphthylene	N.D.	3	17
Acetophenone	N.D.	17	33
Anthracene	N.D.	3	17
Atrazine	N.D.	33	170
Benzaldehyde	N.D.	67	170
Benzo(a)anthracene	N.D.	3	17
Benzo(a)pyrene	N.D.	3	17
Benzo(b)fluoranthene	N.D.	3	17
Benzo(g,h,i)perylene	N.D.	3	17
Benzo(k)fluoranthene	N.D.	3	17
1,1'-Biphenyl	N.D.	17	33
4-Bromophenyl-phenylether	N.D.	17	33
Butylbenzylphthalate	N.D.	67	170

*- Outside of specification
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Quality Control Summary

Client Name: URS Corporation
Reported: 08/04/2016 10:43

Group Number: 1685925

Method Blank (continued)

Analysis Name	Result ug/kg	MDL** ug/kg	LOQ ug/kg
Di-n-butylphthalate	N.D.	67	170
Caprolactam	N.D.	33	170
Carbazole	N.D.	17	33
4-Chloro-3-methylphenol	N.D.	17	33
4-Chloroaniline	N.D.	33	67
bis(2-Chloroethoxy)methane	N.D.	17	33
bis(2-Chloroethyl)ether	N.D.	17	33
2-Chloronaphthalene	N.D.	7	33
2-Chlorophenol	N.D.	17	33
4-Chlorophenyl-phenylether	N.D.	17	33
2,2'-oxybis(1-Chloropropane)	N.D.	17	33
Chrysene	N.D.	3	17
Dibenz(a,h)anthracene	N.D.	3	17
Dibenzofuran	N.D.	17	33
3,3'-Dichlorobenzidine	N.D.	100	330
2,4-Dichlorophenol	N.D.	17	33
Diethylphthalate	N.D.	67	170
2,4-Dimethylphenol	N.D.	17	33
Dimethylphthalate	N.D.	67	170
4,6-Dinitro-2-methylphenol	N.D.	170	500
2,4-Dinitrophenol	N.D.	300	1,000
2,4-Dinitrotoluene	N.D.	67	170
2,6-Dinitrotoluene	N.D.	17	33
1,4-Dioxane	N.D.	100	330
bis(2-Ethylhexyl)phthalate	N.D.	67	170
Fluoranthene	N.D.	3	17
Fluorene	N.D.	3	17
Hexachlorobenzene	N.D.	3	17
Hexachlorobutadiene	N.D.	17	33
Hexachlorocyclopentadiene	N.D.	170	500
Hexachloroethane	N.D.	33	170
Indeno(1,2,3-cd)pyrene	N.D.	3	17
Isophorone	N.D.	17	33
2-Methylnaphthalene	N.D.	3	17
2-Methylphenol	N.D.	17	33
4-Methylphenol	N.D.	17	33
Naphthalene	N.D.	3	17
2-Nitroaniline	N.D.	17	33
3-Nitroaniline	N.D.	67	170
4-Nitroaniline	N.D.	67	170
Nitrobenzene	N.D.	17	33
2-Nitrophenol	N.D.	17	33
4-Nitrophenol	N.D.	170	500
N-Nitroso-di-n-propylamine	N.D.	17	33
N-Nitrosodiphenylamine	N.D.	17	33
Di-n-octylphthalate	N.D.	67	170
Pentachlorophenol	N.D.	33	170
Phenanthrene	N.D.	3	17
Phenol	N.D.	17	33
Pyrene	N.D.	3	17
1,2,4,5-Tetrachlorobenzene	N.D.	17	33

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Quality Control Summary

Client Name: URS Corporation
Reported: 08/04/2016 10:43

Group Number: 1685925

Method Blank (continued)

Analysis Name	Result	MDL**	LOQ
	ug/kg	ug/kg	ug/kg
2,3,4,6-Tetrachlorophenol	N.D.	67	170
2,4,5-Trichlorophenol	N.D.	17	33
2,4,6-Trichlorophenol	N.D.	17	33
	ug/l	ug/l	ug/l
Batch number: 16205WAI026	Sample number(s): 8488108-8488111,8488114-8488117		
Benzo(a)anthracene	N.D.	0.010	0.050
Benzo(b)fluoranthene	N.D.	0.010	0.050
Dibenz(a,h)anthracene	N.D.	0.010	0.050
Indeno(1,2,3-cd)pyrene	N.D.	0.010	0.050
Batch number: 16205WAJ026	Sample number(s): 8488108-8488111,8488114-8488117		
Acenaphthene	N.D.	0.1	0.5
Acenaphthylene	N.D.	0.1	0.5
Acetophenone	N.D.	0.5	1
Anthracene	N.D.	0.1	0.5
Atrazine	N.D.	2	5
Benzaldehyde	N.D.	1	5
Benzo(a)anthracene	N.D.	0.1	0.5
Benzo(a)pyrene	N.D.	0.1	0.5
Benzo(b)fluoranthene	N.D.	0.1	0.5
Benzo(g,h,i)perylene	N.D.	0.1	0.5
Benzo(k)fluoranthene	N.D.	0.1	0.5
1,1'-Biphenyl	N.D.	0.5	1
4-Bromophenyl-phenylether	N.D.	0.5	1
Butylbenzylphthalate	N.D.	2	5
Di-n-butylphthalate	N.D.	2	5
Caprolactam	N.D.	5	15
Carbazole	N.D.	0.5	1
4-Chloro-3-methylphenol	N.D.	0.5	1
4-Chloroaniline	N.D.	2	4
bis(2-Chloroethoxy)methane	N.D.	0.5	1
bis(2-Chloroethyl)ether	N.D.	0.5	1
2-Chloronaphthalene	N.D.	0.4	1
2-Chlorophenol	N.D.	0.5	1
4-Chlorophenyl-phenylether	N.D.	0.5	1
2,2'-oxybis(1-Chloropropane)	N.D.	0.5	1
Chrysene	N.D.	0.1	0.5
Dibenz(a,h)anthracene	N.D.	0.1	0.5
Dibenzofuran	N.D.	0.5	1
3,3'-Dichlorobenzidine	N.D.	2	5
2,4-Dichlorophenol	N.D.	0.5	1
Diethylphthalate	N.D.	2	5
2,4-Dimethylphenol	N.D.	0.5	1
Dimethylphthalate	N.D.	2	5
4,6-Dinitro-2-methylphenol	N.D.	5	15
2,4-Dinitrophenol	N.D.	10	30
2,4-Dinitrotoluene	N.D.	1	5
2,6-Dinitrotoluene	N.D.	0.5	1
1,4-Dioxane	N.D.	1	5
bis(2-Ethylhexyl)phthalate	N.D.	2	5
Fluoranthene	N.D.	0.1	0.5

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Quality Control Summary

Client Name: URS Corporation
Reported: 08/04/2016 10:43

Group Number: 1685925

Method Blank (continued)

Analysis Name	Result	MDL**	LOQ
	ug/l	ug/l	ug/l
Fluorene	N.D.	0.1	0.5
Hexachlorobenzene	N.D.	0.1	0.5
Hexachlorobutadiene	N.D.	0.5	1
Hexachlorocyclopentadiene	N.D.	5	15
Hexachloroethane	N.D.	1	5
Indeno(1,2,3-cd)pyrene	N.D.	0.1	0.5
Isophorone	N.D.	0.5	1
2-Methylnaphthalene	N.D.	0.1	0.5
2-Methylphenol	N.D.	0.5	1
4-Methylphenol	N.D.	0.5	1
Naphthalene	N.D.	0.1	0.5
2-Nitroaniline	N.D.	0.5	1
3-Nitroaniline	N.D.	0.5	1
4-Nitroaniline	N.D.	0.5	1
Nitrobenzene	N.D.	0.5	1
2-Nitrophenol	N.D.	0.5	1
4-Nitrophenol	N.D.	10	30
N-Nitroso-di-n-propylamine	N.D.	0.5	1
N-Nitrosodiphenylamine	N.D.	0.5	1
Di-n-octylphthalate	N.D.	2	5
Pentachlorophenol	N.D.	1	5
Phenanthrene	N.D.	0.1	0.5
Phenol	N.D.	0.5	1
Pyrene	N.D.	0.1	0.5
1,2,4,5-Tetrachlorobenzene	N.D.	0.5	1
2,3,4,6-Tetrachlorophenol	N.D.	0.5	1
2,4,5-Trichlorophenol	N.D.	0.5	1
2,4,6-Trichlorophenol	N.D.	0.5	1
	ug/kg	ug/kg	ug/kg
Batch number: 162100026A	Sample number(s): 8488097-8488107		
PCB-1016	N.D.	3.6	17
PCB-1221	N.D.	4.6	17
PCB-1232	N.D.	8.0	17
PCB-1242	N.D.	3.3	17
PCB-1248	N.D.	3.3	17
PCB-1254	N.D.	3.3	17
PCB-1260	N.D.	4.9	17
PCB-1262	N.D.	3.3	17
PCB-1268	N.D.	3.3	17
Total PCBs	N.D.	3.3	17
	ug/l	ug/l	ug/l
Batch number: 162050017A	Sample number(s): 8488108-8488111,8488114-8488117		
PCB-1016	N.D.	0.0060	0.010
PCB-1221	N.D.	0.0060	0.010
PCB-1232	N.D.	0.0070	0.010
PCB-1242	N.D.	0.0060	0.010
PCB-1248	N.D.	0.0050	0.010
PCB-1254	N.D.	0.0050	0.010
PCB-1260	N.D.	0.0050	0.010

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Quality Control Summary

Client Name: URS Corporation
Reported: 08/04/2016 10:43

Group Number: 1685925

Method Blank (continued)

Analysis Name	Result		MDL**	LOQ
	ug/l		ug/l	ug/l
PCB-1262	N.D.		0.0050	0.010
PCB-1268	N.D.		0.0050	0.010
Total PCBs	N.D.		0.0050	0.010
Batch number: 162050001A	Sample number(s): 8488108-8488111,8488114-8488117			
Ethylene dibromide	N.D.		0.010	0.030
	mg/kg		mg/kg	mg/kg
Batch number: 162095708003	Sample number(s): 8488097-8488107			
Aluminum	N.D.		8.68	20.0
Antimony	N.D.		0.700	2.00
Arsenic	N.D.		0.970	2.00
Barium	N.D.		0.0330	0.500
Beryllium	N.D.		0.0670	0.500
Cadmium	N.D.		0.0490	0.500
Calcium	8.37	J	5.66	20.0
Chromium	N.D.		0.140	1.50
Cobalt	N.D.		0.120	0.500
Copper	0.307	J	0.230	1.00
Iron	N.D.		4.12	20.0
Lead	N.D.		0.550	1.50
Magnesium	2.11	J	1.90	10.0
Manganese	N.D.		0.0830	0.500
Nickel	N.D.		0.300	1.00
Potassium	N.D.		23.9	50.0
Selenium	N.D.		0.900	2.00
Silver	N.D.		0.150	0.500
Sodium	N.D.		23.9	100
Vanadium	N.D.		0.140	0.500
Zinc	N.D.		0.680	2.00
Batch number: 162095708003A	Sample number(s): 8488097-8488107			
Thallium	N.D.		0.0290	0.100
Batch number: 162105711001	Sample number(s): 8488097-8488107			
Mercury	N.D.		0.0100	0.100
	mg/l		mg/l	mg/l
Batch number: 162091848007	Sample number(s): 8488108-8488111,8488114-8488117			
Aluminum	N.D.		0.0868	0.200
Barium	N.D.		0.0011	0.0050
Cadmium	N.D.		0.00049	0.0050
Calcium	0.148	J	0.0382	0.200
Chromium	N.D.		0.0018	0.0150
Copper	N.D.		0.0041	0.0100
Iron	N.D.		0.0747	0.200
Lead	N.D.		0.0062	0.0150
Magnesium	0.0383	J	0.0190	0.100
Manganese	N.D.		0.0018	0.0050
Nickel	N.D.		0.0028	0.0100
Potassium	N.D.		0.160	0.500
Selenium	N.D.		0.0097	0.0200
Silver	N.D.		0.0019	0.0050

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Quality Control Summary

Client Name: URS Corporation
Reported: 08/04/2016 10:43

Group Number: 1685925

Method Blank (continued)

Analysis Name	Result	MDL**	LOQ
	mg/l	mg/l	mg/l
Sodium	N.D.	0.173	1.00
Vanadium	N.D.	0.0016	0.0050
Zinc	N.D.	0.0054	0.0200
Batch number: 162095713009	Sample number(s): 8488108-8488111,8488114-8488117		
Mercury	N.D.	0.000050	0.00020
Batch number: 162096050008A	Sample number(s): 8488108-8488111,8488114-8488117		
Antimony	N.D.	0.00048	0.0010
Arsenic	N.D.	0.00068	0.0020
Beryllium	N.D.	0.00011	0.00050
Cobalt	N.D.	0.00020	0.00050
Thallium	N.D.	0.00016	0.00050
	mg/kg	mg/kg	mg/kg
Batch number: 16213102201B	Sample number(s): 8488097,8488099-8488102,8488105-8488106		
Total Cyanide (solid)	N.D.	0.18	0.50
Batch number: 16214102201A	Sample number(s): 8488098,8488103-8488104,8488107		
Total Cyanide (solid)	N.D.	0.18	0.50
	mg/l	mg/l	mg/l
Batch number: 16210117101B	Sample number(s): 8488108-8488111,8488115-8488116		
Total Cyanide (water)	N.D.	0.0050	0.010
Batch number: 16215117101A	Sample number(s): 8488114,8488117		
Total Cyanide (water)	N.D.	0.0050	0.010

LCS/LCSD

Analysis Name	LCS Spike Added ug/kg	LCS Conc ug/kg	LCSD Spike Added ug/kg	LCSD Conc ug/kg	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: B162101AA	Sample number(s): 8488098-8488103,8488105-8488107								
Acetone	150	130.45	150	130.17	87	87	46-139	0	30
Benzene	20	19.46	20	19.97	97	100	80-120	3	30
Bromochloromethane	20	21.21	20	21.82	106	109	80-126	3	30
Bromodichloromethane	20	17.3	20	18.04	86	90	75-120	4	30
Bromoform	20	13.42	20	14.32	67	72	64-120	6	30
Bromomethane	20	19.3	20	20.01	96	100	16-200	4	30
2-Butanone	150	125.25	150	128.62	83	86	54-129	3	30
Carbon Disulfide	20	17.65	20	17.92	88	90	60-120	1	30
Carbon Tetrachloride	20	16.75	20	17.67	84	88	69-130	5	30
Chlorobenzene	20	18.85	20	19.4	94	97	80-120	3	30
Chloroethane	20	19.11	20	19.47	96	97	11-200	2	30
Chloroform	20	19.33	20	20.02	97	100	80-120	4	30
Chloromethane	20	18.57	20	18.85	93	94	56-120	1	30
Cyclohexane	20	19.67	20	19.77	98	99	58-120	1	30
1,2-Dibromo-3-chloropropane	20	16.71	20	17.33	84	87	54-120	4	30

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Quality Control Summary

Client Name: URS Corporation
Reported: 08/04/2016 10:43

Group Number: 1685925

LCS/LCSD (continued)

Analysis Name	LCS Spike Added ug/kg	LCS Conc ug/kg	LCSD Spike Added ug/kg	LCSD Conc ug/kg	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Dibromochloromethane	20	15.24	20	16.09	76*	80	77-120	5	30
1,2-Dibromoethane	20	19.08	20	19.87	95	99	80-120	4	30
1,2-Dichlorobenzene	20	18.73	20	19.28	94	96	80-120	3	30
1,3-Dichlorobenzene	20	18.2	20	18.93	91	95	80-120	4	30
1,4-Dichlorobenzene	20	18.23	20	19.08	91	95	80-120	5	30
Dichlorodifluoromethane	20	19.15	20	19.47	96	97	28-131	2	30
1,1-Dichloroethane	20	19.48	20	20	97	100	77-120	3	30
1,2-Dichloroethane	20	20.59	20	21.43	103	107	77-130	4	30
1,1-Dichloroethene	20	19.85	20	20.17	99	101	73-129	2	30
cis-1,2-Dichloroethene	20	19.51	20	20.25	98	101	80-120	4	30
trans-1,2-Dichloroethene	20	20.07	20	20.6	100	103	80-125	3	30
1,2-Dichloropropane	20	19.28	20	19.93	96	100	76-120	3	30
cis-1,3-Dichloropropene	20	17.45	20	18.12	87	91	74-120	4	30
trans-1,3-Dichloropropene	20	16.66	20	17.35	83	87	76-120	4	30
Ethylbenzene	20	18.24	20	18.92	91	95	80-120	4	30
Freon 113	20	21.2	20	21.38	106	107	57-141	1	30
2-Hexanone	100	94.83	100	97.74	95	98	39-120	3	30
Isopropylbenzene	20	18.73	20	19.55	94	98	70-120	4	30
Methyl Acetate	20	23.97	20	24.59	120	123	52-146	3	30
Methyl Tertiary Butyl Ether	20	19.73	20	20.58	99	103	72-120	4	30
4-Methyl-2-pentanone	100	100.53	100	103.61	101	104	50-120	3	30
Methylcyclohexane	20	20.37	20	20.52	102	103	52-128	1	30
Methylene Chloride	20	19.5	20	20.48	98	102	76-122	5	30
Styrene	20	18.1	20	18.66	90	93	76-120	3	30
1,1,2,2-Tetrachloroethane	20	18.49	20	18.94	92	95	67-121	2	30
Tetrachloroethene	20	19.06	20	19.64	95	98	78-120	3	30
Toluene	20	18.51	20	19.2	93	96	80-120	4	30
1,2,3-Trichlorobenzene	20	17.98	20	19.39	90	97	47-123	8	30
1,2,4-Trichlorobenzene	20	17.69	20	19.07	88	95	55-120	7	30
1,1,1-Trichloroethane	20	16.4	20	17.09	82	85	66-128	4	30
1,1,2-Trichloroethane	20	18.96	20	19.77	95	99	80-120	4	30
Trichloroethene	20	19.51	20	20.15	98	101	80-120	3	30
Trichlorofluoromethane	20	19.61	20	19.74	98	99	54-140	1	30
Vinyl Chloride	20	18.69	20	18.91	93	95	59-120	1	30
Xylene (Total)	60	55.55	60	57.44	93	96	80-120	3	30
Batch number: B162111AA	Sample number(s): 8488097								
Acetone	150	138.88	150	132.59	93	88	46-139	5	30
Benzene	20	19.37	20	19.23	97	96	80-120	1	30
Bromochloromethane	20	22.1	20	21.73	110	109	80-126	2	30
Bromodichloromethane	20	17.04	20	17.2	85	86	75-120	1	30
Bromoform	20	13.13	20	13.55	66	68	64-120	3	30
Bromomethane	20	19.69	20	19.25	98	96	16-200	2	30
2-Butanone	150	127.39	150	125.63	85	84	54-129	1	30
Carbon Disulfide	20	18.54	20	17.94	93	90	60-120	3	30
Carbon Tetrachloride	20	15.52	20	16.05	78	80	69-130	3	30
Chlorobenzene	20	18.91	20	18.36	95	92	80-120	3	30
Chloroethane	20	19.61	20	19.02	98	95	11-200	3	30
Chloroform	20	19.33	20	18.9	97	95	80-120	2	30
Chloromethane	20	18.86	20	18.07	94	90	56-120	4	30
Cyclohexane	20	19.55	20	19.48	98	97	58-120	0	30

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Quality Control Summary

Client Name: URS Corporation
Reported: 08/04/2016 10:43

Group Number: 1685925

LCS/LCSD (continued)

Analysis Name	LCS Spike Added ug/kg	LCS Conc ug/kg	LCSD Spike Added ug/kg	LCSD Conc ug/kg	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
1,2-Dibromo-3-chloropropane	20	18.55	20	18.51	93	93	54-120	0	30
Dibromochloromethane	20	14.68	20	15.13	73*	76*	77-120	3	30
1,2-Dibromoethane	20	19.71	20	19.26	99	96	80-120	2	30
1,2-Dichlorobenzene	20	19.82	20	17.88	99	89	80-120	10	30
1,3-Dichlorobenzene	20	18.63	20	16.99	93	85	80-120	9	30
1,4-Dichlorobenzene	20	19.02	20	17.49	95	87	80-120	8	30
Dichlorodifluoromethane	20	19.04	20	18.8	95	94	28-131	1	30
1,1-Dichloroethane	20	19.8	20	19.39	99	97	77-120	2	30
1,2-Dichloroethane	20	20.82	20	20.58	104	103	77-130	1	30
1,1-Dichloroethene	20	19.82	20	19.65	99	98	73-129	1	30
cis-1,2-Dichloroethene	20	19.8	20	19.43	99	97	80-120	2	30
trans-1,2-Dichloroethene	20	20.08	20	20.81	100	104	80-125	4	30
1,2-Dichloropropane	20	19.84	20	19.51	99	98	76-120	2	30
cis-1,3-Dichloropropene	20	17.68	20	17.5	88	87	74-120	1	30
trans-1,3-Dichloropropene	20	16.67	20	16.9	83	84	76-120	1	30
Ethylbenzene	20	18.18	20	17.27	91	86	80-120	5	30
Freon 113	20	20.72	20	20.35	104	102	57-141	2	30
2-Hexanone	100	100.8	100	99.73	101	100	39-120	1	30
Isopropylbenzene	20	18.25	20	17.19	91	86	70-120	6	30
Methyl Acetate	20	25.31	20	24.61	127	123	52-146	3	30
Methyl Tertiary Butyl Ether	20	20.84	20	21.67	104	108	72-120	4	30
4-Methyl-2-pentanone	100	107.49	100	106.32	107	106	50-120	1	30
Methylcyclohexane	20	20.24	20	20.24	101	101	52-128	0	30
Methylene Chloride	20	19.92	20	19.25	100	96	76-122	3	30
Styrene	20	18.3	20	17.64	92	88	76-120	4	30
1,1,2,2-Tetrachloroethane	20	19.24	20	18.43	96	92	67-121	4	30
Tetrachloroethene	20	18.66	20	17.84	93	89	78-120	4	30
Toluene	20	18.47	20	18.05	92	90	80-120	2	30
1,2,3-Trichlorobenzene	20	19.51	20	17.69	98	88	47-123	10	30
1,2,4-Trichlorobenzene	20	18.83	20	17.03	94	85	55-120	10	30
1,1,1-Trichloroethane	20	15.58	20	15.73	78	79	66-128	1	30
1,1,2-Trichloroethane	20	19.31	20	19.12	97	96	80-120	1	30
Trichloroethene	20	19.5	20	19.57	97	98	80-120	0	30
Trichlorofluoromethane	20	19.33	20	19.09	97	95	54-140	1	30
Vinyl Chloride	20	18.72	20	18.17	94	91	59-120	3	30
Xylene (Total)	60	55.74	60	53.02	93	88	80-120	5	30
Batch number: Q162091AA	Sample number(s): 8488104								
Acetone	7500	7967.89	7500	7629.42	106	102	46-139	4	30
Benzene	1000	1006.56	1000	1008.72	101	101	80-120	0	30
Bromochloromethane	1000	969.48	1000	993.49	97	99	80-126	2	30
Bromodichloromethane	1000	894.36	1000	928.1	89	93	75-120	4	30
Bromoform	1000	994.06	1000	896.98	99	90	64-120	10	30
Bromomethane	1000	1118.4	1000	1118.01	112	112	16-200	0	30
2-Butanone	7500	5766.53	7500	5598.64	77	75	54-129	3	30
Carbon Disulfide	1000	916.71	1000	922.39	92	92	60-120	1	30
Carbon Tetrachloride	1000	836	1000	847.77	84	85	69-130	1	30
Chlorobenzene	1000	1049.4	1000	1033.87	105	103	80-120	1	30
Chloroethane	1000	1295.8	1000	1243.62	130	124	11-200	4	30
Chloroform	1000	939.92	1000	972.23	94	97	80-120	3	30
Chloromethane	1000	861.24	1000	837.2	86	84	56-120	3	30

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: URS Corporation
Reported: 08/04/2016 10:43

Group Number: 1685925

LCS/LCSD (continued)

Analysis Name	LCS Spike Added ug/kg	LCS Conc ug/kg	LCSD Spike Added ug/kg	LCSD Conc ug/kg	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Cyclohexane	1000	931.44	1000	1014.91	93	101	58-120	9	30
1,2-Dibromo-3-chloropropane	1000	992.83	1000	910.29	99	91	54-120	9	30
Dibromochloromethane	1000	993.68	1000	934.35	99	93	77-120	6	30
1,2-Dibromoethane	1000	1119.55	1000	1066.36	112	107	80-120	5	30
1,2-Dichlorobenzene	1000	1079.66	1000	1061.64	108	106	80-120	2	30
1,3-Dichlorobenzene	1000	1036.3	1000	1011.8	104	101	80-120	2	30
1,4-Dichlorobenzene	1000	1027.79	1000	1027.89	103	103	80-120	0	30
Dichlorodifluoromethane	1000	701.19	1000	738.03	70	74	28-131	5	30
1,1-Dichloroethane	1000	1000.18	1000	972.3	100	97	77-120	3	30
1,2-Dichloroethane	1000	886.99	1000	914.36	89	91	77-130	3	30
1,1-Dichloroethene	1000	1024.18	1000	1024.88	102	102	73-129	0	30
cis-1,2-Dichloroethene	1000	1012.52	1000	1012.75	101	101	80-120	0	30
trans-1,2-Dichloroethene	1000	1058.18	1000	1105.84	106	111	80-125	4	30
1,2-Dichloropropane	1000	1009.42	1000	998.68	101	100	76-120	1	30
cis-1,3-Dichloropropene	1000	891.07	1000	901.78	89	90	74-120	1	30
trans-1,3-Dichloropropene	1000	1001.67	1000	939.11	100	94	76-120	6	30
Ethylbenzene	1000	1031.93	1000	1073.59	103	107	80-120	4	30
Freon 113	1000	972.97	1000	1068.75	97	107	57-141	9	30
2-Hexanone	5000	4171.74	5000	4152.4	83	83	39-120	0	30
Isopropylbenzene	1000	1148.48	1000	1120.51	115	112	70-120	2	30
Methyl Acetate	1000	962.96	1000	894.44	96	89	52-146	7	30
Methyl Tertiary Butyl Ether	1000	1013.62	1000	1017.54	101	102	72-120	0	30
4-Methyl-2-pentanone	5000	4002.41	5000	4069.92	80	81	50-120	2	30
Methylcyclohexane	1000	1029.21	1000	1111.62	103	111	52-128	8	30
Methylene Chloride	1000	1025.93	1000	1065.87	103	107	76-122	4	30
Styrene	1000	1092.39	1000	1058.77	109	106	76-120	3	30
1,1,2,2-Tetrachloroethane	1000	1254.98	1000	1129.69	125*	113	67-121	11	30
Tetrachloroethene	1000	1049.51	1000	1043.69	105	104	78-120	1	30
Toluene	1000	1108.43	1000	1075.78	111	108	80-120	3	30
1,2,3-Trichlorobenzene	1000	1154.44	1000	1016.61	115	102	47-123	13	30
1,2,4-Trichlorobenzene	1000	1084.6	1000	985.88	108	99	55-120	10	30
1,1,1-Trichloroethane	1000	877.44	1000	884.74	88	88	66-128	1	30
1,1,2-Trichloroethane	1000	1171.16	1000	1056.98	117	106	80-120	10	30
Trichloroethene	1000	1005.28	1000	1010.51	101	101	80-120	1	30
Trichlorofluoromethane	1000	1064.36	1000	1103.16	106	110	54-140	4	30
Vinyl Chloride	1000	990.78	1000	964.94	99	96	59-120	3	30
Xylene (Total)	3000	3165.59	3000	3167.1	106	106	80-120	0	30
	ug/l	ug/l	ug/l	ug/l					
Batch number: C162143AA	Sample number(s): 8488111								
Acetone	37.5	36.28	37.5	36.56	97	97	65-124	1	30
Benzene	5.00	4.83	5.00	4.77	97	95	80-120	1	30
Bromochloromethane	5.00	5.06	5.00	5.00	101	100	80-125	1	30
Bromodichloromethane	5.00	5.05	5.00	4.98	101	100	80-120	1	30
Bromoform	5.00	5.07	5.00	5.05	101	101	62-128	0	30
Bromomethane	5.00	4.96	5.00	4.89	99	98	71-126	1	30
2-Butanone	37.5	34.91	37.5	34.99	93	93	66-135	0	30
Carbon Disulfide	5.00	4.70	5.00	4.70	94	94	65-120	0	30
Carbon Tetrachloride	5.00	4.99	5.00	4.93	100	99	65-134	1	30
Chlorobenzene	5.00	4.96	5.00	4.92	99	98	80-120	1	30

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(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: URS Corporation
Reported: 08/04/2016 10:43

Group Number: 1685925

LCS/LCSD (continued)

Analysis Name	LCS Spike Added ug/l	LCS Conc ug/l	LCSD Spike Added ug/l	LCSD Conc ug/l	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Chloroethane	5.00	4.71	5.00	4.55	94	91	71-122	3	30
Chloroform	5.00	4.71	5.00	4.73	94	95	80-120	0	30
Chloromethane	5.00	4.67	5.00	4.72	93	94	63-121	1	30
Cyclohexane	5.00	4.27	5.00	4.28	85	86	69-120	0	30
1,2-Dibromo-3-chloropropane	5.00	5.61	5.00	5.64	112	113	56-131	1	30
Dibromochloromethane	5.00	5.18	5.00	5.18	104	104	68-131	0	30
1,2-Dibromoethane	5.00	5.25	5.00	5.27	105	105	80-120	0	30
1,2-Dichlorobenzene	5.00	5.02	5.00	5.00	100	100	80-120	0	30
1,3-Dichlorobenzene	5.00	5.01	5.00	4.97	100	99	80-120	1	30
1,4-Dichlorobenzene	5.00	5.03	5.00	5.00	101	100	80-120	1	30
Dichlorodifluoromethane	5.00	5.15	5.00	5.17	103	103	35-142	0	30
1,1-Dichloroethane	5.00	4.62	5.00	4.62	92	92	75-120	0	30
1,2-Dichloroethane	5.00	4.60	5.00	4.52	92	90	72-127	2	30
1,1-Dichloroethene	5.00	4.59	5.00	4.64	92	93	70-120	1	30
cis-1,2-Dichloroethene	5.00	4.92	5.00	4.93	98	99	80-120	0	30
trans-1,2-Dichloroethene	5.00	4.97	5.00	4.89	99	98	80-120	1	30
1,2-Dichloropropane	5.00	4.75	5.00	4.77	95	95	80-120	1	30
cis-1,3-Dichloropropene	5.00	4.77	5.00	4.74	95	95	80-124	1	30
trans-1,3-Dichloropropene	5.00	4.91	5.00	4.87	98	97	77-121	1	30
Ethylbenzene	5.00	4.90	5.00	4.84	98	97	80-120	1	30
Freon 113	5.00	4.65	5.00	4.70	93	94	75-120	1	30
2-Hexanone	25	22.73	25	22.58	91	90	73-128	1	30
Isopropylbenzene	5.00	5.14	5.00	5.10	103	102	80-120	1	30
Methyl Acetate	5.00	4.33	5.00	4.36	87	87	57-143	1	30
Methyl Tertiary Butyl Ether	5.00	4.74	5.00	4.70	95	94	74-120	1	30
4-Methyl-2-pentanone	25	22.91	25	22.93	92	92	71-129	0	30
Methylcyclohexane	5.00	4.73	5.00	4.79	95	96	72-120	1	30
Methylene Chloride	5.00	4.78	5.00	4.68	96	94	80-120	2	30
Styrene	5.00	5.23	5.00	5.14	105	103	80-122	2	30
1,1,2,2-Tetrachloroethane	5.00	4.98	5.00	4.97	100	99	80-120	0	30
Tetrachloroethene	5.00	4.98	5.00	4.87	100	97	80-120	2	30
Toluene	5.00	4.87	5.00	4.84	97	97	80-120	1	30
1,2,3-Trichlorobenzene	5.00	4.97	5.00	4.88	99	98	59-120	2	30
1,2,4-Trichlorobenzene	5.00	4.97	5.00	4.84	99	97	67-120	3	30
1,1,1-Trichloroethane	5.00	4.82	5.00	4.79	96	96	70-124	1	30
1,1,2-Trichloroethane	5.00	5.13	5.00	5.05	103	101	80-120	2	30
Trichloroethene	5.00	4.99	5.00	4.91	100	98	80-120	2	30
Trichlorofluoromethane	5.00	4.98	5.00	4.88	100	98	64-133	2	30
Vinyl Chloride	5.00	4.67	5.00	4.63	93	93	62-128	1	30
m+p-Xylene	10	10.1	10	9.95	101	100	80-120	1	30
o-Xylene	5.00	4.99	5.00	4.99	100	100	80-120	0	30
Xylene (Total)	15	15.09	15	14.94	101	100	80-120	1	30
Batch number: C162151AA	Sample number(s): 8488109								
Trichloroethene	5.00	4.93	5.00	4.69	99	94	80-120	5	30
Batch number: I162082AA	Sample number(s): 8488108-8488110,8488112-8488117								
Acetone	37.5	32.73	37.5	30.53	87	81	65-124	7	30
Benzene	5.00	4.67	5.00	4.51	93	90	80-120	4	30
Bromochloromethane	5.00	4.79	5.00	4.64	96	93	80-125	3	30
Bromodichloromethane	5.00	4.46	5.00	4.31	89	86	80-120	3	30

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(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: URS Corporation
Reported: 08/04/2016 10:43

Group Number: 1685925

LCS/LCSD (continued)

