Honeywell
301 Plainfield Road
Suite 330
Syracuse, NY 13212
315-552-9700
315-552-9780 Fax

October 8, 2015

Mr. Tim Larson
NYSDEC
Division of Environmental Remediation
Remedial Bureau D
625 Broadway, 12th Floor
Albany, NY 12233-7016

RE: Onondaga Lake Remedial Site – Onondaga County, NY
Modified Protective Cap Areas RA-C-1 and RA-D-1 Mean PECQ Investigation Results

Dear Mr. Larson:

This letter report presents chemical characterization results for surface sediment samples collected from small areas within Remediation Area D (RA-D), as well as from areas in Sediment Management Unit 8 (SMU 8) adjacent to RA-C and RA-D. Movement of the cap material and underlying and adjacent sediment in these small areas following cap placement necessitate development of a revised remedial approach for these areas. The sampling was conducted to better understand existing conditions in order to redefine the remedial extent and develop a revised remedial approach that will be protective consistent with the intent of the Record of Decision and Remedial Design for the Onondaga Lake remedy. This will include modified protective caps in movement areas where a chemical isolation cap was included in the Final Design, and thin layer caps in those areas exceeding the design criteria in SMU 8 based on the new surface sampling results. Sampling was completed consistent with work plans approved by the New York State Department of Environmental Conservation (NYSDEC).

Additional geotechnical data was also collected from these areas. Results from the geotechnical investigations will be provided to NYSDEC in a separate report. The results from the chemical and geotechnical investigations will be used to develop the revised remedial approach for these areas, which will be detailed in subsequent submittals to NYSDEC.

INTRODUCTION AND BACKGROUND

For a capping project of the scale of Onondaga Lake Remediation, it is not unusual to expect previously unforeseen field conditions in small areas that may warrant adjustments to the cap system to achieve the remedial goals for the project. Sediment capping operations have been underway in Onondaga Lake since August 21, 2012. During capping in RA-C, movement of a small area of the cap and underlying sediment was observed on September 5, 2012 east of the Department of Transportation (DOT) turnaround area. Movement of the sediments in a small adjacent area in

SMU-8 was also observed. Capping operations were subsequently revised to significantly reduce the likelihood of cap movement. In early November of 2014, movement of the sediment cap and underlying sediments within and adjacent to a small portion of RA-D was observed shortly following completion of cap placement within RA-D. The areas where modified protective caps are being developed to address this movement are shown in Figure 1 and are referred to as modified protective cap areas RA-C-1 and RA-D-1. The combined total area of cap movement in RA-C and RA-D is approximately 6.5 acres, which represents approximately 1.4% of the total capping area under the lake remediation program. Subsequent analysis indicates that these localized areas of movement resulted from underlying sediments that were softer than previously identified during the pre-design investigation.

Surface sediment investigations were completed in and adjacent to modified cap areas RA-C-1 and RA-D-1 to assess surface sediment chemical concentrations and to assist with development of the revised remedial approach for these two areas that will be protective consistent with the intent of the Record of Decision and Remedial Design for the Onondaga Lake remedy. Details of the sampling and results from these investigations are discussed below.

FIELD INVESTIGATION AND RESULTS

As shown on Figures 2 and 3, sediment cores were collected from 5 locations in SMU 8 adjacent to modified cap area RA-C-1, and from 16 locations within modified cap area RA-D-1 and the adjacent SMU-8 area. A gravity corer, used successfully since 2009 for SMU 8 sediment sampling, was used to collect sediment samples during both sampling efforts. Corer penetration at each sample location targeted a depth of at least 9 inches below the top of sediment. Once collected, cores were capped on both ends and stored vertically on the boat and in a cooler with ice. Sediment samples were collected from 0 to 4 centimeters (cm) within the collected cores and from 4 to 15 cm by extruding the appropriate sample intervals from the core tubing. Sample logs for RA-D samples are included in Appendix A. Sediment descriptions were not recorded during the RA-C sampling event.

Samples were analyzed for the constituents used to quantify the Mean Probable Effects Concentration Quotient (Mean PECQ): total mercury, ethylbenzene, xylenes, certain chlorinated benzenes, polynuclear aromatic hydrocarbons (PAHs), total polychlorinated biphenyls (PCBs) based on aroclors, and total organic carbon (TOC) using standard United States Environmental Protection Agency (USEPA) methods and the Lloyd-Kahn procedure for TOC. The mean PECQ was calculated for each sample interval and results are presented in Tables 1 and 2.

As detailed in the Final Design, the sediment compliance depth for the Mean PECQ used for determining the extent of remedial action in SMU 8 is 4 cm, consistent with the SMU 8 mercury PEC compliance depth. Sample locations where the Mean PECQ of 1 is exceeded in the 0 to 4 cm sampling interval are shown in Figures 2 and 3.

As shown in Figure 2, three of five surface samples exceeded a Mean PECQ of 1 in SMU 8 adjacent to MPC-C-1. The area of sediment movement as determined based on post-movement bathymetry measurements will conservatively be used to delineate the revised remedial extent.

A Mean PECQ of 1 was exceeded in 9 of 16 surface samples within and adjacent to MPC-D-1. This data was used in combination with the post-movement bathymetry measurements to delineate the revised remedial extent as shown in Figure 3. Data from deeper sampling intervals were used in the Final Design to determine whether a thin layer cap or a chemical isolation cap would be required in the portion of SMU-8 adjacent to the ILWD. Similarly, data from the 4 to 15 cm depth interval will be considered in future submittals related to developing the modified protective cap area and design in this area.

A USEPA Level IV data validation was conducted on 10 percent of the chemical samples (i.e., full data validation) and a USEPA Level III data validation was conducted on the remaining 90 percent of the samples, as described in the Data Usability Summary Reports (DUSRs), which are provided in Appendix B. This data will be used in subsequent submittals to NYSDEC to develop a revised remedial approach for these two small areas that will be protective consistent with the intent of the Record of Decision and Remedial Design for the Onondaga Lake remedy.

Sincerely,

John P. McAuliffe

John P. McAuliffe, P.E.
Program Director, Syracuse

cc: Edward Glaza, Parsons

TABLES

Table 1
Modified Protective Cap Area RA-C-1
Surface Sampling Results

Location ID	Field Sample ID	Depth Interval (cm)	mean pecq	mercury (mg/kg)	
OL-VC-80224	OL-2221-01	0 to 4	0.90	1.5	J
OL-VC-80224	OL-2221-02	4 to 15	7.21	1.1	J
OL-VC-80225	OL-2221-03	0 to 4	1.79	1.4	J
OL-VC-80225	OL-2221-04	4 to 15	38.47	1.9	J
OL-VC-80226	OL-2221-05	0 to 4	3.09	1.7	J
OL-VC-80226	OL-2221-06	4 to 15	4.13	1.5	J
OL-VC-80227	OL-2221-07	0 to 4	2.34	3.4	J
OL-VC-80227	OL-2221-08	4 to 15	0.82	1.8	J
OL-VC-80228	OL-2221-09	0 to 4	0.56	1.4	J
OL-VC-80228	OL-2221-10	4 to 15	0.86	2.6	J
OL-VC-80226	OL-2221-11	4 to 15	2.43	1.8	J

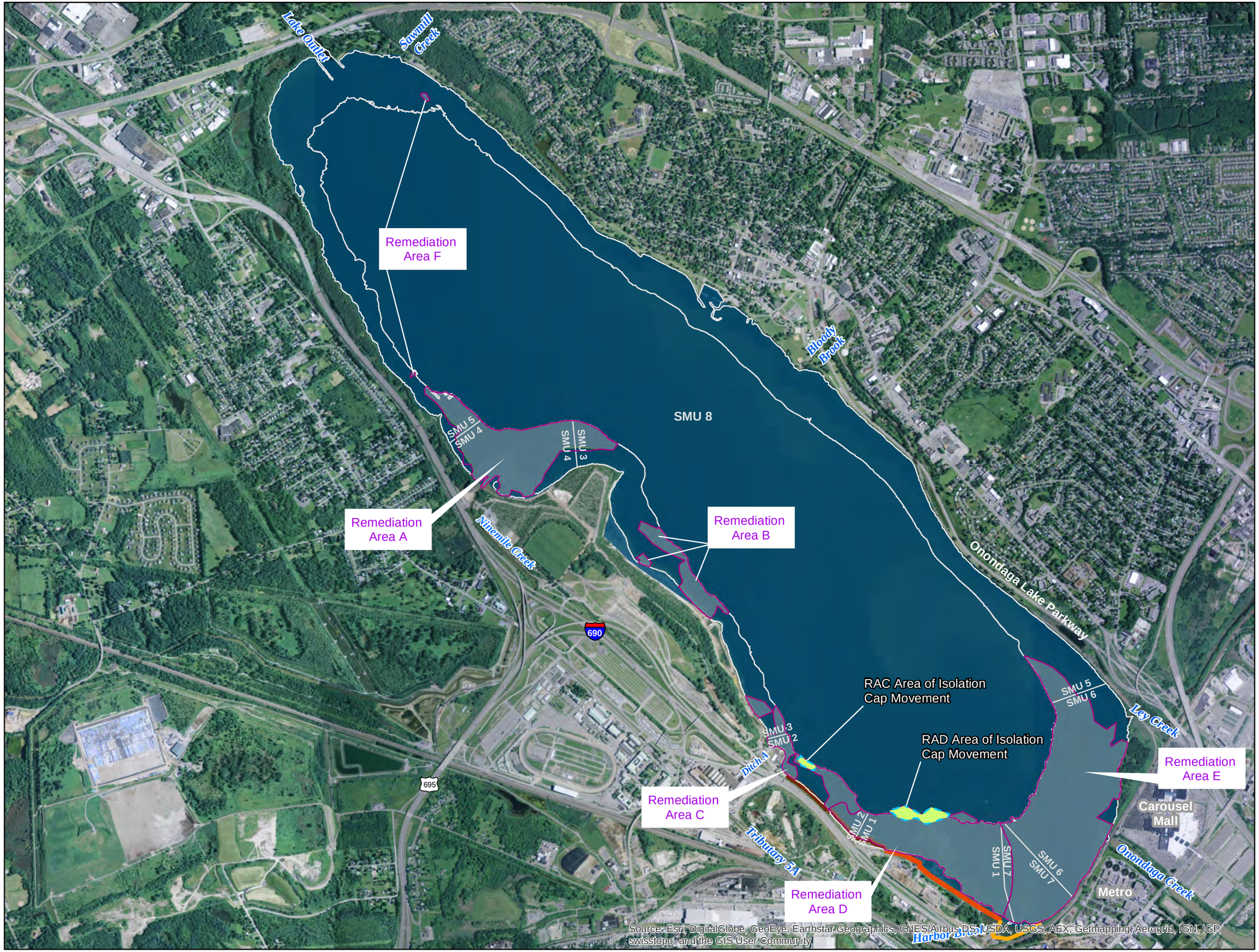
Notes:

1. Sediment samples were not analyzed for 1,3,5-trichlorobenzene. The maximum historical 1,3,5-trichlorobenzene concentration in RA-C sediment samples is 30 ug/kg, which is significantly below the PEC for this compound. Therefore, exclusion of this compound from the Mean PECQ calculation is conservative.

Table 2
Modified Cap Area RA-D-1
Surface Sampling Results

Location ID	Field Sample ID	Depth Interval (cm)	mean pecq	mercury (mg/kg)	
OL-RAD-VC-001	OL-2230-01	0 to 4	0.33	1.4	J
OL-RAD-VC-001	OL-2230-02	4 to 15	0.33	2	J
OL-RAD-VC-001	OL-2230-03	4 to 15	0.26	1.4	J
OL-RAD-VC-002	OL-2230-04	0 to 4	0.28	1.6	J
OL-RAD-VC-002	OL-2230-05	4 to 15	3.78	3.8	J
OL-RAD-VC-003	OL-2230-06	0 to 4	0.15	0.67	
OL-RAD-VC-003	OL-2230-07	4 to 15	0.40	1.9	J
OL-RAD-VC-004	OL-2230-08	0 to 4	0.31	2.1	J
OL-RAD-VC-004	OL-2230-09	4 to 15	0.51	2.4	J
OL-RAD-VC-005	OL-2230-10	0 to 4	0.13	0.65	J
OL-RAD-VC-005	OL-2230-11	4 to 15	0.30	1.2	J
OL-RAD-VC-006	OL-2230-12	0 to 4	1.76	1.7	J
OL-RAD-VC-006	OL-2230-13	4 to 15	2.30	1.3	J
OL-RAD-VC-007	OL-2230-14	0 to 4	7.03	15.3	J
OL-RAD-VC-007	OL-2230-15	4 to 15	7.34	22.5	J
OL-RAD-VC-008	OL-2230-16	0 to 4	0.54	1.7	J
OL-RAD-VC-008	OL-2230-17	4 to 15	0.44	1.9	J
OL-RAD-VC-009	OL-2231-01	0 to 4	9.26	10.1	J
OL-RAD-VC-009	OL-2231-02	4 to 15	6.11	8.5	J
OL-RAD-VC-009	OL-2231-03	4 to 15	20.53	5.1	J
OL-RAD-VC-010	OL-2231-04	0 to 4	17.42	0.27	J
OL-RAD-VC-010	OL-2231-05	4 to 15	13.81	0.34	J
OL-RAD-VC-011	OL-2231-06	0 to 4	15.34	10.5	J
OL-RAD-VC-011	OL-2231-07	4 to 15	19.88	3.2	J
OL-RAD-VC-012	OL-2231-08	0 to 4	7.16	5.9	J
OL-RAD-VC-012	OL-2231-09	4 to 15	17.19	1.6	J
OL-RAD-VC-013	OL-2231-10	0 to 4	11.22	1.2	
OL-RAD-VC-013	OL-2231-11	4 to 15	88.22	0.21	J
OL-RAD-VC-014	OL-2231-12	0 to 4	2.86	0.34	
OL-RAD-VC-014	OL-2231-13	4 to 15	16.33	1.2	J
OL-RAD-VC-015	OL-2231-14	0 to 4	93.28	2.1	J
OL-RAD-VC-015	OL-2231-15	4 to 15	130.51	0.4	J
OL-RAD-VC-016	OL-2231-16	0 to 4	0.07	0.079	
OL-RAD-VC-016	OL-2231-17	4 to 15	12.26	5.8	J