Analysis Name	LCS Spike Added ug/l	LCS Conc ug/l	LCSD Spike Added ug/l	LCSD Conc ug/l	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Bromoform	5.00	3.93	5.00	3.74	79	75	62-128	5	30
Bromomethane	5.00	3.69	5.00	3.56	74	71	71-126	4	30
2-Butanone	37.5	39.1	37.5	35.59	104	95	66-135	9	30
Carbon Disulfide	5.00	4.68	5.00	4.50	94	90	65-120	4	30
Carbon Tetrachloride	5.00	4.11	5.00	3.92	82	78	65-134	5	30
Chlorobenzene	5.00	4.60	5.00	4.50	92	90	80-120	2	30
Chloroethane	5.00	3.75	5.00	3.61	75	72	71-122	4	30
Chloroform	5.00	4.41	5.00	4.22	88	84	80-120	4	30
Chloromethane	5.00	3.56	5.00	3.47	71	69	63-121	2	30
Cyclohexane	5.00	4.18	5.00	4.06	84	81	69-120	3	30
1,2-Dibromo-3-chloropropane	5.00	5.08	5.00	4.48	102	90	56-131	13	30
Dibromochloromethane	5.00	4.70	5.00	4.57	94	91	68-131	3	30
1,2-Dibromoethane	5.00	5.25	5.00	5.12	105	102	80-120	3	30
1,2-Dichlorobenzene	5.00	4.73	5.00	4.61	95	92	80-120	3	30
1,3-Dichlorobenzene	5.00	4.61	5.00	4.49	92	90	80-120	3	30
1,4-Dichlorobenzene	5.00	4.60	5.00	4.49	92	90	80-120	2	30
Dichlorodifluoromethane	5.00	3.88	5.00	3.66	78	73	35-142	6	30
1,1-Dichloroethane	5.00	4.30	5.00	4.08	86	82	75-120	5	30
1,2-Dichloroethane	5.00	3.97	5.00	3.85	79	77	72-127	3	30
1,1-Dichloroethene	5.00	4.73	5.00	4.52	95	90	70-120	5	30
cis-1,2-Dichloroethene	5.00	4.78	5.00	4.56	96	91	80-120	5	30
trans-1,2-Dichloroethene	5.00	4.92	5.00	4.66	98	93	80-120	5	30
1,2-Dichloropropane	5.00	4.76	5.00	4.61	95	92	80-120	3	30
cis-1,3-Dichloropropene	5.00	4.48	5.00	4.33	90	87	80-124	4	30
trans-1,3-Dichloropropene	5.00	4.53	5.00	4.36	91	87	77-121	4	30
Ethylbenzene	5.00	4.55	5.00	4.38	91	88	80-120	4	30
Freon 113	5.00	4.52	5.00	4.33	90	87	75-120	4	30
2-Hexanone	25	23.74	25	23.14	95	93	73-128	3	30
Isopropylbenzene	5.00	4.57	5.00	4.45	91	89	80-120	3	30
Methyl Acetate	5.00	5.38	5.00	5.00	108	100	57-143	7	30
Methyl Tertiary Butyl Ether	5.00	4.46	5.00	4.34	89	87	74-120	3	30
4-Methyl-2-pentanone	25	24	25	22.92	96	92	71-129	5	30
Methylcyclohexane	5.00	4.54	5.00	4.44	91	89	72-120	2	30
Methylene Chloride	5.00	4.74	5.00	4.53	95	91	80-120	5	30
Styrene	5.00	4.84	5.00	4.72	97	94	80-122	2	30
1,1,2,2-Tetrachloroethane	5.00	5.51	5.00	5.39	110	108	80-120	2	30
Tetrachloroethene	5.00	4.39	5.00	4.22	88	84	80-120	4	30
Toluene	5.00	4.62	5.00	4.50	92	90	80-120	3	30
1,2,3-Trichlorobenzene	5.00	5.09	5.00	4.94	102	99	59-120	3	30
1,2,4-Trichlorobenzene	5.00	4.94	5.00	4.76	99	95	67-120	4	30
1,1,1-Trichloroethane	5.00	4.09	5.00	3.97	82	79	70-124	3	30
1,1,2-Trichloroethane	5.00	5.10	5.00	5.01	102	100	80-120	2	30
Trichloroethene	5.00	4.71	5.00	4.50	94	90	80-120	4	30
Trichlorofluoromethane	5.00	3.71	5.00	3.63	74	73	64-133	2	30
Vinyl Chloride	5.00	3.86	5.00	3.71	77	74	62-128	4	30
m+p-Xylene	10	9.17	10	8.85	92	89	80-120	4	30
o-Xylene	5.00	4.49	5.00	4.38	90	88	80-120	3	30
Xylene (Total)	15	13.67	15	13.23	91	88	80-120	3	30
	ug/kg	ug/kg	ug/kg	ug/kg					

*- Outside of specification
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(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
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Quality Control Summary

Client Name: URS Corporation
Reported: 08/04/2016 10:43

Group Number: 1685925

LCS/LCSD (continued)

Analysis Name	LCS Spike Added ug/kg	LCS Conc ug/kg	LCSD Spike Added ug/kg	LCSD Conc ug/kg	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 16210SLG026	Sample number(s): 8488097-8488099,8488101,8488104-8488105,8488107								
Acenaphthene	1666.67	1645.19			99		83-116		
Acenaphthylene	1666.67	1727.28			104		83-119		
Acetophenone	1666.67	1529.34			92		74-116		
Anthracene	1666.67	1642.54			99		82-118		
Atrazine	1666.67	1807.16			108		62-143		
Benzaldehyde	1666.67	1721.68			103*		10-93		
Benzo(a)anthracene	1666.67	1592.53			96		76-119		
Benzo(a)pyrene	1666.67	1622.33			97		85-117		
Benzo(b)fluoranthene	1666.67	1697.52			102		78-129		
Benzo(g,h,i)perylene	1666.67	1719.43			103		77-118		
Benzo(k)fluoranthene	1666.67	1461.76			88		79-120		
1,1'-Biphenyl	1666.67	1584.58			95		76-111		
4-Bromophenyl-phenylether	1666.67	1682.94			101		84-120		
Butylbenzylphthalate	1666.67	1711.26			103		80-118		
Di-n-butylphthalate	1666.67	1706.42			102		84-120		
Caprolactam	1666.67	1507.89			90		73-119		
Carbazole	1666.67	1625.95			98		78-117		
4-Chloro-3-methylphenol	1666.67	1712.75			103		79-127		
4-Chloroaniline	1666.67	654.61			39		10-100		
bis(2-Chloroethoxy)methane	1666.67	1678.14			101		77-116		
bis(2-Chloroethyl)ether	1666.67	1602.24			96		77-115		
2-Chloronaphthalene	1666.67	1614.51			97		63-146		
2-Chlorophenol	1666.67	1710.65			103		85-123		
4-Chlorophenyl-phenylether	1666.67	1617.2			97		81-120		
2,2'-oxybis(1-Chloropropane)	1666.67	1701.22			102		61-134		
Chrysene	1666.67	1584.9			95		80-121		
Dibenz(a,h)anthracene	1666.67	1754.36			105		81-123		
Dibenzofuran	1666.67	1614.94			97		85-115		
3,3'-Dichlorobenzidine	1666.67	552.38			33		10-116		
2,4-Dichlorophenol	1666.67	1672.72			100		86-125		
Diethylphthalate	1666.67	1639.24			98		81-118		
2,4-Dimethylphenol	1666.67	1547.3			93		83-120		
Dimethylphthalate	1666.67	1613.08			97		82-113		
4,6-Dinitro-2-methylphenol	1666.67	1525.1			92		46-134		
2,4-Dinitrophenol	3333.33	2815.97			84		16-132		
2,4-Dinitrotoluene	1666.67	1641.27			98		81-122		
2,6-Dinitrotoluene	1666.67	1758.31			105		86-125		
1,4-Dioxane	1666.67	990.22			59		36-90		
bis(2-Ethylhexyl)phthalate	1666.67	1743.65			105		81-121		
Fluoranthene	1666.67	1569.09			94		81-117		
Fluorene	1666.67	1642.07			99		86-118		
Hexachlorobenzene	1666.67	1688.05			101		79-116		
Hexachlorobutadiene	1666.67	1575.01			95		72-120		
Hexachlorocyclopentadiene	3333.33	3315.43			99		64-137		
Hexachloroethane	1666.67	1656.63			99		78-114		
Indeno(1,2,3-cd)pyrene	1666.67	1694.72			102		81-118		
Isophorone	1666.67	1698.02			102		77-118		
2-Methylnaphthalene	1666.67	1628.89			98		83-109		
2-Methylphenol	1666.67	1761.3			106		80-133		

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Quality Control Summary

Client Name: URS Corporation
Reported: 08/04/2016 10:43

Group Number: 1685925

LCS/LCSD (continued)

Analysis Name	LCS Spike Added ug/kg	LCS Conc ug/kg	LCSD Spike Added ug/kg	LCSD Conc ug/kg	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
4-Methylphenol	1666.67	1749.21			105		73-125		
Naphthalene	1666.67	1601			96		82-112		
2-Nitroaniline	1666.67	1642.05			99		84-126		
3-Nitroaniline	1666.67	1625.61			98		66-119		
4-Nitroaniline	1666.67	1180.52			71		44-110		
Nitrobenzene	1666.67	1690.31			101		70-122		
2-Nitrophenol	1666.67	1694.71			102		83-120		
4-Nitrophenol	1666.67	1604.96			96		52-133		
N-Nitroso-di-n-propylamine	1666.67	1711.48			103		67-121		
N-Nitrosodiphenylamine	1666.67	1676.22			101		83-118		
Di-n-octylphthalate	1666.67	1731.06			104		80-140		
Pentachlorophenol	1666.67	1694.41			102		57-126		
Phenanthrene	1666.67	1575.12			95		80-114		
Phenol	1666.67	1589.04			95		73-122		
Pyrene	1666.67	1595.2			96		81-114		
1,2,4,5-Tetrachlorobenzene	1666.67	1608.66			97		76-116		
2,3,4,6-Tetrachlorophenol	1666.67	1581.93			95		78-133		
2,4,5-Trichlorophenol	1666.67	1698.56			102		86-123		
2,4,6-Trichlorophenol	1666.67	1756.05			105		81-123		
Batch number: 16214SLA026	Sample number(s): 8488100,8488102-8488103,8488106								
Acenaphthene	1666.67	1685.64			101		83-116		
Acenaphthylene	1666.67	1775.57			107		83-119		
Acetophenone	1666.67	1584.59			95		74-116		
Anthracene	1666.67	1715.11			103		82-118		
Atrazine	1666.67	1831.72			110		62-143		
Benzaldehyde	1666.67	1613.97			97*		10-93		
Benzo(a)anthracene	1666.67	1697.55			102		76-119		
Benzo(a)pyrene	1666.67	1678.06			101		85-117		
Benzo(b)fluoranthene	1666.67	1768.55			106		78-129		
Benzo(g,h,i)perylene	1666.67	1963.43			118		77-118		
Benzo(k)fluoranthene	1666.67	1465.43			88		79-120		
1,1'-Biphenyl	1666.67	1627.74			98		76-111		
4-Bromophenyl-phenylether	1666.67	1843.87			111		84-120		
Butylbenzylphthalate	1666.67	1766.81			106		80-118		
Di-n-butylphthalate	1666.67	1761.47			106		84-120		
Caprolactam	1666.67	1580.77			95		73-119		
Carbazole	1666.67	1685.57			101		78-117		
4-Chloro-3-methylphenol	1666.67	1738.95			104		79-127		
4-Chloroaniline	1666.67	1036.37			62		10-100		
bis(2-Chloroethoxy)methane	1666.67	1729.46			104		77-116		
bis(2-Chloroethyl)ether	1666.67	1705.94			102		77-115		
2-Chloronaphthalene	1666.67	1914.4			115		63-146		
2-Chlorophenol	1666.67	1720.02			103		85-123		
4-Chlorophenyl-phenylether	1666.67	1681.15			101		81-120		
2,2'-oxybis(1-Chloropropane)	1666.67	1792.4			108		61-134		
Chrysene	1666.67	1692.98			102		80-121		
Dibenz(a,h)anthracene	1666.67	2003.29			120		81-123		
Dibenzofuran	1666.67	1659			100		85-115		
3,3'-Dichlorobenzidine	1666.67	1122.91			67		10-116		
2,4-Dichlorophenol	1666.67	1713.02			103		86-125		

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Quality Control Summary

Client Name: URS Corporation
Reported: 08/04/2016 10:43

Group Number: 1685925

LCS/LCSD (continued)

Analysis Name	LCS Spike Added ug/kg	LCS Conc ug/kg	LCSD Spike Added ug/kg	LCSD Conc ug/kg	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Diethylphthalate	1666.67	1656.72			99		81-118		
2,4-Dimethylphenol	1666.67	1575.04			95		83-120		
Dimethylphthalate	1666.67	1627.98			98		82-113		
4,6-Dinitro-2-methylphenol	1666.67	1574.72			94		46-134		
2,4-Dinitrophenol	3333.33	3064.28			92		16-132		
2,4-Dinitrotoluene	1666.67	1706.39			102		81-122		
2,6-Dinitrotoluene	1666.67	1743.21			105		86-125		
1,4-Dioxane	1666.67	1058.91			64		36-90		
bis(2-Ethylhexyl)phthalate	1666.67	1840.87			110		81-121		
Fluoranthene	1666.67	1655.81			99		81-117		
Fluorene	1666.67	1677.48			101		86-118		
Hexachlorobenzene	1666.67	1764.55			106		79-116		
Hexachlorobutadiene	1666.67	1616.82			97		72-120		
Hexachlorocyclopentadiene	3333.33	3397.96			102		64-137		
Hexachloroethane	1666.67	1696.9			102		78-114		
Indeno(1,2,3-cd)pyrene	1666.67	1920.45			115		81-118		
Isophorone	1666.67	1792.16			108		77-118		
2-Methylnaphthalene	1666.67	1636.67			98		83-109		
2-Methylphenol	1666.67	1797.34			108		80-133		
4-Methylphenol	1666.67	1784.05			107		73-125		
Naphthalene	1666.67	1622.89			97		82-112		
2-Nitroaniline	1666.67	1705.39			102		84-126		
3-Nitroaniline	1666.67	1659.14			100		66-119		
4-Nitroaniline	1666.67	1165.13			70		44-110		
Nitrobenzene	1666.67	1771.48			106		70-122		
2-Nitrophenol	1666.67	1736.09			104		83-120		
4-Nitrophenol	1666.67	1668.4			100		52-133		
N-Nitroso-di-n-propylamine	1666.67	1781.69			107		67-121		
N-Nitrosodiphenylamine	1666.67	1750.13			105		83-118		
Di-n-octylphthalate	1666.67	1638.59			98		80-140		
Pentachlorophenol	1666.67	1551.25			93		57-126		
Phenanthrene	1666.67	1635.76			98		80-114		
Phenol	1666.67	1644.37			99		73-122		
Pyrene	1666.67	1600.09			96		81-114		
1,2,4,5-Tetrachlorobenzene	1666.67	1671.31			100		76-116		
2,3,4,6-Tetrachlorophenol	1666.67	1550.02			93		78-133		
2,4,5-Trichlorophenol	1666.67	1697.59			102		86-123		
2,4,6-Trichlorophenol	1666.67	1750.21			105		81-123		
	ug/l	ug/l	ug/l	ug/l					
Batch number: 16205WAI026	Sample number(s): 8488108-8488111,8488114-8488117								
Benzo(a)anthracene	1.00	1.10	1.00	1.10	110	110	71-118	0	30
Benzo(b)fluoranthene	1.00	1.11	1.00	1.09	111	109	76-132	2	30
Dibenz(a,h)anthracene	1.00	1.01	1.00	1.01	101	101	47-136	0	30
Indeno(1,2,3-cd)pyrene	1.00	1.03	1.00	1.01	103	101	52-134	2	30
Batch number: 16205WAJ026	Sample number(s): 8488108-8488111,8488114-8488117								
Acenaphthene	50	52.22	50	51.71	104	103	69-123	1	30
Acenaphthylene	50	55.1	50	54.86	110	110	67-125	0	30
Acetophenone	50	51.14	50	50.59	102	101	61-124	1	30

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Quality Control Summary

Client Name: URS Corporation
Reported: 08/04/2016 10:43

Group Number: 1685925

LCS/LCSD (continued)

Analysis Name	LCS Spike Added ug/l	LCS Conc ug/l	LCSD Spike Added ug/l	LCSD Conc ug/l	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Anthracene	50	52.91	50	51.15	106	102	68-126	3	30
Atrazine	50	56.7	50	51.92	113	104	62-140	9	30
Benzaldehyde	50	50.9	50	49.91	102	100	10-123	2	30
Benzo(a)anthracene	50	55.32	50	53.01	111	106	69-133	4	30
Benzo(a)pyrene	50	51.15	50	50.47	102	101	68-126	1	30
Benzo(b)fluoranthene	50	53.22	50	52.38	106	105	71-131	2	30
Benzo(g,h,i)perylene	50	57.95	50	56.03	116	112	62-132	3	30
Benzo(k)fluoranthene	50	50.67	50	50.78	101	102	72-128	0	30
1,1'-Biphenyl	50	52.09	50	52.1	104	104	59-124	0	30
4-Bromophenyl-phenylether	50	56.82	50	55.59	114	111	64-129	2	30
Butylbenzylphthalate	50	40.38	50	41.33	81	83	56-124	2	30
Di-n-butylphthalate	50	47.95	50	46.19	96	92	61-125	4	30
Caprolactam	50	25.8	50	24.53	52*	49	11-51	5	30
Carbazole	50	53.66	50	51.52	107	103	64-126	4	30
4-Chloro-3-methylphenol	50	52.87	50	52.74	106	105	65-125	0	30
4-Chloroaniline	50	34.47	50	48.07	69	96	45-115	33*	30
bis(2-Chloroethoxy)methane	50	55.04	50	53.33	110	107	67-124	3	30
bis(2-Chloroethyl)ether	50	51.02	50	51.42	102	103	65-120	1	30
2-Chloronaphthalene	50	50.45	50	52.69	101	105	57-126	4	30
2-Chlorophenol	50	51.47	50	49.64	103	99	59-120	4	30
4-Chlorophenyl-phenylether	50	51.9	50	52.07	104	104	67-125	0	30
2,2'-oxybis(1-Chloropropane)	50	48.65	50	47.93	97	96	56-128	2	30
Chrysene	50	56.1	50	53.4	112	107	71-136	5	30
Dibenz(a,h)anthracene	50	58.45	50	54.69	117	109	64-133	7	30
Dibenzofuran	50	51.88	50	52.3	104	105	67-120	1	30
3,3'-Dichlorobenzidine	50	32.69	50	44.34	65	89	39-118	30	30
2,4-Dichlorophenol	50	53.73	50	51.79	107	104	66-126	4	30
Diethylphthalate	50	42.13	50	42.52	84	85	55-124	1	30
2,4-Dimethylphenol	50	44.3	50	45.3	89	91	63-117	2	30
Dimethylphthalate	50	29.21	50	30.97	58	62	26-133	6	30
4,6-Dinitro-2-methylphenol	50	53.92	50	52.53	108	105	64-124	3	30
2,4-Dinitrophenol	100	83.42	100	99.45	83	99	42-129	18	30
2,4-Dinitrotoluene	50	51.58	50	52.68	103	105	71-131	2	30
2,6-Dinitrotoluene	50	52.61	50	53.02	105	106	71-133	1	30
1,4-Dioxane	50	40.33	50	36.52	81	73	33-87	10	30
bis(2-Ethylhexyl)phthalate	50	50.37	50	46.4	101	93	66-130	8	30
Fluoranthene	50	54.81	50	52.62	110	105	68-129	4	30
Fluorene	50	51.67	50	51.8	103	104	71-127	0	30
Hexachlorobenzene	50	59.15	50	56.14	118	112	64-128	5	30
Hexachlorobutadiene	50	48.43	50	45.63	97	91	23-129	6	30
Hexachlorocyclopentadiene	100	54.95	100	47.48	55	47	10-101	15	30
Hexachloroethane	50	47.7	50	44.69	95	89	23-121	7	30
Indeno(1,2,3-cd)pyrene	50	58.71	50	54.62	117	109	62-128	7	30
Isophorone	50	54.35	50	53.11	109	106	68-125	2	30
2-Methylnaphthalene	50	50.54	50	48.81	101	98	61-117	3	30
2-Methylphenol	50	50.97	50	49.94	102	100	54-122	2	30
4-Methylphenol	50	47.04	50	46.29	94	93	44-114	2	30
Naphthalene	50	51.41	50	49.74	103	99	62-121	3	30
2-Nitroaniline	50	53.22	50	53.1	106	106	68-130	0	30
3-Nitroaniline	50	46.35	50	48.79	93	98	58-122	5	30

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Quality Control Summary

Client Name: URS Corporation
Reported: 08/04/2016 10:43

Group Number: 1685925

LCS/LCSD (continued)

Analysis Name	LCS Spike Added ug/l	LCS Conc ug/l	LCSD Spike Added ug/l	LCSD Conc ug/l	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
4-Nitroaniline	50	39.49	50	46.5	79	93	61-111	16	30
Nitrobenzene	50	54.75	50	53.34	109	107	70-121	3	30
2-Nitrophenol	50	56.68	50	55.07	113	110	67-131	3	30
4-Nitrophenol	50	35.99	50	32.42	72	65	11-88	10	30
N-Nitroso-di-n-propylamine	50	52.75	50	51.56	105	103	63-121	2	30
N-Nitrosodiphenylamine	50	52.66	50	51.93	105	104	65-125	1	30
Di-n-octylphthalate	50	49.38	50	47.96	99	96	73-131	3	30
Pentachlorophenol	50	46.01	50	49.74	92	99	53-133	8	30
Phenanthrene	50	52.16	50	49.73	104	99	65-120	5	30
Phenol	50	34.5	50	32.82	69	66	19-82	5	30
Pyrene	50	50.26	50	49.32	101	99	68-118	2	30
1,2,4,5-Tetrachlorobenzene	50	53.43	50	51.04	107	102	46-129	5	30
2,3,4,6-Tetrachlorophenol	50	52.15	50	54.11	104	108	76-124	4	30
2,4,5-Trichlorophenol	50	55.13	50	55.5	110	111	68-126	1	30
2,4,6-Trichlorophenol	50	55.02	50	55.17	110	110	71-130	0	30
	ug/kg	ug/kg	ug/kg	ug/kg					
Batch number: 162100026A	Sample number(s): 8488097-8488107								
PCB-1016	168	163.62			97		76-121		
PCB-1260	168	178.8			106		79-130		
	ug/l	ug/l	ug/l	ug/l					
Batch number: 162050017A	Sample number(s): 8488108-8488111,8488114-8488117								
PCB-1016	0.505	0.405	0.505	0.430	80	85	60-117	6	30
PCB-1260	0.504	0.505	0.504	0.526	100	104	57-134	4	30
	ug/l	ug/l	ug/l	ug/l					
Batch number: 162050001A	Sample number(s): 8488108-8488111,8488114-8488117								
Ethylene dibromide	0.128	0.107	0.128	0.107	84	84	60-140	0	20
	mg/kg	mg/kg	mg/kg	mg/kg					
Batch number: 162095708003	Sample number(s): 8488097-8488107								
Aluminum	200	176.27			88		80-120		
Antimony	50	47.87			96		80-120		
Arsenic	15	14.53			97		80-120		
Barium	200	182.82			91		80-120		
Beryllium	5.00	4.76			95		80-120		
Cadmium	5.00	4.73			95		80-120		
Calcium	400	371.59			93		80-120		
Chromium	20	18.22			91		80-120		
Cobalt	50	46.94			94		80-120		
Copper	25	24.48			98		80-120		
Iron	100	91.06			91		80-120		
Lead	15	13.99			93		80-120		
Magnesium	200	183.76			92		80-120		
Manganese	50	47.02			94		80-120		
Nickel	50	47.36			95		80-120		
Potassium	1000	896.76			90		80-120		
Selenium	15	14.51			97		80-120		

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Quality Control Summary

Client Name: URS Corporation
Reported: 08/04/2016 10:43

Group Number: 1685925

LCS/LCSD (continued)

Analysis Name	LCS Spike Added mg/kg	LCS Conc mg/kg	LCSD Spike Added mg/kg	LCSD Conc mg/kg	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Silver	5.00	4.32			86		80-120		
Sodium	1000	916.46			92		80-120		
Vanadium	50	46.09			92		80-120		
Zinc	50	47.06			94		80-120		
Batch number: 162095708003A	Sample number(s): 8488097-8488107								
Thallium	0.200	0.185			93		80-120		
Batch number: 162105711001	Sample number(s): 8488097-8488107								
Mercury	0.100	0.104			104		80-120		
	mg/l	mg/l	mg/l	mg/l					
Batch number: 162091848007	Sample number(s): 8488108-8488111,8488114-8488117								
Aluminum	2.00	2.21			110		80-120		
Barium	2.00	2.08			104		80-120		
Cadmium	0.0500	0.0506			101		80-120		
Calcium	4.00	4.34			109		80-120		
Chromium	0.200	0.202			101		80-120		
Copper	0.250	0.260			104		80-120		
Iron	1.00	1.06			106		80-120		
Lead	0.150	0.152			102		80-120		
Magnesium	2.00	2.12			106		80-120		
Manganese	0.500	0.519			104		80-120		
Nickel	0.500	0.518			104		80-120		
Potassium	10	10.36			104		80-120		
Selenium	0.150	0.151			101		80-120		
Silver	0.0500	0.0521			104		80-120		
Sodium	10	10.17			102		80-120		
Vanadium	0.500	0.530			106		80-120		
Zinc	0.500	0.484			97		80-120		
Batch number: 162095713009	Sample number(s): 8488108-8488111,8488114-8488117								
Mercury	0.00100	0.000930			93		80-120		
Batch number: 162096050008A	Sample number(s): 8488108-8488111,8488114-8488117								
Antimony	0.00600	0.00619			103		80-120		
Arsenic	0.0100	0.0105			105		80-120		
Beryllium	0.00400	0.00401			100		80-120		
Cobalt	0.250	0.246			98		80-120		
Thallium	0.00200	0.00203			102		80-120		
	mg/kg	mg/kg	mg/kg	mg/kg					
Batch number: 16213102201B	Sample number(s): 8488097,8488099-8488102,8488105-8488106								
Total Cyanide (solid)	10	10.17			102		90-110		
Batch number: 16214102201A	Sample number(s): 8488098,8488103-8488104,8488107								
Total Cyanide (solid)	10	9.59			96		90-110		
	mg/l	mg/l	mg/l	mg/l					
Batch number: 16210117101B	Sample number(s): 8488108-8488111,8488115-8488116								
Total Cyanide (water)	0.200	0.218			109		90-110		

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: URS Corporation
Reported: 08/04/2016 10:43

Group Number: 1685925

LCS/LCSD (continued)

Analysis Name	LCS Spike Added mg/l	LCS Conc mg/l	LCSD Spike Added mg/l	LCSD Conc mg/l	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 16215117101A	Sample number(s): 8488114,8488117								
Total Cyanide (water)	0.200	0.197			98		90-110		
	%	%	%	%					
Batch number: 16209820004A	Sample number(s): 8488097-8488107								
Moisture	89.5	89.45			100		99-101		

MS/MSD

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

Analysis Name	Unspiked Conc ug/kg	MS Spike Added ug/kg	MS Conc ug/kg	MSD Spike Added ug/kg	MSD Conc ug/kg	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
Batch number: 16210SLG026	Sample number(s): 8488097-8488099,8488101,8488104-8488105,8488107 UNSPK: 8488107									
Acenaphthene	N.D.	1661.13	1541.81	1655.63	1234.55	93	75*	83-116	22	30
Acenaphthylene	N.D.	1661.13	1619.56	1655.63	1212.58	97	73*	83-119	29	30
Acetophenone	N.D.	1661.13	1405.44	1655.63	1231.33	85	74	74-116	13	30
Anthracene	N.D.	1661.13	1524.17	1655.63	1021.91	92	62*	82-118	39*	30
Atrazine	N.D.	1661.13	1629.17	1655.63	1109.97	98	67	62-143	38*	30
Benzaldehyde	N.D.	1661.13	1684.81	1655.63	1573.37	101*	95*	10-93	7	30
Benzo(a)anthracene	N.D.	1661.13	1464.38	1655.63	940.08	88	57*	76-119	44*	30
Benzo(a)pyrene	N.D.	1661.13	1482.79	1655.63	914.69	89	55*	85-117	47*	30
Benzo(b)fluoranthene	N.D.	1661.13	1505.08	1655.63	970.83	91	59*	78-129	43*	30
Benzo(g,h,i)perylene	N.D.	1661.13	1609.13	1655.63	991.38	97	60*	77-118	48*	30
Benzo(k)fluoranthene	N.D.	1661.13	1356.13	1655.63	915.6	82	55*	79-120	39*	30
1,1'-Biphenyl	N.D.	1661.13	1512.09	1655.63	1253.48	91	76	76-111	19	30
4-Bromophenyl-phenylether	N.D.	1661.13	1573.44	1655.63	1197.14	95	72*	84-120	27	30
Butylbenzylphthalate	N.D.	1661.13	1593.29	1655.63	1026.16	96	62*	80-118	43*	30
Di-n-butylphthalate	N.D.	1661.13	1581.63	1655.63	1067.81	95	64*	84-120	39*	30
Caprolactam	N.D.	1661.13	1685.98	1655.63	1385.98	101	84	73-119	20	30
Carbazole	N.D.	1661.13	1412.98	1655.63	930.08	85	56*	78-117	41*	30
4-Chloro-3-methylphenol	N.D.	1661.13	1541.75	1655.63	901.11	93	54*	79-127	52*	30
4-Chloroaniline	N.D.	1661.13	628.68	1655.63	278.28	38	17	10-100	77*	30
bis(2-Chloroethoxy)methane	N.D.	1661.13	1542.11	1655.63	1270.85	93	77	77-116	19	30
bis(2-Chloroethyl)ether	N.D.	1661.13	1462.79	1655.63	1298.73	88	78	77-115	12	30
2-Chloronaphthalene	N.D.	1661.13	1514.87	1655.63	1414.54	91	85	63-146	7	30
2-Chlorophenol	N.D.	1661.13	1490.81	1655.63	1035.39	90	63*	85-123	36*	30
4-Chlorophenyl-phenylether	N.D.	1661.13	1534.5	1655.63	1224.77	92	74*	81-120	22	30
2,2'-oxybis(1-Chloropropane)	N.D.	1661.13	1588.46	1655.63	1450.17	96	88	61-134	9	30
Chrysene	N.D.	1661.13	1458.03	1655.63	917.88	88	55*	80-121	45*	30
Dibenz(a,h)anthracene	N.D.	1661.13	1624.65	1655.63	985.99	98	60*	81-123	49*	30
Dibenzofuran	N.D.	1661.13	1491.82	1655.63	1182.3	90	71*	85-115	23	30
3,3'-Dichlorobenzidine	N.D.	1661.13	N.D.	1655.63	N.D.	0*	0*	10-116	0	30
2,4-Dichlorophenol	N.D.	1661.13	1466.76	1655.63	950.13	88	57*	86-125	43*	30
Diethylphthalate	N.D.	1661.13	1548.56	1655.63	1153.71	93	70*	81-118	29	30

*- Outside of specification
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(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: URS Corporation
Reported: 08/04/2016 10:43

Group Number: 1685925

MS/MSD (continued)

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

Analysis Name	Unspiked Conc ug/kg	MS Spike Added ug/kg	MS Conc ug/kg	MSD Spike Added ug/kg	MSD Conc ug/kg	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
2,4-Dimethylphenol	N.D.	1661.13	979.75	1655.63	275.6	59*	17*	83-120	112*	30
Dimethylphthalate	N.D.	1661.13	1521.29	1655.63	1192.67	92	72*	82-113	24	30
4,6-Dinitro-2-methylphenol	N.D.	1661.13	1495.29	1655.63	1112.65	90	67	46-134	29	30
2,4-Dinitrophenol	N.D.	3322.26	2975.06	3311.26	2288.33	90	69	16-132	26	30
2,4-Dinitrotoluene	N.D.	1661.13	1518.15	1655.63	1193.32	91	72*	81-122	24	30
2,6-Dinitrotoluene	N.D.	1661.13	1675.62	1655.63	1272.37	101	77*	86-125	27	30
1,4-Dioxane	N.D.	1661.13	822.91	1655.63	778.12	50	47	36-90	6	30
bis(2-Ethylhexyl)phthalate	N.D.	1661.13	1649.79	1655.63	1062.69	99	64*	81-121	43*	30
Fluoranthene	N.D.	1661.13	1446.48	1655.63	968.67	87	59*	81-117	40*	30
Fluorene	N.D.	1661.13	1545.79	1655.63	1198.12	93	72*	86-118	25	30
Hexachlorobenzene	N.D.	1661.13	1562.38	1655.63	1224.29	94	74*	79-116	24	30
Hexachlorobutadiene	N.D.	1661.13	1456.55	1655.63	1333.03	88	81	72-120	9	30
Hexachlorocyclopentadiene	N.D.	3322.26	3742.9	3311.26	3180.8	113	96	64-137	16	30
Hexachloroethane	N.D.	1661.13	1499.83	1655.63	1414.01	90	85	78-114	6	30
Indeno(1,2,3-cd)pyrene	N.D.	1661.13	1579.57	1655.63	977.61	95	59*	81-118	47*	30
Isophorone	N.D.	1661.13	1595.62	1655.63	1323.31	96	80	77-118	19	30
2-Methylnaphthalene	14.74	1661.13	1472.57	1655.63	1276.56	88	76*	83-109	14	30
2-Methylphenol	N.D.	1661.13	1439.96	1655.63	630.11	87	38*	80-133	78*	30
4-Methylphenol	N.D.	1661.13	1387.62	1655.63	705.42	84	43*	73-125	65*	30
Naphthalene	N.D.	1661.13	1456.55	1655.63	1283.65	88	78*	82-112	13	30
2-Nitroaniline	N.D.	1661.13	1574.72	1655.63	1256.91	95	76*	84-126	22	30
3-Nitroaniline	N.D.	1661.13	1160.33	1655.63	747	70	45*	66-119	43*	30
4-Nitroaniline	N.D.	1661.13	916.47	1655.63	619.58	55	37*	44-110	39*	30
Nitrobenzene	N.D.	1661.13	1584.78	1655.63	1368.71	95	83	70-122	15	30
2-Nitrophenol	N.D.	1661.13	1592.46	1655.63	1353.02	96	82*	83-120	16	30
4-Nitrophenol	N.D.	1661.13	1643.17	1655.63	1268.08	99	77	52-133	26	30
N-Nitroso-di-n-propylamine	N.D.	1661.13	1601.98	1655.63	1384.07	96	84	67-121	15	30
N-Nitrosodiphenylamine	N.D.	1661.13	1243.33	1655.63	385.7	75*	23*	83-118	105*	30
Di-n-octylphthalate	N.D.	1661.13	1580.46	1655.63	1078.84	95	65*	80-140	38*	30
Pentachlorophenol	N.D.	1661.13	1587.05	1655.63	975.98	96	59	57-126	48*	30
Phenanthrene	9.98	1661.13	1451.9	1655.63	1047.75	87	63*	80-114	32*	30
Phenol	N.D.	1661.13	1417.6	1655.63	973.69	85	59*	73-122	37*	30
Pyrene	N.D.	1661.13	1436.99	1655.63	970.24	87	59*	81-114	39*	30
1,2,4,5-Tetrachlorobenzene	N.D.	1661.13	1543.31	1655.63	1340.06	93	81	76-116	14	30
2,3,4,6-Tetrachlorophenol	N.D.	1661.13	1475.88	1655.63	853.89	89	52*	78-133	53*	30
2,4,5-Trichlorophenol	N.D.	1661.13	1576.93	1655.63	1042.14	95	63*	86-123	41*	30
2,4,6-Trichlorophenol	N.D.	1661.13	1597.12	1655.63	883.57	96	53*	81-123	58*	30
Batch number: 16214SLA026	Sample number(s): 8488100,8488102-8488103,8488106 UNSPK: P497470									
Acenaphthene	N.D.	1666.67	1698.7	1666.67	1663.63	102	100	83-116	2	30
Acenaphthylene	N.D.	1666.67	1813.77	1666.67	1746.55	109	105	83-119	4	30
Acetophenone	N.D.	1666.67	1567.45	1666.67	1509.65	94	91	74-116	4	30
Anthracene	N.D.	1666.67	1675.63	1666.67	1640.25	101	98	82-118	2	30
Atrazine	N.D.	1666.67	1853.35	1666.67	1768.8	111	106	62-143	5	30
Benzaldehyde	N.D.	1666.67	1863.1	1666.67	1586.3	112*	95*	10-93	16	30
Benzo(a)anthracene	N.D.	1666.67	1672.4	1666.67	1661.21	100	100	76-119	1	30
Benzo(a)pyrene	N.D.	1666.67	1673.36	1666.67	1643.06	100	99	85-117	2	30
Benzo(b)fluoranthene	N.D.	1666.67	1651.56	1666.67	1684.88	99	101	78-129	2	30
Benzo(g,h,i)perylene	N.D.	1666.67	1987.81	1666.67	1987.36	119*	119*	77-118	0	30

*- Outside of specification
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(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: URS Corporation
Reported: 08/04/2016 10:43

Group Number: 1685925

MS/MSD (continued)

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

Analysis Name	Unspiked Conc ug/kg	MS Spike Added ug/kg	MS Conc ug/kg	MSD Spike Added ug/kg	MSD Conc ug/kg	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
Benzo(k)fluoranthene	N.D.	1666.67	1530.54	1666.67	1472.04	92	88	79-120	4	30
1,1'-Biphenyl	N.D.	1666.67	1631.4	1666.67	1588.06	98	95	76-111	3	30
4-Bromophenyl-phenylether	N.D.	1666.67	1754.27	1666.67	1782.68	105	107	84-120	2	30
Butylbenzylphthalate	N.D.	1666.67	1795.81	1666.67	1796.95	108	108	80-118	0	30
Di-n-butylphthalate	N.D.	1666.67	1737.53	1666.67	1709.9	104	103	84-120	2	30
Caprolactam	N.D.	1666.67	1600.03	1666.67	1558.56	96	94	73-119	3	30
Carbazole	N.D.	1666.67	1655.86	1666.67	1629.81	99	98	78-117	2	30
4-Chloro-3-methylphenol	N.D.	1666.67	1698.14	1666.67	1706.95	102	102	79-127	1	30
4-Chloroaniline	N.D.	1666.67	1204.37	1666.67	1192.07	72	72	10-100	1	30
bis(2-Chloroethoxy)methane	N.D.	1666.67	1713.4	1666.67	1688.11	103	101	77-116	1	30
bis(2-Chloroethyl)ether	N.D.	1666.67	1709.19	1666.67	1651.41	103	99	77-115	3	30
2-Chloronaphthalene	N.D.	1666.67	1657.2	1666.67	1837.2	99	110	63-146	10	30
2-Chlorophenol	N.D.	1666.67	1706.68	1666.67	1674.29	102	100	85-123	2	30
4-Chlorophenyl-phenylether	N.D.	1666.67	1683.18	1666.67	1632.97	101	98	81-120	3	30
2,2'-oxybis(1-Chloropropane)	N.D.	1666.67	1814.16	1666.67	1743.03	109	105	61-134	4	30
Chrysene	N.D.	1666.67	1720.64	1666.67	1684.53	103	101	80-121	2	30
Dibenz(a,h)anthracene	N.D.	1666.67	2011.67	1666.67	2010.41	121	121	81-123	0	30
Dibenzofuran	N.D.	1666.67	1662.51	1666.67	1612.35	100	97	85-115	3	30
3,3'-Dichlorobenzidine	N.D.	1666.67	1554.78	1666.67	1435.42	93	86	10-116	8	30
2,4-Dichlorophenol	N.D.	1666.67	1663.95	1666.67	1643.3	100	99	86-125	1	30
Diethylphthalate	N.D.	1666.67	1670.8	1666.67	1619.29	100	97	81-118	3	30
2,4-Dimethylphenol	N.D.	1666.67	1556.27	1666.67	1552.63	93	93	83-120	0	30
Dimethylphthalate	N.D.	1666.67	1647.56	1666.67	1584.94	99	95	82-113	4	30
4,6-Dinitro-2-methylphenol	N.D.	1666.67	1498.65	1666.67	1434.45	90	86	46-134	4	30
2,4-Dinitrophenol	N.D.	3333.33	2762.11	3333.33	2610.88	83	78	16-132	6	30
2,4-Dinitrotoluene	N.D.	1666.67	1672.95	1666.67	1646.98	100	99	81-122	2	30
2,6-Dinitrotoluene	N.D.	1666.67	1815.38	1666.67	1759.21	109	106	86-125	3	30
1,4-Dioxane	N.D.	1666.67	1054.1	1666.67	997.14	63	60	36-90	6	30
bis(2-Ethylhexyl)phthalate	N.D.	1666.67	1853.54	1666.67	1847.4	111	111	81-121	0	30
Fluoranthene	N.D.	1666.67	1644.84	1666.67	1612.78	99	97	81-117	2	30
Fluorene	N.D.	1666.67	1689	1666.67	1637.07	101	98	86-118	3	30
Hexachlorobenzene	N.D.	1666.67	1722.01	1666.67	1701.74	103	102	79-116	1	30
Hexachlorobutadiene	18.19	1666.67	1638.45	1666.67	1631.53	97	97	72-120	0	30
Hexachlorocyclopentadiene	N.D.	3333.33	686.88	3333.33	727.92	21*	22*	64-137	6	30
Hexachloroethane	N.D.	1666.67	1563.66	1666.67	1498.42	94	90	78-114	4	30
Indeno(1,2,3-cd)pyrene	N.D.	1666.67	1963.52	1666.67	1962.73	118	118	81-118	0	30
Isophorone	N.D.	1666.67	1769.72	1666.67	1752.43	106	105	77-118	1	30
2-Methylnaphthalene	N.D.	1666.67	1626.99	1666.67	1600.72	98	96	83-109	2	30
2-Methylphenol	N.D.	1666.67	1750.06	1666.67	1728.43	105	104	80-133	1	30
4-Methylphenol	N.D.	1666.67	1741.03	1666.67	1719.74	104	103	73-125	1	30
Naphthalene	N.D.	1666.67	1640.74	1666.67	1613.28	98	97	82-112	2	30
2-Nitroaniline	N.D.	1666.67	1730.45	1666.67	1704.08	104	102	84-126	2	30
3-Nitroaniline	N.D.	1666.67	1705.95	1666.67	1660.73	102	100	66-119	3	30
4-Nitroaniline	N.D.	1666.67	1371.61	1666.67	1250.37	82	75	44-110	9	30
Nitrobenzene	N.D.	1666.67	1800.04	1666.67	1782.9	108	107	70-122	1	30
2-Nitrophenol	N.D.	1666.67	1756.91	1666.67	1736.8	105	104	83-120	1	30
4-Nitrophenol	N.D.	1666.67	1779.97	1666.67	1697.75	107	102	52-133	5	30
N-Nitroso-di-n-propylamine	N.D.	1666.67	1779.96	1666.67	1712.98	107	103	67-121	4	30
N-Nitrosodiphenylamine	N.D.	1666.67	1669.21	1666.67	1671.44	100	100	83-118	0	30

*- Outside of specification
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(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
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Quality Control Summary

Client Name: URS Corporation
Reported: 08/04/2016 10:43

Group Number: 1685925

MS/MSD (continued)

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

Analysis Name	Unspiked Conc ug/kg	MS Spike Added ug/kg	MS Conc ug/kg	MSD Spike Added ug/kg	MSD Conc ug/kg	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
Di-n-octylphthalate	N.D.	1666.67	1666	1666.67	1645.87	100	99	80-140	1	30
Pentachlorophenol	N.D.	1666.67	1591.2	1666.67	1596.81	95	96	57-126	0	30
Phenanthrene	N.D.	1666.67	1601.92	1666.67	1576.42	96	95	80-114	2	30
Phenol	N.D.	1666.67	1631.96	1666.67	1638.26	98	98	73-122	0	30
Pyrene	N.D.	1666.67	1616.62	1666.67	1611.34	97	97	81-114	0	30
1,2,4,5-Tetrachlorobenzene	N.D.	1666.67	1714.16	1666.67	1655.81	103	99	76-116	3	30
2,3,4,6-Tetrachlorophenol	N.D.	1666.67	1553.94	1666.67	1550.38	93	93	78-133	0	30
2,4,5-Trichlorophenol	N.D.	1666.67	1724.02	1666.67	1688.45	103	101	86-123	2	30
2,4,6-Trichlorophenol	N.D.	1666.67	1799.84	1666.67	1776.57	108	107	81-123	1	30
	ug/kg	**ug/kg**	**ug/kg**	**ug/kg**	**ug/kg**					
Batch number: 162100026A	Sample number(s): 8488097-8488107 UNSPK: 8488106									
PCB-1016	N.D.	166	160.34	167	158.49	97	95	76-121	1	50
PCB-1260	N.D.	166	167.53	167	171.8	101	103	79-130	3	50
	ug/l	**ug/l**	**ug/l**	**ug/l**	**ug/l**					
Batch number: 162050001A	Sample number(s): 8488108-8488111,8488114-8488117 UNSPK: P484359									
Ethylene dibromide	N.D.	0.121	0.111	0.121	0.106	92	88	60-140	4	20
	mg/kg	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**					
Batch number: 162095708003	Sample number(s): 8488097-8488107 UNSPK: 8488097									
Aluminum	4076.7	178.57	6384.75	190.48	7097.15	1293 (2)	1586 (2)	75-125	11	20
Antimony	N.D.	44.64	37.13	47.62	35.7	83	75	75-125	4	20
Arsenic	5.89	13.39	20.13	14.29	18.82	106	91	75-125	7	20
Barium	100.9	178.57	275.65	190.48	276.95	98	92	75-125	0	20
Beryllium	1.70	4.46	5.72	4.76	6.01	90	91	75-125	5	20
Cadmium	0.661	4.46	4.79	4.76	4.64	92	84	75-125	3	20
Calcium	1989.95	357.14	2120.88	380.95	2589.21	37 (2)	157 (2)	75-125	20	20
Chromium	11.79	17.86	29.09	19.05	31.28	97	102	75-125	7	20
Cobalt	18.24	44.64	60.8	47.62	60.63	95	89	75-125	0	20
Copper	8.48	22.32	28.95	23.81	30.91	92	94	75-125	7	20
Iron	12810.37	89.29	12409.4	95.24	12752.72	-449 (2)	-61 (2)	75-125	3	20
Lead	9.79	13.39	22.5	14.29	22.6	95	90	75-125	0	20
Magnesium	355.58	178.57	545.93	190.48	582.16	107	119	75-125	6	20
Manganese	309.37	44.64	322.01	47.62	412.14	28 (2)	216 (2)	75-125	25*	20
Nickel	45.85	44.64	86.62	47.62	89.24	91	91	75-125	3	20
Potassium	469.87	892.86	1507.15	952.38	1538.58	116	112	75-125	2	20
Selenium	N.D.	13.39	15.5	14.29	13.67	116	96	75-125	13	20
Silver	N.D.	4.46	3.79	4.76	4.20	85	88	75-125	10	20
Sodium	593.54	892.86	1357.57	952.38	1407.65	86	85	75-125	4	20
Vanadium	9.61	44.64	54.4	47.62	54.34	100	94	75-125	0	20
Zinc	155.83	44.64	176.29	47.62	175.33	46*	41*	75-125	1	20
Batch number: 162095708003A	Sample number(s): 8488097-8488107 UNSPK: 8488097									
Thallium	0.0542	0.357	0.362	0.381	0.344	86	76	75-125	5	20

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(2) The unspiked result was more than four times the spike added.
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Quality Control Summary

Client Name: URS Corporation
Reported: 08/04/2016 10:43

Group Number: 1685925

MS/MSD (continued)

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

Analysis Name	Unspiked Conc mg/kg	MS Spike Added mg/kg	MS Conc mg/kg	MSD Spike Added mg/kg	MSD Conc mg/kg	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
Batch number: 162105711001	Sample number(s): 8488097-8488107 UNSPK: 8488097									
Mercury	0.0260	0.161	0.229	0.161	0.212	126*	115	80-120	8	20
	mg/l	mg/l	mg/l	mg/l	mg/l					
Batch number: 162091848007	Sample number(s): 8488108-8488111,8488114-8488117 UNSPK: P491324									
Aluminum	0.0997	2.00	2.24	2.00	2.29	107	110	75-125	2	20
Barium	0.0144	2.00	2.04	2.00	2.01	101	100	75-125	2	20
Cadmium	0.000500	0.0500	0.0510	0.0500	0.0511	101	101	75-125	0	20
Calcium	15.08	4.00	19.83	4.00	20.2	119	128*	75-125	2	20
Chromium	0.00238	0.200	0.202	0.200	0.201	100	99	75-125	1	20
Copper	N.D.	0.250	0.264	0.250	0.263	106	105	75-125	0	20
Iron	6.09	1.00	7.17	1.00	7.18	108 (2)	109 (2)	75-125	0	20
Lead	N.D.	0.150	0.152	0.150	0.152	102	101	75-125	0	20
Magnesium	4.19	2.00	6.34	2.00	6.44	108	113	75-125	2	20
Manganese	0.368	0.500	0.891	0.500	0.876	105	102	75-125	2	20
Nickel	0.00935	0.500	0.526	0.500	0.527	103	103	75-125	0	20
Potassium	1.20	10	11.45	10	11.73	103	105	75-125	2	20
Selenium	N.D.	0.150	0.150	0.150	0.149	100	99	75-125	1	20
Silver	N.D.	0.0500	0.0528	0.0500	0.0525	106	105	75-125	1	20
Sodium	30.5	10	41.99	10	41.56	115	111	75-125	1	20
Vanadium	N.D.	0.500	0.535	0.500	0.531	107	106	75-125	1	20
Zinc	N.D.	0.500	0.489	0.500	0.487	98	97	75-125	0	20
Batch number: 162095713009	Sample number(s): 8488108-8488111,8488114-8488117 UNSPK: 8488109									
Mercury	N.D.	0.00100	0.00101	0.00100	0.00101	101	101	80-120	1	20
Batch number: 162096050008A	Sample number(s): 8488108-8488111,8488114-8488117 UNSPK: P489536									
Antimony	N.D.	0.00600	0.00577	0.00600	0.00634	96	106	75-125	9	20
Arsenic	N.D.	0.0100	0.0108	0.0100	0.0108	108	108	75-125	0	20
Beryllium	N.D.	0.00400	0.00396	0.00400	0.00419	99	105	75-125	6	20
Cobalt	N.D.	0.250	0.246	0.250	0.246	98	99	75-125	0	20
Thallium	N.D.	0.00200	0.00189	0.00200	0.00202	94	101	75-125	7	20
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg					
Batch number: 16213102201B	Sample number(s): 8488097,8488099-8488102,8488105-8488106 UNSPK: 8488101									
Total Cyanide (solid)	22.71	4.93	25.78			62 (2)		41-145		
Batch number: 16214102201A	Sample number(s): 8488098,8488103-8488104,8488107 UNSPK: P485541									
Total Cyanide (solid)	N.D.	4.88	4.81			99		41-145		
	mg/l	mg/l	mg/l	mg/l	mg/l					
Batch number: 16210117101B	Sample number(s): 8488108-8488111,8488115-8488116 UNSPK: P486583									
Total Cyanide (water)	N.D.	0.200	0.213			106		72-114		
Batch number: 16215117101A	Sample number(s): 8488114,8488117 UNSPK: P490328									
Total Cyanide (water)	N.D.	0.200	0.204			102		72-114		

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Quality Control Summary

Client Name: URS Corporation
Reported: 08/04/2016 10:43

Group Number: 1685925

Laboratory Duplicate

Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	BKG Conc	DUP Conc	DUP RPD	DUP RPD Max
	mg/kg	mg/kg		
Batch number: 162095708003	Sample number(s): 8488097-8488107 BKG: 8488097			
Aluminum	4076.7	4714.69	15	20
Antimony	N.D.	N.D.	0 (1)	20
Arsenic	5.89	9.44	46* (1)	20
Barium	100.9	97.8	3	20
Beryllium	1.70	2.82	49* (1)	20
Cadmium	0.661	0.483	31* (1)	20
Calcium	1989.95	3296.79	49*	20
Chromium	11.79	15.52	27* (1)	20
Cobalt	18.24	15.11	19	20
Copper	8.48	9.63	13 (1)	20
Iron	12810.37	13018.24	2	20
Lead	9.79	10.71	9 (1)	20
Magnesium	355.58	347.03	2	20
Manganese	309.37	405.48	27*	20
Nickel	45.85	48.25	5	20
Potassium	469.87	391.66	18 (1)	20
Selenium	N.D.	N.D.	0 (1)	20
Silver	N.D.	N.D.	0 (1)	20
Sodium	593.54	688.8	15 (1)	20
Vanadium	9.61	8.31	15 (1)	20
Zinc	155.83	159.27	2	20
Batch number: 162095708003A	Sample number(s): 8488097-8488107 BKG: 8488097			
Thallium	0.0542	0.0484	11 (1)	20
Batch number: 162105711001	Sample number(s): 8488097-8488107 BKG: 8488097			
Mercury	0.0260	0.0891	110* (1)	20
	mg/l	mg/l		
Batch number: 162091848007	Sample number(s): 8488108-8488111,8488114-8488117 BKG: P491324			
Aluminum	0.0997	N.D.	200* (1)	20
Barium	0.0144	0.0148	3 (1)	20
Cadmium	0.000500	N.D.	200* (1)	20
Calcium	15.08	15.56	3	20
Chromium	0.00238	0.00264	10 (1)	20
Copper	N.D.	0.00452	200* (1)	20
Iron	6.09	6.14	1	20
Lead	N.D.	N.D.	0 (1)	20
Magnesium	4.19	4.31	3	20
Manganese	0.368	0.381	3	20
Nickel	0.00935	0.0100	7 (1)	20
Potassium	1.20	1.25	4 (1)	20
Selenium	N.D.	N.D.	0 (1)	20
Silver	N.D.	N.D.	0 (1)	20
Sodium	30.5	31.61	4	20
Vanadium	N.D.	N.D.	0 (1)	20
Zinc	N.D.	N.D.	0 (1)	20

*- Outside of specification
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Quality Control Summary

Client Name: URS Corporation
Reported: 08/04/2016 10:43

Group Number: 1685925

Laboratory Duplicate (continued)

Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	BKG Conc	DUP Conc	DUP RPD	DUP RPD Max
	mg/l	mg/l		
Batch number: 162095713009	Sample number(s): 8488108-8488111,8488114-8488117 BKG: 8488109			
Mercury	N.D.	N.D.	0 (1)	20
Batch number: 162096050008A	Sample number(s): 8488108-8488111,8488114-8488117 BKG: P489536			
Antimony	N.D.	N.D.	0 (1)	20
Arsenic	N.D.	N.D.	0 (1)	20
Beryllium	N.D.	N.D.	0 (1)	20
Cobalt	N.D.	N.D.	0 (1)	20
Thallium	N.D.	N.D.	0 (1)	20
	mg/kg	mg/kg		
Batch number: 16213102201B	Sample number(s): 8488097,8488099-8488102,8488105-8488106 BKG: 8488101			
Total Cyanide (solid)	22.71	19.08	17 (1)	20
Batch number: 16214102201A	Sample number(s): 8488098,8488103-8488104,8488107 BKG: P485541			
Total Cyanide (solid)	N.D.	N.D.	0 (1)	20
	mg/l	mg/l		
Batch number: 16210117101B	Sample number(s): 8488108-8488111,8488115-8488116 BKG: P486583			
Total Cyanide (water)	N.D.	N.D.	0 (1)	20
Batch number: 16215117101A	Sample number(s): 8488114,8488117 BKG: P490328			
Total Cyanide (water)	N.D.	N.D.	0 (1)	20
	%	%		
Batch number: 16209820004A	Sample number(s): 8488097-8488107 BKG: 8488100			
Moisture	16.65	18.98	13*	5

Surrogate Quality Control

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

Analysis Name: PPL/TCL Volatiles in Soil
Batch number: B162101AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8488098	100	102	98	96
8488099	98	98	100	94
8488100	103	111	96	99
8488101	98	97	97	97
8488102	102	109	99	96
8488103	103	112	96	113
8488105	102	103	116	85
8488106	99	102	96	98
8488107	102	106	95	104
Blank	101	105	96	99
LCS	103	102	98	100

*- Outside of specification
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P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: URS Corporation
Reported: 08/04/2016 10:43

Group Number: 1685925

Surrogate Quality Control

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

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
LCSD	102	104	98	100
Limits:	50-141	54-135	52-141	50-131

Analysis Name: PPL/TCL Volatiles in Soil
Batch number: B162111AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8488097	102	103	100	249*
Blank	99	102	96	98
LCS	103	108	98	100
LCSD	103	105	97	100
Limits:	50-141	54-135	52-141	50-131

Analysis Name: VOCs- 25ml Water by 8260B
Batch number: C162143AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8488111	102	104	97	97
Blank	102	104	99	97
LCS	101	103	98	98
LCSD	100	104	98	98
Limits:	77-114	74-113	77-110	78-110

Analysis Name: VOCs- 25ml Water by 8260B
Batch number: I162082AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8488108	95	111	96	103
8488109	95	109	97	100
8488110	95	110	97	100
8488112	97	109	97	97
8488113	95	109	97	97
8488114	96	108	97	97
8488115	96	109	97	98
8488116	95	109	97	97
8488117	96	111	97	98
Blank	96	111	97	98
LCS	96	107	96	98
LCSD	96	110	97	98
Limits:	77-114	74-113	77-110	78-110

Analysis Name: PPL/TCL Volatiles in Soil
Batch number: Q162091AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8488104	80	89	85	85
Blank	86	94	98	97
LCS	86	92	95	98
LCSD	89	93	92	93

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Quality Control Summary

Client Name: URS Corporation
Reported: 08/04/2016 10:43

Group Number: 1685925

Surrogate Quality Control (continued)

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

Limits:	50-141	54-135	52-141	50-131

Analysis Name: PAHs in waters by SIM
Batch number: 16205WAI026

	Fluoranthene-d10	Benzo(a)pyrene-d12	1-Methylnaphthalene-d10
8488108	103	41	85
8488109	104	83	89
8488110	108	81	89
8488111	111	83	88
8488114	101	94	80
8488115	115	102	86
8488116	113	100	82
8488117	109	97	83
Blank	107	111	93
LCS	110	109	93
LCSD	108	106	94
Limits:	50-133	41-137	43-126

Analysis Name: TCL SW846 8270C Water
Batch number: 16205WAJ026

	2-Fluorophenol	Phenol-d6	2,4,6-Tribromophenol	Nitrobenzene-d5	2-Fluorobiphenyl	Terphenyl-d14
8488108	9*	30	11*	0*	73	55
8488109	35	30	58	89	83	81
8488110	47	49	61	102	95	96
8488111	26	36	42	95	89	89
8488114	71	53	107	92	87	87
8488115	70	51	103	92	84	87
8488116	64	47	92	81	76	85
8488117	79	58	115	103	98	104
Blank	72	51	111	97	91	96
LCS	88	68	112	110	101	105
LCSD	80	62	115	107	99	101
Limits:	10-103	10-85	22-150	46-128	61-112	41-125

Analysis Name: PPL/TCL SVOCs in Soil
Batch number: 16210SLG026

	Phenol-d6	2-Fluorophenol	2,4,6-Tribromophenol	Nitrobenzene-d5	2-Fluorobiphenyl	Terphenyl-d14
8488097	92	96	97	97	94	66
8488098	88	90	93	91	88	59
8488099	89	92	89	92	87	59
8488101	93	96	89	97	93	63
8488104	91	94	95	95	99	65
8488105	92	93	83	103	100	63
8488107	88	89	98	92	91	57*
Blank	93	99	109	101	100	77
LCS	100	102	103	100	98	78
MS	89	89	96	95	94	62
MSD	65	63	47	87	82	49*

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Quality Control Summary

Client Name: URS Corporation
Reported: 08/04/2016 10:43

Group Number: 1685925

Surrogate Quality Control (continued)

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

Limits:	58-122	57-126	35-136	54-123	63-117	59-129

Analysis Name: PPL/TCL SVOCs in Soil
Batch number: 16214SLA026

	Phenol-d6	2-Fluorophenol	2,4,6-Tribromophenol	Nitrobenzene-d5	2-Fluorobiphenyl	Terphenyl-d14
8488100	89	90	79	93	90	95
8488102	94	98	99	101	95	102
8488103	91	94	104	103	98	102
8488106	92	95	101	96	90	99
Blank	92	96	112	99	98	105
LCS	101	103	109	103	99	105
MS	98	101	109	104	99	105
MSD	97	99	108	102	97	104
Limits:	58-122	57-126	35-136	54-123	63-117	59-129

Analysis Name: EDB 8011
Batch number: 162050001A

	1,1,2,2-Tetrachloroethane
8488108	125
8488109	127
8488110	139*
8488111	132
8488114	128
8488115	105
8488116	100
8488117	100
Blank	90
LCS	96
LCSD	98
MS	99
MSD	97
Limits:	46-136

Analysis Name: PCBs in Water - Low Level
Batch number: 162050017A

	Tetrachloro-m-xylene	Decachlorobiphenyl
8488108	91	73
8488109	188*	109
8488110	94	72
8488111	95	63
8488114	85	98
8488115	107	94
8488116	91	115
8488117	97	104
Blank	91	114
LCS	88	119
LCSD	77	120

*- Outside of specification
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Quality Control Summary

Client Name: URS Corporation
Reported: 08/04/2016 10:43

Group Number: 1685925

Surrogate Quality Control (continued)

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

Limits: 33-137 10-148

Analysis Name: PCBs in Soil (microwave)
Batch number: 162100026A

	Tetrachloro-m-xylene	Decachlorobiphenyl
8488097	102	112
8488098	114	110
8488099	113	111
8488100	109	108
8488101	112	108
8488102	97	113
8488103	93	107
8488104	81	91
8488105	87	103
8488106	109	103
8488107	97	113
Blank	117	113
LCS	109	109
MS	105	106
MSD	106	108
Limits:	53-140	45-143

*- Outside of specification
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Environmental Analysis Request/Chain of Custody

eurofins

Lancaster Laboratories Environmental

For Eurofins Lancaster Laboratories Environmental use only

Acct. # 3464 Group # 1685925 Sample # 8488097-117

COC # 505469

Client Information

Client: AECOM

Acct. #:

Project Name/#: Union Switch & Signal

PWSID #:

Project Manager: Rebecca Walsh

P.O. #:

Sampler: Ellen McGuiness

Quote #:

State where samples were collected: PA

For Compliance: Yes ☐ No ☐

Matrix

Soil ☒ Sediment ☐ Tissue ☐ Water: Potable ☐ Ground ☐ NPDES ☐ Surface ☐ Other: ____

Analysis Requested

Preservation Codes

For Lab Use Only

FSC:

SCR#:

Preservation Codes: H=HCl, T=Thiosulfate, N=HNO_3, B=NaOH, S=H_2SO_4, O=Other

Remarks

Sample Identification	Collected Date	Collected Time	Grab	Composite	Total # of Containers	Moisture	Metals	PCBs 8082	SVOCs 8270C	Total Cyanide	VOCs 8260B	Remarks
S-1 (14-15)	7/20/16	900	X		6	X	X	X	X	X	X	
S-2 (7-8)	7/20/16	1200	X		6	X	X	X	X	X	X	
S-3 (12-13)	7/19/16	1200	X		6	X	X	X	X	X	X	
S-4 (12-13)	7/19/16	1300	X		6	X	X	X	X	X	X	
S-5 (13-14)	7/19/16	1430	X		6	X	X	X	X	X	X	
S-6 (7-8)	7/19/16	1400	X		6	X	X	X	X	X	X	
S-7 (11-12)	7/20/16	1345	X		6	X	X	X	X	X	X	
S-8 (2-3)	7/20/16	1430	X		6	X	X	X	X	X	X	
S-9 (5-6)	7/19/16	1500	X		6	X	X	X	X	X	X	
S-10 (12-13)	7/19/16	1645	X		6	X	X	X	X	X	X	

Turnaround Time (TAT) Requested (please circle)

Standard Rush

(Rush TAT is subject to laboratory approval and surcharge.)

Date results are needed: Standard 2WK

E-mail address:

Data Package Options (circle if required)

Type I (EPA Level 3 Equivalent/non-CLP) Type VI (Raw Data Only)

Type III (Reduced non-CLP) NJ DKQP TX TRRP-13

NYSDEC Category A or B MA MCP CT RCP

Relinquished by	Date	Time	Received by	Date	Time
Ellen McGuiness	7/21/16	1220	[signature]	7/21/16	1220
[signature]	7-21-16	1320			
			[signature]	7-22-16	930

EDD Required? Yes No

If yes, format:

Site-Specific QC (MS/MSD/Dup)? Yes No

(If yes, indicate QC sample and submit triplicate sample volume.)

Relinquished by Commercial Carrier: UPS ____ FedEx ____ Other ____

Temperature upon receipt 0.7-16 °C

Environmental Analysis Request/Chain of Custody

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For Eurofins Lancaster Laboratories Environmental use only
Acct. # 3464 Group # 1685925 Sample # 8168097-117

COC # 505468

Client Information

Client: AECOM
Acct. #:
Project Name/#: Union Switch & Signal
PWSID #:
Project Manager: Rebecca Walsh
P.O. #:
Sampler: Ellen McGuiness
Quote #:
State where samples were collected: PA
For Compliance: Yes ☐ No ☐

For Lab Use Only
FSC:
SCR#: 191540

Preservation Codes
H=HCl T=Thiosulfate
N=HNO_3 B=NaOH
S=H_2SO_4 O=Other

Remarks

Sample Identification	Collected Date	Collected Time	Grab	Composite	Soil ☒	Sediment ☐	Tissue ☐	Water: Potable ☐	Ground ☐	Surface ☐	NPDES ☐	Other:	Total # of Containers	Moisture	Metals	PCBs 8082	SVOCs 8270C	Total Cyanide	VOCs 8260B						Remarks
DUP-072016-2	7/20/16	—	X		X								6	X	X	X	X	X	X						

Turnaround Time (TAT) Requested (please circle)
Standard Rush
(Rush TAT is subject to laboratory approval and surcharge.)

Date results are needed: Stand 2WX

E-mail address:

Data Package Options (circle if required)
Type I (EPA Level 3 Equivalent/non-CLP) Type VI (Raw Data Only)
Type III (Reduced non-CLP) NJ DKQP TX TRRP-13
NYSDEC Category A or B MA MCP CT RCP

Relinquished by	Date	Time	Received by	Date	Time
[signature]	7-12-16	1530	[signature]	7-21-16	1220
[signature]	7-21-16	1320			
			[signature]	7-22-16	930

EDD Required? Yes No
If yes, format:

Site-Specific QC (MS/MSD/Dup)? Yes No
(If yes, indicate QC sample and submit triplicate sample volume.)

Relinquished by Commercial Carrier:
UPS _____ FedEx _____ Other _____

Temperature upon receipt 0.7-1.6 °C

Environmental Analysis Request/Chain of Custody

eurofins

Lancaster Laboratories Environmental

For Eurofins Lancaster Laboratories Environmental use only

Acct. # 3464 Group # 1685925 Sample # 9488097-117

COC # 505470

Client Information

Client: AECOM

Acct. #:

Project Name/#: Union Switch & Signal

PWSID #:

Project Manager: Rebecca Walsh

P.O. #:

Sampler: Ellen McGuiness

Quote #:

State where samples were collected: PA

For Compliance: Yes ☐ No ☒

Matrix

Soil ☐ Sediment ☐ Tissue ☐ Potable ☐ Ground ☒ Water NPDES ☐ Surface ☐ Other: _____

Analysis Requested / Preservation Codes

For Lab Use Only

FSC:

SCR#:

Preservation Codes

H=HCl T=Thiosulfate
N=HNO_3 B=NaOH
S=H_2SO_4 O=Other

Sample Identification	Collected Date	Collected Time	Grab	Composite	Total # of Containers	Total Cyanide (02)	Metals (08)	VOCs 8260B (38)	PCBs Low Level 8082 (43)	EDB 8011 (57)	PAHs 8270C SIM SVOCs 8270C (153)	Remarks
GW-1	7/20/16	930	X		11	X	X	X	X	X	X	
GW-2	7/19/16	1530	X		11	X	X	X	X	X	X	
GW-3	7/20/16	1630	X		11	X	X	X	X	X	X	
DUP-072016-1	7/20/16	—	X		11	X	X	X	X	X	X	
TB-072016-1	7/20/16	—	X		2			X				
TB-072016-2	7/20/16	—	X		2			X				
EB-072016	7/20/16	1700	X		11	X	X	X	X	X	X	
EB-071916	7/19/16	1600	X		11	X	X	X	X	X	X	
FB-071916	7/19/16	1605	X		11	X	X	X	X	X	X	
FB-072016	7/20/16	1705	X		11	X	X	X	X	X	X	

Turnaround Time (TAT) Requested (please circle)

Standard Rush

(Rush TAT is subject to laboratory approval and surcharge.)

Date results are needed: STD 2WK

E-mail address: rebecca.walsh@aecom.com ellen.mcguiness@aecom.com

Data Package Options (circle if required)

Type I (EPA Level 3 Equivalent/non-CLP) Type VI (Raw Data Only)

Type III (Reduced non-CLP) NJ DKQP TX TRRP-13

NYSDEC Category A or B MA MCP CT RCP

Relinquished by	Date	Time	Received by	Date	Time
Ellen McGuiness	7/21/16	1220	[signature]	7/21/16	1220
[signature]	7-21-16	1320			
			[signature]	7-22-16	930

EDD Required? Yes No

If yes, format: _____

Site-Specific QC (MS/MSD/Dup)? Yes No

(If yes, indicate QC sample and submit triplicate sample volume.)