FIGURES



Remediation Area Boundary

Sediment Management Unit (SMU) Boundary

Areas with Isolation Cap

Area of Isolation Cap Movement

Willis/Semet IRM Barrier Wall

West Wall Portion of the WB-B/HB IRM

East Wall Portion of the WB-B/HB IRM

1,800 900 0 1,800

Feet

FIGURE 1

Honeywell

Onondaga Lake
Syracuse, New York

Area of Isolation Cap Movement Within RA-C and RA-D

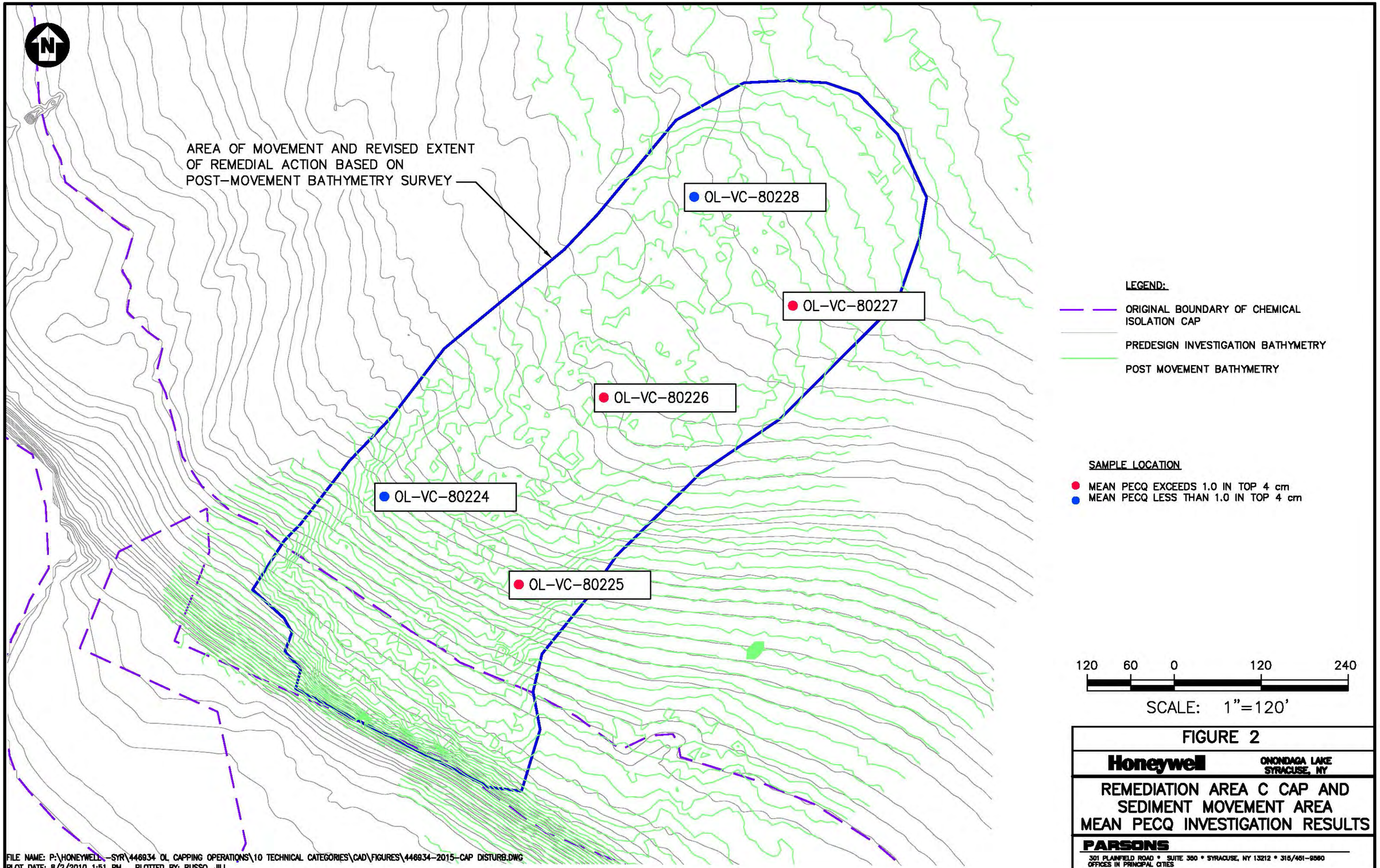
PARSONS

301 PLAINFIELD RD, SUITE 350, SYRACUSE, NY 13212

User: 40189

Date Revised: 8/27/2015 10:19:12 AM

Path: Q:\GIS\GIS_Lake\CAP\MXD\SMUs_Rem_Areas-2015.mxd


N
AREA OF MOVEMENT AND REVISED EXTENT
OF REMEDIAL ACTION BASED ON
POST-MOVEMENT BATHYMETRY SURVEY
OL-VC-80228
OL-VC-80227
OL-VC-80226
OL-VC-80224
OL-VC-80225
LEGEND:
ORIGINAL BOUNDARY OF CHEMICAL ISOLATION CAP
PREDESIGN INVESTIGATION BATHYMETRY
POST MOVEMENT BATHYMETRY
SAMPLE LOCATION
MEAN PECQ EXCEEDS 1.0 IN TOP 4 cm
MEAN PECQ LESS THAN 1.0 IN TOP 4 cm
120 60 0 120 240
SCALE: 1"=120'
FIGURE 2
Honeywell
ONONDAGA LAKE
SYRACUSE, NY
REMEDIATION AREA C CAP AND
SEDIMENT MOVEMENT AREA
MEAN PECQ INVESTIGATION RESULTS
PARSONS
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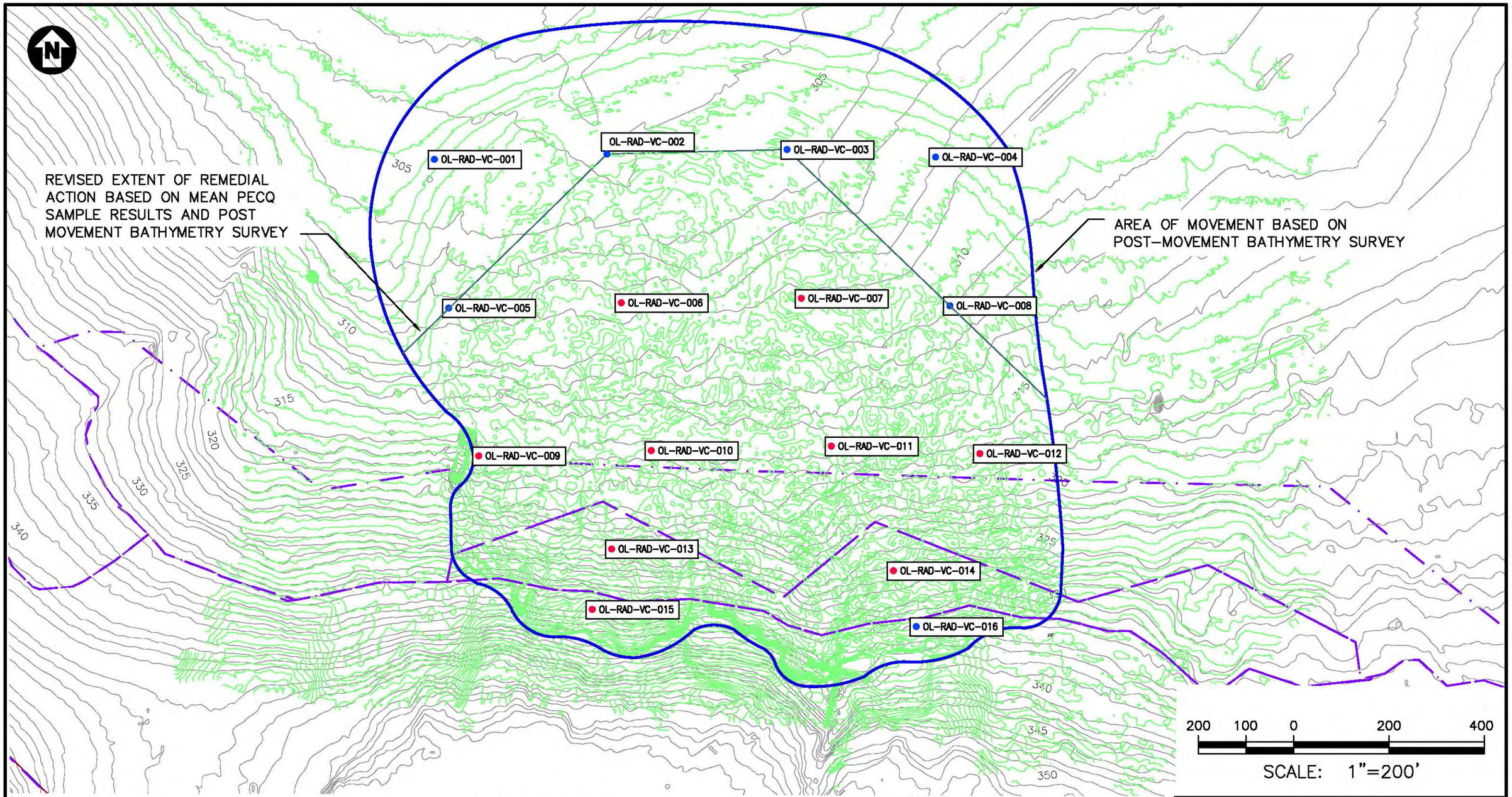
OFFICES IN PRINCIPAL CITIES
FILE NAME: P:\HONEYWELL -SYR\446934 OL CAPPING OPERATIONS\10 TECHNICAL CATEGORIES\CAD\FIGURES\446934-2015-CAP DISTURB.DWG
PLOT DATE: 8/2/2010 1:51 PM PLOTTED BY: RUSSO, JILL



SAMPLE LOCATION

- MEAN PECQ EXCEEDS 1.0 IN TOP 4 cm
- MEAN PECQ LESS THAN 1.0 IN TOP 4 cm

LEGEND:

- ORIGINAL CAPPED AREA BOUNDARY
- PREDESIGN INVESTIGATION BATHYMETRY
- POST MOVEMENT BATHYMETRY
- AREA OF MEAN PECQ EXCEEDANCE OF 1
- ORIGINAL THIN LAYER CAP AREA

FIGURE 3

Honeywell

ONONDAGA LAKE
SYRACUSE, NY

REMEDIATION AREA D CAP AND SEDIMENT MOVEMENT AREA MEAN PECQ INVESTIGATION RESULTS

PARSONS

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OFFICES IN PRINCIPAL CITIES

FILE NAME: P:\HONEYWELL -SYR\446934 OL CAPPING OPERATIONS\10 TECHNICAL CATEGORIES\CAD\FIGURES\446934-2015-CAP DISTURB.DWG
PLOT DATE: 8/2/2010 1:51 PM PLOTTED BY: RUSSO, JILL

APPENDIX B

DATA USABILITY SUMMARY REPORTS

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-RAD-VC-001
Date: 05/07/2015
Weather: 65 degrees F, winds 4 mph

Northing: 1119464.761
Easting: 923706.697
Mud Line: 307.2 FT
Surface Water Depth: 55.3 FT

Drilling Company: Atlantic Testing
Logging Company: PARSONS
Geologist: Andrew Kowalczk
Penetration Depth: 0.5 Core Recovery Depth: 0.5

Water Elev: NA
Attempts: 1
Depth Units: Ft

Depth Ft	Recov %	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0	100	OL-2230-01		ML	wet, dark brown, soft, SILT	Vibracore	SILT
	100	OL-2230-02		ML	wet, dark brown, soft, SILT	Vibracore	SILT
0.5							

Note: Null fields indicate reading not taken.

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-RAD-VC-002
Date: 05/07/2015
Weather: 66 degrees F, winds 4 mph

Northing: 1119470.564	Drilling Company: Atlantic Testing	Water Elev: NA
Easting: 924071.469	Logging Company: PARSONS	Attempts: 1
Mud Line: 308 FT	Geologist: Andrew Kowalczk	Depth Units: Ft
Surface Water Depth: 54.5 FT	Penetration Depth: 0.5 Core Recovery Depth: 0.5	

Depth Ft	Recov %	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0	100	OL-[illegible]-04		ML	wet, soft, medium-dark brown,SILT	Vibracore	SILT
	100	OL-[illegible]-05		ML	wet, dark brown, soft, SILT	Vibracore	SILT
0.5							

Note: Null fields indicate reading not taken.

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-RAD-VC-003
Date: 05/07/2015
Weather: 66 degrees F, winds 4 mph

Northing: 1119481.583
Easting: 924444.372
Mud Line: 309 FT
Surface Water Depth: 53.5 FT

Drilling Company: Atlantic Testing
Logging Company: PARSONS
Geologist: Andrew Kowalczk
Penetration Depth: 0.5 Core Recovery Depth: 0.5

Water Elev: NA
Attempts: 1
Depth Units: Ft

Depth Ft	Recov %	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0	100	OL-[illegible]-06		ML	wet, soft, medium-dark brown, SILT	Vibracore	SILT
	100	OL-[illegible]-07		ML	wet, soft, medium-dark brown, SILT	Vibracore	SILT
0.5							

Note: Null fields indicate reading not taken.