Relinquished by Commercial Carrier:

UPS _____ FedEx _____ Other _____

Temperature upon receipt 0.7-1.6 °C

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Sample Administration Receipt Documentation Log

Doc Log ID: 154762

Group Number(s): 1685925

Client: AECOM

Delivery and Receipt Information

Delivery Method:	Pittsburgh Office	Arrival Timestamp:	07/22/2016 9:30
Number of Packages:	5	Number of Projects:	2
State/Province of Origin:	PA		

Arrival Condition Summary

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

Unpacked by Joseph Huber (7831) at 11:37 on 07/22/2016

Samples Chilled Details

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

Cooler #	Thermometer ID	Corrected Temp	Therm. Type	Ice Type	Ice Present?	Ice Container	Elevated Temp?
1	DT121	0.7	DT	Wet	Y	Loose	N
2	DT121	1.2	DT	Wet	Y	Loose	N
3	DT121	1.0	DT	Wet	Y	Loose	N
4	DT121	1.5	DT	Wet	Y	Loose	N
5	DT121	1.6	DT	Wet	Y	Loose	N

2425 New Holland Pike
Lancaster, PA 17605-2425

T | 717-656-2300
F | 717-656-2681
www.LancasterLabs.com

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Sample Administration Receipt Documentation Log

Doc Log ID: 154762

Group Number(s): 1685925

Client: AECOM

Delivery and Receipt Information

Delivery Method:	Pittsburgh Office	Arrival Timestamp:	07/22/2016 9:30
Number of Packages:	5	Number of Projects:	2
State/Province of Origin:	PA		

Arrival Condition Summary

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

Unpacked by Joseph Huber (7831) at 11:37 on 07/22/2016

Samples Chilled Details

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

Cooler #	Thermometer ID	Corrected Temp	Therm. Type	Ice Type	Ice Present?	Ice Container	Elevated Temp?
1	DT121	0.7	DT	Wet	Y	Loose	N
2	DT121	1.2	DT	Wet	Y	Loose	N
3	DT121	1.0	DT	Wet	Y	Loose	N
4	DT121	1.5	DT	Wet	Y	Loose	N
5	DT121	1.6	DT	Wet	Y	Loose	N

2425 New Holland Pike
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T | 717-656-2300
F | 717-656-2681
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Explanation of Symbols and Abbreviations

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

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

< less than

> greater than

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

ppb parts per billion

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

Laboratory Data Qualifiers:

B - Analyte detected in the blank
C - Result confirmed by reanalysis
E - Concentration exceeds the calibration range
J (or G, I, X) - estimated value ≥ the Method Detection Limit (MDL or DL) and < the Limit of Quantitation (LOQ or RL)
P - Concentration difference between the primary and confirmation column >40%. The lower result is reported.
U - Analyte was not detected at the value indicated
V - Concentration difference between the primary and confirmation column >100%. The reporting limit is raised due to this disparity and evident interference…

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods.
Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

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

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

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

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8/3/2016
Ms. Barbara Weyandt
Eurofins Lancaster Laboratories Environmental, LLC
2425 New Holland Pike

Lancaster PA 17605-2425

Project Name:
Project #:
Workorder #: 1607439

Dear Ms. Barbara Weyandt

The following report includes the data for the above referenced project for sample(s) received on 7/25/2016 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free the Project Manager: Ausha Scott at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Ausha Scott

Project Manager

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WORK ORDER #: 1607439

Work Order Summary

CLIENT:	Ms. Barbara Weyandt Eurofins Lancaster Laboratories Environmental, LLC 2425 New Holland Pike Lancaster, PA 17605-2425	**BILL TO:**	Ms. Barbara Weyandt Eurofins Lancaster Laboratories Environmental, LLC 2425 New Holland Pike Lancaster, PA 17605-2425
PHONE:	717-656-2300	**P.O. #**	60397721-3
FAX:		**PROJECT #**	
DATE RECEIVED:	07/25/2016	**CONTACT:**	Ausha Scott
DATE COMPLETED:	08/03/2016		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	SG-1	Modified TO-15	8 "Hg	5 psi
01B	SG-1	Modified TO-15	8 "Hg	5 psi
02A	SG-2	Modified TO-15	5.7 "Hg	4.9 psi
02B	SG-2	Modified TO-15	5.7 "Hg	4.9 psi
03A	SG-3	Modified TO-15	1.8 "Hg	5.3 psi
03B	SG-3	Modified TO-15	1.8 "Hg	5.3 psi
04A	SG-4	Modified TO-15	3.3 "Hg	5 psi
05A	Lab Blank	Modified TO-15	NA	NA
05B	Lab Blank	Modified TO-15	NA	NA
05C	Lab Blank	Modified TO-15	NA	NA
05D	Lab Blank	Modified TO-15	NA	NA
05E	Lab Blank	Modified TO-15	NA	NA
06A	CCV	Modified TO-15	NA	NA
06B	CCV	Modified TO-15	NA	NA
06C	CCV	Modified TO-15	NA	NA
06D	CCV	Modified TO-15	NA	NA
06E	CCV	Modified TO-15	NA	NA
07A	LCS	Modified TO-15	NA	NA
07AA	LCSD	Modified TO-15	NA	NA
07B	LCS	Modified TO-15	NA	NA
07BB	LCSD	Modified TO-15	NA	NA
07C	LCS	Modified TO-15	NA	NA
07CC	LCSD	Modified TO-15	NA	NA

Continued on next page

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WORK ORDER #: 1607439

Work Order Summary

CLIENT:	Ms. Barbara Weyandt Eurofins Lancaster Laboratories Environmental, LLC 2425 New Holland Pike Lancaster, PA 17605-2425	**BILL TO:**	Ms. Barbara Weyandt Eurofins Lancaster Laboratories Environmental, LLC 2425 New Holland Pike Lancaster, PA 17605-2425
PHONE:	717-656-2300	**P.O. #**	60397721-3
FAX:		**PROJECT #**	
DATE RECEIVED:	07/25/2016	**CONTACT:**	Ausha Scott
DATE COMPLETED:	08/03/2016		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
07D	LCS	Modified TO-15	NA	NA
07DD	LCSD	Modified TO-15	NA	NA
07E	LCS	Modified TO-15	NA	NA
07EE	LCSD	Modified TO-15	NA	NA

CERTIFIED BY: Heidi Hayes

Technical Director

DATE: 08/03/16

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704434-15-9, UT NELAP CA0093332015-6, VA NELAP - 8113, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2015, Expiration date: 10/17/2016.
Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

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180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
Modified TO-15 Full Scan/SIM
Eurofins Lancaster Laboratories Environmental, LLC
Workorder# 1607439

Four 6 Liter Summa Canister (SIM Certified) samples were received on July 25, 2016. The laboratory performed analysis via modified EPA Method TO-15 using GC/MS in the Full Scan and SIM acquisition modes. The method involves concentrating up to 1.0 liters of air. The concentrated aliquot is then flash vaporized and swept through a water management system to remove water vapor. Following dehumidification, the sample passes directly into the GC/MS for analysis.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the ATL modifications.

Requirement	***TO-15***	***ATL Modifications***
ICAL %RSD acceptance criteria	</=30% RSD with 2 compounds allowed out to < 40% RSD	For Full Scan: 30% RSD with 4 compounds allowed out to < 40% RSD For SIM: Project specific; default criteria is </=30% RSD with 10% of compounds allowed out to < 40% RSD
Daily Calibration	+- 30% Difference	For Full Scan: </= 30% Difference with four allowed out up to </=40%.; flag and narrate outliers For SIM: Project specific; default criteria is </= 30% Difference with 10% of compounds allowed out up to </=40%.; flag and narrate outliers
Blank and standards	Zero air	Nitrogen
Method Detection Limit	Follow 40CFR Pt.136 App. B	The MDL met all relevant requirements in Method TO-15 (statistical MDL less than the LOQ). The concentration of the spiked replicate may have exceeded 10X the calculated MDL in some cases

Receiving Notes

The Chain of Custody was missing method information. EATL proceeded with the analysis as per the original contract or verbal agreement.

The Chain of Custody (COC) information for sample SG-1 did not match the information on the canister with regard to canister identification. The client was notified of the discrepancy and the information on the canister was used to process and report the sample.

Analytical Notes

All Quality Control Limit exceedances and affected sample results are noted by flags. Each flag is defined at the bottom of this Case Narrative and on each Sample Result Summary page. Target compound non-detects in the samples that are associated with high bias in QC analyses have not been flagged.

Sample SG-4 was transferred from SIM/Low Level analysis to full scan TO-15 due to high levels of target compounds.

The results for each sample in this report were acquired from two separate data files originating from the same analytical run. The two data files have the same base file name and are differentiated with a "sim" extension on the SIM data file.

Dilutions were performed on samples SG-2, SG-3 and SG-4 due to the presence of high level target species.

Definition of Data Qualifying Flags

Nine qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

CN - See case narrative explanation

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

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Summary of Detected Compounds
MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

Client Sample ID: SG-1

Lab ID#: 1607439-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,3-Butadiene	0.18	23	0.40	52
Freon 11	0.18	2.6	1.0	14
Ethanol	0.91	22	1.7	42
Freon 113	0.18	0.26	1.4	2.0
Acetone	0.91	54	2.2	130
2-Propanol	0.91	4.8	2.2	12
Carbon Disulfide	0.91	4.5	2.8	14
Hexane	0.18	18	0.64	65
2-Butanone (Methyl Ethyl Ketone)	0.91	5.5	2.7	16
Cyclohexane	0.18	13	0.63	45
Heptane	0.18	4.4	0.74	18
4-Methyl-2-pentanone	0.18	0.29	0.74	1.2
1,3-Dichlorobenzene	0.18	1.2	1.1	7.0

Client Sample ID: SG-1

Lab ID#: 1607439-01B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.036	0.84	0.18	4.1
Chloromethane	0.091	4.4	0.19	9.0
Vinyl Chloride	0.018	0.18	0.046	0.45
Chloroethane	0.091	0.92	0.24	2.4
Chloroform	0.036	0.22	0.18	1.1
1,1,1-Trichloroethane	0.036	0.16	0.20	0.85
Carbon Tetrachloride	0.036	0.12	0.23	0.75
Benzene	0.091	6.4	0.29	20
1,2-Dichloroethane	0.036	0.047	0.15	0.19
Trichloroethene	0.036	0.22	0.20	1.2
Toluene	0.036	14	0.14	54
Tetrachloroethene	0.036	0.039	0.25	0.26
Ethyl Benzene	0.036	0.11	0.16	0.50
m,p-Xylene	0.073	0.32	0.32	1.4
o-Xylene	0.036	0.13	0.16	0.56

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Summary of Detected Compounds
MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

Client Sample ID: SG-2

Lab ID#: 1607439-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,3-Butadiene	0.41	9.8	0.91	22
Freon 11	0.41	3.9	2.3	22
Ethanol	2.1	41	3.9	77
Freon 113	0.41	2.0	3.2	15
Acetone	2.1	39	4.9	92
2-Propanol	2.1	4.0	5.1	9.8
Carbon Disulfide	2.1	3.0	6.4	9.3
Hexane	0.41	4.9	1.4	17
2-Butanone (Methyl Ethyl Ketone)	2.1	3.7	6.1	11
Cyclohexane	0.41	2.4	1.4	8.3
Heptane	0.41	1.8	1.7	7.2
1,3-Dichlorobenzene	0.41	2.0	2.5	12

Client Sample ID: SG-2

Lab ID#: 1607439-02B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.083	0.47	0.41	2.3
Chloromethane	0.21	2.0	0.43	4.1
Vinyl Chloride	0.041	0.19	0.10	0.49
Chloroethane	0.21	0.27	0.54	0.72
1,1-Dichloroethene	0.041	0.097	0.16	0.39
cis-1,2-Dichloroethene	0.083	0.17	0.33	0.67
Chloroform	0.083	1.6	0.40	7.6
1,1,1-Trichloroethane	0.083	0.24	0.45	1.3
Carbon Tetrachloride	0.083	0.084	0.52	0.53
Benzene	0.21	4.3	0.66	14
Trichloroethene	0.083	43	0.44	230
Toluene	0.083	7.9	0.31	30
Ethyl Benzene	0.083	0.091	0.36	0.40
m,p-Xylene	0.16	0.23	0.72	1.0
o-Xylene	0.083	0.097	0.36	0.42

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Summary of Detected Compounds
MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

Client Sample ID: SG-3

Lab ID#: 1607439-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethanol	7.2	10	14	20
Acetone	7.2	9.2	17	22

Client Sample ID: SG-3

Lab ID#: 1607439-03B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.29	0.61	1.4	3.0
1,1-Dichloroethene	0.14	9.4	0.57	37
1,1-Dichloroethane	0.29	1.8	1.2	7.3
Chloroform	0.29	1.5	1.4	7.4
1,1,1-Trichloroethane	0.29	180	1.6	1000
Carbon Tetrachloride	0.29	3.0 J0	1.8	19 J0
Benzene	0.72	0.92	2.3	2.9
Trichloroethene	0.29	7.8	1.6	42
Toluene	0.29	1.1	1.1	4.0

Client Sample ID: SG-4

Lab ID#: 1607439-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	15	300	60	1200
Hexane	15	42	53	150
1,1-Dichloroethane	15	34	61	140
Chloroform	15	20	73	98
1,1,1-Trichloroethane	15	3100	82	17000
Cyclohexane	15	240	52	820
Carbon Tetrachloride	15	41	95	260
Trichloroethene	15	91	81	490

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Client Sample ID: SG-1

Lab ID#: 1607439-01A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**20072810**	**Date of Collection:**	**7/20/16 11:26:00 AM**
Dil. Factor:	**1.82**	**Date of Analysis:**	**7/28/16 02:12 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,3-Butadiene	0.18	23	0.40	52
Bromomethane	0.91	Not Detected	3.5	Not Detected
Freon 11	0.18	2.6	1.0	14
Ethanol	0.91	22	1.7	42
Freon 113	0.18	0.26	1.4	2.0
Acetone	0.91	54	2.2	130
2-Propanol	0.91	4.8	2.2	12
Carbon Disulfide	0.91	4.5	2.8	14
3-Chloropropene	0.91	Not Detected	2.8	Not Detected
Methylene Chloride	0.36	Not Detected	1.3	Not Detected
Hexane	0.18	18	0.64	65
2-Butanone (Methyl Ethyl Ketone)	0.91	5.5	2.7	16
Tetrahydrofuran	0.91	Not Detected	2.7	Not Detected
Cyclohexane	0.18	13	0.63	45
2,2,4-Trimethylpentane	0.91	Not Detected	4.2	Not Detected
Heptane	0.18	4.4	0.74	18
1,2-Dichloropropane	0.18	Not Detected	0.84	Not Detected
1,4-Dioxane	0.18	Not Detected	0.66	Not Detected
Bromodichloromethane	0.18	Not Detected	1.2	Not Detected
cis-1,3-Dichloropropene	0.18	Not Detected	0.83	Not Detected
4-Methyl-2-pentanone	0.18	0.29	0.74	1.2
trans-1,3-Dichloropropene	0.18	Not Detected	0.83	Not Detected
2-Hexanone	0.91	Not Detected	3.7	Not Detected
Dibromochloromethane	0.18	Not Detected	1.6	Not Detected
Chlorobenzene	0.18	Not Detected	0.84	Not Detected
Styrene	0.18	Not Detected	0.78	Not Detected
Bromoform	0.18	Not Detected	1.9	Not Detected
Cumene	0.18	Not Detected	0.89	Not Detected
Propylbenzene	0.18	Not Detected	0.89	Not Detected
4-Ethyltoluene	0.18	Not Detected	0.89	Not Detected
1,3,5-Trimethylbenzene	0.18	Not Detected	0.89	Not Detected
1,2,4-Trimethylbenzene	0.18	Not Detected	0.89	Not Detected
1,3-Dichlorobenzene	0.18	1.2	1.1	7.0
alpha-Chlorotoluene	0.18	Not Detected	0.94	Not Detected
1,2-Dichlorobenzene	0.18	Not Detected	1.1	Not Detected
1,2,4-Trichlorobenzene	0.91	Not Detected	6.8	Not Detected
Hexachlorobutadiene	0.91	Not Detected	9.7	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	108	70-130

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Client Sample ID: SG-1

Lab ID#: 1607439-01A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**20072810**	**Date of Collection:**	**7/20/16 11:26:00 AM**
Dil. Factor:	**1.82**	**Date of Analysis:**	**7/28/16 02:12 PM**

Surrogates	**%Recovery**	**Method Limits**
Toluene-d8	99	70-130
4-Bromofluorobenzene	105	70-130

eurofins | Air Toxics

Client Sample ID: SG-1

Lab ID#: 1607439-01B

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**20072810sim**	**Date of Collection:**	**7/20/16 11:26:00 AM**
Dil. Factor:	**1.82**	**Date of Analysis:**	**7/28/16 02:12 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.036	0.84	0.18	4.1
Freon 114	0.036	Not Detected	0.25	Not Detected
Chloromethane	0.091	4.4	0.19	9.0
Vinyl Chloride	0.018	0.18	0.046	0.45
Chloroethane	0.091	0.92	0.24	2.4
1,1-Dichloroethene	0.018	Not Detected	0.072	Not Detected
trans-1,2-Dichloroethene	0.18	Not Detected	0.72	Not Detected
Methyl tert-butyl ether	0.18	Not Detected	0.66	Not Detected
1,1-Dichloroethane	0.036	Not Detected	0.15	Not Detected
cis-1,2-Dichloroethene	0.036	Not Detected	0.14	Not Detected
Chloroform	0.036	0.22	0.18	1.1
1,1,1-Trichloroethane	0.036	0.16	0.20	0.85
Carbon Tetrachloride	0.036	0.12	0.23	0.75
Benzene	0.091	6.4	0.29	20
1,2-Dichloroethane	0.036	0.047	0.15	0.19
Trichloroethene	0.036	0.22	0.20	1.2
Toluene	0.036	14	0.14	54
1,1,2-Trichloroethane	0.036	Not Detected	0.20	Not Detected
Tetrachloroethene	0.036	0.039	0.25	0.26
1,2-Dibromoethane (EDB)	0.036	Not Detected	0.28	Not Detected
Ethyl Benzene	0.036	0.11	0.16	0.50
m,p-Xylene	0.073	0.32	0.32	1.4
o-Xylene	0.036	0.13	0.16	0.56
1,1,2,2-Tetrachloroethane	0.036	Not Detected	0.25	Not Detected
1,4-Dichlorobenzene	0.036	Not Detected	0.22	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	112	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	106	70-130

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Client Sample ID: SG-2

Lab ID#: 1607439-02A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**e080107**	**Date of Collection:**	**7/20/16 1:10:00 PM**
Dil. Factor:	**4.13**	**Date of Analysis:**	**8/1/16 12:39 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,3-Butadiene	0.41	9.8	0.91	22
Bromomethane	2.1	Not Detected	8.0	Not Detected
Freon 11	0.41	3.9	2.3	22
Ethanol	2.1	41	3.9	77
Freon 113	0.41	2.0	3.2	15
Acetone	2.1	39	4.9	92
2-Propanol	2.1	4.0	5.1	9.8
Carbon Disulfide	2.1	3.0	6.4	9.3
3-Chloropropene	2.1	Not Detected	6.5	Not Detected
Methylene Chloride	0.83	Not Detected	2.9	Not Detected
Hexane	0.41	4.9	1.4	17
2-Butanone (Methyl Ethyl Ketone)	2.1	3.7	6.1	11
Tetrahydrofuran	2.1	Not Detected UJ	6.1	Not Detected UJ
Cyclohexane	0.41	2.4	1.4	8.3
2,2,4-Trimethylpentane	2.1	Not Detected	9.6	Not Detected
Heptane	0.41	1.8	1.7	7.2
1,2-Dichloropropane	0.41	Not Detected	1.9	Not Detected
1,4-Dioxane	0.41	Not Detected	1.5	Not Detected
Bromodichloromethane	0.41	Not Detected	2.8	Not Detected
cis-1,3-Dichloropropene	0.41	Not Detected	1.9	Not Detected
4-Methyl-2-pentanone	0.41	Not Detected	1.7	Not Detected
trans-1,3-Dichloropropene	0.41	Not Detected	1.9	Not Detected
2-Hexanone	2.1	Not Detected	8.4	Not Detected
Dibromochloromethane	0.41	Not Detected	3.5	Not Detected
Chlorobenzene	0.41	Not Detected	1.9	Not Detected
Styrene	0.41	Not Detected	1.8	Not Detected
Bromoform	0.41	Not Detected	4.3	Not Detected
Cumene	0.41	Not Detected	2.0	Not Detected
Propylbenzene	0.41	Not Detected	2.0	Not Detected
4-Ethyltoluene	0.41	Not Detected	2.0	Not Detected
1,3,5-Trimethylbenzene	0.41	Not Detected	2.0	Not Detected
1,2,4-Trimethylbenzene	0.41	Not Detected	2.0	Not Detected
1,3-Dichlorobenzene	0.41	2.0	2.5	12
alpha-Chlorotoluene	0.41	Not Detected	2.1	Not Detected
1,2-Dichlorobenzene	0.41	Not Detected	2.5	Not Detected
1,2,4-Trichlorobenzene	2.1	Not Detected	15	Not Detected
Hexachlorobutadiene	2.1	Not Detected	22	Not Detected

UJ = Analyte associated with low bias in the CCV.

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits

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Client Sample ID: SG-2

Lab ID#: 1607439-02A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**e080107**	**Date of Collection:**	**7/20/16 1:10:00 PM**
Dil. Factor:	**4.13**	**Date of Analysis:**	**8/1/16 12:39 PM**

Surrogates	**%Recovery**	**Method Limits**
1,2-Dichloroethane-d4	100	70-130
Toluene-d8	94	70-130
4-Bromofluorobenzene	100	70-130

eurofins | Air Toxics

Client Sample ID: SG-2

Lab ID#: 1607439-02B

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**e080107sim**	**Date of Collection:**	**7/20/16 1:10:00 PM**
Dil. Factor:	**4.13**	**Date of Analysis:**	**8/1/16 12:39 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.083	0.47	0.41	2.3
Freon 114	0.083	Not Detected	0.58	Not Detected
Chloromethane	0.21	2.0	0.43	4.1
Vinyl Chloride	0.041	0.19	0.10	0.49
Chloroethane	0.21	0.27	0.54	0.72
1,1-Dichloroethene	0.041	0.097	0.16	0.39
trans-1,2-Dichloroethene	0.41	Not Detected	1.6	Not Detected
Methyl tert-butyl ether	0.41	Not Detected	1.5	Not Detected
1,1-Dichloroethane	0.083	Not Detected	0.33	Not Detected
cis-1,2-Dichloroethene	0.083	0.17	0.33	0.67
Chloroform	0.083	1.6	0.40	7.6
1,1,1-Trichloroethane	0.083	0.24	0.45	1.3
Carbon Tetrachloride	0.083	0.084	0.52	0.53
Benzene	0.21	4.3	0.66	14
1,2-Dichloroethane	0.083	Not Detected	0.33	Not Detected
Trichloroethene	0.083	43	0.44	230
Toluene	0.083	7.9	0.31	30
1,1,2-Trichloroethane	0.083	Not Detected	0.45	Not Detected
Tetrachloroethene	0.083	Not Detected	0.56	Not Detected
1,2-Dibromoethane (EDB)	0.083	Not Detected	0.63	Not Detected
Ethyl Benzene	0.083	0.091	0.36	0.40
m,p-Xylene	0.16	0.23	0.72	1.0
o-Xylene	0.083	0.097	0.36	0.42
1,1,2,2-Tetrachloroethane	0.083	Not Detected	0.57	Not Detected
1,4-Dichlorobenzene	0.083	Not Detected	0.50	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	104	70-130
Toluene-d8	95	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: SG-3

Lab ID#: 1607439-03A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**20072812**	**Date of Collection:**	**7/20/16 4:10:00 PM**
Dil. Factor:	**14.5**	**Date of Analysis:**	**7/28/16 03:47 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,3-Butadiene	1.4	Not Detected	3.2	Not Detected
Bromomethane	7.2	Not Detected	28	Not Detected
Freon 11	1.4	Not Detected	8.1	Not Detected
Ethanol	7.2	10	14	20
Freon 113	1.4	Not Detected	11	Not Detected
Acetone	7.2	9.2	17	22
2-Propanol	7.2	Not Detected	18	Not Detected
Carbon Disulfide	7.2	Not Detected	22	Not Detected
3-Chloropropene	7.2	Not Detected	23	Not Detected
Methylene Chloride	2.9	Not Detected	10	Not Detected
Hexane	1.4	Not Detected	5.1	Not Detected
2-Butanone (Methyl Ethyl Ketone)	7.2	Not Detected	21	Not Detected
Tetrahydrofuran	7.2	Not Detected	21	Not Detected
Cyclohexane	1.4	Not Detected	5.0	Not Detected
2,2,4-Trimethylpentane	7.2	Not Detected	34	Not Detected
Heptane	1.4	Not Detected	5.9	Not Detected
1,2-Dichloropropane	1.4	Not Detected	6.7	Not Detected
1,4-Dioxane	1.4	Not Detected	5.2	Not Detected
Bromodichloromethane	1.4	Not Detected	9.7	Not Detected
cis-1,3-Dichloropropene	1.4	Not Detected	6.6	Not Detected
4-Methyl-2-pentanone	1.4	Not Detected	5.9	Not Detected
trans-1,3-Dichloropropene	1.4	Not Detected	6.6	Not Detected
2-Hexanone	7.2	Not Detected	30	Not Detected
Dibromochloromethane	1.4	Not Detected	12	Not Detected
Chlorobenzene	1.4	Not Detected	6.7	Not Detected
Styrene	1.4	Not Detected	6.2	Not Detected
Bromoform	1.4	Not Detected	15	Not Detected
Cumene	1.4	Not Detected	7.1	Not Detected
Propylbenzene	1.4	Not Detected	7.1	Not Detected
4-Ethyltoluene	1.4	Not Detected	7.1	Not Detected
1,3,5-Trimethylbenzene	1.4	Not Detected	7.1	Not Detected
1,2,4-Trimethylbenzene	1.4	Not Detected	7.1	Not Detected
1,3-Dichlorobenzene	1.4	Not Detected	8.7	Not Detected
alpha-Chlorotoluene	1.4	Not Detected	7.5	Not Detected
1,2-Dichlorobenzene	1.4	Not Detected	8.7	Not Detected
1,2,4-Trichlorobenzene	7.2	Not Detected	54	Not Detected
Hexachlorobutadiene	7.2	Not Detected	77	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	106	70-130

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Client Sample ID: SG-3

Lab ID#: 1607439-03A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**20072812**	**Date of Collection:**	**7/20/16 4:10:00 PM**
Dil. Factor:	**14.5**	**Date of Analysis:**	**7/28/16 03:47 PM**

Surrogates	**%Recovery**	**Method Limits**
Toluene-d8	99	70-130
4-Bromofluorobenzene	94	70-130

eurofins | Air Toxics

Client Sample ID: SG-3

Lab ID#: 1607439-03B

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**20072812sim**	**Date of Collection:**	**7/20/16 4:10:00 PM**
Dil. Factor:	**14.5**	**Date of Analysis:**	**7/28/16 03:47 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.29	0.61	1.4	3.0
Freon 114	0.29	Not Detected	2.0	Not Detected
Chloromethane	0.72	Not Detected	1.5	Not Detected
Vinyl Chloride	0.14	Not Detected	0.37	Not Detected
Chloroethane	0.72	Not Detected	1.9	Not Detected
1,1-Dichloroethene	0.14	9.4	0.57	37
trans-1,2-Dichloroethene	1.4	Not Detected	5.7	Not Detected
Methyl tert-butyl ether	1.4	Not Detected	5.2	Not Detected
1,1-Dichloroethane	0.29	1.8	1.2	7.3
cis-1,2-Dichloroethene	0.29	Not Detected	1.1	Not Detected
Chloroform	0.29	1.5	1.4	7.4
1,1,1-Trichloroethane	0.29	180	1.6	1000
Carbon Tetrachloride	0.29	3.0 J0	1.8	19 J0
Benzene	0.72	0.92	2.3	2.9
1,2-Dichloroethane	0.29	Not Detected	1.2	Not Detected
Trichloroethene	0.29	7.8	1.6	42
Toluene	0.29	1.1	1.1	4.0
1,1,2-Trichloroethane	0.29	Not Detected	1.6	Not Detected
Tetrachloroethene	0.29	Not Detected	2.0	Not Detected
1,2-Dibromoethane (EDB)	0.29	Not Detected	2.2	Not Detected
Ethyl Benzene	0.29	Not Detected	1.2	Not Detected
m,p-Xylene	0.58	Not Detected	2.5	Not Detected
o-Xylene	0.29	Not Detected	1.2	Not Detected
1,1,2,2-Tetrachloroethane	0.29	Not Detected	2.0	Not Detected
1,4-Dichlorobenzene	0.29	Not Detected	1.7	Not Detected

J0 = Estimated value due to bias in the CCV.

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	106	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	97	70-130

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Client Sample ID: SG-4

Lab ID#: 1607439-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p080117**	**Date of Collection:**	**7/20/16 3:25:00 PM**
Dil. Factor:	**30.1**	**Date of Analysis:**	**8/1/16 06:34 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	15	Not Detected	74	Not Detected
Freon 114	15	Not Detected	100	Not Detected
Chloromethane	150	Not Detected	310	Not Detected
Vinyl Chloride	15	Not Detected	38	Not Detected
1,3-Butadiene	15	Not Detected	33	Not Detected
Bromomethane	150	Not Detected	580	Not Detected
Chloroethane	60	Not Detected	160	Not Detected
Freon 11	15	Not Detected	84	Not Detected
Ethanol	60	Not Detected	110	Not Detected
Freon 113	15	Not Detected	120	Not Detected
1,1-Dichloroethene	15	300	60	1200
Acetone	150	Not Detected	360	Not Detected
2-Propanol	60	Not Detected	150	Not Detected
Carbon Disulfide	60	Not Detected	190	Not Detected
3-Chloropropene	60	Not Detected	190	Not Detected
Methylene Chloride	150	Not Detected	520	Not Detected
Methyl tert-butyl ether	60	Not Detected	220	Not Detected
trans-1,2-Dichloroethene	15	Not Detected	60	Not Detected
Hexane	15	42	53	150
1,1-Dichloroethane	15	34	61	140
2-Butanone (Methyl Ethyl Ketone)	60	Not Detected	180	Not Detected
cis-1,2-Dichloroethene	15	Not Detected	60	Not Detected
Tetrahydrofuran	15	Not Detected	44	Not Detected
Chloroform	15	20	73	98
1,1,1-Trichloroethane	15	3100	82	17000
Cyclohexane	15	240	52	820
Carbon Tetrachloride	15	41	95	260
2,2,4-Trimethylpentane	15	Not Detected	70	Not Detected
Benzene	15	Not Detected	48	Not Detected
1,2-Dichloroethane	15	Not Detected	61	Not Detected
Heptane	15	Not Detected	62	Not Detected
Trichloroethene	15	91	81	490
1,2-Dichloropropane	15	Not Detected	70	Not Detected
1,4-Dioxane	60	Not Detected	220	Not Detected
Bromodichloromethane	15	Not Detected	100	Not Detected
cis-1,3-Dichloropropene	15	Not Detected	68	Not Detected
4-Methyl-2-pentanone	15	Not Detected	62	Not Detected
Toluene	15	Not Detected	57	Not Detected
trans-1,3-Dichloropropene	15	Not Detected	68	Not Detected
1,1,2-Trichloroethane	15	Not Detected	82	Not Detected
Tetrachloroethene	15	Not Detected	100	Not Detected
2-Hexanone	60	Not Detected	250	Not Detected

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Client Sample ID: SG-4

Lab ID#: 1607439-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p080117**	**Date of Collection:**	**7/20/16 3:25:00 PM**
Dil. Factor:	**30.1**	**Date of Analysis:**	**8/1/16 06:34 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	15	Not Detected	130	Not Detected
1,2-Dibromoethane (EDB)	15	Not Detected	120	Not Detected
Chlorobenzene	15	Not Detected	69	Not Detected
Ethyl Benzene	15	Not Detected	65	Not Detected
m,p-Xylene	15	Not Detected	65	Not Detected
o-Xylene	15	Not Detected	65	Not Detected
Styrene	15	Not Detected	64	Not Detected
Bromoform	15	Not Detected	160	Not Detected
Cumene	15	Not Detected	74	Not Detected
1,1,2,2-Tetrachloroethane	15	Not Detected	100	Not Detected
Propylbenzene	15	Not Detected	74	Not Detected
4-Ethyltoluene	15	Not Detected	74	Not Detected
1,3,5-Trimethylbenzene	15	Not Detected	74	Not Detected
1,2,4-Trimethylbenzene	15	Not Detected	74	Not Detected
1,3-Dichlorobenzene	15	Not Detected	90	Not Detected
1,4-Dichlorobenzene	15	Not Detected	90	Not Detected
alpha-Chlorotoluene	15	Not Detected	78	Not Detected
1,2-Dichlorobenzene	15	Not Detected	90	Not Detected
1,2,4-Trichlorobenzene	60	Not Detected	450	Not Detected
Hexachlorobutadiene	60	Not Detected	640	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
Toluene-d8	97	70-130
1,2-Dichloroethane-d4	100	70-130
4-Bromofluorobenzene	96	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1607439-05A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**20072806**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 7/28/16 11:19 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,3-Butadiene	0.10	Not Detected	0.22	Not Detected
Bromomethane	0.50	Not Detected	1.9	Not Detected
Freon 11	0.10	Not Detected	0.56	Not Detected
Ethanol	0.50	Not Detected	0.94	Not Detected
Freon 113	0.10	Not Detected	0.77	Not Detected
Acetone	0.50	Not Detected	1.2	Not Detected
2-Propanol	0.50	Not Detected	1.2	Not Detected
Carbon Disulfide	0.50	Not Detected	1.6	Not Detected
3-Chloropropene	0.50	Not Detected	1.6	Not Detected
Methylene Chloride	0.20	Not Detected	0.69	Not Detected
Hexane	0.10	Not Detected	0.35	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.50	Not Detected	1.5	Not Detected
Tetrahydrofuran	0.50	Not Detected	1.5	Not Detected
Cyclohexane	0.10	Not Detected	0.34	Not Detected
2,2,4-Trimethylpentane	0.50	Not Detected	2.3	Not Detected
Heptane	0.10	Not Detected	0.41	Not Detected
1,2-Dichloropropane	0.10	Not Detected	0.46	Not Detected
1,4-Dioxane	0.10	Not Detected	0.36	Not Detected
Bromodichloromethane	0.10	Not Detected	0.67	Not Detected
cis-1,3-Dichloropropene	0.10	Not Detected	0.45	Not Detected
4-Methyl-2-pentanone	0.10	Not Detected	0.41	Not Detected
trans-1,3-Dichloropropene	0.10	Not Detected	0.45	Not Detected
2-Hexanone	0.50	Not Detected	2.0	Not Detected
Dibromochloromethane	0.10	Not Detected	0.85	Not Detected
Chlorobenzene	0.10	Not Detected	0.46	Not Detected
Styrene	0.10	Not Detected	0.42	Not Detected
Bromoform	0.10	Not Detected	1.0	Not Detected
Cumene	0.10	Not Detected	0.49	Not Detected
Propylbenzene	0.10	Not Detected	0.49	Not Detected
4-Ethyltoluene	0.10	Not Detected	0.49	Not Detected
1,3,5-Trimethylbenzene	0.10	Not Detected	0.49	Not Detected
1,2,4-Trimethylbenzene	0.10	Not Detected	0.49	Not Detected
1,3-Dichlorobenzene	0.10	Not Detected	0.60	Not Detected
alpha-Chlorotoluene	0.10	Not Detected	0.52	Not Detected
1,2-Dichlorobenzene	0.10	Not Detected	0.60	Not Detected
1,2,4-Trichlorobenzene	0.50	Not Detected	3.7	Not Detected
Hexachlorobutadiene	0.50	Not Detected	5.3	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	111	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1607439-05A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**20072806**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 7/28/16 11:19 AM**	