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-RAD-VC-004
Date: 05/07/2015
Weather: 66 degrees F, winds 4 mph

Northing: 1119465.88
Easting: 924767.672
Mud Line: 310.8 FT
Surface Water Depth: 51.7 FT

Drilling Company: Atlantic Testing
Logging Company: PARSONS
Geologist: Andrew Kowalczk
Penetration Depth: 0.5 Core Recovery Depth: 0.5

Water Elev: NA
Attempts: 1
Depth Units: Ft

Depth Ft	Recov %	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0	100	OL-[illegible]		ML	wet, soft, medium-dark brown, SILT	Vibracore	SILT
	100	OL-[illegible]		ML	wet, soft, dark brown, SILT	Vibracore	SILT
0.5							

Note: Null fields indicate reading not taken.

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-RAD-VC-005
Date: 05/07/2015
Weather: 66 degrees F, winds 4 mph

Northing: 1119147.838	Drilling Company: Atlantic Testing	Water Elev: NA
Easting: 923737.648	Logging Company: PARSONS	Attempts: 1
Mud Line: 312 FT	Geologist: Andrew Kowalczk	Depth Units: Ft
Surface Water Depth: 50.5 FT	Penetration Depth: 0.5 Core Recovery Depth: 0.5	

Depth Ft	Recov %	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0	100	OL-2230-10		ML	wet, soft, brown, SILT, trace fine sand	Vibracore	SILT
	100	OL-2230-11		ML	wet, soft, dark brown, SILT	Vibracore	SILT
0.5							

Note: Null fields indicate reading not taken.

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-RAD-VC-006
Date: 05/07/2015
Weather: 66 degrees F, winds 4 mph

Northing: 1119165.786	Drilling Company: Atlantic Testing	Water Elev: NA
Easting: 924101.917	Logging Company: PARSONS	Attempts: 1
Mud Line: 309.8 FT	Geologist: Andrew Kowalczk	Depth Units: Ft
Surface Water Depth: 52.7 FT	Penetration Depth: 0.5 Core Recovery Depth: 0.5	

Depth Ft	Recov %	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0	100	OL-0206-12		ML	wet, soft, light-medium gray, SILT, trace fine to coarse sand, strong petroleum odor	Vibracore	SILT
	100	OL-0206-13		ML	wet, soft, light-medium gray, SILT, strong petroleum odor	Vibracore	SILT
0.5							

Note: Null fields indicate reading not taken.

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-RAD-VC-007
Date: 05/07/2015
Weather: 65 degrees F, winds 4 mph

Northing: 1119171.479	Drilling Company: Atlantic Testing	Water Elev: NA
Easting: 924473.527	Logging Company: PARSONS	Attempts: 1
Mud Line: 310 FT	Geologist: Andrew Kowalczk	Depth Units: Ft
Surface Water Depth: 52.5 FT	Penetration Depth: 0.5 Core Recovery Depth: 0.5	

Depth Ft	Recov %	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0	100	OL-2223-14	0.0	ML	wet, soft, black, SILT	Vibracore	SILT
	100	OL-2223-15	0.1	ML	wet, soft, black, SILT	Vibracore	SILT
0.5							

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-RAD-VC-008
Date: 05/07/2015
Weather: 66 degrees F, winds 4 mph

Northing: 1119159.313
Easting: 924783.829
Mud Line: 313.7 FT
Surface Water Depth: 48.8 FT

Drilling Company: Atlantic Testing
Logging Company: PARSONS
Geologist: Andrew Kowalczk
Penetration Depth: 0.5 Core Recovery Depth: 0.5

Water Elev: NA
Attempts: 1
Depth Units: Ft

Depth Ft	Recov %	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0	100	OL-2230-16		ML	wet, soft, medium-dark brown, SILT, trace fine sand	Vibracore	SILT
	100	OL-2230-17		ML	wet, soft, medium-dark brown, SILT, trace fine sand	Vibracore	SILT
0.5							

Note: Null fields indicate reading not taken.

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-RAD-VC-009
Date: 05/08/2015
Weather: 71 degrees F, winds 3 mph

Northing: 1118847.183	Drilling Company: Atlantic Testing	Water Elev: NA
Easting: 924160.652	Logging Company: PARSONS	Attempts: 1
Mud Line: 316 FT	Geologist: Andrew Kowalczk	Depth Units: Ft
Surface Water Depth: 46.5 FT	Penetration Depth: 0.5 Core Recovery Depth: 0.5	

Depth Ft	Recov %	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0	100	OL-2331-01	0.4	ML	wet, soft, dark brown-black, SILT, trace medium sand, slight petroleum odor	Vibracore	SILT
	100	OL-2331-02	0.5	ML	wet, soft, dark brown-black, SILT, trace medium sand, slight petroleum odor	Vibracore	SILT
0.5							

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-RAD-VC-010
Date: 05/08/2015
Weather: 71 degrees F, winds 3 mph

Northing: 1118862.502	Drilling Company: Atlantic Testing	Water Elev: NA
Easting: 924536.943	Logging Company: PARSONS	Attempts: 1
Mud Line: 315.8 FT	Geologist: Andrew Kowalczk	Depth Units: Ft
Surface Water Depth: 45.7 FT	Penetration Depth: 0.5 Core Recovery Depth: 0.5	

Depth Ft	Recov %	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0	100	OL-0221-04	0.4	ML	wet, soft, gray, SILT-like grains, rotten odor	Vibracore	SILT
	100	OL-0221-05	0.8	SOLW	wet, soft, gray, SILT-like grains, rotten odor, trace cap material	Vibracore	SOLVAY WASTE
0.5							

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-RAD-VC-011
Date: 05/08/2015
Weather: 71 degrees F, winds 3 mph

Northing: 1118847.632	Drilling Company: Atlantic Testing	Water Elev: NA
Easting: 924866.12	Logging Company: PARSONS	Attempts: 1
Mud Line: 316 FT	Geologist: Andrew Kowalczk	Depth Units: Ft
Surface Water Depth: 46.5 FT	Penetration Depth: 0.5 Core Recovery Depth: 0.5	

Depth Ft	Recov %	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0	100	OL-0201-08	0	ML	wet, soft, dark grey, SILT, trace fine sand, trace silt-like grains, trace organic material	Vibracore	SILT
	100	OL-0201-07	3.9	SOLW	wet, soft, light green-light grey, SILT-like grains	Vibracore	SOLVAY WASTE
0.5							

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-RAD-VC-012
Date: 05/08/2015
Weather: 71 degrees F, winds 3 mph

Northing: 1118848.496	Drilling Company: Atlantic Testing	Water Elev: NA
Easting: 923801.116	Logging Company: PARSONS	Attempts: 1
Mud Line: 318 FT	Geologist: Andrew Kowalczk	Depth Units: Ft
Surface Water Depth: 44.5 FT	Penetration Depth: 0.5 Core Recovery Depth: 0.5	

Depth Ft	Recov %	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0	100	OL-2231-08	0.6	ML	wet, soft, dark brown-dark grey, SILT, trace fine sand, slight petroleum odor	Vibracore	SILT
	100	OL-2231-09	1.0	SOLW	wet, soft, light green-dark grey, SILT-like grains, trace silt, trace fine sand, mothball odor	Vibracore	SOLVAY WASTE
0.5							

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-RAD-VC-013
Date: 05/08/2015
Weather: 71 degrees F, winds 3 mph

Northing: 1118652.386
Easting: 924080.052
Mud Line: 319 FT
Surface Water Depth: 43.5 FT

Drilling Company: Atlantic Testing
Logging Company: PARSONS
Geologist: Andrew Kowalczk
Penetration Depth: 0.5
Core Recovery Depth: 0.5

Water Elev: NA
Attempts: 1
Depth Units: Ft

Depth Ft	Recov %	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0	100	OL-0221-10	0.1	ML	wet, soft, light-dark gray, SILT, some fine to coarse sand, slight methane odor	Vibracore	SILT
	100	OL-0221-11	1.7	SOLW	wet, soft, light gray, SILT-like grains, trace fine to coarse sand, methane odor	Vibracore	SOLVAY WASTE
0.5							

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-RAD-VC-014
Date: 05/08/2015
Weather: 71 degrees F, winds 3 mph

Northing: 1118602.571	Drilling Company: Atlantic Testing	Water Elev: NA
Easting: 924669.386	Logging Company: PARSONS	Attempts: 1
Mud Line: 323 FT	Geologist: Andrew Kowalczk	Depth Units: Ft
Surface Water Depth: 39.5 FT	Penetration Depth: 0.5 Core Recovery Depth: 0.5	

Depth Ft	Recov %	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0	100	OL-0221-12	1.6	SW	wet, loose, reddish-brown-gray, fine to coarse SAND, fine gravel, little silt-like grains, mothball odor	Vibracore	SAND
	100	OL-0221-13	1.6	SOLW	wet, soft, light gray-light green, SILT-like grains, mothball odor	Vibracore	SOLVAY WASTE
0.5							

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-RAD-VC-015
Date: 05/08/2015
Weather: 71 degrees F, winds 3 mph

Northing: 1118519.693	Drilling Company: Atlantic Testing	Water Elev: NA
Easting: 924038.254	Logging Company: PARSONS	Attempts: 1
Mud Line: 332.5 FT	Geologist: Andrew Kowalczk	Depth Units: Ft
Surface Water Depth: 30 FT	Penetration Depth: 0.5 Core Recovery Depth: 0.5	

Depth Ft	Recov %	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0	100	OL-0221-14	3.3	ML	wet, soft, dark gray, SILT, trace medium to fine sand, slight petroleum odor	Vibracore	SILT
	100	OL-2221-15	4.2	ML	wet, soft, medium-dark gray, SILT, slight petroleum odor	Vibracore	SILT
0.5							

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-RAD-VC-016
Date: 05/08/2015
Weather: 71 degrees F, winds 3 mph

Northing: 1118481.313	Drilling Company: Atlantic Testing	Water Elev: NA
Easting: 924722.717	Logging Company: PARSONS	Attempts: 1
Mud Line: 330.5 FT	Geologist: Andrew Kowalczk	Depth Units: Ft
Surface Water Depth: 32 FT	Penetration Depth: 0.5 Core Recovery Depth: 0.5	

Depth Ft	Recov %	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0	100	OL-2221-16	1.1	SP	wet, loose, dark brown, fine to coarse SAND, some fine gravel (cap material)	Vibracore	SAND
	100	OL-2221-17	1.4	ML	wet, loose, dark brown, fine-coarse sand, fine gravel (cap material)	Vibracore	SILT
0.5							

APPENDIX A

BORING LOGS

Honeywell

DATA USABILITY SUMMARY REPORT

RA-C CAP DISTURBANCE AREA INVESTIGATION

Prepared For:

Honeywell

101 Columbia Road
Morristown, New Jersey 07962

Prepared By:

PARSONS

301 Plainfield Road, Suite 350
Syracuse, New York 13212
Phone: (315) 451-9560
Fax: (315) 451-9570

JUNE 2015

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LIST OF ATTACHMENTS

ATTACHMENT A VALIDATED LABORATORY DATA

SECTION 1

DATA USABILITY SUMMARY

Sediment samples were collected as part of the RA-C Cap Disturbance Area Investigation sampling on August 5, 2014. Analytical results from these samples were validated and reviewed by Parsons for usability with respect to the following requirements:

- Work plan;
- Onondaga Lake QAPP;
- July 2005 NYSDEC Analytical Services Protocol (ASP); and
- USEPA Region II Standard Operating Procedures (SOPs) for organic and inorganic data review.

The analytical laboratory for this project was Test America Laboratories (TAL) in Pittsburgh, Pennsylvania. This laboratory is certified to conduct project analyses through the New York State Department of Health (NYSDOH) and the National Environmental Laboratory Accreditation Program (NELAP).

1.1 LABORATORY DATA PACKAGES

The laboratory data package turnaround time, defined as the time from sample receipt by the laboratory to receipt of the analytical data packages by Parsons, was 14 days for the samples.

The laboratory data packages received from TAL were paginated, complete, and overall were of good quality. Comments on specific quality control (QC) and other requirements are discussed in detail in the attached data validation reports which are summarized in Section 2.

1.2 SAMPLING AND CHAIN-OF-CUSTODY

The samples were collected, properly preserved, shipped under a chain-of-custody (COC) record, and received at TAL within two days of sampling. All samples were received intact and in good condition at TAL.

1.3 LABORATORY ANALYTICAL METHODS

The sediment samples were collected and analyzed for volatiles, polynuclear aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), mercury, and total organic carbon (TOC). Summaries of issues concerning these laboratory analyses are presented in Subsections 1.3.1 through 1.3.5. The data qualifications resulting from the data validation review and statements on the laboratory analytical precision, accuracy, representativeness, completeness, and comparability (PARCC) are discussed for each analytical method in Section 2 of this Data Usability Summary Report (DUSR). A USEPA Level IV data validation (i.e., full data validation) was conducted by Parsons on 10% of the project samples with the remaining 90% of the project samples undergoing a USEPA Level III data validation which provides data

defensibility. The laboratory data were reviewed and may be qualified with the following validation flags:

"U" - not detected at the value given,

"UJ" - estimated and not detected at the value given,

"J" - estimated at the value given,

"J+" - estimated biased high at the value given,

"J-" - estimated biased low at the value given,

"N" - presumptive evidence at the value given, and

"R" - unusable value.

The validated laboratory data were tabulated and are presented in Attachment A.

1.3.1 Volatile Organic Analysis

Sediment samples collected from the site were analyzed for volatiles using the USEPA SW-846 8260C analytical method. Certain reported results for these samples were qualified as estimated based upon instrument calibrations and field duplicate precision. The reported volatile analytical results were 100% complete (i.e., usable) for the data presented by TAL. PARCC requirements were met.

1.3.2 PAH Organic Analysis

Sediment samples collected from the site were analyzed for PAHs using the USEPA SW-846 8270D analytical method. Certain reported results for these samples were qualified as estimated based upon field duplicate precision. The reported PAH analytical results were 100% complete (i.e., usable) for the data presented by TAL. PARCC requirements were met.

1.3.3 PCBs Organic Analysis

Sediment samples collected from the site were analyzed for PCBs using the USEPA SW-846 8082A analytical method. Certain reported results for these samples were qualified as estimated based upon sample result identifications and field duplicate precision. The reported PCB analytical results were considered 100% complete (i.e., usable) for the data presented by TAL. PARCC requirements were met.

1.3.4 Mercury Analysis

Sediment samples collected from the site were analyzed for mercury using the USEPA SW-846 7471B analytical method. The reported results for these samples did not require qualification resulting from data validation. The mercury results were considered 100% complete (i.e., usable) for the data presented by TAL. PARCC requirements were met.

1.3.5 TOC Analysis

Sediment samples collected from the site were analyzed for TOC using the USEPA approved Lloyd Kahn analytical method. The reported results for these samples did not require qualification resulting from data validation. The TOC results were considered 100% complete (i.e., usable) for the data presented by TAL. PARCC requirements were met.

SECTION 2

DATA VALIDATION REPORT

2.1 SEDIMENT SAMPLES

Data review has been completed for data packages generated by TAL containing sediment samples collected from the site. These samples were contained within sample delivery group (SDG) 180-35538-1. All of these samples were properly preserved, shipped under a COC record, and received intact by the analytical laboratory. The validated laboratory data were tabulated and are presented in Attachment A.

Data validation was performed for all samples in accordance with the project work plan, QAPP, NYSDEC ASP, and the USEPA Region II SOPs for organic and inorganic data review. This data validation and usability report is presented by analysis type.

2.1.1 Volatiles

The following items were reviewed for compliancy in the volatile analysis:

- Custody documentation
- Holding times
- Surrogate recoveries
- Matrix spike/matrix spike duplicate (MS/MSD) precision and accuracy
- Laboratory control sample (LCS) recoveries
- Laboratory method blank and equipment blank contamination
- GC/MS instrument performance
- Sample result verification and identification
- Initial and continuing calibrations
- Internal standard area counts and retention times
- Field duplicate precision
- Quantitation limits
- Data completeness

These items were considered compliant and acceptable in accordance with the validation protocols with the exception of MS/MSD precision and accuracy, continuing calibrations, and field duplicate precision as discussed below.

MS/MSD Precision and Accuracy

All MS/MSD precision (relative percent difference; RPD) and accuracy (percent recovery; %R) measurements were considered acceptable and within QC limits for designated spiked samples with the exception of the high MS/MSD precision results for 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, ethylbenzene, and total xylenes during the spiked analyses of sample OL-2221-06. Validation qualification of the parent sample was not required.

Continuing Calibrations

All continuing calibration compounds were compliant with a minimum relative response factor (RRF) of 0.05 and a maximum %D within ±20% with the exception of 1,2,3-trichlorobenzene (-27.5%D) in the continuing calibration associated with samples OL-2221-01, -03, and -07 through -11. The sample results for this compound were considered estimated with positive results qualified "J" and nondetected results qualified "UJ" for the affected samples.

Field Duplicate Precision

All field duplicate precision results were considered acceptable with the exception of the high precision for ethylbenzene (98%RPD) and total xylenes (138%RPD) associated with sample OL-2221-06 and its field duplicate sample OL-2221-11. Therefore, the results for these compounds were considered estimated and qualified "J" for these samples.

Usability

All volatile results for the sediment samples were considered usable following data validation.

Summary

The quality assurance objectives for measurement data included considerations for precision, accuracy, representativeness, completeness, and comparability. The volatile sediment data presented by TAL were 100% complete (i.e., usable). The validated laboratory data are tabulated and presented in Attachment A.

It was noted that samples OL-2221-08 and -09 contained less than 30% solids content. Therefore, results for these samples were considered estimated with positive results qualified "J" and nondetected results qualified "UJ".

It was also noted that the TerraCore samples OL-2221-01, -02, and -03 were froze outside of the 48-hour holding time by the laboratory. However, sample results were not affected and validation qualification was not required.

2.1.2 PAHs

The following items were reviewed for compliancy in the PAH analysis:

- Custody documentation

- Holding times
- Surrogate recoveries
- Matrix spike/matrix spike duplicate (MS/MSD) precision and accuracy
- Laboratory control sample (LCS) recoveries
- Laboratory method blank and equipment blank contamination
- GC/MS instrument performance
- Sample result verification and identification
- Initial and continuing calibrations
- Internal standard area counts and retention times
- Field duplicate precision
- Quantitation limits
- Data completeness

These items were considered compliant and acceptable in accordance with the validation protocols with the exception of MS/MSD precision and accuracy and field duplicate precision as discussed below.

MS/MSD Precision and Accuracy

All MS/MSD precision (relative percent difference; RPD) and accuracy (percent recovery; %R) measurements were considered acceptable and within QC limits for all compounds of designated spiked project samples with the exception of the many high MS/MSD accuracy results during the spiked analyses of sample OL-2221-06. Validation qualification was not required for the parent sample.

Field Duplicate Precision

All field duplicate precision results were considered acceptable with the exception of the high precision for naphthalene (62%RPD) and benzo(k)fluoranthene (64%RPD) associated with sample OL-2221-06 and its field duplicate sample OL-2221-11. Therefore, the results for these compounds were considered estimated and qualified “J” for these samples.

Usability

All PAH results for the sediment samples were considered usable following data validation.

Summary

The quality assurance objectives for measurement data included considerations for precision, accuracy, representativeness, completeness, and comparability. The sediment PAH data presented by TAL were 100% complete (i.e., usable). The validated PAH laboratory data are tabulated and presented in Attachment A.

It was noted that samples OL-2221-08 and -09 contained less than 30% solids content. Therefore, results for these samples were considered estimated with positive results qualified "J" and nondetected results qualified "UJ".

2.1.3 PCBs

The following items were reviewed for compliancy in the PCB analysis:

- Custody documentation
- Holding times
- Surrogate recoveries
- Matrix spike/matrix spike duplicate (MS/MSD) precision and accuracy
- Laboratory control sample (LCS) recoveries
- Laboratory method blank and equipment blank contamination
- Initial calibrations
- Verification calibrations
- Chromatogram quality
- Sample result verification and identification
- Field duplicate precision
- Quantitation limits
- Data completeness

These items were considered compliant and acceptable in accordance with the validation protocols with the exception of surrogate recoveries, MS/MSD precision and accuracy, sample result identifications, and field duplicate precision as discussed below.

Surrogate Recoveries

All sample surrogate recoveries were considered acceptable and within QC limits with the exception of the high surrogate recovery for tetrachloro-m-xylene (QC limit 30-150%R) in sample OL-2221-06 (156%R); and the high surrogate recovery for decachlorobiphenyl (QC limit 20-150%R) in samples OL-2221-01 (448%R) and -03 (188%R). Validation qualification of these samples was not required.

MS/MSD Precision and Accuracy

All MS/MSD precision (relative percent difference; RPD) and accuracy (percent recovery; %R) measurements were considered acceptable and within QC limits for all compounds of designated spiked project samples with the exception of the MS/MSD accuracy results for PCB-1016 and PCB-1260 during the spiked analyses of sample OL-2221-06. Validation qualification was not required for the associated parent sample.

Sample Result Identification

All positive PCB sample results were within retention time windows and verified present using secondary column confirmation. However, it was noted in the laboratory's case narrative that PCB-1248, PCB-1254, and PCB-1260 were reported as a mixture for samples OL-2221-01 through -09 and -11 based upon poor match quality with the standards. Therefore, these results were considered estimated with positive results qualified "J" and nondetected results qualified "UJ" for the affected samples.

Field Duplicate Precision

All field duplicate precision results were considered acceptable with the exception of the high precision for PCB-1248 (199%RPD) and the PCB-1260 results (340 µg/kg and nondetect) associated with sample OL-2221-06 and its field duplicate sample OL-2221-11. Therefore, the results for these compounds were considered estimated with positive results qualified "J" and nondetected results qualified "UJ" for these samples.

Usability

All PCB results for the sediment samples were considered usable following data validation.

Summary

The quality assurance objectives for measurement data included considerations for precision, accuracy, representativeness, completeness, and comparability. The PCB data for presented by TAL were 100% complete with all data considered usable and valid. The validated data are tabulated and presented in Attachment A.

It was noted that samples OL-2221-08 and -09 contained less than 30% solids content. Therefore, results for these samples were considered estimated with positive results qualified "J" and nondetected results qualified "UJ".

2.1.4 Mercury

The following items were reviewed for compliancy in the mercury analysis:

- Custody documentation
- Holding times
- Initial and continuing calibration verifications
- Initial and continuing calibration blank, and laboratory preparation blank and equipment blank contamination
- Matrix spike/matrix spike duplicate (MS/MSD) recoveries
- Laboratory duplicate precision
- Laboratory control sample (LCS) recoveries
- Field duplicate precision
- Sample result verification and identification

- Quantitation limits
- Data completeness

These items were considered compliant and acceptable in accordance with the validation protocols.

Usability

All mercury results for the sediment samples were considered usable following data validation.

Summary

The quality assurance objectives for measurement data included considerations for precision, accuracy, representativeness, completeness, and comparability. The mercury data for the sediment samples presented by TAL were 100% complete (i.e., usable). The validated laboratory data are tabulated and presented in Attachment A.

It was noted that all sediment samples contained less than 50% solids content. Therefore, results for these samples were considered estimated with positive results qualified "J" and nondetected results qualified "UJ".

2.1.5 TOC

The following items were reviewed for compliancy in the TOC analysis:

- Custody documentation
- Holding times
- Initial and continuing calibration verifications
- Laboratory method blank and equipment blank contamination
- Matrix spike/matrix spike duplicate (MS/MSD) recoveries
- Laboratory duplicate precision
- Laboratory control sample (LCS) recoveries
- Field duplicate precision
- Sample result verification and identification
- Quantitation limits
- Data completeness

These items were considered compliant and acceptable in accordance with the validation protocols.

Usability

All TOC results for the sediment samples were considered usable following data validation.

Summary

The quality assurance objectives for measurement data included considerations for precision, accuracy, representativeness, completeness, and comparability. The TOC data for the sediment samples presented by TAL were 100% complete (i.e., usable). The validated laboratory data are tabulated and presented in Attachment A.

It was noted that samples OL-2221-08 and -09 contained less than 30% solids content. Therefore, results for these samples were considered estimated with positive results qualified "J" and nondetected results qualified "UJ".

ATTACHMENT A

VALIDATED LABORATORY DATA

00 SYR Soil
Onondaga Lake (Syracuse NY)

				Location ID	OL-VC-80224		OL-VC-80224		OL-VC-80225		OL-VC-80225		OL-VC-80226		OL-VC-80226	
				Field Sample ID	OL-2221-01		OL-2221-02		OL-2221-03		OL-2221-04		OL-2221-05		OL-2221-06	
				Depth (ft)	0 - 0.13		0.13 - 0.49		0 - 0.13		0.13 - 0.49		0 - 0.13		0.13 - 0.49	
				Sampled	08/05/2014		08/05/2014		08/05/2014		08/05/2014		08/05/2014		08/05/2014	
				SDG	180-35538-1		180-35538-1		180-35538-1		180-35538-1		180-35538-1		180-35538-1	
				Matrix	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
				Purpose	REG		REG		REG		REG		REG		REG	
				Type	SED		SED		SED		SED		SED		SED	
Method	Parameter Code	Parameter Name	Units	Leached												
LKTOC	TOC	TOTAL ORGANIC CARBON	ug/kg	N	55000000.0		35000000.0		37000000.0		53000000.0		28000000.0		24000000.0	
SW7471	7439-97-6	MERCURY	mg/kg	N	1.5	J	1.1	J	1.4	J	1.9	J	1.7	J	1.5	J
SW8082	12674-11-2	AROCLOR-1016	ug/kg	N	12	U	5.5	U	6.0	U	11	U	12	U	11	U
SW8082	11104-28-2	AROCLOR-1221	ug/kg	N	12	U	5.5	U	6.0	U	11	U	12	U	11	U
SW8082	11141-16-5	AROCLOR-1232	ug/kg	N	12	U	5.5	U	6.0	U	11	U	12	U	11	U
SW8082	53469-21-9	AROCLOR-1242	ug/kg	N	12	U	5.5	U	6.0	U	11	U	12	U	11	U
SW8082	12672-29-6	AROCLOR-1248	ug/kg	N	12	UJ	5.7	J	21	J	17	J	4.5	J	1200	J
SW8082	11097-69-1	AROCLOR-1254	ug/kg	N	100	J	5.5	UJ	6.0	UJ	11	UJ	12	UJ	11	UJ
SW8082	11096-82-5	AROCLOR-1260	ug/kg	N	76	J	2.5	J	16	J	4.6	J	1.8	J	340	J
SW8082	11100-14-4	AROCLOR-1268	ug/kg	N	31		1.6	J	9.6		11	U	12	U	26	
SW8260	87-61-6	1,2,3-TRICHLOROBENZENE	ug/kg	N	13	UJ	470	J	13	UJ	630	U	380	J	500	U
SW8260	120-82-1	1,2,4-TRICHLOROBENZENE	ug/kg	N	13	U	3800		13	U	630	U	600	U	500	U
SW8260	95-50-1	1,2-DICHLOROBENZENE	ug/kg	N	13	U	590	J	36		630	U	600	U	500	U
SW8260	541-73-1	1,3-DICHLOROBENZENE	ug/kg	N	13	U	980		13		630	U	600	U	500	U
SW8260	106-46-7	1,4-DICHLOROBENZENE	ug/kg	N	3.7	J	2300		74		630	U	600	U	500	U
SW8260	108-90-7	CHLOROBENZENE	ug/kg	N	13	U	730	U	18		70	J	600	U	500	U
SW8260	100-41-4	ETHYLBENZENE	ug/kg	N	20		3200		170		1700		180	J	100	J
SW8260	1330-20-7	XYLENES, TOTAL	ug/kg	N	6.1	J	5300		370		10000		1300	J	1800	J
SW8270	83-32-9	ACENAPHTHENE	ug/kg	N	140		590		140	U	2500		430		280	
SW8270	208-96-8	ACENAPHTHYLENE	ug/kg	N	310		440		360		3000		790		910	
SW8270	120-12-7	ANTHRACENE	ug/kg	N	390		700		520		7900		1700		1700	
SW8270	56-55-3	BENZO(A)ANTHRACENE	ug/kg	N	670		1100		630		7100		3100		3200	
SW8270	50-32-8	BENZO(A)PYRENE	ug/kg	N	580		900		460		3500		2100		2700	
SW8270	205-99-2	BENZO(B)FLUORANTHENE	ug/kg	N	830		1000		570		4400		2000		2700	
SW8270	191-24-2	BENZO(G,H,I)PERYLENE	ug/kg	N	510		680		380		2000		1200		1900	
SW8270	207-08-9	BENZO(K)FLUORANTHENE	ug/kg	N	250		410		220		2100		880		930	J
SW8270	218-01-9	CHRYSENE	ug/kg	N	800		1200		700		5700		3000		3200	
SW8270	53-70-3	DIBENZO(A,H)ANTHRACENE	ug/kg	N	150		200		98	J	1100		410		500	
SW8270	206-44-0	FLUORANTHENE	ug/kg	N	1600		2400		1400		16000		5400		5300	
SW8270	86-73-7	FLUORENE	ug/kg	N	290		5500		680		22000		940		620	
SW8270	193-39-5	INDENO(1,2,3-CD)PYRENE	ug/kg	N	400		620		330		1800		1100		1400	
SW8270	91-20-3	NAPHTHALENE	ug/kg	N	20000		51000		73000		2300000		85000		31000	J
SW8270	85-01-8	PHENANTHRENE	ug/kg	N	1100		2200		1600		24000		3800		2800	
SW8270	129-00-0	PYRENE	ug/kg	N	1300		2400		1200		11000		5000		5200	