Surrogates	**%Recovery**	**Method Limits**
Toluene-d8	99	70-130
4-Bromofluorobenzene	89	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1607439-05B

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**20072806sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 7/28/16 11:19 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.020	Not Detected	0.099	Not Detected
Freon 114	0.020	Not Detected	0.14	Not Detected
Chloromethane	0.050	Not Detected	0.10	Not Detected
Vinyl Chloride	0.010	Not Detected	0.026	Not Detected
Chloroethane	0.050	Not Detected	0.13	Not Detected
1,1-Dichloroethene	0.010	Not Detected	0.040	Not Detected
trans-1,2-Dichloroethene	0.10	Not Detected	0.40	Not Detected
Methyl tert-butyl ether	0.10	Not Detected	0.36	Not Detected
1,1-Dichloroethane	0.020	Not Detected	0.081	Not Detected
cis-1,2-Dichloroethene	0.020	Not Detected	0.079	Not Detected
Chloroform	0.020	Not Detected	0.098	Not Detected
1,1,1-Trichloroethane	0.020	Not Detected	0.11	Not Detected
Carbon Tetrachloride	0.020	Not Detected	0.12	Not Detected
Benzene	0.050	Not Detected	0.16	Not Detected
1,2-Dichloroethane	0.020	Not Detected	0.081	Not Detected
Trichloroethene	0.020	Not Detected	0.11	Not Detected
Toluene	0.020	Not Detected	0.075	Not Detected
1,1,2-Trichloroethane	0.020	Not Detected	0.11	Not Detected
Tetrachloroethene	0.020	Not Detected	0.14	Not Detected
1,2-Dibromoethane (EDB)	0.020	Not Detected	0.15	Not Detected
Ethyl Benzene	0.020	Not Detected	0.087	Not Detected
m,p-Xylene	0.040	Not Detected	0.17	Not Detected
o-Xylene	0.020	Not Detected	0.087	Not Detected
1,1,2,2-Tetrachloroethane	0.020	Not Detected	0.14	Not Detected
1,4-Dichlorobenzene	0.020	Not Detected	0.12	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	117	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	94	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1607439-05C

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p080107**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/1/16 12:24 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.50	Not Detected	2.5	Not Detected
Freon 114	0.50	Not Detected	3.5	Not Detected
Chloromethane	5.0	Not Detected	10	Not Detected
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
1,3-Butadiene	0.50	Not Detected	1.1	Not Detected
Bromomethane	5.0	Not Detected	19	Not Detected
Chloroethane	2.0	Not Detected	5.3	Not Detected
Freon 11	0.50	Not Detected	2.8	Not Detected
Ethanol	2.0	Not Detected	3.8	Not Detected
Freon 113	0.50	Not Detected	3.8	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Acetone	5.0	Not Detected	12	Not Detected
2-Propanol	2.0	Not Detected	4.9	Not Detected
Carbon Disulfide	2.0	Not Detected	6.2	Not Detected
3-Chloropropene	2.0	Not Detected	6.3	Not Detected
Methylene Chloride	5.0	Not Detected	17	Not Detected
Methyl tert-butyl ether	2.0	Not Detected	7.2	Not Detected
trans-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Hexane	0.50	Not Detected	1.8	Not Detected
1,1-Dichloroethane	0.50	Not Detected	2.0	Not Detected
2-Butanone (Methyl Ethyl Ketone)	2.0	Not Detected	5.9	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Tetrahydrofuran	0.50	Not Detected	1.5	Not Detected
Chloroform	0.50	Not Detected	2.4	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Cyclohexane	0.50	Not Detected	1.7	Not Detected
Carbon Tetrachloride	0.50	Not Detected	3.1	Not Detected
2,2,4-Trimethylpentane	0.50	Not Detected	2.3	Not Detected
Benzene	0.50	Not Detected	1.6	Not Detected
1,2-Dichloroethane	0.50	Not Detected	2.0	Not Detected
Heptane	0.50	Not Detected	2.0	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
1,2-Dichloropropane	0.50	Not Detected	2.3	Not Detected
1,4-Dioxane	2.0	Not Detected	7.2	Not Detected
Bromodichloromethane	0.50	Not Detected	3.4	Not Detected
cis-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
4-Methyl-2-pentanone	0.50	Not Detected	2.0	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
trans-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
1,1,2-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected
2-Hexanone	2.0	Not Detected	8.2	Not Detected

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Client Sample ID: Lab Blank

Lab ID#: 1607439-05C

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p080107**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/1/16 12:24 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	0.50	Not Detected	4.2	Not Detected
1,2-Dibromoethane (EDB)	0.50	Not Detected	3.8	Not Detected
Chlorobenzene	0.50	Not Detected	2.3	Not Detected
Ethyl Benzene	0.50	Not Detected	2.2	Not Detected
m,p-Xylene	0.50	Not Detected	2.2	Not Detected
o-Xylene	0.50	Not Detected	2.2	Not Detected
Styrene	0.50	Not Detected	2.1	Not Detected
Bromoform	0.50	Not Detected	5.2	Not Detected
Cumene	0.50	Not Detected	2.4	Not Detected
1,1,2,2-Tetrachloroethane	0.50	Not Detected	3.4	Not Detected
Propylbenzene	0.50	Not Detected	2.4	Not Detected
4-Ethyltoluene	0.50	Not Detected	2.4	Not Detected
1,3,5-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
1,2,4-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
1,3-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,4-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
alpha-Chlorotoluene	0.50	Not Detected	2.6	Not Detected
1,2-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,2,4-Trichlorobenzene	2.0	Not Detected	15	Not Detected
Hexachlorobutadiene	2.0	Not Detected	21	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	96	70-130
4-Bromofluorobenzene	95	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1607439-05D

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**e080106**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/1/16 11:52 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,3-Butadiene	0.10	Not Detected	0.22	Not Detected
Bromomethane	0.50	Not Detected	1.9	Not Detected
Freon 11	0.10	Not Detected	0.56	Not Detected
Ethanol	0.50	Not Detected	0.94	Not Detected
Freon 113	0.10	Not Detected	0.77	Not Detected
Acetone	0.50	Not Detected	1.2	Not Detected
2-Propanol	0.50	Not Detected	1.2	Not Detected
Carbon Disulfide	0.50	Not Detected	1.6	Not Detected
3-Chloropropene	0.50	Not Detected	1.6	Not Detected
Methylene Chloride	0.20	Not Detected	0.69	Not Detected
Hexane	0.10	Not Detected	0.35	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.50	Not Detected	1.5	Not Detected
Tetrahydrofuran	0.50	Not Detected UJ	1.5	Not Detected UJ
Cyclohexane	0.10	Not Detected	0.34	Not Detected
2,2,4-Trimethylpentane	0.50	Not Detected	2.3	Not Detected
Heptane	0.10	Not Detected	0.41	Not Detected
1,2-Dichloropropane	0.10	Not Detected	0.46	Not Detected
1,4-Dioxane	0.10	Not Detected	0.36	Not Detected
Bromodichloromethane	0.10	Not Detected	0.67	Not Detected
cis-1,3-Dichloropropene	0.10	Not Detected	0.45	Not Detected
4-Methyl-2-pentanone	0.10	Not Detected	0.41	Not Detected
trans-1,3-Dichloropropene	0.10	Not Detected	0.45	Not Detected
2-Hexanone	0.50	Not Detected	2.0	Not Detected
Dibromochloromethane	0.10	Not Detected	0.85	Not Detected
Chlorobenzene	0.10	Not Detected	0.46	Not Detected
Styrene	0.10	Not Detected	0.42	Not Detected
Bromoform	0.10	Not Detected	1.0	Not Detected
Cumene	0.10	Not Detected	0.49	Not Detected
Propylbenzene	0.10	Not Detected	0.49	Not Detected
4-Ethyltoluene	0.10	Not Detected	0.49	Not Detected
1,3,5-Trimethylbenzene	0.10	Not Detected	0.49	Not Detected
1,2,4-Trimethylbenzene	0.10	Not Detected	0.49	Not Detected
1,3-Dichlorobenzene	0.10	Not Detected	0.60	Not Detected
alpha-Chlorotoluene	0.10	Not Detected	0.52	Not Detected
1,2-Dichlorobenzene	0.10	Not Detected	0.60	Not Detected
1,2,4-Trichlorobenzene	0.50	Not Detected	3.7	Not Detected
Hexachlorobutadiene	0.50	Not Detected	5.3	Not Detected

UJ = Analyte associated with low bias in the CCV.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits

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Client Sample ID: Lab Blank

Lab ID#: 1607439-05D

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**e080106**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/1/16 11:52 AM**	

Surrogates	**%Recovery**	**Method Limits**
1,2-Dichloroethane-d4	106	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	95	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1607439-05E

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**e080106sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/1/16 11:52 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.020	Not Detected	0.099	Not Detected
Freon 114	0.020	Not Detected	0.14	Not Detected
Chloromethane	0.050	Not Detected	0.10	Not Detected
Vinyl Chloride	0.010	Not Detected	0.026	Not Detected
Chloroethane	0.050	Not Detected	0.13	Not Detected
1,1-Dichloroethene	0.010	Not Detected	0.040	Not Detected
trans-1,2-Dichloroethene	0.10	Not Detected	0.40	Not Detected
Methyl tert-butyl ether	0.10	Not Detected	0.36	Not Detected
1,1-Dichloroethane	0.020	Not Detected	0.081	Not Detected
cis-1,2-Dichloroethene	0.020	Not Detected	0.079	Not Detected
Chloroform	0.020	Not Detected	0.098	Not Detected
1,1,1-Trichloroethane	0.020	Not Detected	0.11	Not Detected
Carbon Tetrachloride	0.020	Not Detected	0.12	Not Detected
Benzene	0.050	Not Detected	0.16	Not Detected
1,2-Dichloroethane	0.020	Not Detected	0.081	Not Detected
Trichloroethene	0.020	Not Detected	0.11	Not Detected
Toluene	0.020	Not Detected	0.075	Not Detected
1,1,2-Trichloroethane	0.020	Not Detected	0.11	Not Detected
Tetrachloroethene	0.020	Not Detected	0.14	Not Detected
1,2-Dibromoethane (EDB)	0.020	Not Detected	0.15	Not Detected
Ethyl Benzene	0.020	Not Detected	0.087	Not Detected
m,p-Xylene	0.040	Not Detected	0.17	Not Detected
o-Xylene	0.020	Not Detected	0.087	Not Detected
1,1,2,2-Tetrachloroethane	0.020	Not Detected	0.14	Not Detected
1,4-Dichlorobenzene	0.020	Not Detected	0.12	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	110	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	97	70-130

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Client Sample ID: CCV

Lab ID#: 1607439-06A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**20072802**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 7/28/16 08:43 AM**

Compound	%Recovery
1,3-Butadiene	98
Bromomethane	107
Freon 11	102
Ethanol	98
Freon 113	91
Acetone	98
2-Propanol	96
Carbon Disulfide	102
3-Chloropropene	103
Methylene Chloride	94
Hexane	96
2-Butanone (Methyl Ethyl Ketone)	100
Tetrahydrofuran	103
Cyclohexane	95
2,2,4-Trimethylpentane	101
Heptane	114
1,2-Dichloropropane	110
1,4-Dioxane	106
Bromodichloromethane	117
cis-1,3-Dichloropropene	114
4-Methyl-2-pentanone	122
trans-1,3-Dichloropropene	117
2-Hexanone	109
Dibromochloromethane	123
Chlorobenzene	105
Styrene	112
Bromoform	127
Cumene	114
Propylbenzene	106
4-Ethyltoluene	98
1,3,5-Trimethylbenzene	110
1,2,4-Trimethylbenzene	106
1,3-Dichlorobenzene	102
alpha-Chlorotoluene	121
1,2-Dichlorobenzene	103
1,2,4-Trichlorobenzene	95
Hexachlorobutadiene	89

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	107	70-130

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Client Sample ID: CCV

Lab ID#: 1607439-06A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**20072802**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 7/28/16 08:43 AM**	

Surrogates	**%Recovery**	**Method Limits**
Toluene-d8	108	70-130
4-Bromofluorobenzene	105	70-130

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Client Sample ID: CCV

Lab ID#: 1607439-06B

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**20072802sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 7/28/16 08:43 AM**	

Compound	**%Recovery**
Freon 12	105
Freon 114	94
Chloromethane	92
Vinyl Chloride	93
Chloroethane	101
1,1-Dichloroethene	86
trans-1,2-Dichloroethene	92
Methyl tert-butyl ether	97
1,1-Dichloroethane	99
cis-1,2-Dichloroethene	92
Chloroform	101
1,1,1-Trichloroethane	103
Carbon Tetrachloride	135
Benzene	90
1,2-Dichloroethane	115
Trichloroethene	98
Toluene	107
1,1,2-Trichloroethane	106
Tetrachloroethene	96
1,2-Dibromoethane (EDB)	109
Ethyl Benzene	110
m,p-Xylene	108
o-Xylene	108
1,1,2,2-Tetrachloroethane	116
1,4-Dichlorobenzene	89

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
1,2-Dichloroethane-d4	108	70-130
Toluene-d8	106	70-130
4-Bromofluorobenzene	107	70-130

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Client Sample ID: CCV

Lab ID#: 1607439-06C

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p080105**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 8/1/16 10:55 AM**

Compound	%Recovery
Freon 12	112
Freon 114	104
Chloromethane	105
Vinyl Chloride	109
1,3-Butadiene	116
Bromomethane	99
Chloroethane	98
Freon 11	99
Ethanol	90
Freon 113	91
1,1-Dichloroethene	102
Acetone	99
2-Propanol	98
Carbon Disulfide	96
3-Chloropropene	104
Methylene Chloride	100
Methyl tert-butyl ether	100
trans-1,2-Dichloroethene	111
Hexane	103
1,1-Dichloroethane	100
2-Butanone (Methyl Ethyl Ketone)	101
cis-1,2-Dichloroethene	102
Tetrahydrofuran	104
Chloroform	102
1,1,1-Trichloroethane	95
Cyclohexane	99
Carbon Tetrachloride	103
2,2,4-Trimethylpentane	98
Benzene	96
1,2-Dichloroethane	100
Heptane	101
Trichloroethene	102
1,2-Dichloropropane	92
1,4-Dioxane	102
Bromodichloromethane	98
cis-1,3-Dichloropropene	98
4-Methyl-2-pentanone	97
Toluene	96
trans-1,3-Dichloropropene	105
1,1,2-Trichloroethane	104
Tetrachloroethene	97
2-Hexanone	105

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Client Sample ID: CCV

Lab ID#: 1607439-06C

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p080105**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 8/1/16 10:55 AM**

Compound	%Recovery
Dibromochloromethane	101
1,2-Dibromoethane (EDB)	103
Chlorobenzene	102
Ethyl Benzene	102
m,p-Xylene	103
o-Xylene	105
Styrene	106
Bromoform	102
Cumene	104
1,1,2,2-Tetrachloroethane	99
Propylbenzene	103
4-Ethyltoluene	107
1,3,5-Trimethylbenzene	104
1,2,4-Trimethylbenzene	105
1,3-Dichlorobenzene	100
1,4-Dichlorobenzene	100
alpha-Chlorotoluene	102
1,2-Dichlorobenzene	102
1,2,4-Trichlorobenzene	106
Hexachlorobutadiene	105

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	96	70-130
4-Bromofluorobenzene	104	70-130

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Client Sample ID: CCV

Lab ID#: 1607439-06D

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**e080102**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 8/1/16 08:51 AM**

Compound	%Recovery
1,3-Butadiene	86
Bromomethane	100
Freon 11	99
Ethanol	103
Freon 113	88
Acetone	79
2-Propanol	84
Carbon Disulfide	87
3-Chloropropene	112
Methylene Chloride	78
Hexane	78
2-Butanone (Methyl Ethyl Ketone)	85
Tetrahydrofuran	63 Q
Cyclohexane	87
2,2,4-Trimethylpentane	86
Heptane	87
1,2-Dichloropropane	82
1,4-Dioxane	86
Bromodichloromethane	95
cis-1,3-Dichloropropene	86
4-Methyl-2-pentanone	87
trans-1,3-Dichloropropene	87
2-Hexanone	87
Dibromochloromethane	100
Chlorobenzene	94
Styrene	96
Bromoform	102
Cumene	88
Propylbenzene	83
4-Ethyltoluene	85
1,3,5-Trimethylbenzene	76
1,2,4-Trimethylbenzene	70
1,3-Dichlorobenzene	77
alpha-Chlorotoluene	78
1,2-Dichlorobenzene	84
1,2,4-Trichlorobenzene	102
Hexachlorobutadiene	116

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits

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Client Sample ID: CCV

Lab ID#: 1607439-06D

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**e080102**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/1/16 08:51 AM**	

Surrogates	**%Recovery**	**Method Limits**
1,2-Dichloroethane-d4	98	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	97	70-130

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Client Sample ID: CCV

Lab ID#: 1607439-06E

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**e080102sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/1/16 08:51 AM**	

Compound	**%Recovery**
Freon 12	94
Freon 114	92
Chloromethane	76
Vinyl Chloride	84
Chloroethane	96
1,1-Dichloroethene	81
trans-1,2-Dichloroethene	87
Methyl tert-butyl ether	87
1,1-Dichloroethane	87
cis-1,2-Dichloroethene	83
Chloroform	86
1,1,1-Trichloroethane	94
Carbon Tetrachloride	97
Benzene	82
1,2-Dichloroethane	96
Trichloroethene	85
Toluene	89
1,1,2-Trichloroethane	92
Tetrachloroethene	90
1,2-Dibromoethane (EDB)	92
Ethyl Benzene	96
m,p-Xylene	98
o-Xylene	93
1,1,2,2-Tetrachloroethane	72
1,4-Dichlorobenzene	81

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
1,2-Dichloroethane-d4	100	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: LCS

Lab ID#: 1607439-07A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**20072803**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 7/28/16 09:22 AM**	

Compound	%Recovery	Method Limits
1,3-Butadiene	106	70-130
Bromomethane	115	70-130
Freon 11	111	70-130
Ethanol	111	70-130
Freon 113	96	70-130
Acetone	101	70-130
2-Propanol	110	70-130
Carbon Disulfide	98	70-130
3-Chloropropene	106	70-130
Methylene Chloride	100	70-130
Hexane	105	70-130
2-Butanone (Methyl Ethyl Ketone)	103	70-130
Tetrahydrofuran	108	70-130
Cyclohexane	103	70-130
2,2,4-Trimethylpentane	109	70-130
Heptane	118	70-130
1,2-Dichloropropane	115	70-130
1,4-Dioxane	105	70-130
Bromodichloromethane	125	70-130
cis-1,3-Dichloropropene	110	70-130
4-Methyl-2-pentanone	127	70-130
trans-1,3-Dichloropropene	124	70-130
2-Hexanone	117	70-130
Dibromochloromethane	129	70-130
Chlorobenzene	107	70-130
Styrene	118	70-130
Bromoform	136 Q	70-130
Cumene	118	70-130
Propylbenzene	110	70-130
4-Ethyltoluene	100	70-130
1,3,5-Trimethylbenzene	107	70-130
1,2,4-Trimethylbenzene	103	70-130
1,3-Dichlorobenzene	104	70-130
alpha-Chlorotoluene	137 Q	70-130
1,2-Dichlorobenzene	105	70-130
1,2,4-Trichlorobenzene	101	70-130
Hexachlorobutadiene	94	70-130

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits

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Client Sample ID: LCS

Lab ID#: 1607439-07A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**20072803**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 7/28/16 09:22 AM**	

Surrogates	**%Recovery**	**Method Limits**
1,2-Dichloroethane-d4	107	70-130
Toluene-d8	106	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: LCSD

Lab ID#: 1607439-07AA

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**20072804**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 7/28/16 10:01 AM**	

Compound	**%Recovery**	**Method Limits**
1,3-Butadiene	107	70-130
Bromomethane	113	70-130
Freon 11	109	70-130
Ethanol	108	70-130
Freon 113	94	70-130
Acetone	102	70-130
2-Propanol	109	70-130
Carbon Disulfide	97	70-130
3-Chloropropene	104	70-130
Methylene Chloride	100	70-130
Hexane	103	70-130
2-Butanone (Methyl Ethyl Ketone)	102	70-130
Tetrahydrofuran	107	70-130
Cyclohexane	102	70-130
2,2,4-Trimethylpentane	105	70-130
Heptane	112	70-130
1,2-Dichloropropane	111	70-130
1,4-Dioxane	102	70-130
Bromodichloromethane	125	70-130
cis-1,3-Dichloropropene	108	70-130
4-Methyl-2-pentanone	122	70-130
trans-1,3-Dichloropropene	124	70-130
2-Hexanone	116	70-130
Dibromochloromethane	129	70-130
Chlorobenzene	106	70-130
Styrene	116	70-130
Bromoform	135 Q	70-130
Cumene	116	70-130
Propylbenzene	108	70-130
4-Ethyltoluene	97	70-130
1,3,5-Trimethylbenzene	105	70-130
1,2,4-Trimethylbenzene	99	70-130
1,3-Dichlorobenzene	101	70-130
alpha-Chlorotoluene	135 Q	70-130
1,2-Dichlorobenzene	102	70-130
1,2,4-Trichlorobenzene	99	70-130
Hexachlorobutadiene	92	70-130

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**

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Client Sample ID: LCSD

Lab ID#: 1607439-07AA

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**20072804**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 7/28/16 10:01 AM**	

Surrogates	**%Recovery**	**Method Limits**
1,2-Dichloroethane-d4	105	70-130
Toluene-d8	104	70-130
4-Bromofluorobenzene	103	70-130

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Client Sample ID: LCS

Lab ID#: 1607439-07B

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**20072803sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 7/28/16 09:22 AM**	

Compound	%Recovery	Method Limits
Freon 12	112	70-130
Freon 114	107	70-130
Chloromethane	98	70-130
Vinyl Chloride	104	70-130
Chloroethane	113	70-130
1,1-Dichloroethene	92	70-130
trans-1,2-Dichloroethene	100	70-130
Methyl tert-butyl ether	99	70-130
1,1-Dichloroethane	102	70-130
cis-1,2-Dichloroethene	95	70-130
Chloroform	105	70-130
1,1,1-Trichloroethane	108	70-130
Carbon Tetrachloride	133	60-140
Benzene	93	70-130
1,2-Dichloroethane	117	70-130
Trichloroethene	102	70-130
Toluene	110	70-130
1,1,2-Trichloroethane	112	70-130
Tetrachloroethene	102	70-130
1,2-Dibromoethane (EDB)	117	70-130
Ethyl Benzene	114	70-130
m,p-Xylene	112	70-130
o-Xylene	114	70-130
1,1,2,2-Tetrachloroethane	121	70-130
1,4-Dichlorobenzene	91	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	106	70-130
Toluene-d8	105	70-130
4-Bromofluorobenzene	107	70-130

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Client Sample ID: LCSD

Lab ID#: 1607439-07BB

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**20072804sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 7/28/16 10:01 AM**	

Compound	%Recovery	Method Limits
Freon 12	109	70-130
Freon 114	104	70-130
Chloromethane	96	70-130
Vinyl Chloride	102	70-130
Chloroethane	111	70-130
1,1-Dichloroethene	92	70-130
trans-1,2-Dichloroethene	98	70-130
Methyl tert-butyl ether	98	70-130
1,1-Dichloroethane	100	70-130
cis-1,2-Dichloroethene	94	70-130
Chloroform	104	70-130
1,1,1-Trichloroethane	106	70-130
Carbon Tetrachloride	131	60-140
Benzene	91	70-130
1,2-Dichloroethane	114	70-130
Trichloroethene	101	70-130
Toluene	107	70-130
1,1,2-Trichloroethane	112	70-130
Tetrachloroethene	100	70-130
1,2-Dibromoethane (EDB)	114	70-130
Ethyl Benzene	111	70-130
m,p-Xylene	109	70-130
o-Xylene	110	70-130
1,1,2,2-Tetrachloroethane	117	70-130
1,4-Dichlorobenzene	88	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	105	70-130
Toluene-d8	104	70-130
4-Bromofluorobenzene	107	70-130

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Client Sample ID: LCS

Lab ID#: 1607439-07C

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p080103**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/1/16 09:51 AM**	

Compound	%Recovery	Method Limits
Freon 12	126	70-130
Freon 114	134 Q	70-130
Chloromethane	129	70-130
Vinyl Chloride	114	70-130
1,3-Butadiene	114	70-130
Bromomethane	110	70-130
Chloroethane	109	70-130
Freon 11	109	70-130
Ethanol	102	70-130
Freon 113	97	70-130
1,1-Dichloroethene	110	70-130
Acetone	106	70-130
2-Propanol	110	70-130
Carbon Disulfide	92	70-130
3-Chloropropene	106	70-130
Methylene Chloride	107	70-130
Methyl tert-butyl ether	107	70-130
trans-1,2-Dichloroethene	113	70-130
Hexane	115	70-130
1,1-Dichloroethane	106	70-130
2-Butanone (Methyl Ethyl Ketone)	109	70-130
cis-1,2-Dichloroethene	106	70-130
Tetrahydrofuran	109	70-130
Chloroform	106	70-130
1,1,1-Trichloroethane	104	70-130
Cyclohexane	106	70-130
Carbon Tetrachloride	113	70-130
2,2,4-Trimethylpentane	108	70-130
Benzene	102	70-130
1,2-Dichloroethane	103	70-130
Heptane	107	70-130
Trichloroethene	108	70-130
1,2-Dichloropropane	101	70-130
1,4-Dioxane	106	70-130
Bromodichloromethane	108	70-130
cis-1,3-Dichloropropene	97	70-130
4-Methyl-2-pentanone	107	70-130
Toluene	103	70-130
trans-1,3-Dichloropropene	104	70-130
1,1,2-Trichloroethane	106	70-130
Tetrachloroethene	99	70-130
2-Hexanone	108	70-130

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Client Sample ID: LCS

Lab ID#: 1607439-07C

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p080103**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/1/16 09:51 AM**	

Compound	**%Recovery**	**Method Limits**
Dibromochloromethane	104	70-130
1,2-Dibromoethane (EDB)	104	70-130
Chlorobenzene	102	70-130
Ethyl Benzene	107	70-130
m,p-Xylene	107	70-130
o-Xylene	109	70-130
Styrene	110	70-130
Bromoform	107	70-130
Cumene	108	70-130
1,1,2,2-Tetrachloroethane	103	70-130
Propylbenzene	108	70-130
4-Ethyltoluene	109	70-130
1,3,5-Trimethylbenzene	107	70-130
1,2,4-Trimethylbenzene	107	70-130
1,3-Dichlorobenzene	102	70-130
1,4-Dichlorobenzene	101	70-130
alpha-Chlorotoluene	107	70-130
1,2-Dichlorobenzene	103	70-130
1,2,4-Trichlorobenzene	104	70-130
Hexachlorobutadiene	104	70-130

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	104	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: LCSD

Lab ID#: 1607439-07CC

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p080104**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/1/16 10:16 AM**	

Compound	%Recovery	Method Limits
Freon 12	114	70-130
Freon 114	114	70-130
Chloromethane	113	70-130
Vinyl Chloride	117	70-130
1,3-Butadiene	104	70-130
Bromomethane	107	70-130
Chloroethane	108	70-130
Freon 11	105	70-130
Ethanol	101	70-130
Freon 113	98	70-130
1,1-Dichloroethene	100	70-130
Acetone	103	70-130
2-Propanol	107	70-130
Carbon Disulfide	90	70-130
3-Chloropropene	105	70-130
Methylene Chloride	104	70-130
Methyl tert-butyl ether	105	70-130
trans-1,2-Dichloroethene	118	70-130
Hexane	109	70-130
1,1-Dichloroethane	104	70-130
2-Butanone (Methyl Ethyl Ketone)	100	70-130
cis-1,2-Dichloroethene	107	70-130
Tetrahydrofuran	105	70-130
Chloroform	107	70-130
1,1,1-Trichloroethane	102	70-130
Cyclohexane	108	70-130
Carbon Tetrachloride	110	70-130
2,2,4-Trimethylpentane	104	70-130
Benzene	99	70-130
1,2-Dichloroethane	102	70-130
Heptane	103	70-130
Trichloroethene	105	70-130
1,2-Dichloropropane	99	70-130
1,4-Dioxane	103	70-130
Bromodichloromethane	104	70-130
cis-1,3-Dichloropropene	97	70-130
4-Methyl-2-pentanone	103	70-130
Toluene	101	70-130
trans-1,3-Dichloropropene	102	70-130
1,1,2-Trichloroethane	105	70-130
Tetrachloroethene	99	70-130
2-Hexanone	109	70-130

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Client Sample ID: LCSD

Lab ID#: 1607439-07CC

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p080104**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/1/16 10:16 AM**	

Compound	**%Recovery**	**Method Limits**
Dibromochloromethane	101	70-130
1,2-Dibromoethane (EDB)	102	70-130
Chlorobenzene	99	70-130
Ethyl Benzene	108	70-130
m,p-Xylene	107	70-130
o-Xylene	110	70-130
Styrene	110	70-130
Bromoform	104	70-130
Cumene	106	70-130
1,1,2,2-Tetrachloroethane	99	70-130
Propylbenzene	107	70-130
4-Ethyltoluene	113	70-130
1,3,5-Trimethylbenzene	104	70-130
1,2,4-Trimethylbenzene	108	70-130
1,3-Dichlorobenzene	103	70-130
1,4-Dichlorobenzene	100	70-130
alpha-Chlorotoluene	107	70-130
1,2-Dichlorobenzene	104	70-130
1,2,4-Trichlorobenzene	110	70-130
Hexachlorobutadiene	107	70-130

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	102	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: LCS

Lab ID#: 1607439-07D

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**e080103**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/1/16 09:34 AM**	

Compound	%Recovery	Method Limits
1,3-Butadiene	92	70-130
Bromomethane	111	70-130
Freon 11	117	70-130
Ethanol	113	70-130
Freon 113	95	70-130
Acetone	85	70-130
2-Propanol	93	70-130
Carbon Disulfide	86	70-130
3-Chloropropene	128	70-130
Methylene Chloride	96	70-130
Hexane	89	70-130
2-Butanone (Methyl Ethyl Ketone)	87	70-130
Tetrahydrofuran	74	70-130
Cyclohexane	95	70-130
2,2,4-Trimethylpentane	91	70-130
Heptane	96	70-130
1,2-Dichloropropane	92	70-130
1,4-Dioxane	101	70-130
Bromodichloromethane	108	70-130
cis-1,3-Dichloropropene	89	70-130
4-Methyl-2-pentanone	97	70-130
trans-1,3-Dichloropropene	96	70-130
2-Hexanone	99	70-130
Dibromochloromethane	109	70-130
Chlorobenzene	102	70-130
Styrene	107	70-130
Bromoform	110	70-130
Cumene	96	70-130
Propylbenzene	91	70-130
4-Ethyltoluene	93	70-130
1,3,5-Trimethylbenzene	84	70-130
1,2,4-Trimethylbenzene	80	70-130
1,3-Dichlorobenzene	85	70-130
alpha-Chlorotoluene	90	70-130
1,2-Dichlorobenzene	90	70-130
1,2,4-Trichlorobenzene	107	70-130
Hexachlorobutadiene	108	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	99	70-130

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Client Sample ID: LCS

Lab ID#: 1607439-07D

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**e080103**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/1/16 09:34 AM**	

Surrogates	**%Recovery**	**Method Limits**
Toluene-d8	100	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: LCSD

Lab ID#: 1607439-07DD

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**e080104**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/1/16 10:17 AM**	

Compound	**%Recovery**	**Method Limits**
1,3-Butadiene	82	70-130
Bromomethane	106	70-130
Freon 11	109	70-130
Ethanol	114	70-130
Freon 113	88	70-130
Acetone	85	70-130
2-Propanol	93	70-130
Carbon Disulfide	80	70-130
3-Chloropropene	122	70-130
Methylene Chloride	85	70-130
Hexane	87	70-130
2-Butanone (Methyl Ethyl Ketone)	88	70-130
Tetrahydrofuran	68 Q	70-130
Cyclohexane	96	70-130
2,2,4-Trimethylpentane	92	70-130
Heptane	93	70-130
1,2-Dichloropropane	90	70-130
1,4-Dioxane	95	70-130
Bromodichloromethane	108	70-130
cis-1,3-Dichloropropene	90	70-130
4-Methyl-2-pentanone	99	70-130
trans-1,3-Dichloropropene	100	70-130
2-Hexanone	95	70-130
Dibromochloromethane	106	70-130
Chlorobenzene	101	70-130
Styrene	104	70-130
Bromoform	112	70-130
Cumene	97	70-130
Propylbenzene	91	70-130
4-Ethyltoluene	90	70-130
1,3,5-Trimethylbenzene	84	70-130
1,2,4-Trimethylbenzene	77	70-130
1,3-Dichlorobenzene	86	70-130
alpha-Chlorotoluene	91	70-130
1,2-Dichlorobenzene	92	70-130
1,2,4-Trichlorobenzene	113	70-130
Hexachlorobutadiene	117	70-130

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**

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Client Sample ID: LCSD

Lab ID#: 1607439-07DD

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**e080104**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/1/16 10:17 AM**	

Surrogates	**%Recovery**	**Method Limits**
1,2-Dichloroethane-d4	97	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	103	70-130

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Client Sample ID: LCS

Lab ID#: 1607439-07E

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**e080103sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/1/16 09:34 AM**	

Compound	%Recovery	Method Limits
Freon 12	104	70-130
Freon 114	105	70-130
Chloromethane	81	70-130
Vinyl Chloride	94	70-130
Chloroethane	107	70-130
1,1-Dichloroethene	91	70-130
trans-1,2-Dichloroethene	82	70-130
Methyl tert-butyl ether	92	70-130
1,1-Dichloroethane	94	70-130
cis-1,2-Dichloroethene	100	70-130
Chloroform	95	70-130
1,1,1-Trichloroethane	103	70-130
Carbon Tetrachloride	97	60-140
Benzene	89	70-130
1,2-Dichloroethane	104	70-130
Trichloroethene	93	70-130
Toluene	97	70-130
1,1,2-Trichloroethane	101	70-130
Tetrachloroethene	99	70-130
1,2-Dibromoethane (EDB)	101	70-130
Ethyl Benzene	106	70-130
m,p-Xylene	107	70-130
o-Xylene	104	70-130
1,1,2,2-Tetrachloroethane	79	70-130
1,4-Dichlorobenzene	89	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	101	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	103	70-130

eurofins | Air Toxics

Client Sample ID: LCSD

Lab ID#: 1607439-07EE

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**e080104sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/1/16 10:17 AM**	