00 SYR Soil
Onondaga Lake (Syracuse NY)

					Field Dup									
				Location ID	OL-VC-80226		OL-VC-80227		OL-VC-80227		OL-VC-80228		OL-VC-80228	
				Field Sample ID	OL-2221-11		OL-2221-07		OL-2221-08		OL-2221-09		OL-2221-10	
				Depth (ft)	0.13 - 0.49		0 - 0.13		0.13 - 0.49		0 - 0.13		0.13 - 0.49	
				Sampled	08/05/2014		08/05/2014		08/05/2014		08/05/2014		08/05/2014	
				SDG	180-35538-1		180-35538-1		180-35538-1		180-35538-1		180-35538-1	
				Matrix	SOIL		SOIL		SOIL		SOIL		SOIL	
				Purpose	FD		REG		REG		REG		REG	
				Type	SED		SED		SED		SED		SED	
Method	Parameter Code	Parameter Name	Units	Leached										
LKTOC	TOC	TOTAL ORGANIC CARBON	ug/kg	N	29000000.0		42000000.0		36000000.0	J	41000000.0	J	33000000.0	
SW7471	7439-97-6	MERCURY	mg/kg	N	1.8	J	3.4	J	1.8	J	1.4	J	2.6	J
SW8082	12674-11-2	AROCLOR-1016	ug/kg	N	12	U	13	U	17	UJ	19	UJ	13	U
SW8082	11104-28-2	AROCLOR-1221	ug/kg	N	12	U	13	U	17	UJ	19	UJ	13	U
SW8082	11141-16-5	AROCLOR-1232	ug/kg	N	12	U	13	U	17	UJ	19	UJ	13	U
SW8082	53469-21-9	AROCLOR-1242	ug/kg	N	12	U	13	U	17	UJ	19	UJ	13	U
SW8082	12672-29-6	AROCLOR-1248	ug/kg	N	3.2	J	1300	J	120	J	150	J	170	
SW8082	11097-69-1	AROCLOR-1254	ug/kg	N	12	UJ	13	UJ	17	UJ	19	UJ	13	U
SW8082	11096-82-5	AROCLOR-1260	ug/kg	N	12	UJ	380	J	55	J	58	J	63	
SW8082	11100-14-4	AROCLOR-1268	ug/kg	N	12	U	23		7.5	J	5.9	J	6.8	J
SW8260	87-61-6	1,2,3-TRICHLOROBENZENE	ug/kg	N	7.5	UJ	11	UJ	22	UJ	13	UJ	15	UJ
SW8260	120-82-1	1,2,4-TRICHLOROBENZENE	ug/kg	N	7.5	U	11	U	22	UJ	13	UJ	15	U
SW8260	95-50-1	1,2-DICHLOROBENZENE	ug/kg	N	1.7	J	11	U	22	UJ	13	UJ	15	U
SW8260	541-73-1	1,3-DICHLOROBENZENE	ug/kg	N	7.5	U	11	U	22	UJ	13	UJ	15	U
SW8260	106-46-7	1,4-DICHLOROBENZENE	ug/kg	N	2.2	J	4.2	J	22	UJ	7.6	J	15	U
SW8260	108-90-7	CHLOROBENZENE	ug/kg	N	7.5	U	9.5	J	22	UJ	16	J	2.4	J
SW8260	100-41-4	ETHYLBENZENE	ug/kg	N	34	J	11	U	22	UJ	13	UJ	15	U
SW8260	1330-20-7	XYLENES, TOTAL	ug/kg	N	330	J	33	U	67	UJ	39	UJ	46	U
SW8270	83-32-9	ACENAPHTHENE	ug/kg	N	350		170	J	70	J	32	J	80	J
SW8270	208-96-8	ACENAPHTHYLENE	ug/kg	N	850		330		140	J	100	J	240	
SW8270	120-12-7	ANTHRACENE	ug/kg	N	1900		450		150	J	110	J	240	
SW8270	56-55-3	BENZO(A)ANTHRACENE	ug/kg	N	3200		780		320	J	270	J	530	
SW8270	50-32-8	BENZO(A)PYRENE	ug/kg	N	2500		770		360	J	340	J	590	
SW8270	205-99-2	BENZO(B)FLUORANTHENE	ug/kg	N	1800		1100		540	J	580	J	940	
SW8270	191-24-2	BENZO(G,H,I)PERYLENE	ug/kg	N	1700		730		390	J	400	J	610	
SW8270	207-08-9	BENZO(K)FLUORANTHENE	ug/kg	N	1800	J	350		290	J	150	J	240	
SW8270	218-01-9	CHRYSENE	ug/kg	N	3200		990		470	J	440	J	750	
SW8270	53-70-3	DIBENZO(A,H)ANTHRACENE	ug/kg	N	530		170	J	280	UJ	300	UJ	140	J
SW8270	206-44-0	FLUORANTHENE	ug/kg	N	5900		1700		770	J	670	J	1100	
SW8270	86-73-7	FLUORENE	ug/kg	N	810		170	J	110	J	50	J	110	J
SW8270	193-39-5	INDENO(1,2,3-CD)PYRENE	ug/kg	N	1300		580		330	J	310	J	490	
SW8270	91-20-3	NAPHTHALENE	ug/kg	N	59000	J	630		570	J	270	J	260	
SW8270	85-01-8	PHENANTHRENE	ug/kg	N	3700		940		370	J	270	J	580	
SW8270	129-00-0	PYRENE	ug/kg	N	5500		1400		590	J	490	J	880	

00 SYR Water
Onondaga Lake (Syracuse NY)

Location ID					FIELD QC		FIELD QC	
Field Sample ID					OL-2221-12		OL-2221-13	
Depth (ft)								
Date Sampled					08/06/2014		08/06/2014	
SDG					180-35538-1		180-35538-1	
Matrix					WATER		WATER	
Purpose					EB		TB	
Type					BLKWATER		BLKWATER	
Method	Parameter Code	Parameter Name	Units	Filtered				
SM5310C	TOC	TOTAL ORGANIC CARBON	mg/L	N	0.35	J		
SW7470	7439-97-6	MERCURY	ug/l	N	0.20	U		
SW8082	11096-82-5	AROCLOR-1260	ug/l	N	0.010	U		
SW8082	11097-69-1	AROCLOR-1254	ug/l	N	0.010	U		
SW8082	11100-14-4	AROCLOR-1268	ug/l	N	0.010	U		
SW8082	11104-28-2	AROCLOR-1221	ug/l	N	0.010	U		
SW8082	11141-16-5	AROCLOR-1232	ug/l	N	0.010	U		
SW8082	12672-29-6	AROCLOR-1248	ug/l	N	0.010	U		
SW8082	12674-11-2	AROCLOR-1016	ug/l	N	0.010	U		
SW8082	53469-21-9	AROCLOR-1242	ug/l	N	0.010	U		
SW8260	100-41-4	ETHYLBENZENE	ug/l	N	1.0	U	1	U
SW8260	106-46-7	1,4-DICHLOROBENZENE	ug/l	N	1.0	U	1	U
SW8260	108-90-7	CHLOROBENZENE	ug/l	N	1.0	U	1	U
SW8260	120-82-1	1,2,4-TRICHLOROBENZENE	ug/l	N	1.0	U	1	U
SW8260	1330-20-7	XYLENES, TOTAL	ug/l	N	3.0	U	3	U
SW8260	541-73-1	1,3-DICHLOROBENZENE	ug/l	N	1.0	U	1	U
SW8260	87-61-6	1,2,3-TRICHLOROBENZENE	ug/l	N	1.0	U	1	U
SW8260	95-50-1	1,2-DICHLOROBENZENE	ug/l	N	1.0	U	1	U
SW8270	120-12-7	ANTHRACENE	ug/l	N	0.28	U		
SW8270	129-00-0	PYRENE	ug/l	N	0.28	U		
SW8270	191-24-2	BENZO(G,H,I)PERYLENE	ug/l	N	0.28	U		
SW8270	193-39-5	INDENO(1,2,3-CD)PYRENE	ug/l	N	0.28	U		
SW8270	205-99-2	BENZO(B)FLUORANTHENE	ug/l	N	0.28	U		
SW8270	206-44-0	FLUORANTHENE	ug/l	N	0.28	U		
SW8270	207-08-9	BENZO(K)FLUORANTHENE	ug/l	N	0.28	U		
SW8270	208-96-8	ACENAPHTHYLENE	ug/l	N	0.28	U		
SW8270	218-01-9	CHRYSENE	ug/l	N	0.28	U		
SW8270	50-32-8	BENZO(A)PYRENE	ug/l	N	0.28	U		
SW8270	53-70-3	DIBENZO(A,H)ANTHRACENE	ug/l	N	0.28	U		
SW8270	56-55-3	BENZO(A)ANTHRACENE	ug/l	N	0.28	U		
SW8270	83-32-9	ACENAPHTHENE	ug/l	N	0.28	U		
SW8270	85-01-8	PHENANTHRENE	ug/l	N	0.28	U		
SW8270	86-73-7	FLUORENE	ug/l	N	0.28	U		
SW8270	91-20-3	NAPHTHALENE	ug/l	N	0.28	U		

DATA USABILITY SUMMARY REPORT

RA-D PECQ INVESTIGATION

Prepared For:

Honeywell

101 Columbia Road
Morristown, New Jersey 07962

Prepared By:

PARSONS

301 Plainfield Road, Suite 350
Syracuse, New York 13212
Phone: (315) 451-9560
Fax: (315) 451-9570

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LIST OF ATTACHMENTS

ATTACHMENT A VALIDATED LABORATORY DATA

SECTION 1

DATA USABILITY SUMMARY

Sediment samples were collected as part of the RA-D PECQ Investigation sampling on May 7, 2015 through May 8, 2015. Analytical results from these samples were validated and reviewed by Parsons for usability with respect to the following requirements:

- Work plan;
- Onondaga Lake QAPP;
- July 2005 NYSDEC Analytical Services Protocol (ASP); and
- USEPA Region II Standard Operating Procedures (SOPs) for organic and inorganic data review.

The analytical laboratory for this project was Accutest Laboratories (Accutest). This laboratory is certified to conduct project analyses through the New York State Department of Health (NYSDOH) and the National Environmental Laboratory Accreditation Program (NELAP).

1.1 LABORATORY DATA PACKAGES

The laboratory data package turnaround time, defined as the time from sample receipt by the laboratory to receipt of the analytical data packages by Parsons, was 15-19 days for the samples.

The laboratory data packages received from Accutest were paginated, complete, and overall were of good quality. Comments on specific quality control (QC) and other requirements are discussed in detail in the attached data validation reports which are summarized in Section 2.

1.2 SAMPLING AND CHAIN-OF-CUSTODY

The samples were collected, properly preserved, shipped under a chain-of-custody (COC) record, and received at Accutest within one day of sampling. All samples were received intact and in good condition at Accutest.

1.3 LABORATORY ANALYTICAL METHODS

The sediment samples were collected and analyzed for volatiles, phenol, polynuclear aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), mercury, and total organic carbon (TOC). Summaries of issues concerning these laboratory analyses are presented in Subsections 1.3.1 through 1.3.5. The data qualifications resulting from the data validation review and statements on the laboratory analytical precision, accuracy, representativeness, completeness, and comparability (PARCC) are discussed for each analytical method in Section 2 of this Data Usability Summary Report (DUSR). A USEPA Level IV data validation (i.e., full data validation) was conducted by Parsons on 10% of the project samples with the remaining 90% of the project samples undergoing a USEPA Level III data validation which provides data

defensibility. The laboratory data were reviewed and may be qualified with the following validation flags:

"U" - not detected at the value given,

"UJ" - estimated and not detected at the value given,

"J" - estimated at the value given,

"J+" - estimated biased high at the value given,

"J-" - estimated biased low at the value given,

"N" - presumptive evidence at the value given, and

"R" - unusable value.

The validated laboratory data were tabulated and are presented in Attachment A.

1.3.1 Volatile Organic Analysis

Sediment samples collected from the site were analyzed for volatiles using the USEPA SW-846 8260C analytical method. Certain reported results for these samples were qualified as estimated based upon field duplicate precision and sample moisture content. The reported volatile analytical results were 100% complete (i.e., usable) for the data presented by Accutest. PARCC requirements were met.