Compound	%Recovery	Method Limits
Freon 12	103	70-130
Freon 114	104	70-130
Chloromethane	80	70-130
Vinyl Chloride	93	70-130
Chloroethane	107	70-130
1,1-Dichloroethene	89	70-130
trans-1,2-Dichloroethene	82	70-130
Methyl tert-butyl ether	92	70-130
1,1-Dichloroethane	94	70-130
cis-1,2-Dichloroethene	99	70-130
Chloroform	94	70-130
1,1,1-Trichloroethane	103	70-130
Carbon Tetrachloride	96	60-140
Benzene	89	70-130
1,2-Dichloroethane	104	70-130
Trichloroethene	92	70-130
Toluene	97	70-130
1,1,2-Trichloroethane	99	70-130
Tetrachloroethene	98	70-130
1,2-Dibromoethane (EDB)	99	70-130
Ethyl Benzene	103	70-130
m,p-Xylene	106	70-130
o-Xylene	101	70-130
1,1,2,2-Tetrachloroethane	79	70-130
1,4-Dichlorobenzene	87	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	101	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	101	70-130

Appendix D
VISL Calculation Tables

Soil Gas Sample SG-1

EPA-OLEM VAPOR INTRUSION ASSESSMENT

Sub-slab or Exterior Soil Gas Concentration to Indoor Air Concentration (SGC-IAC) Calculator Version 3.5.1 (May 2016 RSLs)

Parameter	Symbol	Value	Instructions
Exposure Scenario	Scenario	Commercial	Select residential or commercial scenario from pull down list
Target Risk for Carcinogens	TCR_SG	1.00E-06	Enter target risk for carcinogens (for comparison to the calculated VI carcinogenic risk in column F)
Target Hazard Quotient for Non-Carcinogens	THQ_SG	0.1	Enter target hazard quotient for non-carcinogens (for comparison to the calculated VI hazard in column G)

CAS	Chemical Name	Site Sub-slab or Exterior Soil Gas Concentration Csg (ug/m^3)	Calculated Indoor Air Concentration Cia (ug/m^3)	VI Carcinogenic Risk CR	VI Hazard HQ	Inhalation Unit Risk IUR (ug/m^3)$^{-1}$	IUR Source*	Reference Concentration RfC (mg/m^3)	RFC Source*	Mutagenic Indicator i
75-07-0	Acetaldehyde		--	--	--	2.20E-06	I	9.00E-03	I	
67-64-1	Acetone	1.3E+02	3.90E+00	No IUR	2.9E-05			3.10E+01	A	
75-05-8	Acetonitrile		--	--	--			6.00E-02	I	
107-02-8	Acrolein		--	--	--			2.00E-05	I	
79-10-7	Acrylic Acid		--	--	--			1.00E-03	I	
107-13-1	Acrylonitrile		--	--	--	6.80E-05	I	2.00E-03	I	
309-00-2	Aldrin		--	--	--	4.90E-03	I			
107-18-6	Allyl Alcohol		--	--	--			1.00E-04	X	
107-05-1	Allyl Chloride		--	--	--	6.00E-06	CA	1.00E-03	I	
7664-41-7	Ammonia		--	--	--			1.00E-01	I	
75-85-4	Amyl Alcohol, tert-		--	--	--			3.00E-03	X	
12674-11-2	Aroclor 1016		--	--	--	2.00E-05	S			
11104-28-2	Aroclor 1221		--	--	--	5.70E-04	S			
11141-16-5	Aroclor 1232		--	--	--	5.70E-04	S			
53469-21-9	Aroclor 1242		--	--	--	5.70E-04	S			
12672-29-6	Aroclor 1248		--	--	--	5.70E-04	S			
11097-69-1	Aroclor 1254		--	--	--	5.70E-04	S			
11096-82-5	Aroclor 1260		--	--	--	5.70E-04	S			
103-33-3	Azobenzene		--	--	--	3.10E-05	I			
56-55-3	Benz[a]anthracene		--	--	--	1.10E-04	CA			Mut
71-43-2	Benzene	2.0E+01	6.00E-01	3.8E-07	4.6E-03	7.80E-06	I	3.00E-02	I	
100-44-7	Benzyl Chloride		--	--	--	4.90E-05	CA	1.00E-03	P	
92-52-4	Biphenyl, 1,1'-		--	--	--			4.00E-04	X	
111-44-4	Bis(2-chloroethyl)ether		--	--	--	3.30E-04	I			
542-88-1	Bis(chloromethyl)ether		--	--	--	6.20E-02	I			
10294-34-5	Boron Trichloride		--	--	--			2.00E-02	P	
7637-07-2	Boron Trifluoride		--	--	--			1.30E-02	CA	
107-04-0	Bromo-2-chloroethane, 1-		--	--	--	6.00E-04	X			
108-86-1	Bromobenzene		--	--	--			6.00E-02	I	
74-97-5	Bromochloromethane		--	--	--			4.00E-02	X	
75-27-4	Bromodichloromethane		--	--	--	3.70E-05	CA			
75-25-2	Bromoform		--	--	--	1.10E-06	I			
74-83-9	Bromomethane		--	--	--			5.00E-03	I	
106-99-0	Butadiene, 1,3-	5.2E+01	1.56E+00	**3.8E-06**	**1.8E-01**	3.00E-05	I	2.00E-03	I	
78-92-2	Butyl alcohol, sec-		--	--	--			3.00E+01	P	
75-15-0	Carbon Disulfide	1.4E+01	4.20E-01	No IUR	1.4E-04			7.00E-01	I	
56-23-5	Carbon Tetrachloride	7.5E-01	2.25E-02	1.1E-08	5.1E-05	6.00E-06	I	1.00E-01	I	
463-58-1	Carbonyl Sulfide		--	--	--			1.00E-01	P	
12789-03-6	Chlordane		--	--	--	1.00E-04	I	7.00E-04	I	
7782-50-5	Chlorine		--	--	--			1.50E-04	A	
10049-04-4	Chlorine Dioxide		--	--	--			2.00E-04	I	
75-68-3	Chloro-1,1-difluoroethane, 1-		--	--	--			5.00E+01	I	
126-99-8	Chloro-1,3-butadiene, 2-		--	--	--	3.00E-04	I	2.00E-02	I	
108-90-7	Chlorobenzene		--	--	--			5.00E-02	P	
98-56-6	Chlorobenzotrifluoride, 4-		--	--	--			3.00E-01	P	
75-45-6	Chlorodifluoromethane		--	--	--			5.00E+01	I	
67-66-3	Chloroform	1.1E+00	3.30E-02	6.2E-08	7.7E-05	2.30E-05	I	9.80E-02	A	
74-87-3	Chloromethane	9.0E+00	2.70E-01	No IUR	6.8E-04			9.00E-02	I	
107-30-2	Chloromethyl Methyl Ether		--	--	--	6.90E-04	CA			
76-06-2	Chloropicrin		--	--	--			4.00E-04	CA	
8007-45-2	Coke Oven Emissions		--	--	--	6.20E-04	I			Mut
98-82-8	Cumene		--	--	--			4.00E-01	I	
57-12-5	Cyanide (CN-)		--	--	--			8.00E-04	S	
110-82-7	Cyclohexane	4.5E+01	1.35E+00	No IUR	5.1E-05			6.00E+00	I	
108-94-1	Cyclohexanone		--	--	--			7.00E-01	P	
110-83-8	Cyclohexene		--	--	--			1.00E+00	X	
72-55-9	DDE, p,p'-		--	--	--	9.70E-05	CA			
96-12-8	Dibromo-3-chloropropane, 1,2-		--	--	--	6.00E-03	P	2.00E-04	I	Mut
106-93-4	Dibromoethane, 1,2-		--	--	--	6.00E-04	I	9.00E-03	I	
74-95-3	Dibromomethane (Methylene Bromide)		--	--	--			4.00E-03	X	
764-41-0	Dichloro-2-butene, 1,4-		--	--	--	4.20E-03	P			
1476-11-5	Dichloro-2-butene, cis-1,4-		--	--	--	4.20E-03	P			
110-57-6	Dichloro-2-butene, trans-1,4-		--	--	--	4.20E-03	P			
95-50-1	Dichlorobenzene, 1,2-		--	--	--			2.00E-01	H	
106-46-7	Dichlorobenzene, 1,4-		--	--	--	1.10E-05	CA	8.00E-01	I	
75-71-8	Dichlorodifluoromethane	4.1E+00	1.23E-01	No IUR	2.8E-04			1.00E-01	X	
75-34-3	Dichloroethane, 1,1-		--	--	--	1.60E-06	CA			
107-06-2	Dichloroethane, 1,2-	1.9E-01	5.70E-03	1.2E-08	1.9E-04	2.60E-05	I	7.00E-03	P	
75-35-4	Dichloroethylene, 1,1-		--	--	--			2.00E-01	I	
78-87-5	Dichloropropane, 1,2-		--	--	--	1.00E-05	CA	4.00E-03	I	
542-75-6	Dichloropropene, 1,3-		--	--	--	4.00E-06	I	2.00E-02	I	
77-73-6	Dicyclopentadiene		--	--	--			3.00E-04	X	
75-37-6	Difluoroethane, 1,1-		--	--	--			4.00E+01	I	
94-58-6	Dihydrosafrole		--	--	--	1.30E-05	CA			
108-20-3	Diisopropyl Ether		--	--	--			7.00E-01	P	
68-12-2	Dimethylformamide		--	--	--			3.00E-02	I	
57-14-7	Dimethylhydrazine, 1,1-		--	--	--			2.00E-06	X	
540-73-8	Dimethylhydrazine, 1,2-		--	--	--	1.60E-01	CA			
513-37-1	Dimethylvinylchloride		--	--	--	1.30E-05	CA			
123-91-1	Dioxane, 1,4-		--	--	--	5.00E-06	I	3.00E-02	I	
106-89-8	Epichlorohydrin		--	--	--	1.20E-06	I	1.00E-03	I	
106-88-7	Epoxybutane, 1,2-		--	--	--			2.00E-02	I	
111-15-9	Ethoxyethanol Acetate, 2-		--	--	--			6.00E-02	P	
110-80-5	Ethoxyethanol, 2-		--	--	--			2.00E-01	I	
141-78-6	Ethyl Acetate		--	--	--			7.00E-02	P	
140-88-5	Ethyl Acrylate		--	--	--			8.00E-03	P	
75-00-3	Ethyl Chloride (Chloroethane)	2.4E+00	7.20E-02	No IUR	1.6E-06			1.00E+01	I	
97-63-2	Ethyl Methacrylate		--	--	--			3.00E-01	P	
100-41-4	Ethylbenzene	5.0E-01	1.50E-02	3.1E-09	3.4E-06	2.50E-06	CA	1.00E+00	I	
75-21-8	Ethylene Oxide		--	--	--	8.80E-05	CA	3.00E-02	CA	
151-56-4	Ethyleneimine		--	--	--	1.90E-02	CA			
50-00-0	Formaldehyde		--	--	--	1.30E-05	I	9.80E-03	A	
64-18-6	Formic Acid		--	--	--			3.00E-04	X	
98-01-1	Furfural		--	--	--			5.00E-02	H	
765-34-4	Glycidyl		--	--	--			1.00E-03	H	
76-44-8	Heptachlor		--	--	--	1.30E-03	I			
1024-57-3	Heptachlor Epoxide		--	--	--	2.60E-03	I			
39635-31-9	Heptachlorobiphenyl, 2,3,3',4,4',5,5'- (PCB 189)		--	--	--	1.10E-03	E	1.30E-03	E	
118-74-1	Hexachlorobenzene		--	--	--	4.60E-04	I			

EPA-OLEM VAPOR INTRUSION ASSESSMENT

Sub-slab or Exterior Soil Gas Concentration to Indoor Air Concentration (SGC-IAC) Calculator Version 3.5.1 (May 2016 RSLs)

Parameter	Symbol	Value	Instructions
Exposure Scenario	Scenario	Commercial	Select residential or commercial scenario from pull down list
Target Risk for Carcinogens	TCR_SG	1.00E-06	Enter target risk for carcinogens (for comparison to the calculated VI carcinogenic risk in column F)
Target Hazard Quotient for Non-Carcinogens	THQ_SG	0.1	Enter target hazard quotient for non-carcinogens (for comparison to the calculated VI hazard in column G)

CAS	Chemical Name	Site Sub-slab or Exterior Soil Gas Concentration Csg (ug/m^3)	Calculated Indoor Air Concentration Cia (ug/m^3)	VI Carcinogenic Risk CR	VI Hazard HQ	Inhalation Unit Risk IUR (ug/m^3)$^{-1}$	IUR Source*	Reference Concentration RfC (mg/m^3)	RFC Source*	Mutagenic Indicator i
38380-08-4	Hexachlorobiphenyl, 2,3,3',4,4',5- (PCB 156)		--	--	--	1.10E-03	E	1.30E-03	E	
69782-90-7	Hexachlorobiphenyl, 2,3,3',4,4',5'- (PCB 157)		--	--	--	1.10E-03	E	1.30E-03	E	
52663-72-6	Hexachlorobiphenyl, 2,3',4,4',5,5'- (PCB 167)		--	--	--	1.10E-03	E	1.30E-03	E	
32774-16-6	Hexachlorobiphenyl, 3,3',4,4',5,5'- (PCB 169)		--	--	--	1.10E+00	E	1.30E-06	E	
87-68-3	Hexachlorobutadiene		--	--	--	2.20E-05	I			
77-47-4	Hexachlorocyclopentadiene		--	--	--			2.00E-04	I	
67-72-1	Hexachloroethane		--	--	--	1.10E-05	CA	3.00E-02	I	
822-06-0	Hexamethylene Diisocyanate, 1,6-		--	--	--			1.00E-05	I	
110-54-3	Hexane, N-	6.5E+01	1.95E+00	No IUR	6.4E-04			7.00E-01	I	
591-78-6	Hexanone, 2-		--	--	--			3.00E-02	I	
302-01-2	Hydrazine		--	--	--	4.90E-03	I	3.00E-05	P	
7647-01-0	Hydrogen Chloride		--	--	--			2.00E-02	I	
74-90-8	Hydrogen Cyanide		--	--	--			8.00E-04	I	
7664-39-3	Hydrogen Fluoride		--	--	--			1.40E-02	CA	
7783-06-4	Hydrogen Sulfide		--	--	--			2.00E-03	I	
67-63-0	Isopropanol	1.2E+01	3.60E-01	No IUR	4.1E-04			2.00E-01	P	
7439-97-6	Mercury (elemental)		--	--	--			3.00E-04	I	
126-98-7	Methacrylonitrile		--	--	--			3.00E-02	P	
67-56-1	Methanol		--	--	--			2.00E+01	I	
110-49-6	Methoxyethanol Acetate, 2-		--	--	--			1.00E-03	P	
109-86-4	Methoxyethanol, 2-		--	--	--			2.00E-02	I	
96-33-3	Methyl Acrylate		--	--	--			2.00E-02	P	
78-93-3	Methyl Ethyl Ketone (2-Butanone)	1.6E+01	4.80E-01	No IUR	2.2E-05			5.00E+00	I	
60-34-4	Methyl Hydrazine		--	--	--	1.00E-03	X	2.00E-05	X	
108-10-1	Methyl Isobutyl Ketone (4-methyl-2-pentanone)	1.2E+00	3.60E-02	No IUR	2.7E-06			3.00E+00	I	
624-83-9	Methyl Isocyanate		--	--	--			1.00E-03	CA	
80-62-6	Methyl Methacrylate		--	--	--			7.00E-01	I	
25013-15-4	Methyl Styrene (Mixed Isomers)		--	--	--			4.00E-02	H	
1634-04-4	Methyl tert-Butyl Ether (MTBE)		--	--	--	2.60E-07	CA	3.00E+00	I	
75-09-2	Methylene Chloride		--	--	--	1.00E-08	I	6.00E-01	I	Mut
2385-85-5	Mirex		--	--	--	5.10E-03	CA			
64742-95-6	Naphtha, High Flash Aromatic (HFAN)		--	--	--			1.00E-01	P	
91-20-3	Naphthalene		--	--	--	3.40E-05	CA	3.00E-03	I	
13463-39-3	Nickel Carbonyl		--	--	--	2.60E-04	CA	1.40E-05	CA	
98-95-3	Nitrobenzene		--	--	--	4.00E-05	I	9.00E-03	I	
75-52-5	Nitromethane		--	--	--	8.80E-06	P	5.00E-03	P	
79-46-9	Nitropropane, 2-		--	--	--	2.70E-03	H	2.00E-02	I	
62-75-9	Nitrosodimethylamine, N-		--	--	--	1.40E-02	I	4.00E-05	X	Mut
924-16-3	Nitroso-di-N-butylamine, N-		--	--	--	1.60E-03	I			
10595-95-6	Nitrosomethylethylamine, N-		--	--	--	6.30E-03	CA			
111-84-2	Nonane, n-		--	--	--			2.00E-02	P	
32598-14-4	Pentachlorobiphenyl, 2,3,3',4,4'- (PCB 105)		--	--	--	1.10E-03	E	1.30E-03	E	
74472-37-0	Pentachlorobiphenyl, 2,3,4,4',5- (PCB 114)		--	--	--	1.10E-03	E	1.30E-03	E	
31508-00-6	Pentachlorobiphenyl, 2,3',4,4',5- (PCB 118)		--	--	--	1.10E-03	E	1.30E-03	E	
65510-44-3	Pentachlorobiphenyl, 2',3,4,4',5- (PCB 123)		--	--	--	1.10E-03	E	1.30E-03	E	
57465-28-8	Pentachlorobiphenyl, 3,3',4,4',5- (PCB 126)		--	--	--	3.80E+00	E	4.00E-07	E	
109-66-0	Pentane, n-		--	--	--			1.00E+00	P	
75-44-5	Phosgene		--	--	--			3.00E-04	I	
7803-51-2	Phosphine		--	--	--			3.00E-04	I	
123-38-6	Propionaldehyde		--	--	--			8.00E-03	I	
103-65-1	Propyl benzene		--	--	--			1.00E+00	X	
115-07-1	Propylene		--	--	--			3.00E+00	CA	
107-98-2	Propylene Glycol Monomethyl Ether		--	--	--			2.00E+00	I	
75-56-9	Propylene Oxide		--	--	--	3.70E-06	I	3.00E-02	I	
100-42-5	Styrene		--	--	--			1.00E+00	I	
7446-11-9	Sulfur Trioxide		--	--	--			1.00E-03	CA	
1746-01-6	TCDD, 2,3,7,8-		--	--	--	3.80E+01	CA	4.00E-08	CA	
70362-50-4	Tetrachlorobiphenyl, 3,4,4',5- (PCB 81)		--	--	--	1.10E-02	E	1.30E-04	E	
630-20-6	Tetrachloroethane, 1,1,1,2-		--	--	--	7.40E-06	I			
79-34-5	Tetrachloroethane, 1,1,2,2-		--	--	--	5.80E-05	CA			
127-18-4	Tetrachloroethylene	2.6E-01	7.80E-03	1.7E-10	4.5E-05	2.60E-07	I	4.00E-02	I	
811-97-2	Tetrafluoroethane, 1,1,1,2-		--	--	--			8.00E+01	I	
109-99-9	Tetrahydrofuran		--	--	--			2.00E+00	I	
7550-45-0	Titanium Tetrachloride		--	--	--			1.00E-04	A	
108-88-3	Toluene	5.4E+01	1.62E+00	No IUR	7.4E-05			5.00E+00	I	
584-84-9	Toluene-2,4-diisocyanate		--	--	--	1.10E-05	CA	8.00E-06	CA	
91-08-7	Toluene-2,6-diisocyanate		--	--	--	1.10E-05	CA	8.00E-06	CA	
76-13-1	Trichloro-1,2,2-trifluoroethane, 1,1,2-	2.0E+00	6.00E-02	No IUR	4.6E-07			3.00E+01	H	
120-82-1	Trichlorobenzene, 1,2,4-		--	--	--			2.00E-03	P	
71-55-6	Trichloroethane, 1,1,1-	8.5E-01	2.55E-02	No IUR	1.2E-06			5.00E+00	I	
79-00-5	Trichloroethane, 1,1,2-		--	--	--	1.60E-05	I	2.00E-04	X	
79-01-6	Trichloroethylene	1.2E+00	3.60E-02	1.2E-08	4.1E-03	see note	I	2.00E-03	I	TCE
96-18-4	Trichloropropane, 1,2,3-		--	--	--			3.00E-04	I	Mut
96-19-5	Trichloropropene, 1,2,3-		--	--	--			3.00E-04	P	
121-44-8	Triethylamine		--	--	--			7.00E-03	I	
420-46-2	Trifluoroethane, 1,1,1-		--	--	--			2.00E+01	P	
526-73-8	Trimethylbenzene, 1,2,3-		--	--	--			5.00E-03	P	
95-63-6	Trimethylbenzene, 1,2,4-		--	--	--			7.00E-03	P	
126-72-7	Tris(2,3-dibromopropyl)phosphate		--	--	--	6.60E-04	CA			
108-05-4	Vinyl Acetate		--	--	--			2.00E-01	I	
593-60-2	Vinyl Bromide		--	--	--	3.20E-05	H	3.00E-03	I	
75-01-4	Vinyl Chloride	4.5E-01	1.35E-02	4.8E-09	3.1E-05	4.40E-06	I	1.00E-01	I	VC
108-38-3	Xylene, m-	1.4E+00	4.20E-02	No IUR	9.6E-05			1.00E-01	S	
95-47-6	Xylene, o-	1.4E+00	4.20E-02	No IUR	9.6E-05			1.00E-01	S	
106-42-3	Xylene, P-	5.6E-01	1.68E-02	No IUR	3.8E-05			1.00E-01	S	
1330-20-7	Xylenes		--	--	--			1.00E-01	I	

Notes:

(1) **Inhalation Pathway Exposure Parameters (RME):**

Exposure Scenario	Units	Residential Symbol	Residential Value	Commercial Symbol	Commercial Value	Selected (based on scenario) Symbol	Selected (based on scenario) Value
Averaging time for carcinogens	(yrs)	ATc_R_SG	70	ATc_C_SG	70	ATc_SG	70
Averaging time for non-carcinogens	(yrs)	ATnc_R_SG	26	ATnc_C_SG	25	ATnc_SG	25
Exposure duration	(yrs)	ED_R_SG	26	ED_C_SG	25	ED_SG	25
Exposure frequency	(days/yr)	EF_R_SG	350	EF_C_SG	250	EF_SG	250
Exposure time	(hr/day)	ET_R_SG	24	ET_C_SG	8	ET_SG	8

EPA-OLEM VAPOR INTRUSION ASSESSMENT

Sub-slab or Exterior Soil Gas Concentration to Indoor Air Concentration (SGC-IAC) Calculator Version 3.5.1 (May 2016 RSLs)

Parameter	Symbol	Value	Instructions
Exposure Scenario	Scenario	Commercial	Select residential or commercial scenario from pull down list
Target Risk for Carcinogens	TCR_SG	1.00E-06	Enter target risk for carcinogens (for comparison to the calculated VI carcinogenic risk in column F)
Target Hazard Quotient for Non-Carcinogens	THQ_SG	0.1	Enter target hazard quotient for non-carcinogens (for comparison to the calculated VI hazard in column G)

CAS	Chemical Name	Site Sub-slab or Exterior Soil Gas Concentration	Calculated Indoor Air Concentration	VI Carcinogenic Risk	VI Hazard	Inhalation Unit Risk	IUR Source*	Reference Concentration	RFC Source*	Mutagenic Indicator
		Csg	Cia	CR	HQ	IUR		RfC		i
		(ug/m^3)	(ug/m^3)			(ug/m^3)$^{-1}$		(mg/m^3)		

(2) **Generic Attenuation Factors:**

Source Medium of Vapors		Residential Symbol	Residential Value	Commercial Symbol	Commercial Value	Selected (based on scenario) Symbol	Selected (based on scenario) Value
Groundwater	(-)	AFgw_R_SG	0.001	AFgw_C_SG	0.001	AFgw_SG	0.001
Sub-Slab and Exterior Soil Gas	(-)	AFss_R_SG	0.03	AFss_C_SG	0.03	AFss_SG	0.03

(3) **Formulas**

Cia, target = MIN(Cia,c; Cia,nc)

Cia,c (ug/m3) = TCR x ATc x (365 days/yr) x (24 hrs/day) / (ED x EF x ET x IUR)

Cia,nc (ug/m3) = THQ x ATnc x (365 days/yr) x (24 hrs/day) x RfC x (1000 ug/mg) / (ED x EF x ET)

(4) **Special Case Chemicals**

	Residential Symbol	Residential Value	Commercial Symbol	Commercial Value	Selected (based on scenario) Symbol	Selected (based on scenario) Value
Trichloroethylene						
	mIURTCE_R_SG	1.00E-06	nIURTCE_C_SG	0.00E+00	mIURTCE_SG	0.00E+00
	IURTCE_R_SG	3.10E-06	IURTCE_C_SG	4.10E-06	IURTCE_SG	4.10E-06

Mutagenic Chemicals — The exposure durations and age-dependent adjustment factors for mutagenic-mode-of-action are listed in the table below:

Note: This section applies to trichloroethylene and other mutagenic chemicals, but not to vinyl chloride.

Age Cohort	Exposure Duration	Age-dependent adjustment factor
0 - 2 years	2	10
2 - 6 years	4	3
6 - 16 years	10	3
16 - 26 years	10	1

Mutagenic-mode-of-action (MMOA) adjustment factor 25 — This factor is used in the equations for mutagenic chemicals.

Vinyl Chloride — See the Navigation Guide equation for Cia,c for vinyl chloride.

Notation:

I = IRIS: EPA Integrated Risk Information System (IRIS). Available online at: http://www.epa.gov/iris/subst/index.html

P = PPRTV. EPA Provisional Peer Reviewed Toxicity Values (PPRTVs). Available online at: http://hhpprtv.ornl.gov/pprtv.shtml

A = Agency for Toxic Substances and Disease Registry (ATSDR) Minimum Risk Levels (MRLs). Available online at: http://www.atsdr.cdc.gov/mrls/index.html

CA = California Environmental Protection Agency/Office of Environmental Health Hazard Assessment assessments. Available online at: http://www.oehha.ca.gov/risk/ChemicalDB/index.asp

H = HEAST. EPA Superfund Health Effects Assessment Summary Tables (HEAST) database. Available online at: http://epa-heast.ornl.gov/heast.shtml

S = See RSL User Guide, Section 5

X = PPRTV Appendix

Mut = Chemical acts according to the mutagenic-mode-of-action, special exposure parameters apply (see footnote (4) above).

VC = Special exposure equation for vinyl chloride applies (see Navigation Guide for equation).

TCE = Special mutagenic and non-mutagenic IURs for trichloroethylene apply (see footnote (4) above).

Yellow highlighting indicates site-specific parameters that may be edited by the user.

Blue highlighting indicates exposure factors that are based on Risk Assessment Guidance for Superfund (RAGS) or EPA vapor intrusion guidance, which generally should not be changed.

Pink highlighting indicates VI carcinogenic risk greater than the target risk for carcinogens (TCR) or VI Hazard greater than or equal to the target hazard quotient for non-carcinogens (THQ).

Soil Gas Sample SG-2

EPA-OLEM VAPOR INTRUSION ASSESSMENT

Sub-slab or Exterior Soil Gas Concentration to Indoor Air Concentration (SGC-IAC) Calculator Version 3.5.1 (May 2016 RSLs)

Parameter	Symbol	Value	Instructions
Exposure Scenario	Scenario	Commercial	Select residential or commercial scenario from pull down list
Target Risk for Carcinogens	TCR_SG	1.00E-06	Enter target risk for carcinogens (for comparison to the calculated VI carcinogenic risk in column F)
Target Hazard Quotient for Non-Carcinogens	THQ_SG	0.1	Enter target hazard quotient for non-carcinogens (for comparison to the calculated VI hazard in column G)

CAS	Chemical Name	Site Sub-slab or Exterior Soil Gas Concentration	Calculated Indoor Air Concentration	VI Carcinogenic Risk	VI Hazard	Inhalation Unit Risk	IUR Source*	Reference Concentration	RFC Source*	Mutagenic Indicator
		Csg	Cia	CR	HQ	IUR		RfC		
		(ug/m^3)	(ug/m^3)			(ug/m^3)$^{-1}$		(mg/m^3)		i
75-07-0	Acetaldehyde		--	--	--	2.20E-06	I	9.00E-03	I	
67-64-1	Acetone	9.2E+01	2.76E+00	No IUR	2.0E-05			3.10E+01	A	
75-05-8	Acetonitrile		--	--	--			6.00E-02	I	
107-02-8	Acrolein		--	--	--			2.00E-05	I	
79-10-7	Acrylic Acid		--	--	--			1.00E-03	I	
107-13-1	Acrylonitrile		--	--	--	6.80E-05	I	2.00E-03	I	
309-00-2	Aldrin		--	--	--	4.90E-03	I			
107-18-6	Allyl Alcohol		--	--	--			1.00E-04	X	
107-05-1	Allyl Chloride		--	--	--	6.00E-06	CA	1.00E-03	I	
7664-41-7	Ammonia		--	--	--			1.00E-01	I	
75-85-4	Amyl Alcohol, tert-		--	--	--			3.00E-03	X	
12674-11-2	Aroclor 1016		--	--	--	2.00E-05	S			
11104-28-2	Aroclor 1221		--	--	--	5.70E-04	S			
11141-16-5	Aroclor 1232		--	--	--	5.70E-04	S			
53469-21-9	Aroclor 1242		--	--	--	5.70E-04	S			
12672-29-6	Aroclor 1248		--	--	--	5.70E-04	S			
11097-69-1	Aroclor 1254		--	--	--	5.70E-04	S			
11096-82-5	Aroclor 1260		--	--	--	5.70E-04	S			
103-33-3	Azobenzene		--	--	--	3.10E-05	I			
56-55-3	Benz[a]anthracene		--	--	--	1.10E-04	CA			Mut
71-43-2	Benzene	1.4E+01	4.20E-01	2.7E-07	3.2E-03	7.80E-06	I	3.00E-02	I	
100-44-7	Benzyl Chloride		--	--	--	4.90E-05	CA	1.00E-03	P	
92-52-4	Biphenyl, 1,1'-		--	--	--			4.00E-04	X	
111-44-4	Bis(2-chloroethyl)ether		--	--	--	3.30E-04	I			
542-88-1	Bis(chloromethyl)ether		--	--	--	6.20E-02	I			
10294-34-5	Boron Trichloride		--	--	--			2.00E-02	P	
7637-07-2	Boron Trifluoride		--	--	--			1.30E-02	CA	
107-04-0	Bromo-2-chloroethane, 1-		--	--	--	6.00E-04	X			
108-86-1	Bromobenzene		--	--	--			6.00E-02	I	
74-97-5	Bromochloromethane		--	--	--			4.00E-02	X	
75-27-4	Bromodichloromethane		--	--	--	3.70E-05	CA			
75-25-2	Bromoform		--	--	--	1.10E-06	I			
74-83-9	Bromomethane		--	--	--			5.00E-03	I	
106-99-0	Butadiene, 1,3-	2.2E+01	6.60E-01	**1.6E-06**	7.5E-02	3.00E-05	I	2.00E-03	I	
78-92-2	Butyl alcohol, sec-		--	--	--			3.00E+01	P	
75-15-0	Carbon Disulfide	9.3E+00	2.79E-01	No IUR	9.1E-05			7.00E-01	I	
56-23-5	Carbon Tetrachloride	5.3E-01	1.59E-02	7.8E-09	3.6E-05	6.00E-06	I	1.00E-01	I	
463-58-1	Carbonyl Sulfide		--	--	--			1.00E-01	P	
12789-03-6	Chlordane		--	--	--	1.00E-04	I	7.00E-04	I	
7782-50-5	Chlorine		--	--	--			1.50E-04	A	
10049-04-4	Chlorine Dioxide		--	--	--			2.00E-04	I	
75-68-3	Chloro-1,1-difluoroethane, 1-		--	--	--			5.00E+01	I	
126-99-8	Chloro-1,3-butadiene, 2-		--	--	--	3.00E-04	I	2.00E-02	I	
108-90-7	Chlorobenzene		--	--	--			5.00E-02	P	
98-56-6	Chlorobenzotrifluoride, 4-		--	--	--			3.00E-01	P	
75-45-6	Chlorodifluoromethane		--	--	--			5.00E+01	I	
67-66-3	Chloroform	7.6E+00	2.28E-01	4.3E-07	5.3E-04	2.30E-05	I	9.80E-02	A	
74-87-3	Chloromethane	4.1E+00	1.23E-01	No IUR	3.1E-04			9.00E-02	I	
107-30-2	Chloromethyl Methyl Ether		--	--	--	6.90E-04	CA			
76-06-2	Chloropicrin		--	--	--			4.00E-04	CA	
8007-45-2	Coke Oven Emissions		--	--	--	6.20E-04	I			Mut
98-82-8	Cumene		--	--	--			4.00E-01	I	
57-12-5	Cyanide (CN-)		--	--	--			8.00E-04	S	
110-82-7	Cyclohexane	8.3E+00	2.49E-01	No IUR	9.5E-06			6.00E+00	I	
108-94-1	Cyclohexanone		--	--	--			7.00E-01	P	
110-83-8	Cyclohexene		--	--	--			1.00E+00	X	
72-55-9	DDE, p,p'-		--	--	--	9.70E-05	CA			
96-12-8	Dibromo-3-chloropropane, 1,2-		--	--	--	6.00E-03	P	2.00E-04	I	Mut
106-93-4	Dibromoethane, 1,2-		--	--	--	6.00E-04	I	9.00E-03	I	
74-95-3	Dibromomethane (Methylene Bromide)		--	--	--			4.00E-03	X	
764-41-0	Dichloro-2-butene, 1,4-		--	--	--	4.20E-03	P			
1476-11-5	Dichloro-2-butene, cis-1,4-		--	--	--	4.20E-03	P			
110-57-6	Dichloro-2-butene, trans-1,4-		--	--	--	4.20E-03	P			
95-50-1	Dichlorobenzene, 1,2-		--	--	--			2.00E-01	H	
106-46-7	Dichlorobenzene, 1,4-		--	--	--	1.10E-05	CA	8.00E-01	I	
75-71-8	Dichlorodifluoromethane	2.3E+00	6.90E-02	No IUR	1.6E-04			1.00E-01	X	
75-34-3	Dichloroethane, 1,1-		--	--	--	1.60E-06	CA			
107-06-2	Dichloroethane, 1,2-	0.0E+00	0.00E+00	0.0E+00	0.0E+00	2.60E-05	I	7.00E-03	P	
75-35-4	Dichloroethylene, 1,1-	3.9E-01	1.17E-02	No IUR	1.3E-05			2.00E-01	I	
78-87-5	Dichloropropane, 1,2-		--	--	--	1.00E-05	CA	4.00E-03	I	
542-75-6	Dichloropropene, 1,3-		--	--	--	4.00E-06	I	2.00E-02	I	
77-73-6	Dicyclopentadiene		--	--	--			3.00E-04	X	
75-37-6	Difluoroethane, 1,1-		--	--	--			4.00E+01	I	
94-58-6	Dihydrosafrole		--	--	--	1.30E-05	CA			
108-20-3	Diisopropyl Ether		--	--	--			7.00E-01	P	
68-12-2	Dimethylformamide		--	--	--			3.00E-02	I	
57-14-7	Dimethylhydrazine, 1,1-		--	--	--			2.00E-06	X	
540-73-8	Dimethylhydrazine, 1,2-		--	--	--	1.60E-01	CA			
513-37-1	Dimethylvinylchloride		--	--	--	1.30E-05	CA			
123-91-1	Dioxane, 1,4-		--	--	--	5.00E-06	I	3.00E-02	I	
106-89-8	Epichlorohydrin		--	--	--	1.20E-06	I	1.00E-03	I	
106-88-7	Epoxybutane, 1,2-		--	--	--			2.00E-02	I	
111-15-9	Ethoxyethanol Acetate, 2-		--	--	--			6.00E-02	P	
110-80-5	Ethoxyethanol, 2-		--	--	--			2.00E-01	I	
141-78-6	Ethyl Acetate		--	--	--			7.00E-02	P	
140-88-5	Ethyl Acrylate		--	--	--			8.00E-03	P	
75-00-3	Ethyl Chloride (Chloroethane)	7.2E-01	2.16E-02	No IUR	4.9E-07			1.00E+01	I	
97-63-2	Ethyl Methacrylate		--	--	--			3.00E-01	P	
100-41-4	Ethylbenzene	4.0E-01	1.20E-02	2.4E-09	2.7E-06	2.50E-06	CA	1.00E+00	I	
75-21-8	Ethylene Oxide		--	--	--	8.80E-05	CA	3.00E-02	CA	
151-56-4	Ethyleneimine		--	--	--	1.90E-02	CA			
50-00-0	Formaldehyde		--	--	--	1.30E-05	I	9.80E-03	A	
64-18-6	Formic Acid		--	--	--			3.00E-04	X	
98-01-1	Furfural		--	--	--			5.00E-02	H	
765-34-4	Glycidyl		--	--	--			1.00E-03	H	
76-44-8	Heptachlor		--	--	--	1.30E-03	I			
1024-57-3	Heptachlor Epoxide		--	--	--	2.60E-03	I			
39635-31-9	Heptachlorobiphenyl, 2,3,3',4,4',5,5'- (PCB 189)		--	--	--	1.10E-03	E	1.30E-03	E	
118-74-1	Hexachlorobenzene		--	--	--	4.60E-04	I			