1.3.2 Semivolatile Organic Analysis

Sediment samples collected from the site were analyzed for phenol and PAHs using the USEPA SW-846 8270D SIM analytical method. Certain reported results for these samples were qualified as estimated based upon instrument calibrations, field duplicate precision, and sample moisture content. The reported semivolatile analytical results were 100% complete (i.e., usable) for the data presented by Accutest. PARCC requirements were met.

1.3.3 PCBs Organic Analysis

Sediment samples collected from the site were analyzed for PCBs using the USEPA SW-846 8082A analytical method. Certain reported results for these samples were qualified as estimated based upon holding times, laboratory control sample recoveries, sample result identifications, field duplicate precision, and sample moisture content. The reported PCB analytical results were considered 100% complete (i.e., usable) for the data presented by Accutest. PARCC requirements were met.

1.3.4 Mercury Analysis

Sediment samples collected from the site were analyzed for mercury using the USEPA SW-846 7471B analytical method. Certain reported results for these samples were qualified as estimated based upon moisture content. The mercury results were considered 100% complete (i.e., usable) for the data presented by Accutest. PARCC requirements were met.

1.3.5 TOC Analysis

Sediment samples collected from the site were analyzed for TOC using the USEPA approved Lloyd Kahn analytical method. Certain reported results for these samples were qualified as estimated based upon field duplicate precision and sample moisture content. The TOC results were considered 100% complete (i.e., usable) for the data presented by Accutest. PARCC requirements were met.

SECTION 2

DATA VALIDATION REPORT

2.1 SEDIMENT SAMPLES

Data review has been completed for data packages generated by Accutest containing sediment samples collected from the site. These samples were contained within sample delivery groups (SDGs) JB94265 and JB94396. All of these samples were properly preserved, shipped under a COC record, and received intact by the analytical laboratory. The validated laboratory data were tabulated and are presented in Attachment A.

Data validation was performed for all samples in accordance with the project work plan, QAPP, NYSDEC ASP, and the USEPA Region II SOPs for organic and inorganic data review. This data validation and usability report is presented by analysis type.

2.1.1 Volatiles

The following items were reviewed for compliancy in the volatile analysis:

- Custody documentation
- Holding times
- Surrogate recoveries
- Matrix spike/matrix spike duplicate (MS/MSD) precision and accuracy
- Laboratory control sample (LCS) recoveries
- Laboratory method blank and equipment blank contamination
- GC/MS instrument performance
- Sample result verification and identification
- Initial and continuing calibrations
- Internal standard area counts and retention times
- Field duplicate precision
- Quantitation limits
- Data completeness

These items were considered compliant and acceptable in accordance with the validation protocols with the exception of MS/MSD precision and accuracy and field duplicate precision as discussed below.

MS/MSD Precision and Accuracy

All MS/MSD precision (relative percent difference; RPD) and accuracy (percent recovery; %R) measurements were considered acceptable and within QC limits for designated spiked samples with the exception of the low MSD accuracy results for 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, ethylbenzene, 1,2,3-trichlorobenzene, and 1,2,4-trichlorobenzene during the spiked analyses of sample OL-2230-05; and the high MS/MSD accuracy results for naphthalene during the spiked analyses of sample OL-2231-17. Validation qualification of the parent samples was not required.

Field Duplicate Precision

All field duplicate precision results were considered acceptable with the exception of the high precision for ethylbenzene (96%RPD), 1,2-dichlorobenzene (146%RPD), 1,4-dichlorobenzene (93%RPD), naphthalene (162%RPD), toluene (135%RPD), m,p-xylene (150%RPD), o-xylene (114%RPD), and total xylenes (142%RPD) associated with sample OL-2231-02 and its field duplicate sample OL-2231-03. Therefore, the results for these compounds were considered estimated and qualified "J" for these samples.

Usability

All volatile results for the sediment samples were considered usable following data validation.

Summary

The quality assurance objectives for measurement data included considerations for precision, accuracy, representativeness, completeness, and comparability. The volatile sediment data presented by Accutest were 100% complete (i.e., usable). The validated laboratory data are tabulated and presented in Attachment A.

It was noted that samples OL-2230-03, -04, -05, -14, -15, OL-2231-07, and -09 contained less than 30% solids content. Therefore, results for these samples were considered estimated with positive results qualified "J" and nondetected results qualified "UJ".

2.1.2 Semivolatiles

The following items were reviewed for compliancy in the semivolatile analysis:

- Custody documentation
- Holding times
- Surrogate recoveries
- Matrix spike/matrix spike duplicate (MS/MSD) precision and accuracy
- Laboratory control sample (LCS) recoveries
- Laboratory method blank and equipment blank contamination

- GC/MS instrument performance
- Sample result verification and identification
- Initial and continuing calibrations
- Internal standard area counts and retention times
- Field duplicate precision
- Quantitation limits
- Data completeness

These items were considered compliant and acceptable in accordance with the validation protocols with the exception of MS/MSD precision and accuracy, continuing calibrations, and field duplicate precision as discussed below.

MS/MSD Precision and Accuracy

All MS/MSD precision (relative percent difference; RPD) and accuracy (percent recovery; %R) measurements were considered acceptable and within QC limits for all compounds of designated spiked project samples with the exception of the many high MS/MSD accuracy results during the spiked analyses of sample OL-2230-05. Validation qualification was not required for the parent sample.

Continuing Calibrations

All continuing calibration compounds were compliant with a minimum relative response factor (RRF) of 0.05 and a maximum %D within ±20% with the exception of indeno(1,2,3-cd)pyrene (-24.4%D) in the continuing calibration associated with sample OL-2230-07. The positive sample result for this compound was considered estimated and qualified "J" for this sample.

Field Duplicate Precision

All field duplicate precision results were considered acceptable with the exception of the acenaphthene and fluorene results associated with sample OL-2230-02 and its field duplicate sample OL-2230-03; and the phenol, acenaphthene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene, and pyrene results associated with sample OL-2231-02 and its field duplicate sample OL-2231-03. Therefore, the results for these compounds were considered estimated with positive results qualified "J" and nondetected results qualified "UJ" for the associated parent samples and field duplicates.

Usability

All semivolatile results for the sediment samples were considered usable following data validation.

Summary

The quality assurance objectives for measurement data included considerations for precision, accuracy, representativeness, completeness, and comparability. The sediment semivolatile data presented by Accutest were 100% complete (i.e., usable). The validated laboratory data are tabulated and presented in Attachment A.

It was noted that samples OL-2230-03, -04, -05, -14, -15, OL-2231-07, and -09 contained less than 30% solids content. Therefore, results for these samples were considered estimated with positive results qualified "J" and nondetected results qualified "UJ".

2.1.3 PCBs

The following items were reviewed for compliancy in the PCB analysis:

- Custody documentation
- Holding times
- Surrogate recoveries
- Matrix spike/matrix spike duplicate (MS/MSD) precision and accuracy
- Laboratory control sample (LCS) recoveries
- Laboratory method blank and equipment blank contamination
- Initial calibrations
- Verification calibrations
- Chromatogram quality
- Sample result verification and identification
- Field duplicate precision
- Quantitation limits
- Data completeness

These items were considered compliant and acceptable in accordance with the validation protocols with the exception of holding times, surrogate recoveries, MS/MSD precision and accuracy, LCS recoveries, sample result identifications, and field duplicate precision as discussed below.

Holding Times

All extraction and analytical sample holding times were within criteria for all samples with the exception of samples OL-2231-02, -06, -09, -10, -14, and -17 which exceeded the 14-day extraction holding time criteria by two to four days. Therefore, results for these samples were considered estimated with positive results qualified "J" and nondetected results qualified "UJ".

Surrogate Recoveries

All sample surrogate recoveries were considered acceptable and within QC limits with the exception of the high surrogate recovery for tetrachloro-m-xylene (QC limit 14-139%R) in sample OL-2230-01 (145%R). Validation qualification of these samples was not required.

MS/MSD Precision and Accuracy

All MS/MSD precision (relative percent difference; RPD) and accuracy (percent recovery; %R) measurements were considered acceptable and within QC limits for all compounds of designated spiked project samples with the exception of the MS/MSD accuracy results for PCB-1016 during the spiked analyses of sample OL-2230-01. Validation qualification was not required for the associated parent sample.

LCS Recoveries

All LCS recoveries were considered acceptable and within QC limits with the exception of the high LCS recoveries for PCB-1016 (151%R; QC limit 52-146%R) and PCB-1260 (143%R; QC limit 48-140%R) associated with samples OL-2231-03, -04, -05, -07, -08, -11, -12, -13, -15, and -16. Therefore, associated sample results were considered estimated, possibly biased high, and qualified "J+" for the affected samples.

Sample Result Identification

All positive PCB sample results were within retention time windows and verified present using secondary column confirmation. The percent difference (%D) between the PCB results on the quantitation and confirmation columns was less than 25% with the exception of PCB-1242 in sample OL-2230-12; PCB-1254 in samples OL-2230-12, OL-2231-06, -10, and -14; PCB-1260 in sample OL-2230-05; and total PCBs in samples OL-2231-10 and -14. Therefore, the results for these compounds were considered estimated and qualified "J" for the affected samples.

Field Duplicate Precision

All field duplicate precision results were considered acceptable with the exception of the results for PCB-1248, PCB-1254, PCB-1260, and total PCBs associated with sample OL-2231-02 and its field duplicate sample OL-2231-03. Therefore, the results for these compounds were considered estimated with positive results qualified "J" and nondetected results qualified "UJ" for these samples.

Usability

All PCB results for the sediment samples were considered usable following data validation.

Summary

The quality assurance objectives for measurement data included considerations for precision, accuracy, representativeness, completeness, and comparability. The PCB data for

presented by Accutest were 100% complete with all data considered usable and valid. The validated data are tabulated and presented in Attachment A.

It was noted that samples OL-2230-03, -04, -05, -14, -15, OL-2231-07, and -09 contained less than 30% solids content. Therefore, results for these samples were considered estimated with positive results qualified "J" and nondetected results qualified "UJ".

2.1.4 Mercury

The following items were reviewed for compliancy in the mercury analysis:

- Custody documentation
- Holding times
- Initial and continuing calibration verifications
- Initial and continuing calibration blank, and laboratory preparation blank and equipment blank contamination
- Matrix spike/matrix spike duplicate (MS/MSD) recoveries
- Laboratory duplicate precision
- Laboratory control sample (LCS) recoveries
- Field duplicate precision
- Sample result verification and identification
- Quantitation limits
- Data completeness

These items were considered compliant and acceptable in accordance with the validation protocols.

Usability

All mercury results for the sediment samples were considered usable following data validation.

Summary

The quality assurance objectives for measurement data included considerations for precision, accuracy, representativeness, completeness, and comparability. The mercury data for the sediment samples presented by TAL were 100% complete (i.e., usable). The validated laboratory data are tabulated and presented in Attachment A.

It was noted that all sediment samples except samples OL-2230-06, OL-2231-10, -12, and -16 contained less than 50% solids content. Therefore, results for these samples were considered estimated with positive results qualified "J" and nondetected results qualified "UJ".

2.1.5 TOC

The following items were reviewed for compliancy in the TOC analysis:

- Custody documentation
- Holding times
- Initial and continuing calibration verifications
- Laboratory method blank and equipment blank contamination
- Matrix spike/matrix spike duplicate (MS/MSD) recoveries
- Laboratory duplicate precision
- Laboratory control sample (LCS) recoveries
- Field duplicate precision
- Sample result verification and identification
- Quantitation limits
- Data completeness

These items were considered compliant and acceptable in accordance with the validation protocols with the exception of field duplicate precision.

Field Duplicate Precision

All field duplicate precision results were considered acceptable with the exception of the precision for TOC (70%RPD) associated with sample OL-2231-02 and its field duplicate sample OL-2231-03. Therefore, the results for these samples were considered estimated and qualified "J".

Usability

All TOC results for the sediment samples were considered usable following data validation.

Summary

The quality assurance objectives for measurement data included considerations for precision, accuracy, representativeness, completeness, and comparability. The TOC data for the sediment samples presented by Accutest were 100% complete (i.e., usable). The validated laboratory data are tabulated and presented in Attachment A.

It was noted that samples OL-2230-03, -04, -05, -14, -15, OL-2231-07, and -09 contained less than 30% solids content. Therefore, results for these samples were considered estimated with positive results qualified "J" and nondetected results qualified "UJ".

ATTACHMENT A

VALIDATED LABORATORY DATA

00 SYR Soil
Onondaga Lake (Syracuse NY)
Validated Data

				Location ID	OL-RAD-VC-001		OL-RAD-VC-001		OL-RAD-VC-001		OL-RAD-VC-002		OL-RAD-VC-002	
				Field Sample ID	OL-2230-01		OL-2230-02		OL-2230-03		OL-2230-04		OL-2230-05	
				Depth (ft)	0 - 0.13		0.13 - 0.5		0.13 - 0.5		0 - 0.13		0.13 - 0.5	
				Sampled	05/07/2015		05/07/2015		05/07/2015		05/07/2015		05/07/2015	
				SDG	JB94265		JB94265		JB94265		JB94265		JB94265	
				Matrix	SOIL		SOIL		SOIL		SOIL		SOIL	
				Purpose	REG		REG		FD		REG		REG	
				Type	SED		SED		SED		SED		SED	
Method	Parameter Code	Parameter Name	Units	Leached										
Lloyd Kahn	FRACOC	FRACTION ORGANIC CARBON	%	N	3.04		2.80		3.15	J	3.07	J	3.44	J
Lloyd Kahn	TOC	TOTAL ORGANIC CARBON	mg/kg	N	30400		28000		31500	J	30700	J	34400	J
SM2540G	SOLID	SOLIDS, PERCENT	%	N	30.3		34.0		27.7		27.5		29.5	
SW7471	7439-97-6	MERCURY	mg/kg	N	1.4	J	2.0	J	1.4	J	1.6	J	3.8	J
SW8082	12674-11-2	AROCLOR-1016	ug/kg	N	270	U	220	U	290	UJ	680	UJ	270	UJ
SW8082	11104-28-2	AROCLOR-1221	ug/kg	N	270	U	220	U	290	UJ	680	UJ	270	UJ
SW8082	11141-16-5	AROCLOR-1232	ug/kg	N	270	U	220	U	290	UJ	680	UJ	270	UJ
SW8082	53469-21-9	AROCLOR-1242	ug/kg	N	270	U	220	U	290	UJ	680	UJ	2550	J
SW8082	12672-29-6	AROCLOR-1248	ug/kg	N	270	U	220	U	290	UJ	680	UJ	270	UJ
SW8082	11097-69-1	AROCLOR-1254	ug/kg	N	270	U	220	U	290	UJ	680	UJ	1740	J
SW8082	11096-82-5	AROCLOR-1260	ug/kg	N	270	U	220	U	290	UJ	680	UJ	555	J
SW8082	11100-14-4	AROCLOR-1268	ug/kg	N	270	U	220	U	290	UJ	680	UJ	270	UJ
SW8082	1336-36-3	PCBS, N.O.S.	ug/kg	N	270	U	220	U	290	UJ	680	UJ	4850	J
SW8260	87-61-6	1,2,3-TRICHLOROBENZENE	ug/kg	N	16	U	14	U	18	UJ	17	UJ	16	UJ
SW8260	120-82-1	1,2,4-TRICHLOROBENZENE	ug/kg	N	16	U	14	U	18	UJ	17	UJ	16	UJ
SW8260	95-50-1	1,2-DICHLOROBENZENE	ug/kg	N	0.90	J	0.85	J	0.81	J	0.95	J	12.0	J
SW8260	108-70-3	1,3,5-TRICHLOROBENZENE	ug/kg	N	16	U	14	U	18	UJ	17	UJ	12.1	J
SW8260	541-73-1	1,3-DICHLOROBENZENE	ug/kg	N	3.2	U	1.7	J	2.3	J	0.61	J	13.6	J
SW8260	106-46-7	1,4-DICHLOROBENZENE	ug/kg	N	1.4	J	8.3		10.8	J	2.9	J	35.4	J
SW8260	71-43-2	BENZENE	ug/kg	N	0.93	J	1.3	J	2.5	J	0.81	J	80.3	J
SW8260	108-90-7	CHLOROBENZENE	ug/kg	N	7.8		70.1		104	J	5.8	J	74.1	J
SW8260	100-41-4	ETHYLBENZENE	ug/kg	N	3.2	U	2.8	U	3.7	UJ	3.3	UJ	1.1	J
SW8260	91-20-3	NAPHTHALENE	ug/kg	N	16	U	1.9	J	2.8	J	2.4	J	5.8	J
SW8260	95-47-6	O-XYLENE	ug/kg	N	3.2	U	0.99	J	3.7	UJ	3.3	UJ	23.3	J
SW8260	108-88-3	TOLUENE	ug/kg	N	3.2	U	0.68	J	1.1	J	3.3	UJ	2.8	J
SW8260	XYLENES1314	XYLENES, M & P	ug/kg	N	3.2	U	2.8	U	3.7	UJ	3.3	UJ	85.7	J
SW8260	1330-20-7	XYLENES, TOTAL	ug/kg	N	3.2	U	1.9	J	2.3	J	1.4	J	109	J
SW8270D-SIM	83-32-9	ACENAPHTHENE	ug/kg	N	16.1		16.5	J	12	UJ	17.4	J	29.2	J
SW8270D-SIM	208-96-8	ACENAPHTHYLENE	ug/kg	N	36.6		37.0		23.3	J	42.1	J	54.7	J
SW8270D-SIM	120-12-7	ANTHRACENE	ug/kg	N	37.1		40.2		24.8	J	44.7	J	72.5	J
SW8270D-SIM	56-55-3	BENZO(A)ANTHRACENE	ug/kg	N	112		118		81.0	J	134	J	178	J
SW8270D-SIM	50-32-8	BENZO(A)PYRENE	ug/kg	N	166		154		109	J	175	J	201	J
SW8270D-SIM	205-99-2	BENZO(B)FLUORANTHENE	ug/kg	N	266		212		158	J	266	J	264	J
SW8270D-SIM	191-24-2	BENZO(G,H,I)PERYLENE	ug/kg	N	124		114		90.4	J	140	J	155	J
SW8270D-SIM	207-08-9	BENZO(K)FLUORANTHENE	ug/kg	N	36.3		44.3		30.7	J	49.5	J	69.9	J
SW8270D-SIM	218-01-9	CHRYSENE	ug/kg	N	159		158		117	J	193	J	244	J
SW8270D-SIM	53-70-3	DIBENZO(A,H)ANTHRACENE	ug/kg	N	32.0		32.7		27.5	J	38.3	J	44.3	J
SW8270D-SIM	206-44-0	FLUORANTHENE	ug/kg	N	286		269		182	J	332	J	390	J
SW8270D-SIM	86-73-7	FLUORENE	ug/kg	N	18.4		20.4	J	12	UJ	20.2	J	36.9	J
SW8270D-SIM	193-39-5	INDENO(1,2,3-CD)PYRENE	ug/kg	N	112		95.1		77.5	J	116	J	123	J
SW8270D-SIM	85-01-8	PHENANTHRENE	ug/kg	N	109		123		67.2	J	112	J	201	J
SW8270D-SIM	108-95-2	PHENOL	ug/kg	N	140		88	U	120	UJ	120	UJ	110	UJ
SW8270D-SIM	129-00-0	PYRENE	ug/kg	N	247		246		162	J	285	J	370	J
SW9045	PH	pH	S.U.	N	7.20		7.71		7.35	J	7.16	J	7.89	J

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				Location ID	OL-RAD-VC-003		OL-RAD-VC-003		OL-RAD-VC-004		OL-RAD-VC-004		OL-RAD-VC-005	
				Field Sample ID	OL-2230-06		OL-2230-07		OL-2230-08		OL-2230-09		OL-2230-10	
				Depth (ft)	0 - 0.13		0.13 - 0.5		0 - 0.13		0.13 - 0.5		0 - 0.13	
				Sampled	05/07/2015		05/07/2015		05/07/2015		05/07/2015		05/07/2015	
				SDG	JB94265		JB94265		JB94265		JB94265		JB94265	
				Matrix	SOIL		SOIL		SOIL		SOIL		SOIL	
				Purpose	REG		REG		REG		REG		REG	
				Type	SED		SED		SED		SED		SED	
Method	Parameter Code	Parameter Name	Units	Leached										
Lloyd Kahn	FRACOC	FRACTION ORGANIC CARBON	%	N	1.26		2.16		3.03		3.42		2.37	
Lloyd Kahn	TOC	TOTAL ORGANIC CARBON	mg/kg	N	12600		21600		30300		34200		23700	
SM2540G	SOLID	SOLIDS, PERCENT	%	N	74.1		49.9		31.8		33.6		41.8	
SW7471	7439-97-6	MERCURY	mg/kg	N	0.67		1.9	J	2.1	J	2.4	J	0.65	J
SW8082	12674-11-2	AROCLOR-1016	ug/kg	N	60	U	150	U	110	U	240	U	91	U
SW8082	11104-28-2	AROCLOR-1221	ug/kg	N	60	U	150	U	110	U	240	U	91	U
SW8082	11141-16-5	AROCLOR-1232	ug/kg	N	60	U	150	U	110	U	240	U	91	U
SW8082	53469-21-9	AROCLOR-1242	ug/kg	N	60	U	208		110	U	282		91	U
SW8082	12672-29-6	AROCLOR-1248	ug/kg	N	60	U	150	U	110	U	240	U	91	U
SW8082	11097-69-1	AROCLOR-1254	ug/kg	N	60	U	150	U	110	U	240	U	91	U
SW8082	11096-82-5	AROCLOR-1260	ug/kg	N	60	U	150	U	110	U	240	U	91	U
SW8082	11100-14-4	AROCLOR-1268	ug/kg	N	60	U	150	U	110	U	240	U	91	U
SW8082	1336-36-3	PCBS, N.O.S.	ug/kg	N	60	U	208		110	U	282		91	U
SW8260	87-61-6	1,2,3-TRICHLOROBENZENE	ug/kg	N	6.8	U	10	U	14	U	15	U	11	U
SW8260	120-82-1	1,2,4-TRICHLOROBENZENE	ug/kg	N	6.8	U	10	U	14	U	15	U	11	U
SW8260	95-50-1	1,2-DICHLOROBENZENE	ug/kg	N	1.4	U	0.77	J	0.66	J	0.93	J	2.3	U
SW8260	108-70-3	1,3,5-TRICHLOROBENZENE	ug/kg	N	6.8	U	10	U	14	U	15	U	11	U
SW8260	541-73-1	1,3-DICHLOROBENZENE	ug/kg	N	1.4	U	0.71	J	0.61	J	1.5	J	2.3	U
SW8260	106-46-7	1,4-DICHLOROBENZENE	ug/kg	N	0.33	J	4.5		2.9		10.6		0.60	J
SW8260	71-43-2	BENZENE	ug/kg	N	0.29	J	1.2		1.4	U	0.78	J	1.1	U
SW8260	108-90-7	CHLOROBENZENE	ug/kg	N	2.7	U	10.6		3.7	J	25.8		0.56	J
SW8260	100-41-4	ETHYLBENZENE	ug/kg	N	1.4	U	2.0	U	2.8	U	3.0	U	2.3	U
SW8260	91-20-3	NAPHTHALENE	ug/kg	N	6.8	U	0.92	J	14	U	15	U	11	U
SW8260	95-47-6	O-XYLENE	ug/kg	N	1.4	U	0.76	J	2.8	U	2.0	J	2.3	U
SW8260	108-88-3	TOLUENE	ug/kg	N	1.4	U	2.0	U	2.8	U	3.0	U	2.3	U
SW8260	XYLENES1314	XYLENES, M & P	ug/kg	N	1.4	U	1.0	J	2.8	U	2.5	J	2.3	U
SW8260	1330-20-7	XYLENES, TOTAL	ug/kg	N	1.4	U	1.8	J	1.2	J	4.4		2.3	U
SW8270D-SIM	83-32-9	ACENAPHTHENE	ug/kg	N	7.26		23.3		14.8		28.9		9.43	
SW8270D-SIM	208-96-8	ACENAPHTHYLENE	ug/kg	N	16.2		59.1		25.5		53.8		11.2	
SW8270D-SIM	120-12-7	ANTHRACENE	ug/kg	N	17.9		64.7		39.8		71.2		10.2	
SW8270D-SIM	56-55-3	BENZO(A)ANTHRACENE	ug/kg	N	50.1		154		100		170		28.3	
SW8270D-SIM	50-32-8	BENZO(A)PYRENE	ug/kg	N	66.3		178		113		174		36.2	
SW8270D-SIM	205-99-2	BENZO(B)FLUORANTHENE	ug/kg	N	98.0		245		171		286		53.2	
SW8270D-SIM	191-24-2	BENZO(G,H,I)PERYLENE	ug/kg	N	52.1		146		98.6		125		30.4	
SW8270D-SIM	207-08-9	BENZO(K)FLUORANTHENE	ug/kg	N	20.8		78.2		64.7		25.9		19.8	
SW8270D-SIM	218-01-9	CHRYSENE	ug/kg	N	69.4		203		143		191		39.3	
SW8270D-SIM	53-70-3	DIBENZO(A,H)ANTHRACENE	ug/kg	N	13.2		41.1		21.2		32.1		7.5	U
SW8270D-SIM	206-44-0	FLUORANTHENE	ug/kg	N	123		241		256		334		67.8	
SW8270D-SIM	86-73-7	FLUORENE	ug/kg	N	8.30		30.1		17.4		39.5		8.43	
SW8270D-SIM	193-39-5	INDENO(1,2,3-CD)PYRENE	ug/kg	N	42.9		114	J	79.1		103		23.9	
SW8270D-SIM	85-01-8	PHENANTHRENE	ug/kg	N	52.4		162		92.8		177		30.8	
SW8270D-SIM	108-95-2	PHENOL	ug/kg	N	42	U	63	U	99	U	99	U	75	U
SW8270D-SIM	129-00-0	PYRENE	ug/kg	N	106		303		208		316		58.8	
SW9045	PH	pH	S.U.	N	7.09		7.57		7.17		7.87		6.92	