EPA-OLEM VAPOR INTRUSION ASSESSMENT

Sub-slab or Exterior Soil Gas Concentration to Indoor Air Concentration (SGC-IAC) Calculator Version 3.5.1 (May 2016 RSLs)

Parameter	Symbol	Value	Instructions
Exposure Scenario	Scenario	Commercial	Select residential or commercial scenario from pull down list
Target Risk for Carcinogens	TCR_SG	1.00E-06	Enter target risk for carcinogens (for comparison to the calculated VI carcinogenic risk in column F)
Target Hazard Quotient for Non-Carcinogens	THQ_SG	0.1	Enter target hazard quotient for non-carcinogens (for comparison to the calculated VI hazard in column G)

CAS	Chemical Name	Site Sub-slab or Exterior Soil Gas Concentration Csg (ug/m^3)	Calculated Indoor Air Concentration Cia (ug/m^3)	VI Carcinogenic Risk CR	VI Hazard HQ	Inhalation Unit Risk IUR (ug/m^3)$^{-1}$	IUR Source*	Reference Concentration RfC (mg/m^3)	RFC Source*	Mutagenic Indicator i
38380-08-4	Hexachlorobiphenyl, 2,3,3',4,4',5- (PCB 156)		--	--	--	1.10E-03	E	1.30E-03	E	
69782-90-7	Hexachlorobiphenyl, 2,3,3',4,4',5'- (PCB 157)		--	--	--	1.10E-03	E	1.30E-03	E	
52663-72-6	Hexachlorobiphenyl, 2,3',4,4',5,5'- (PCB 167)		--	--	--	1.10E-03	E	1.30E-03	E	
32774-16-6	Hexachlorobiphenyl, 3,3',4,4',5,5'- (PCB 169)		--	--	--	1.10E+00	E	1.30E-06	E	
87-68-3	Hexachlorobutadiene		--	--	--	2.20E-05	I			
77-47-4	Hexachlorocyclopentadiene		--	--	--			2.00E-04	I	
67-72-1	Hexachloroethane		--	--	--	1.10E-05	CA	3.00E-02	I	
822-06-0	Hexamethylene Diisocyanate, 1,6-		--	--	--			1.00E-05	I	
110-54-3	Hexane, N-	1.7E+01	5.10E-01	No IUR	1.7E-04			7.00E-01	I	
591-78-6	Hexanone, 2-		--	--	--			3.00E-02	I	
302-01-2	Hydrazine		--	--	--	4.90E-03	I	3.00E-05	P	
7647-01-0	Hydrogen Chloride		--	--	--			2.00E-02	I	
74-90-8	Hydrogen Cyanide		--	--	--			8.00E-04	I	
7664-39-3	Hydrogen Fluoride		--	--	--			1.40E-02	CA	
7783-06-4	Hydrogen Sulfide		--	--	--			2.00E-03	I	
67-63-0	Isopropanol	9.8E+00	2.94E-01	No IUR	3.4E-04			2.00E-01	P	
7439-97-6	Mercury (elemental)		--	--	--			3.00E-04	I	
126-98-7	Methacrylonitrile		--	--	--			3.00E-02	P	
67-56-1	Methanol		--	--	--			2.00E+01	I	
110-49-6	Methoxyethanol Acetate, 2-		--	--	--			1.00E-03	P	
109-86-4	Methoxyethanol, 2-		--	--	--			2.00E-02	I	
96-33-3	Methyl Acrylate		--	--	--			2.00E-02	P	
78-93-3	Methyl Ethyl Ketone (2-Butanone)	1.1E+01	3.30E-01	No IUR	1.5E-05			5.00E+00	I	
60-34-4	Methyl Hydrazine		--	--	--	1.00E-03	X	2.00E-05	X	
108-10-1	Methyl Isobutyl Ketone (4-methyl-2-pentanone)	0.0E+00	0.00E+00	No IUR	0.0E+00			3.00E+00	I	
624-83-9	Methyl Isocyanate		--	--	--			1.00E-03	CA	
80-62-6	Methyl Methacrylate		--	--	--			7.00E-01	I	
25013-15-4	Methyl Styrene (Mixed Isomers)		--	--	--			4.00E-02	H	
1634-04-4	Methyl tert-Butyl Ether (MTBE)		--	--	--	2.60E-07	CA	3.00E+00	I	
75-09-2	Methylene Chloride		--	--	--	1.00E-08	I	6.00E-01	I	Mut
2385-85-5	Mirex		--	--	--	5.10E-03	CA			
64742-95-6	Naphtha, High Flash Aromatic (HFAN)		--	--	--			1.00E-01	P	
91-20-3	Naphthalene		--	--	--	3.40E-05	CA	3.00E-03	I	
13463-39-3	Nickel Carbonyl		--	--	--	2.60E-04	CA	1.40E-05	CA	
98-95-3	Nitrobenzene		--	--	--	4.00E-05	I	9.00E-03	I	
75-52-5	Nitromethane		--	--	--	8.80E-06	P	5.00E-03	P	
79-46-9	Nitropropane, 2-		--	--	--	2.70E-03	H	2.00E-02	I	
62-75-9	Nitrosodimethylamine, N-		--	--	--	1.40E-02	I	4.00E-05	X	Mut
924-16-3	Nitroso-di-N-butylamine, N-		--	--	--	1.60E-03	I			
10595-95-6	Nitrosomethylethylamine, N-		--	--	--	6.30E-03	CA			
111-84-2	Nonane, n-		--	--	--			2.00E-02	P	
32598-14-4	Pentachlorobiphenyl, 2,3,3',4,4'- (PCB 105)		--	--	--	1.10E-03	E	1.30E-03	E	
74472-37-0	Pentachlorobiphenyl, 2,3,4,4',5- (PCB 114)		--	--	--	1.10E-03	E	1.30E-03	E	
31508-00-6	Pentachlorobiphenyl, 2,3',4,4',5- (PCB 118)		--	--	--	1.10E-03	E	1.30E-03	E	
65510-44-3	Pentachlorobiphenyl, 2',3,4,4',5- (PCB 123)		--	--	--	1.10E-03	E	1.30E-03	E	
57465-28-8	Pentachlorobiphenyl, 3,3',4,4',5- (PCB 126)		--	--	--	3.80E+00	E	4.00E-07	E	
109-66-0	Pentane, n-		--	--	--			1.00E+00	P	
75-44-5	Phosgene		--	--	--			3.00E-04	I	
7803-51-2	Phosphine		--	--	--			3.00E-04	I	
123-38-6	Propionaldehyde		--	--	--			8.00E-03	I	
103-65-1	Propyl benzene		--	--	--			1.00E+00	X	
115-07-1	Propylene		--	--	--			3.00E+00	CA	
107-98-2	Propylene Glycol Monomethyl Ether		--	--	--			2.00E+00	I	
75-56-9	Propylene Oxide		--	--	--	3.70E-06	I	3.00E-02	I	
100-42-5	Styrene		--	--	--			1.00E+00	I	
7446-11-9	Sulfur Trioxide		--	--	--			1.00E-03	CA	
1746-01-6	TCDD, 2,3,7,8-		--	--	--	3.80E+01	CA	4.00E-08	CA	
70362-50-4	Tetrachlorobiphenyl, 3,4,4',5- (PCB 81)		--	--	--	1.10E-02	E	1.30E-04	E	
630-20-6	Tetrachloroethane, 1,1,1,2-		--	--	--	7.40E-06	I			
79-34-5	Tetrachloroethane, 1,1,2,2-		--	--	--	5.80E-05	CA			
127-18-4	Tetrachloroethylene	0.0E+00	0.00E+00	0.0E+00	0.0E+00	2.60E-07	I	4.00E-02	I	
811-97-2	Tetrafluoroethane, 1,1,1,2-		--	--	--			8.00E+01	I	
109-99-9	Tetrahydrofuran		--	--	--			2.00E+00	I	
7550-45-0	Titanium Tetrachloride		--	--	--			1.00E-04	A	
108-88-3	Toluene	3.0E+01	9.00E-01	No IUR	4.1E-05			5.00E+00	I	
584-84-9	Toluene-2,4-diisocyanate		--	--	--	1.10E-05	CA	8.00E-06	CA	
91-08-7	Toluene-2,6-diisocyanate		--	--	--	1.10E-05	CA	8.00E-06	CA	
76-13-1	Trichloro-1,2,2-trifluoroethane, 1,1,2-	1.5E+01	4.50E-01	No IUR	3.4E-06			3.00E+01	H	
120-82-1	Trichlorobenzene, 1,2,4-		--	--	--			2.00E-03	P	
71-55-6	Trichloroethane, 1,1,1-	1.3E+00	3.90E-02	No IUR	1.8E-06			5.00E+00	I	
79-00-5	Trichloroethane, 1,1,2-		--	--	--	1.60E-05	I	2.00E-04	X	
79-01-6	Trichloroethylene	2.3E+02	6.90E+00	**2.3E-06**	**7.9E-01**	see note	I	2.00E-03	I	TCE
96-18-4	Trichloropropane, 1,2,3-		--	--	--			3.00E-04	I	Mut
96-19-5	Trichloropropene, 1,2,3-		--	--	--			3.00E-04	P	
121-44-8	Triethylamine		--	--	--			7.00E-03	I	
420-46-2	Trifluoroethane, 1,1,1-		--	--	--			2.00E+01	P	
526-73-8	Trimethylbenzene, 1,2,3-		--	--	--			5.00E-03	P	
95-63-6	Trimethylbenzene, 1,2,4-		--	--	--			7.00E-03	P	
126-72-7	Tris(2,3-dibromopropyl)phosphate		--	--	--	6.60E-04	CA			
108-05-4	Vinyl Acetate		--	--	--			2.00E-01	I	
593-60-2	Vinyl Bromide		--	--	--	3.20E-05	H	3.00E-03	I	
75-01-4	Vinyl Chloride	4.9E-01	1.47E-02	5.3E-09	3.4E-05	4.40E-06	I	1.00E-01	I	VC
108-38-3	Xylene, m-	1.0E+00	3.00E-02	No IUR	6.8E-05			1.00E-01	S	
95-47-6	Xylene, o-	4.2E-01	1.26E-02	No IUR	2.9E-05			1.00E-01	S	
106-42-3	Xylene, P-	1.0E+00	3.00E-02	No IUR	6.8E-05			1.00E-01	S	
1330-20-7	Xylenes		--	--	--			1.00E-01	I	

Notes:

(1) **Inhalation Pathway Exposure Parameters (RME):**

Exposure Scenario	Units	Residential Symbol	Residential Value	Commercial Symbol	Commercial Value	Selected (based on scenario) Symbol	Selected (based on scenario) Value
Averaging time for carcinogens	(yrs)	ATc_R_SG	70	ATc_C_SG	70	ATc_SG	70
Averaging time for non-carcinogens	(yrs)	ATnc_R_SG	26	ATnc_C_SG	25	ATnc_SG	25
Exposure duration	(yrs)	ED_R_SG	26	ED_C_SG	25	ED_SG	25
Exposure frequency	(days/yr)	EF_R_SG	350	EF_C_SG	250	EF_SG	250
Exposure time	(hr/day)	ET_R_SG	24	ET_C_SG	8	ET_SG	8

EPA-OLEM VAPOR INTRUSION ASSESSMENT

Sub-slab or Exterior Soil Gas Concentration to Indoor Air Concentration (SGC-IAC) Calculator Version 3.5.1 (May 2016 RSLs)

Parameter	Symbol	Value	Instructions
Exposure Scenario	Scenario	Commercial	Select residential or commercial scenario from pull down list
Target Risk for Carcinogens	TCR_SG	1.00E-06	Enter target risk for carcinogens (for comparison to the calculated VI carcinogenic risk in column F)
Target Hazard Quotient for Non-Carcinogens	THQ_SG	0.1	Enter target hazard quotient for non-carcinogens (for comparison to the calculated VI hazard in column G)

CAS	Chemical Name	Site Sub-slab or Exterior Soil Gas Concentration Csg (ug/m^3)	Calculated Indoor Air Concentration Cia (ug/m^3)	VI Carcinogenic Risk CR	VI Hazard HQ	Inhalation Unit Risk IUR (ug/m^3)$^{-1}$	IUR Source*	Reference Concentration RfC (mg/m^3)	RFC Source*	Mutagenic Indicator i

(2) **Generic Attenuation Factors:**

Source Medium of Vapors		Residential Symbol	Residential Value	Commercial Symbol	Commercial Value	Selected (based on scenario) Symbol	Selected (based on scenario) Value
Groundwater	(-)	AFgw_R_SG	0.001	AFgw_C_SG	0.001	AFgw_SG	0.001
Sub-Slab and Exterior Soil Gas	(-)	AFss_R_SG	0.03	AFss_C_SG	0.03	AFss_SG	0.03

(3) **Formulas**

Cia, target = MIN(Cia,c; Cia,nc)

Cia,c (ug/m3) = TCR x ATc x (365 days/yr) x (24 hrs/day) / (ED x EF x ET x IUR)

Cia,nc (ug/m3) = THQ x ATnc x (365 days/yr) x (24 hrs/day) x RfC x (1000 ug/mg) / (ED x EF x ET)

(4) **Special Case Chemicals**

	Residential Symbol	Residential Value	Commercial Symbol	Commercial Value	Selected (based on scenario) Symbol	Selected (based on scenario) Value
Trichloroethylene						
	mIURTCE_R_SG	1.00E-06	nIURTCE_C_SG	0.00E+00	mIURTCE_SG	0.00E+00
	IURTCE_R_SG	3.10E-06	IURTCE_C_SG	4.10E-06	IURTCE_SG	4.10E-06

Mutagenic Chemicals — The exposure durations and age-dependent adjustment factors for mutagenic-mode-of-action are listed in the table below:

Note: This section applies to trichloroethylene and other mutagenic chemicals, but not to vinyl chloride.

Age Cohort	Exposure Duration	Age-dependent adjustment factor
0 - 2 years	2	10
2 - 6 years	4	3
6 - 16 years	10	3
16 - 26 years	10	1

Mutagenic-mode-of-action (MMOA) adjustment factor 25 — This factor is used in the equations for mutagenic chemicals.

Vinyl Chloride — See the Navigation Guide equation for Cia,c for vinyl chloride.

Notation:

I = IRIS: EPA Integrated Risk Information System (IRIS). Available online at: http://www.epa.gov/iris/subst/index.html

P = PPRTV. EPA Provisional Peer Reviewed Toxicity Values (PPRTVs). Available online at: http://hhpprtv.ornl.gov/pprtv.shtml

A = Agency for Toxic Substances and Disease Registry (ATSDR) Minimum Risk Levels (MRLs). Available online at: http://www.atsdr.cdc.gov/mrls/index.html

CA = California Environmental Protection Agency/Office of Environmental Health Hazard Assessment assessments. Available online at: http://www.oehha.ca.gov/risk/ChemicalDB/index.asp

H = HEAST. EPA Superfund Health Effects Assessment Summary Tables (HEAST) database. Available online at: http://epa-heast.ornl.gov/heast.shtml

S = See RSL User Guide, Section 5

X = PPRTV Appendix

Mut = Chemical acts according to the mutagenic-mode-of-action, special exposure parameters apply (see footnote (4) above).

VC = Special exposure equation for vinyl chloride applies (see Navigation Guide for equation).

TCE = Special mutagenic and non-mutagenic IURs for trichloroethylene apply (see footnote (4) above).

Yellow highlighting indicates site-specific parameters that may be edited by the user.

Blue highlighting indicates exposure factors that are based on Risk Assessment Guidance for Superfund (RAGS) or EPA vapor intrusion guidance, which generally should not be changed.

Pink highlighting indicates VI carcinogenic risk greater than the target risk for carcinogens (TCR) or VI Hazard greater than or equal to the target hazard quotient for non-carcinogens (THQ).

Soil Gas Sample SG-3

EPA-OLEM VAPOR INTRUSION ASSESSMENT

Sub-slab or Exterior Soil Gas Concentration to Indoor Air Concentration (SGC-IAC) Calculator Version 3.5.1 (May 2016 RSLs)

Parameter	Symbol	Value	Instructions
Exposure Scenario	Scenario	Commercial	Select residential or commercial scenario from pull down list
Target Risk for Carcinogens	TCR_SG	1.00E-06	Enter target risk for carcinogens (for comparison to the calculated VI carcinogenic risk in column F)
Target Hazard Quotient for Non-Carcinogens	THQ_SG	0.1	Enter target hazard quotient for non-carcinogens (for comparison to the calculated VI hazard in column G)

CAS	Chemical Name	Site Sub-slab or Exterior Soil Gas Concentration	Calculated Indoor Air Concentration	VI Carcinogenic Risk	VI Hazard	Inhalation Unit Risk	IUR Source*	Reference Concentration	RFC Source*	Mutagenic Indicator
		Csg	Cia	CR	HQ	IUR		RfC		
		(ug/m^3)	(ug/m^3)			(ug/m^3)$^{-1}$		(mg/m^3)		i
75-07-0	Acetaldehyde		--	--	--	2.20E-06	I	9.00E-03	I	
67-64-1	Acetone	2.2E+01	6.60E-01	No IUR	4.9E-06			3.10E+01	A	
75-05-8	Acetonitrile		--	--	--			6.00E-02	I	
107-02-8	Acrolein		--	--	--			2.00E-05	I	
79-10-7	Acrylic Acid		--	--	--			1.00E-03	I	
107-13-1	Acrylonitrile		--	--	--	6.80E-05	I	2.00E-03	I	
309-00-2	Aldrin		--	--	--	4.90E-03	I			
107-18-6	Allyl Alcohol		--	--	--			1.00E-04	X	
107-05-1	Allyl Chloride		--	--	--	6.00E-06	CA	1.00E-03	I	
7664-41-7	Ammonia		--	--	--			1.00E-01	I	
75-85-4	Amyl Alcohol, tert-		--	--	--			3.00E-03	X	
12674-11-2	Aroclor 1016		--	--	--	2.00E-05	S			
11104-28-2	Aroclor 1221		--	--	--	5.70E-04	S			
11141-16-5	Aroclor 1232		--	--	--	5.70E-04	S			
53469-21-9	Aroclor 1242		--	--	--	5.70E-04	S			
12672-29-6	Aroclor 1248		--	--	--	5.70E-04	S			
11097-69-1	Aroclor 1254		--	--	--	5.70E-04	S			
11096-82-5	Aroclor 1260		--	--	--	5.70E-04	S			
103-33-3	Azobenzene		--	--	--	3.10E-05	I			
56-55-3	Benz[a]anthracene		--	--	--	1.10E-04	CA			Mut
71-43-2	Benzene	2.9E+00	8.70E-02	5.5E-08	6.6E-04	7.80E-06	I	3.00E-02	I	
100-44-7	Benzyl Chloride		--	--	--	4.90E-05	CA	1.00E-03	P	
92-52-4	Biphenyl, 1,1'-		--	--	--			4.00E-04	X	
111-44-4	Bis(2-chloroethyl)ether		--	--	--	3.30E-04	I			
542-88-1	Bis(chloromethyl)ether		--	--	--	6.20E-02	I			
10294-34-5	Boron Trichloride		--	--	--			2.00E-02	P	
7637-07-2	Boron Trifluoride		--	--	--			1.30E-02	CA	
107-04-0	Bromo-2-chloroethane, 1-		--	--	--	6.00E-04	X			
108-86-1	Bromobenzene		--	--	--			6.00E-02	I	
74-97-5	Bromochloromethane		--	--	--			4.00E-02	X	
75-27-4	Bromodichloromethane		--	--	--	3.70E-05	CA			
75-25-2	Bromoform		--	--	--	1.10E-06	I			
74-83-9	Bromomethane		--	--	--			5.00E-03	I	
106-99-0	Butadiene, 1,3-	0.0E+00	0.00E+00	0.0E+00	0.0E+00	3.00E-05	I	2.00E-03	I	
78-92-2	Butyl alcohol, sec-		--	--	--			3.00E+01	P	
75-15-0	Carbon Disulfide	0.0E+00	0.00E+00	No IUR	0.0E+00			7.00E-01	I	
56-23-5	Carbon Tetrachloride	1.9E+01	5.70E-01	2.8E-07	1.3E-03	6.00E-06	I	1.00E-01	I	
463-58-1	Carbonyl Sulfide		--	--	--			1.00E-01	P	
12789-03-6	Chlordane		--	--	--	1.00E-04	I	7.00E-04	I	
7782-50-5	Chlorine		--	--	--			1.50E-04	A	
10049-04-4	Chlorine Dioxide		--	--	--			2.00E-04	I	
75-68-3	Chloro-1,1-difluoroethane, 1-		--	--	--			5.00E+01	I	
126-99-8	Chloro-1,3-butadiene, 2-		--	--	--	3.00E-04	I	2.00E-02	I	
108-90-7	Chlorobenzene		--	--	--			5.00E-02	P	
98-56-6	Chlorobenzotrifluoride, 4-		--	--	--			3.00E-01	P	
75-45-6	Chlorodifluoromethane		--	--	--			5.00E+01	I	
67-66-3	Chloroform	7.4E+00	2.22E-01	4.2E-07	5.2E-04	2.30E-05	I	9.80E-02	A	
74-87-3	Chloromethane	0.0E+00	0.00E+00	No IUR	0.0E+00			9.00E-02	I	
107-30-2	Chloromethyl Methyl Ether		--	--	--	6.90E-04	CA			
76-06-2	Chloropicrin		--	--	--			4.00E-04	CA	
8007-45-2	Coke Oven Emissions		--	--	--	6.20E-04	I			Mut
98-82-8	Cumene		--	--	--			4.00E-01	I	
57-12-5	Cyanide (CN-)		--	--	--			8.00E-04	S	
110-82-7	Cyclohexane	0.0E+00	0.00E+00	No IUR	0.0E+00			6.00E+00	I	
108-94-1	Cyclohexanone		--	--	--			7.00E-01	P	
110-83-8	Cyclohexene		--	--	--			1.00E+00	X	
72-55-9	DDE, p,p'-		--	--	--	9.70E-05	CA			
96-12-8	Dibromo-3-chloropropane, 1,2-		--	--	--	6.00E-03	P	2.00E-04	I	Mut
106-93-4	Dibromoethane, 1,2-		--	--	--	6.00E-04	I	9.00E-03	I	
74-95-3	Dibromomethane (Methylene Bromide)		--	--	--			4.00E-03	X	
764-41-0	Dichloro-2-butene, 1,4-		--	--	--	4.20E-03	P			
1476-11-5	Dichloro-2-butene, cis-1,4-		--	--	--	4.20E-03	P			
110-57-6	Dichloro-2-butene, trans-1,4-		--	--	--	4.20E-03	P			
95-50-1	Dichlorobenzene, 1,2-		--	--	--			2.00E-01	H	
106-46-7	Dichlorobenzene, 1,4-		--	--	--	1.10E-05	CA	8.00E-01	I	
75-71-8	Dichlorodifluoromethane	3.0E+00	9.00E-02	No IUR	2.1E-04			1.00E-01	X	
75-34-3	Dichloroethane, 1,1-	7.3E+00	2.19E-01	2.9E-08	No RfC	1.60E-06	CA			
107-06-2	Dichloroethane, 1,2-	0.0E+00	0.00E+00	0.0E+00	0.0E+00	2.60E-05	I	7.00E-03	P	
75-35-4	Dichloroethylene, 1,1-	3.7E+01	1.11E+00	No IUR	1.3E-03			2.00E-01	I	
78-87-5	Dichloropropane, 1,2-		--	--	--	1.00E-05	CA	4.00E-03	I	
542-75-6	Dichloropropene, 1,3-		--	--	--	4.00E-06	I	2.00E-02	I	
77-73-6	Dicyclopentadiene		--	--	--			3.00E-04	X	
75-37-6	Difluoroethane, 1,1-		--	--	--			4.00E+01	I	
94-58-6	Dihydrosafrole		--	--	--	1.30E-05	CA			
108-20-3	Diisopropyl Ether		--	--	--			7.00E-01	P	
68-12-2	Dimethylformamide		--	--	--			3.00E-02	I	
57-14-7	Dimethylhydrazine, 1,1-		--	--	--			2.00E-06	X	
540-73-8	Dimethylhydrazine, 1,2-		--	--	--	1.60E-01	CA			
513-37-1	Dimethylvinylchloride		--	--	--	1.30E-05	CA			
123-91-1	Dioxane, 1,4-		--	--	--	5.00E-06	I	3.00E-02	I	
106-89-8	Epichlorohydrin		--	--	--	1.20E-06	I	1.00E-03	I	
106-88-7	Epoxybutane, 1,2-		--	--	--			2.00E-02	I	
111-15-9	Ethoxyethanol Acetate, 2-		--	--	--			6.00E-02	P	
110-80-5	Ethoxyethanol, 2-		--	--	--			2.00E-01	I	
141-78-6	Ethyl Acetate		--	--	--			7.00E-02	P	
140-88-5	Ethyl Acrylate		--	--	--			8.00E-03	P	
75-00-3	Ethyl Chloride (Chloroethane)	0.0E+00	0.00E+00	No IUR	0.0E+00			1.00E+01	I	
97-63-2	Ethyl Methacrylate		--	--	--			3.00E-01	P	
100-41-4	Ethylbenzene	0.0E+00	0.00E+00	0.0E+00	0.0E+00	2.50E-06	CA	1.00E+00	I	
75-21-8	Ethylene Oxide		--	--	--	8.80E-05	CA	3.00E-02	CA	
151-56-4	Ethyleneimine		--	--	--	1.90E-02	CA			
50-00-0	Formaldehyde		--	--	--	1.30E-05	I	9.80E-03	A	
64-18-6	Formic Acid		--	--	--			3.00E-04	X	
98-01-1	Furfural		--	--	--			5.00E-02	H	
765-34-4	Glycidyl		--	--	--			1.00E-03	H	
76-44-8	Heptachlor		--	--	--	1.30E-03	I			
1024-57-3	Heptachlor Epoxide		--	--	--	2.60E-03	I			
39635-31-9	Heptachlorobiphenyl, 2,3,3',4,4',5,5'- (PCB 189)		--	--	--	1.10E-03	E	1.30E-03	E	
118-74-1	Hexachlorobenzene		--	--	--	4.60E-04	I			

EPA-OLEM VAPOR INTRUSION ASSESSMENT

Sub-slab or Exterior Soil Gas Concentration to Indoor Air Concentration (SGC-IAC) Calculator Version 3.5.1 (May 2016 RSLs)

Parameter	Symbol	Value	Instructions
Exposure Scenario	Scenario	Commercial	Select residential or commercial scenario from pull down list
Target Risk for Carcinogens	TCR_SG	1.00E-06	Enter target risk for carcinogens (for comparison to the calculated VI carcinogenic risk in column F)
Target Hazard Quotient for Non-Carcinogens	THQ_SG	0.1	Enter target hazard quotient for non-carcinogens (for comparison to the calculated VI hazard in column G)

CAS	Chemical Name	Site Sub-slab or Exterior Soil Gas Concentration Csg (ug/m^3)	Calculated Indoor Air Concentration Cia (ug/m^3)	VI Carcinogenic Risk CR	VI Hazard HQ	Inhalation Unit Risk IUR (ug/m^3)$^{-1}$	IUR Source*	Reference Concentration RfC (mg/m^3)	RFC Source*	Mutagenic Indicator i
38380-08-4	Hexachlorobiphenyl, 2,3,3',4,4',5- (PCB 156)		--	--	--	1.10E-03	E	1.30E-03	E	
69782-90-7	Hexachlorobiphenyl, 2,3,3',4,4',5'- (PCB 157)		--	--	--	1.10E-03	E	1.30E-03	E	
52663-72-6	Hexachlorobiphenyl, 2,3',4,4',5,5'- (PCB 167)		--	--	--	1.10E-03	E	1.30E-03	E	
32774-16-6	Hexachlorobiphenyl, 3,3',4,4',5,5'- (PCB 169)		--	--	--	1.10E+00	E	1.30E-06	E	
87-68-3	Hexachlorobutadiene		--	--	--	2.20E-05	I			
77-47-4	Hexachlorocyclopentadiene		--	--	--			2.00E-04	I	
67-72-1	Hexachloroethane		--	--	--	1.10E-05	CA	3.00E-02	I	
822-06-0	Hexamethylene Diisocyanate, 1,6-		--	--	--			1.00E-05	I	
110-54-3	Hexane, N-	0.0E+00	0.00E+00	No IUR	0.0E+00			7.00E-01	I	
591-78-6	Hexanone, 2-		--	--	--			3.00E-02	I	
302-01-2	Hydrazine		--	--	--	4.90E-03	I	3.00E-05	P	
7647-01-0	Hydrogen Chloride		--	--	--			2.00E-02	I	
74-90-8	Hydrogen Cyanide		--	--	--			8.00E-04	I	
7664-39-3	Hydrogen Fluoride		--	--	--			1.40E-02	CA	
7783-06-4	Hydrogen Sulfide		--	--	--			2.00E-03	I	
67-63-0	Isopropanol	0.0E+00	0.00E+00	No IUR	0.0E+00			2.00E-01	P	
7439-97-6	Mercury (elemental)		--	--	--			3.00E-04	I	
126-98-7	Methacrylonitrile		--	--	--			3.00E-02	P	
67-56-1	Methanol		--	--	--			2.00E+01	I	
110-49-6	Methoxyethanol Acetate, 2-		--	--	--			1.00E-03	P	
109-86-4	Methoxyethanol, 2-		--	--	--			2.00E-02	I	
96-33-3	Methyl Acrylate		--	--	--			2.00E-02	P	
78-93-3	Methyl Ethyl Ketone (2-Butanone)	0.0E+00	0.00E+00	No IUR	0.0E+00			5.00E+00	I	
60-34-4	Methyl Hydrazine		--	--	--	1.00E-03	X	2.00E-05	X	
108-10-1	Methyl Isobutyl Ketone (4-methyl-2-pentanone)	0.0E+00	0.00E+00	No IUR	0.0E+00			3.00E+00	I	
624-83-9	Methyl Isocyanate		--	--	--			1.00E-03	CA	
80-62-6	Methyl Methacrylate		--	--	--			7.00E-01	I	
25013-15-4	Methyl Styrene (Mixed Isomers)		--	--	--			4.00E-02	H	
1634-04-4	Methyl tert-Butyl Ether (MTBE)		--	--	--	2.60E-07	CA	3.00E+00	I	
75-09-2	Methylene Chloride		--	--	--	1.00E-08	I	6.00E-01	I	Mut
2385-85-5	Mirex		--	--	--	5.10E-03	CA			
64742-95-6	Naphtha, High Flash Aromatic (HFAN)		--	--	--			1.00E-01	P	
91-20-3	Naphthalene		--	--	--	3.40E-05	CA	3.00E-03	I	
13463-39-3	Nickel Carbonyl		--	--	--	2.60E-04	CA	1.40E-05	CA	
98-95-3	Nitrobenzene		--	--	--	4.00E-05	I	9.00E-03	I	
75-52-5	Nitromethane		--	--	--	8.80E-06	P	5.00E-03	P	
79-46-9	Nitropropane, 2-		--	--	--	2.70E-03	H	2.00E-02	I	
62-75-9	Nitrosodimethylamine, N-		--	--	--	1.40E-02	I	4.00E-05	X	Mut
924-16-3	Nitroso-di-N-butylamine, N-		--	--	--	1.60E-03	I			
10595-95-6	Nitrosomethylethylamine, N-		--	--	--	6.30E-03	CA			
111-84-2	Nonane, n-		--	--	--			2.00E-02	P	
32598-14-4	Pentachlorobiphenyl, 2,3,3',4,4'- (PCB 105)		--	--	--	1.10E-03	E	1.30E-03	E	
74472-37-0	Pentachlorobiphenyl, 2,3,4,4',5- (PCB 114)		--	--	--	1.10E-03	E	1.30E-03	E	
31508-00-6	Pentachlorobiphenyl, 2,3',4,4',5- (PCB 118)		--	--	--	1.10E-03	E	1.30E-03	E	
65510-44-3	Pentachlorobiphenyl, 2',3,4,4',5- (PCB 123)		--	--	--	1.10E-03	E	1.30E-03	E	
57465-28-8	Pentachlorobiphenyl, 3,3',4,4',5- (PCB 126)		--	--	--	3.80E+00	E	4.00E-07	E	
109-66-0	Pentane, n-		--	--	--			1.00E+00	P	
75-44-5	Phosgene		--	--	--			3.00E-04	I	
7803-51-2	Phosphine		--	--	--			3.00E-04	I	
123-38-6	Propionaldehyde		--	--	--			8.00E-03	I	
103-65-1	Propyl benzene		--	--	--			1.00E+00	X	
115-07-1	Propylene		--	--	--			3.00E+00	CA	
107-98-2	Propylene Glycol Monomethyl Ether		--	--	--			2.00E+00	I	
75-56-9	Propylene Oxide		--	--	--	3.70E-06	I	3.00E-02	I	
100-42-5	Styrene		--	--	--			1.00E+00	I	
7446-11-9	Sulfur Trioxide		--	--	--			1.00E-03	CA	
1746-01-6	TCDD, 2,3,7,8-		--	--	--	3.80E+01	CA	4.00E-08	CA	
70362-50-4	Tetrachlorobiphenyl, 3,4,4',5- (PCB 81)		--	--	--	1.10E-02	E	1.30E-04	E	
630-20-6	Tetrachloroethane, 1,1,1,2-		--	--	--	7.40E-06	I			
79-34-5	Tetrachloroethane, 1,1,2,2-		--	--	--	5.80E-05	CA			
127-18-4	Tetrachloroethylene	0.0E+00	0.00E+00	0.0E+00	0.0E+00	2.60E-07	I	4.00E-02	I	
811-97-2	Tetrafluoroethane, 1,1,1,2-		--	--	--			8.00E+01	I	
109-99-9	Tetrahydrofuran		--	--	--			2.00E+00	I	
7550-45-0	Titanium Tetrachloride		--	--	--			1.00E-04	A	
108-88-3	Toluene	4.0E+00	1.20E-01	No IUR	5.5E-06			5.00E+00	I	
584-84-9	Toluene-2,4-diisocyanate		--	--	--	1.10E-05	CA	8.00E-06	CA	
91-08-7	Toluene-2,6-diisocyanate		--	--	--	1.10E-05	CA	8.00E-06	CA	
76-13-1	Trichloro-1,2,2-trifluoroethane, 1,1,2-	0.0E+00	0.00E+00	No IUR	0.0E+00			3.00E+01	H	
120-82-1	Trichlorobenzene, 1,2,4-		--	--	--			2.00E-03	P	
71-55-6	Trichloroethane, 1,1,1-	1.0E+03	3.00E+01	No IUR	1.4E-03			5.00E+00	I	
79-00-5	Trichloroethane, 1,1,2-		--	--	--	1.60E-05	I	2.00E-04	X	
79-01-6	Trichloroethylene	4.2E+01	1.26E+00	4.2E-07	**1.4E-01**	see note	I	2.00E-03	I	TCE
96-18-4	Trichloropropane, 1,2,3-		--	--	--			3.00E-04	I	Mut
96-19-5	Trichloropropene, 1,2,3-		--	--	--			3.00E-04	P	
121-44-8	Triethylamine		--	--	--			7.00E-03	I	
420-46-2	Trifluoroethane, 1,1,1-		--	--	--			2.00E+01	P	
526-73-8	Trimethylbenzene, 1,2,3-		--	--	--			5.00E-03	P	
95-63-6	Trimethylbenzene, 1,2,4-		--	--	--			7.00E-03	P	
126-72-7	Tris(2,3-dibromopropyl)phosphate		--	--	--	6.60E-04	CA			
108-05-4	Vinyl Acetate		--	--	--			2.00E-01	I	
593-60-2	Vinyl Bromide		--	--	--	3.20E-05	H	3.00E-03	I	
75-01-4	Vinyl Chloride	0.0E+00	0.00E+00	0.0E+00	0.0E+00	4.40E-06	I	1.00E-01	I	VC
108-38-3	Xylene, m-	0.0E+00	0.00E+00	No IUR	0.0E+00			1.00E-01	S	
95-47-6	Xylene, o-	0.0E+00	0.00E+00	No IUR	0.0E+00			1.00E-01	S	
106-42-3	Xylene, P-	0.0E+00	0.00E+00	No IUR	0.0E+00			1.00E-01	S	
1330-20-7	Xylenes		--	--	--			1.00E-01	I	

Notes:

(1)	**Inhalation Pathway Exposure Parameters (RME):**	Units	Residential		Commercial		Selected (based on scenario)	
	Exposure Scenario		**Symbol**	**Value**	**Symbol**	**Value**	**Symbol**	**Value**
	Averaging time for carcinogens	(yrs)	ATc_R_SG	70	ATc_C_SG	70	ATc_SG	70
	Averaging time for non-carcinogens	(yrs)	ATnc_R_SG	26	ATnc_C_SG	25	ATnc_SG	25
	Exposure duration	(yrs)	ED_R_SG	26	ED_C_SG	25	ED_SG	25
	Exposure frequency	(days/yr)	EF_R_SG	350	EF_C_SG	250	EF_SG	250
	Exposure time	(hr/day)	ET_R_SG	24	ET_C_SG	8	ET_SG	8

EPA-OLEM VAPOR INTRUSION ASSESSMENT

Sub-slab or Exterior Soil Gas Concentration to Indoor Air Concentration (SGC-IAC) Calculator Version 3.5.1 (May 2016 RSLs)

Parameter	Symbol	Value	Instructions
Exposure Scenario	Scenario	Commercial	Select residential or commercial scenario from pull down list
Target Risk for Carcinogens	TCR_SG	1.00E-06	Enter target risk for carcinogens (for comparison to the calculated VI carcinogenic risk in column F)
Target Hazard Quotient for Non-Carcinogens	THQ_SG	0.1	Enter target hazard quotient for non-carcinogens (for comparison to the calculated VI hazard in column G)

CAS	Chemical Name	Site Sub-slab or Exterior Soil Gas Concentration	Calculated Indoor Air Concentration	VI Carcinogenic Risk	VI Hazard	Inhalation Unit Risk	IUR Source*	Reference Concentration	RFC Source*	Mutagenic Indicator
		Csg	Cia	CR	HQ	IUR		RfC		i
		(ug/m^3)	(ug/m^3)			(ug/m^3)$^{-1}$		(mg/m^3)		

(2) **Generic Attenuation Factors:**

Source Medium of Vapors		Residential Symbol	Residential Value	Commercial Symbol	Commercial Value	Selected (based on scenario) Symbol	Selected (based on scenario) Value
Groundwater	(-)	AFgw_R_SG	0.001	AFgw_C_SG	0.001	AFgw_SG	0.001
Sub-Slab and Exterior Soil Gas	(-)	AFss_R_SG	0.03	AFss_C_SG	0.03	AFss_SG	0.03

(3) **Formulas**

Cia, target = MIN(Cia,c; Cia,nc)

Cia,c (ug/m3) = TCR x ATc x (365 days/yr) x (24 hrs/day) / (ED x EF x ET x IUR)

Cia,nc (ug/m3) = THQ x ATnc x (365 days/yr) x (24 hrs/day) x RfC x (1000 ug/mg) / (ED x EF x ET)

(4) **Special Case Chemicals**

	Residential Symbol	Residential Value	Commercial Symbol	Commercial Value	Selected (based on scenario) Symbol	Selected (based on scenario) Value
Trichloroethylene						
	mIURTCE_R_SG	1.00E-06	nIURTCE_C_SG	0.00E+00	mIURTCE_SG	0.00E+00
	IURTCE_R_SG	3.10E-06	IURTCE_C_SG	4.10E-06	IURTCE_SG	4.10E-06

Mutagenic Chemicals — The exposure durations and age-dependent adjustment factors for mutagenic-mode-of-action are listed in the table below:

Note: This section applies to trichloroethylene and other mutagenic chemicals, but not to vinyl chloride.

Age Cohort	Exposure Duration	Age-dependent adjustment factor
0 - 2 years	2	10
2 - 6 years	4	3
6 - 16 years	10	3
16 - 26 years	10	1

Mutagenic-mode-of-action (MMOA) adjustment factor 25 — This factor is used in the equations for mutagenic chemicals.

Vinyl Chloride — See the Navigation Guide equation for Cia,c for vinyl chloride.

Notation:

I = IRIS: EPA Integrated Risk Information System (IRIS). Available online at: http://www.epa.gov/iris/subst/index.html

P = PPRTV. EPA Provisional Peer Reviewed Toxicity Values (PPRTVs). Available online at: http://hhpprtv.ornl.gov/pprtv.shtml

A = Agency for Toxic Substances and Disease Registry (ATSDR) Minimum Risk Levels (MRLs). Available online at: http://www.atsdr.cdc.gov/mrls/index.html

CA = California Environmental Protection Agency/Office of Environmental Health Hazard Assessment assessments. Available online at: http://www.oehha.ca.gov/risk/ChemicalDB/index.asp

H = HEAST. EPA Superfund Health Effects Assessment Summary Tables (HEAST) database. Available online at: http://epa-heast.ornl.gov/heast.shtml

S = See RSL User Guide, Section 5

X = PPRTV Appendix

Mut = Chemical acts according to the mutagenic-mode-of-action, special exposure parameters apply (see footnote (4) above).

VC = Special exposure equation for vinyl chloride applies (see Navigation Guide for equation).

TCE = Special mutagenic and non-mutagenic IURs for trichloroethylene apply (see footnote (4) above).

Yellow highlighting indicates site-specific parameters that may be edited by the user.

Blue highlighting indicates exposure factors that are based on Risk Assessment Guidance for Superfund (RAGS) or EPA vapor intrusion guidance, which generally should not be changed.

Pink highlighting indicates VI carcinogenic risk greater than the target risk for carcinogens (TCR) or VI Hazard greater than or equal to the target hazard quotient for non-carcinogens (THQ).

Soil Gas Sample SG-4

EPA-OLEM VAPOR INTRUSION ASSESSMENT

Sub-slab or Exterior Soil Gas Concentration to Indoor Air Concentration (SGC-IAC) Calculator Version 3.5.1 (May 2016 RSLs)

Parameter	Symbol	Value	Instructions
Exposure Scenario	Scenario	Commercial	Select residential or commercial scenario from pull down list
Target Risk for Carcinogens	TCR_SG	1.00E-06	Enter target risk for carcinogens (for comparison to the calculated VI carcinogenic risk in column F)
Target Hazard Quotient for Non-Carcinogens	THQ_SG	0.1	Enter target hazard quotient for non-carcinogens (for comparison to the calculated VI hazard in column G)

CAS	Chemical Name	Site Sub-slab or Exterior Soil Gas Concentration	Calculated Indoor Air Concentration	VI Carcinogenic Risk	VI Hazard	Inhalation Unit Risk	IUR Source*	Reference Concentration	RFC Source*	Mutagenic Indicator
		Csg	Cia	CR	HQ	IUR		RfC		
		(ug/m^3)	(ug/m^3)			(ug/m^3)$^{-1}$		(mg/m^3)		i
75-07-0	Acetaldehyde		--	--	--	2.20E-06	I	9.00E-03	I	
67-64-1	Acetone	0.0E+00	0.00E+00	No IUR	0.0E+00			3.10E+01	A	
75-05-8	Acetonitrile		--	--	--			6.00E-02	I	
107-02-8	Acrolein		--	--	--			2.00E-05	I	
79-10-7	Acrylic Acid		--	--	--			1.00E-03	I	
107-13-1	Acrylonitrile		--	--	--	6.80E-05	I	2.00E-03	I	
309-00-2	Aldrin		--	--	--	4.90E-03	I			
107-18-6	Allyl Alcohol		--	--	--			1.00E-04	X	
107-05-1	Allyl Chloride		--	--	--	6.00E-06	CA	1.00E-03	I	
7664-41-7	Ammonia		--	--	--			1.00E-01	I	
75-85-4	Amyl Alcohol, tert-		--	--	--			3.00E-03	X	
12674-11-2	Aroclor 1016		--	--	--	2.00E-05	S			
11104-28-2	Aroclor 1221		--	--	--	5.70E-04	S			
11141-16-5	Aroclor 1232		--	--	--	5.70E-04	S			
53469-21-9	Aroclor 1242		--	--	--	5.70E-04	S			
12672-29-6	Aroclor 1248		--	--	--	5.70E-04	S			
11097-69-1	Aroclor 1254		--	--	--	5.70E-04	S			
11096-82-5	Aroclor 1260		--	--	--	5.70E-04	S			
103-33-3	Azobenzene		--	--	--	3.10E-05	I			
56-55-3	Benz[a]anthracene		--	--	--	1.10E-04	CA			Mut
71-43-2	Benzene	0.0E+00	0.00E+00	0.0E+00	0.0E+00	7.80E-06	I	3.00E-02	I	
100-44-7	Benzyl Chloride		--	--	--	4.90E-05	CA	1.00E-03	P	
92-52-4	Biphenyl, 1,1'-		--	--	--			4.00E-04	X	
111-44-4	Bis(2-chloroethyl)ether		--	--	--	3.30E-04	I			
542-88-1	Bis(chloromethyl)ether		--	--	--	6.20E-02	I			
10294-34-5	Boron Trichloride		--	--	--			2.00E-02	P	
7637-07-2	Boron Trifluoride		--	--	--			1.30E-02	CA	
107-04-0	Bromo-2-chloroethane, 1-		--	--	--	6.00E-04	X			
108-86-1	Bromobenzene		--	--	--			6.00E-02	I	
74-97-5	Bromochloromethane		--	--	--			4.00E-02	X	
75-27-4	Bromodichloromethane		--	--	--	3.70E-05	CA			
75-25-2	Bromoform		--	--	--	1.10E-06	I			
74-83-9	Bromomethane		--	--	--			5.00E-03	I	
106-99-0	Butadiene, 1,3-	0.0E+00	0.00E+00	0.0E+00	0.0E+00	3.00E-05	I	2.00E-03	I	
78-92-2	Butyl alcohol, sec-		--	--	--			3.00E+01	P	
75-15-0	Carbon Disulfide	0.0E+00	0.00E+00	No IUR	0.0E+00			7.00E-01	I	
56-23-5	Carbon Tetrachloride	2.6E+02	7.80E+00	**3.8E-06**	1.8E-02	6.00E-06	I	1.00E-01	I	
463-58-1	Carbonyl Sulfide		--	--	--			1.00E-01	P	
12789-03-6	Chlordane		--	--	--	1.00E-04	I	7.00E-04	I	
7782-50-5	Chlorine		--	--	--			1.50E-04	A	
10049-04-4	Chlorine Dioxide		--	--	--			2.00E-04	I	
75-68-3	Chloro-1,1-difluoroethane, 1-		--	--	--			5.00E+01	I	
126-99-8	Chloro-1,3-butadiene, 2-		--	--	--	3.00E-04	I	2.00E-02	I	
108-90-7	Chlorobenzene		--	--	--			5.00E-02	P	
98-56-6	Chlorobenzotrifluoride, 4-		--	--	--			3.00E-01	P	
75-45-6	Chlorodifluoromethane		--	--	--			5.00E+01	I	
67-66-3	Chloroform	9.8E+01	2.94E+00	**5.5E-06**	6.8E-03	2.30E-05	I	9.80E-02	A	
74-87-3	Chloromethane	0.0E+00	0.00E+00	No IUR	0.0E+00			9.00E-02	I	
107-30-2	Chloromethyl Methyl Ether		--	--	--	6.90E-04	CA			
76-06-2	Chloropicrin		--	--	--			4.00E-04	CA	
8007-45-2	Coke Oven Emissions		--	--	--	6.20E-04	I			Mut
98-82-8	Cumene		--	--	--			4.00E-01	I	
57-12-5	Cyanide (CN-)		--	--	--			8.00E-04	S	
110-82-7	Cyclohexane	8.2E+02	2.46E+01	No IUR	9.4E-04			6.00E+00	I	
108-94-1	Cyclohexanone		--	--	--			7.00E-01	P	
110-83-8	Cyclohexene		--	--	--			1.00E+00	X	
72-55-9	DDE, p,p'-		--	--	--	9.70E-05	CA			
96-12-8	Dibromo-3-chloropropane, 1,2-		--	--	--	6.00E-03	P	2.00E-04	I	Mut
106-93-4	Dibromoethane, 1,2-		--	--	--	6.00E-04	I	9.00E-03	I	
74-95-3	Dibromomethane (Methylene Bromide)		--	--	--			4.00E-03	X	
764-41-0	Dichloro-2-butene, 1,4-		--	--	--	4.20E-03	P			
1476-11-5	Dichloro-2-butene, cis-1,4-		--	--	--	4.20E-03	P			
110-57-6	Dichloro-2-butene, trans-1,4-		--	--	--	4.20E-03	P			
95-50-1	Dichlorobenzene, 1,2-		--	--	--			2.00E-01	H	
106-46-7	Dichlorobenzene, 1,4-		--	--	--	1.10E-05	CA	8.00E-01	I	
75-71-8	Dichlorodifluoromethane	0.0E+00	0.00E+00	No IUR	0.0E+00			1.00E-01	X	
75-34-3	Dichloroethane, 1,1-	1.4E+02	4.20E+00	5.5E-07	No RfC	1.60E-06	CA			
107-06-2	Dichloroethane, 1,2-	0.0E+00	0.00E+00	0.0E+00	0.0E+00	2.60E-05	I	7.00E-03	P	
75-35-4	Dichloroethylene, 1,1-	1.2E+03	3.60E+01	No IUR	4.1E-02			2.00E-01	I	
78-87-5	Dichloropropane, 1,2-		--	--	--	1.00E-05	CA	4.00E-03	I	
542-75-6	Dichloropropene, 1,3-		--	--	--	4.00E-06	I	2.00E-02	I	
77-73-6	Dicyclopentadiene		--	--	--			3.00E-04	X	
75-37-6	Difluoroethane, 1,1-		--	--	--			4.00E+01	I	
94-58-6	Dihydrosafrole		--	--	--	1.30E-05	CA			
108-20-3	Diisopropyl Ether		--	--	--			7.00E-01	P	
68-12-2	Dimethylformamide		--	--	--			3.00E-02	I	
57-14-7	Dimethylhydrazine, 1,1-		--	--	--			2.00E-06	X	
540-73-8	Dimethylhydrazine, 1,2-		--	--	--	1.60E-01	CA			
513-37-1	Dimethylvinylchloride		--	--	--	1.30E-05	CA			
123-91-1	Dioxane, 1,4-		--	--	--	5.00E-06	I	3.00E-02	I	
106-89-8	Epichlorohydrin		--	--	--	1.20E-06	I	1.00E-03	I	
106-88-7	Epoxybutane, 1,2-		--	--	--			2.00E-02	I	
111-15-9	Ethoxyethanol Acetate, 2-		--	--	--			6.00E-02	P	
110-80-5	Ethoxyethanol, 2-		--	--	--			2.00E-01	I	
141-78-6	Ethyl Acetate		--	--	--			7.00E-02	P	
140-88-5	Ethyl Acrylate		--	--	--			8.00E-03	P	
75-00-3	Ethyl Chloride (Chloroethane)	0.0E+00	0.00E+00	No IUR	0.0E+00			1.00E+01	I	
97-63-2	Ethyl Methacrylate		--	--	--			3.00E-01	P	
100-41-4	Ethylbenzene	0.0E+00	0.00E+00	0.0E+00	0.0E+00	2.50E-06	CA	1.00E+00	I	
75-21-8	Ethylene Oxide		--	--	--	8.80E-05	CA	3.00E-02	CA	
151-56-4	Ethyleneimine		--	--	--	1.90E-02	CA			
50-00-0	Formaldehyde		--	--	--	1.30E-05	I	9.80E-03	A	
64-18-6	Formic Acid		--	--	--			3.00E-04	X	
98-01-1	Furfural		--	--	--			5.00E-02	H	
765-34-4	Glycidyl		--	--	--			1.00E-03	H	
76-44-8	Heptachlor		--	--	--	1.30E-03	I			
1024-57-3	Heptachlor Epoxide		--	--	--	2.60E-03	I			
39635-31-9	Heptachlorobiphenyl, 2,3,3',4,4',5,5'- (PCB 189)		--	--	--	1.10E-03	E	1.30E-03	E	
118-74-1	Hexachlorobenzene		--	--	--	4.60E-04	I			

EPA-OLEM VAPOR INTRUSION ASSESSMENT

Sub-slab or Exterior Soil Gas Concentration to Indoor Air Concentration (SGC-IAC) Calculator Version 3.5.1 (May 2016 RSLs)

Parameter	Symbol	Value	Instructions
Exposure Scenario	Scenario	Commercial	Select residential or commercial scenario from pull down list
Target Risk for Carcinogens	TCR_SG	1.00E-06	Enter target risk for carcinogens (for comparison to the calculated VI carcinogenic risk in column F)
Target Hazard Quotient for Non-Carcinogens	THQ_SG	0.1	Enter target hazard quotient for non-carcinogens (for comparison to the calculated VI hazard in column G)

CAS	Chemical Name	Site Sub-slab or Exterior Soil Gas Concentration Csg (ug/m^3)	Calculated Indoor Air Concentration Cia (ug/m^3)	VI Carcinogenic Risk CR	VI Hazard HQ	Inhalation Unit Risk IUR (ug/m^3)$^{-1}$	IUR Source*	Reference Concentration RfC (mg/m^3)	RFC Source*	Mutagenic Indicator i
38380-08-4	Hexachlorobiphenyl, 2,3,3',4,4',5- (PCB 156)		--	--	--	1.10E-03	E	1.30E-03	E	
69782-90-7	Hexachlorobiphenyl, 2,3,3',4,4',5'- (PCB 157)		--	--	--	1.10E-03	E	1.30E-03	E	
52663-72-6	Hexachlorobiphenyl, 2,3',4,4',5,5'- (PCB 167)		--	--	--	1.10E-03	E	1.30E-03	E	
32774-16-6	Hexachlorobiphenyl, 3,3',4,4',5,5'- (PCB 169)		--	--	--	1.10E+00	E	1.30E-06	E	
87-68-3	Hexachlorobutadiene		--	--	--	2.20E-05	I			
77-47-4	Hexachlorocyclopentadiene		--	--	--			2.00E-04	I	
67-72-1	Hexachloroethane		--	--	--	1.10E-05	CA	3.00E-02	I	
822-06-0	Hexamethylene Diisocyanate, 1,6-		--	--	--			1.00E-05	I	
110-54-3	Hexane, N-	1.5E+02	4.50E+00	No IUR	1.5E-03			7.00E-01	I	
591-78-6	Hexanone, 2-		--	--	--			3.00E-02	I	
302-01-2	Hydrazine		--	--	--	4.90E-03	I	3.00E-05	P	
7647-01-0	Hydrogen Chloride		--	--	--			2.00E-02	I	
74-90-8	Hydrogen Cyanide		--	--	--			8.00E-04	I	
7664-39-3	Hydrogen Fluoride		--	--	--			1.40E-02	CA	
7783-06-4	Hydrogen Sulfide		--	--	--			2.00E-03	I	
67-63-0	Isopropanol	0.0E+00	0.00E+00	No IUR	0.0E+00			2.00E-01	P	
7439-97-6	Mercury (elemental)		--	--	--			3.00E-04	I	
126-98-7	Methacrylonitrile		--	--	--			3.00E-02	P	
67-56-1	Methanol		--	--	--			2.00E+01	I	
110-49-6	Methoxyethanol Acetate, 2-		--	--	--			1.00E-03	P	
109-86-4	Methoxyethanol, 2-		--	--	--			2.00E-02	I	
96-33-3	Methyl Acrylate		--	--	--			2.00E-02	P	
78-93-3	Methyl Ethyl Ketone (2-Butanone)	0.0E+00	0.00E+00	No IUR	0.0E+00			5.00E+00	I	
60-34-4	Methyl Hydrazine		--	--	--	1.00E-03	X	2.00E-05	X	
108-10-1	Methyl Isobutyl Ketone (4-methyl-2-pentanone)	0.0E+00	0.00E+00	No IUR	0.0E+00			3.00E+00	I	
624-83-9	Methyl Isocyanate		--	--	--			1.00E-03	CA	
80-62-6	Methyl Methacrylate		--	--	--			7.00E-01	I	
25013-15-4	Methyl Styrene (Mixed Isomers)		--	--	--			4.00E-02	H	
1634-04-4	Methyl tert-Butyl Ether (MTBE)		--	--	--	2.60E-07	CA	3.00E+00	I	
75-09-2	Methylene Chloride		--	--	--	1.00E-08	I	6.00E-01	I	Mut
2385-85-5	Mirex		--	--	--	5.10E-03	CA			
64742-95-6	Naphtha, High Flash Aromatic (HFAN)		--	--	--			1.00E-01	P	
91-20-3	Naphthalene		--	--	--	3.40E-05	CA	3.00E-03	I	
13463-39-3	Nickel Carbonyl		--	--	--	2.60E-04	CA	1.40E-05	CA	
98-95-3	Nitrobenzene		--	--	--	4.00E-05	I	9.00E-03	I	
75-52-5	Nitromethane		--	--	--	8.80E-06	P	5.00E-03	P	
79-46-9	Nitropropane, 2-		--	--	--	2.70E-03	H	2.00E-02	I	
62-75-9	Nitrosodimethylamine, N-		--	--	--	1.40E-02	I	4.00E-05	X	Mut
924-16-3	Nitroso-di-N-butylamine, N-		--	--	--	1.60E-03	I			
10595-95-6	Nitrosomethylethylamine, N-		--	--	--	6.30E-03	CA			
111-84-2	Nonane, n-		--	--	--			2.00E-02	P	
32598-14-4	Pentachlorobiphenyl, 2,3,3',4,4'- (PCB 105)		--	--	--	1.10E-03	E	1.30E-03	E	
74472-37-0	Pentachlorobiphenyl, 2,3,4,4',5- (PCB 114)		--	--	--	1.10E-03	E	1.30E-03	E	
31508-00-6	Pentachlorobiphenyl, 2,3',4,4',5- (PCB 118)		--	--	--	1.10E-03	E	1.30E-03	E	
65510-44-3	Pentachlorobiphenyl, 2',3,4,4',5- (PCB 123)		--	--	--	1.10E-03	E	1.30E-03	E	
57465-28-8	Pentachlorobiphenyl, 3,3',4,4',5- (PCB 126)		--	--	--	3.80E+00	E	4.00E-07	E	
109-66-0	Pentane, n-		--	--	--			1.00E+00	P	
75-44-5	Phosgene		--	--	--			3.00E-04	I	
7803-51-2	Phosphine		--	--	--			3.00E-04	I	
123-38-6	Propionaldehyde		--	--	--			8.00E-03	I	
103-65-1	Propyl benzene		--	--	--			1.00E+00	X	
115-07-1	Propylene		--	--	--			3.00E+00	CA	
107-98-2	Propylene Glycol Monomethyl Ether		--	--	--			2.00E+00	I	
75-56-9	Propylene Oxide		--	--	--	3.70E-06	I	3.00E-02	I	
100-42-5	Styrene		--	--	--			1.00E+00	I	
7446-11-9	Sulfur Trioxide		--	--	--			1.00E-03	CA	
1746-01-6	TCDD, 2,3,7,8-		--	--	--	3.80E+01	CA	4.00E-08	CA	
70362-50-4	Tetrachlorobiphenyl, 3,4,4',5- (PCB 81)		--	--	--	1.10E-02	E	1.30E-04	E	
630-20-6	Tetrachloroethane, 1,1,1,2-		--	--	--	7.40E-06	I			
79-34-5	Tetrachloroethane, 1,1,2,2-		--	--	--	5.80E-05	CA			
127-18-4	Tetrachloroethylene	0.0E+00	0.00E+00	0.0E+00	0.0E+00	2.60E-07	I	4.00E-02	I	
811-97-2	Tetrafluoroethane, 1,1,1,2-		--	--	--			8.00E+01	I	
109-99-9	Tetrahydrofuran		--	--	--			2.00E+00	I	
7550-45-0	Titanium Tetrachloride		--	--	--			1.00E-04	A	
108-88-3	Toluene	0.0E+00	0.00E+00	No IUR	0.0E+00			5.00E+00	I	
584-84-9	Toluene-2,4-diisocyanate		--	--	--	1.10E-05	CA	8.00E-06	CA	
91-08-7	Toluene-2,6-diisocyanate		--	--	--	1.10E-05	CA	8.00E-06	CA	
76-13-1	Trichloro-1,2,2-trifluoroethane, 1,1,2-	0.0E+00	0.00E+00	No IUR	0.0E+00			3.00E+01	H	
120-82-1	Trichlorobenzene, 1,2,4-		--	--	--			2.00E-03	P	
71-55-6	Trichloroethane, 1,1,1-	1.7E+04	5.10E+02	No IUR	2.3E-02			5.00E+00	I	
79-00-5	Trichloroethane, 1,1,2-		--	--	--	1.60E-05	I	2.00E-04	X	
79-01-6	Trichloroethylene	4.9E+02	1.47E+01	**4.9E-06**	**1.7E+00**	see note	I	2.00E-03	I	TCE
96-18-4	Trichloropropane, 1,2,3-		--	--	--			3.00E-04	I	Mut
96-19-5	Trichloropropene, 1,2,3-		--	--	--			3.00E-04	P	
121-44-8	Triethylamine		--	--	--			7.00E-03	I	
420-46-2	Trifluoroethane, 1,1,1-		--	--	--			2.00E+01	P	
526-73-8	Trimethylbenzene, 1,2,3-		--	--	--			5.00E-03	P	
95-63-6	Trimethylbenzene, 1,2,4-		--	--	--			7.00E-03	P	
126-72-7	Tris(2,3-dibromopropyl)phosphate		--	--	--	6.60E-04	CA			
108-05-4	Vinyl Acetate		--	--	--			2.00E-01	I	
593-60-2	Vinyl Bromide		--	--	--	3.20E-05	H	3.00E-03	I	
75-01-4	Vinyl Chloride	0.0E+00	0.00E+00	0.0E+00	0.0E+00	4.40E-06	I	1.00E-01	I	VC
108-38-3	Xylene, m-	0.0E+00	0.00E+00	No IUR	0.0E+00			1.00E-01	S	
95-47-6	Xylene, o-	0.0E+00	0.00E+00	No IUR	0.0E+00			1.00E-01	S	
106-42-3	Xylene, P-	0.0E+00	0.00E+00	No IUR	0.0E+00			1.00E-01	S	
1330-20-7	Xylenes		--	--	--			1.00E-01	I	

Notes:

(1)	**Inhalation Pathway Exposure Parameters (RME):**	Units	Residential		Commercial		Selected (based on scenario)	
	Exposure Scenario		**Symbol**	**Value**	**Symbol**	**Value**	**Symbol**	**Value**
	Averaging time for carcinogens	(yrs)	ATc_R_SG	70	ATc_C_SG	70	ATc_SG	70
	Averaging time for non-carcinogens	(yrs)	ATnc_R_SG	26	ATnc_C_SG	25	ATnc_SG	25
	Exposure duration	(yrs)	ED_R_SG	26	ED_C_SG	25	ED_SG	25
	Exposure frequency	(days/yr)	EF_R_SG	350	EF_C_SG	250	EF_SG	250
	Exposure time	(hr/day)	ET_R_SG	24	ET_C_SG	8	ET_SG	8

EPA-OLEM VAPOR INTRUSION ASSESSMENT

Sub-slab or Exterior Soil Gas Concentration to Indoor Air Concentration (SGC-IAC) Calculator Version 3.5.1 (May 2016 RSLs)

Parameter	Symbol	Value	Instructions
Exposure Scenario	Scenario	Commercial	Select residential or commercial scenario from pull down list
Target Risk for Carcinogens	TCR_SG	1.00E-06	Enter target risk for carcinogens (for comparison to the calculated VI carcinogenic risk in column F)
Target Hazard Quotient for Non-Carcinogens	THQ_SG	0.1	Enter target hazard quotient for non-carcinogens (for comparison to the calculated VI hazard in column G)

CAS	Chemical Name	Site Sub-slab or Exterior Soil Gas Concentration Csg (ug/m^3)	Calculated Indoor Air Concentration Cia (ug/m^3)	VI Carcinogenic Risk CR	VI Hazard HQ	Inhalation Unit Risk IUR (ug/m^3)$^{-1}$	IUR Source*	Reference Concentration RfC (mg/m^3)	RFC Source*	Mutagenic Indicator i

(2) **Generic Attenuation Factors:**

Source Medium of Vapors		Residential Symbol	Residential Value	Commercial Symbol	Commercial Value	Selected (based on scenario) Symbol	Selected (based on scenario) Value
Groundwater	(-)	AFgw_R_SG	0.001	AFgw_C_SG	0.001	AFgw_SG	0.001
Sub-Slab and Exterior Soil Gas	(-)	AFss_R_SG	0.03	AFss_C_SG	0.03	AFss_SG	0.03

(3) **Formulas**

Cia, target = MIN(Cia,c; Cia,nc)

Cia,c (ug/m3) = TCR x ATc x (365 days/yr) x (24 hrs/day) / (ED x EF x ET x IUR)

Cia,nc (ug/m3) = THQ x ATnc x (365 days/yr) x (24 hrs/day) x RfC x (1000 ug/mg) / (ED x EF x ET)

(4) **Special Case Chemicals**

	Residential Symbol	Residential Value	Commercial Symbol	Commercial Value	Selected (based on scenario) Symbol	Selected (based on scenario) Value
Trichloroethylene						
	mIURTCE_R_SG	1.00E-06	nIURTCE_C_SG	0.00E+00	mIURTCE_SG	0.00E+00
	IURTCE_R_SG	3.10E-06	IURTCE_C_SG	4.10E-06	IURTCE_SG	4.10E-06

Mutagenic Chemicals — The exposure durations and age-dependent adjustment factors for mutagenic-mode-of-action are listed in the table below:

Note: This section applies to trichloroethylene and other mutagenic chemicals, but not to vinyl chloride.

Age Cohort	Exposure Duration	Age-dependent adjustment factor
0 - 2 years	2	10
2 - 6 years	4	3
6 - 16 years	10	3
16 - 26 years	10	1

Mutagenic-mode-of-action (MMOA) adjustment factor 25 — This factor is used in the equations for mutagenic chemicals.

Vinyl Chloride — See the Navigation Guide equation for Cia,c for vinyl chloride.

Notation:

I = IRIS: EPA Integrated Risk Information System (IRIS). Available online at: http://www.epa.gov/iris/subst/index.html

P = PPRTV. EPA Provisional Peer Reviewed Toxicity Values (PPRTVs). Available online at: http://hhpprtv.ornl.gov/pprtv.shtml

A = Agency for Toxic Substances and Disease Registry (ATSDR) Minimum Risk Levels (MRLs). Available online at: http://www.atsdr.cdc.gov/mrls/index.html

CA = California Environmental Protection Agency/Office of Environmental Health Hazard Assessment assessments. Available online at: http://www.oehha.ca.gov/risk/ChemicalDB/index.asp

H = HEAST. EPA Superfund Health Effects Assessment Summary Tables (HEAST) database. Available online at: http://epa-heast.ornl.gov/heast.shtml

S = See RSL User Guide, Section 5

X = PPRTV Appendix

Mut = Chemical acts according to the mutagenic-mode-of-action, special exposure parameters apply (see footnote (4) above).

VC = Special exposure equation for vinyl chloride applies (see Navigation Guide for equation).

TCE = Special mutagenic and non-mutagenic IURs for trichloroethylene apply (see footnote (4) above).

Yellow highlighting indicates site-specific parameters that may be edited by the user.

Blue highlighting indicates exposure factors that are based on Risk Assessment Guidance for Superfund (RAGS) or EPA vapor intrusion guidance, which generally should not be changed.

Pink highlighting indicates VI carcinogenic risk greater than the target risk for carcinogens (TCR) or VI Hazard greater than or equal to the target hazard quotient for non-carcinogens (THQ).