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				Location ID	OL-RAD-VC-005		OL-RAD-VC-006		OL-RAD-VC-006		OL-RAD-VC-007		OL-RAD-VC-007	
				Field Sample ID	OL-2230-11		OL-2230-12		OL-2230-13		OL-2230-14		OL-2230-15	
				Depth (ft)	0.13 - 0.5		0 - 0.13		0.13 - 0.5		0 - 0.13		0.13 - 0.5	
				Sampled	05/07/2015		05/07/2015		05/07/2015		05/07/2015		05/07/2015	
				SDG	JB94265		JB94265		JB94265		JB94265		JB94265	
				Matrix	SOIL		SOIL		SOIL		SOIL		SOIL	
				Purpose	REG		REG		REG		REG		REG	
				Type	SED		SED		SED		SED		SED	
Method	Parameter Code	Parameter Name	Units	Leached										
Lloyd Kahn	FRACOC	FRACTION ORGANIC CARBON	%	N	2.43		1.96		2.22		8.34	J	7.91	J
Lloyd Kahn	TOC	TOTAL ORGANIC CARBON	mg/kg	N	24300		19600		22200		83400	J	79100	J
SM2540G	SOLID	SOLIDS, PERCENT	%	N	36.5		43.4		45.4		23.7		26.5	
SW7471	7439-97-6	MERCURY	mg/kg	N	1.2	J	1.7	J	1.3	J	15.3	J	22.5	J
SW8082	12674-11-2	AROCLOR-1016	ug/kg	N	210	U	180	U	170	U	140	UJ	290	UJ
SW8082	11104-28-2	AROCLOR-1221	ug/kg	N	210	U	180	U	170	U	140	UJ	290	UJ
SW8082	11141-16-5	AROCLOR-1232	ug/kg	N	210	U	180	U	170	U	140	UJ	290	UJ
SW8082	53469-21-9	AROCLOR-1242	ug/kg	N	210	U	337	J	170	U	140	UJ	1650	J
SW8082	12672-29-6	AROCLOR-1248	ug/kg	N	210	U	180	U	170	U	3090	J	290	UJ
SW8082	11097-69-1	AROCLOR-1254	ug/kg	N	210	U	281	J	170	U	2000	J	2740	J
SW8082	11096-82-5	AROCLOR-1260	ug/kg	N	210	U	180	U	170	U	666	J	1020	J
SW8082	11100-14-4	AROCLOR-1268	ug/kg	N	210	U	180	U	170	U	140	UJ	290	UJ
SW8082	1336-36-3	PCBS, N.O.S.	ug/kg	N	210	U	618		170	U	5760	J	5410	J
SW8260	87-61-6	1,2,3-TRICHLOROBENZENE	ug/kg	N	12	U	870	U	850	U	21	UJ	18	UJ
SW8260	120-82-1	1,2,4-TRICHLOROBENZENE	ug/kg	N	12	U	870	U	850	U	21	UJ	18	UJ
SW8260	95-50-1	1,2-DICHLOROBENZENE	ug/kg	N	2.5	U	87.7	J	165	J	131	J	179	J
SW8260	108-70-3	1,3,5-TRICHLOROBENZENE	ug/kg	N	12	U	870	U	850	U	31.3	J	18.4	J
SW8260	541-73-1	1,3-DICHLOROBENZENE	ug/kg	N	2.5	U	170	U	170	U	99.9	J	97.1	J
SW8260	106-46-7	1,4-DICHLOROBENZENE	ug/kg	N	0.80	J	161	J	212		219	J	236	J
SW8260	71-43-2	BENZENE	ug/kg	N	0.80	J	730		1180		270	J	617	J
SW8260	108-90-7	CHLOROBENZENE	ug/kg	N	1.1	J	280	J	418		523	J	618	J
SW8260	100-41-4	ETHYLBENZENE	ug/kg	N	2.5	U	188		295		16.8	J	50.1	J
SW8260	91-20-3	NAPHTHALENE	ug/kg	N	12	U	8930		9720		88.9	J	309	J
SW8260	95-47-6	O-XYLENE	ug/kg	N	2.5	U	960		1520		676	J	823	J
SW8260	108-88-3	TOLUENE	ug/kg	N	2.5	U	863		1770		32.6	J	55.6	J
SW8260	XYLENES1314	XYLENES, M & P	ug/kg	N	2.5	U	2300		3850		1300	J	1750	J
SW8260	1330-20-7	XYLENES, TOTAL	ug/kg	N	2.5	U	3260		5370		1980	J	2570	J
SW8270D-SIM	83-32-9	ACENAPHTHENE	ug/kg	N	8.9	U	7.5	U	218		510	J	613	J
SW8270D-SIM	208-96-8	ACENAPHTHYLENE	ug/kg	N	31.4		718		360		648	J	532	J
SW8270D-SIM	120-12-7	ANTHRACENE	ug/kg	N	33.3		350		266		1820	J	1190	J
SW8270D-SIM	56-55-3	BENZO(A)ANTHRACENE	ug/kg	N	138		227		426		2110	J	1670	J
SW8270D-SIM	50-32-8	BENZO(A)PYRENE	ug/kg	N	141		171		282		1630	J	1390	J
SW8270D-SIM	205-99-2	BENZO(B)FLUORANTHENE	ug/kg	N	156		269		375		2160	J	1750	J
SW8270D-SIM	191-24-2	BENZO(G,H,I)PERYLENE	ug/kg	N	89.7		107		147		1040	J	534	J
SW8270D-SIM	207-08-9	BENZO(K)FLUORANTHENE	ug/kg	N	63.5		75.0		114		539	J	651	J
SW8270D-SIM	218-01-9	CHRYSENE	ug/kg	N	148		297		462		2950	J	2330	J
SW8270D-SIM	53-70-3	DIBENZO(A,H)ANTHRACENE	ug/kg	N	21.4		31.0		57.8		239	J	172	J
SW8270D-SIM	206-44-0	FLUORANTHENE	ug/kg	N	250		855		867		5860	J	4070	J
SW8270D-SIM	86-73-7	FLUORENE	ug/kg	N	12.1		7.5	U	293		13	UJ	11	UJ
SW8270D-SIM	193-39-5	INDENO(1,2,3-CD)PYRENE	ug/kg	N	70.2		87.6		131		661	J	456	J
SW8270D-SIM	85-01-8	PHENANTHRENE	ug/kg	N	77.7		1680		1080		6020	J	4340	J
SW8270D-SIM	108-95-2	PHENOL	ug/kg	N	89	U	3180		4700		168	J	110	UJ
SW8270D-SIM	129-00-0	PYRENE	ug/kg	N	269		722		918		5660	J	4220	J
SW9045	PH	pH	S.U.	N	6.95		8.38		8.48		7.89	J	8.29	J

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				Location ID	OL-RAD-VC-008		OL-RAD-VC-008		OL-RAD-VC-009		OL-RAD-VC-009		OL-RAD-VC-009	
				Field Sample ID	OL-2230-16		OL-2230-17		OL-2231-01		OL-2231-02		OL-2231-03	
				Depth (ft)	0 - 0.13		0.13 - 0.5		0 - 0.13		0.13 - 0.5		0.13 - 0.5	
				Sampled	05/07/2015		05/07/2015		05/08/2015		05/08/2015		05/08/2015	
				SDG	JB94265		JB94265		JB94396		JB94396		JB94396	
				Matrix	SOIL		SOIL		SOIL		SOIL		SOIL	
				Purpose	REG		REG		REG		REG		FD	
				Type	SED		SED		SED		SED		SED	
Method	Parameter Code	Parameter Name	Units	Leached										
Lloyd Kahn	FRACOC	FRACTION ORGANIC CARBON	%	N	2.72		2.81		3.11		3.64	J	1.75	J
Lloyd Kahn	TOC	TOTAL ORGANIC CARBON	mg/kg	N	27200		28100		31100		36400	J	17500	J
SM2540G	SOLID	SOLIDS, PERCENT	%	N	34.2		34.5		39.0		46.8		36.8	
SW7471	7439-97-6	MERCURY	mg/kg	N	1.7	J	1.9	J	10.1	J	8.5	J	5.1	J
SW8082	12674-11-2	AROCLOR-1016	ug/kg	N	130	U	230	U	250	U	170	UJ	130	U
SW8082	11104-28-2	AROCLOR-1221	ug/kg	N	130	U	230	U	250	U	170	UJ	130	U
SW8082	11141-16-5	AROCLOR-1232	ug/kg	N	130	U	230	U	250	U	170	UJ	130	U
SW8082	53469-21-9	AROCLOR-1242	ug/kg	N	130	U	230	U	250	U	170	UJ	130	U
SW8082	12672-29-6	AROCLOR-1248	ug/kg	N	130	U	230	U	830		366	J	130	UJ
SW8082	11097-69-1	AROCLOR-1254	ug/kg	N	130	U	230	U	510		543	J	130	UJ
SW8082	11096-82-5	AROCLOR-1260	ug/kg	N	130	U	230	U	250	U	307	J	130	UJ
SW8082	11100-14-4	AROCLOR-1268	ug/kg	N	130	U	230	U	250	U	170	UJ	130	U
SW8082	1336-36-3	PCBS, N.O.S.	ug/kg	N	130	U	230	U	1340		1220	J	130	UJ
SW8260	87-61-6	1,2,3-TRICHLOROBENZENE	ug/kg	N	17	U	14	U	1000	U	820	U	1100	U
SW8260	120-82-1	1,2,4-TRICHLOROBENZENE	ug/kg	N	17	U	14	U	1000	U	820	U	289	J
SW8260	95-50-1	1,2-DICHLOROBENZENE	ug/kg	N	3.4	U	0.72	J	1060		504	J	3210	J
SW8260	108-70-3	1,3,5-TRICHLOROBENZENE	ug/kg	N	17	U	14	U	1000	U	820	U	1100	U
SW8260	541-73-1	1,3-DICHLOROBENZENE	ug/kg	N	3.4	U	2.8	U	124	J	163		116	J
SW8260	106-46-7	1,4-DICHLOROBENZENE	ug/kg	N	3.4	U	1.1	J	1820		1750	J	4800	J
SW8260	71-43-2	BENZENE	ug/kg	N	1.7	U	2.1		2970		1520		822	
SW8260	108-90-7	CHLOROBENZENE	ug/kg	N	6.8	U	1.2	J	1180		1100		1540	
SW8260	100-41-4	ETHYLBENZENE	ug/kg	N	3.4	U	2.8	U	1920		1120		3170	J
SW8260	91-20-3	NAPHTHALENE	ug/kg	N	17	U	14	U	54700		20200	J	190000	J
SW8260	95-47-6	O-XYLENE	ug/kg	N	3.4	U	2.8	U	5350		2720	J	9970	J
SW8260	108-88-3	TOLUENE	ug/kg	N	3.4	U	2.8	U	1800		264	J	1370	J
SW8260	XYLENES1314	XYLENES, M & P	ug/kg	N	3.4	U	2.8	U	14100		5310	J	37300	J
SW8260	1330-20-7	XYLENES, TOTAL	ug/kg	N	3.4	U	2.8	U	19500		8030	J	47200	J
SW8270D-SIM	83-32-9	ACENAPHTHENE	ug/kg	N	20.9		22.9		8.5	U	527	J	8.8	UJ
SW8270D-SIM	208-96-8	ACENAPHTHYLENE	ug/kg	N	47.1		61.7		763		728		1120	
SW8270D-SIM	120-12-7	ANTHRACENE	ug/kg	N	39.7		51.9		680		1150	J	620	J
SW8270D-SIM	56-55-3	BENZO(A)ANTHRACENE	ug/kg	N	117		176		808		1660	J	201	J
SW8270D-SIM	50-32-8	BENZO(A)PYRENE	ug/kg	N	133		191		655		1400	J	104	J
SW8270D-SIM	205-99-2	BENZO(B)FLUORANTHENE	ug/kg	N	175		274		930		1990	J	168	J
SW8270D-SIM	191-24-2	BENZO(G,H,I)PERYLENE	ug/kg	N	87.2		138		379		979	J	71.6	J
SW8270D-SIM	207-08-9	BENZO(K)FLUORANTHENE	ug/kg	N	70.4		106		312		615	J	54.2	J
SW8270D-SIM	218-01-9	CHRYSENE	ug/kg	N	148		209		1060		2190	J	295	J
SW8270D-SIM	53-70-3	DIBENZO(A,H)ANTHRACENE	ug/kg	N	21.1		35.6		77.4		208	J	21.3	J
SW8270D-SIM	206-44-0	FLUORANTHENE	ug/kg	N	253		367		1930		3500	J	921	J
SW8270D-SIM	86-73-7	FLUORENE	ug/kg	N	22.2		25.2		8.5	U	7.0	U	8.8	U
SW8270D-SIM	193-39-5	INDENO(1,2,3-CD)PYRENE	ug/kg	N	79.4		116		382		789	J	52.2	J
SW8270D-SIM	85-01-8	PHENANTHRENE	ug/kg	N	101		143		2390		3950		2720	
SW8270D-SIM	108-95-2	PHENOL	ug/kg	N	96	U	87	U	1090		768	J	185	J
SW8270D-SIM	129-00-0	PYRENE	ug/kg	N	230		328		1960		3710	J	687	J
SW9045	PH	pH	S.U.	N	7.36		7.02		8.16		8.26		8.38	

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				Location ID	OL-RAD-VC-010		OL-RAD-VC-010		OL-RAD-VC-011		OL-RAD-VC-011		OL-RAD-VC-012	
				Field Sample ID	OL-2231-04		OL-2231-05		OL-2231-06		OL-2231-07		OL-2231-08	
				Depth (ft)	0 - 0.13		0.13 - 0.5		0 - 0.13		0.13 - 0.5		0 - 0.13	
				Sampled	05/08/2015		05/08/2015		05/08/2015		05/08/2015		05/08/2015	
				SDG	JB94396		JB94396		JB94396		JB94396		JB94396	
				Matrix	SOIL		SOIL		SOIL		SOIL		SOIL	
				Purpose	REG		REG		REG		REG		REG	
				Type	SED		SED		SED		SED		SED	
Method	Parameter Code	Parameter Name	Units	Leached										
Lloyd Kahn	FRACOC	FRACTION ORGANIC CARBON	%	N	2.43		2.07		4.79		1.50	J	1.26	
Lloyd Kahn	TOC	TOTAL ORGANIC CARBON	mg/kg	N	24300		20700		47900		15000	J	12600	
SM2540G	SOLID	SOLIDS, PERCENT	%	N	37.0		34.6		38.7		27.5		31.7	
SW7471	7439-97-6	MERCURY	mg/kg	N	0.27	J	0.34	J	10.5	J	3.2	J	5.9	J
SW8082	12674-11-2	AROCLOR-1016	ug/kg	N	120	U	130	U	200	UJ	170	UJ	150	U
SW8082	11104-28-2	AROCLOR-1221	ug/kg	N	120	U	130	U	200	UJ	170	UJ	150	U
SW8082	11141-16-5	AROCLOR-1232	ug/kg	N	120	U	130	U	200	UJ	170	UJ	150	U
SW8082	53469-21-9	AROCLOR-1242	ug/kg	N	120	U	130	U	200	UJ	170	UJ	150	U
SW8082	12672-29-6	AROCLOR-1248	ug/kg	N	120	U	130	U	443	J	170	UJ	150	U
SW8082	11097-69-1	AROCLOR-1254	ug/kg	N	120	U	130	U	645	J	170	UJ	150	U
SW8082	11096-82-5	AROCLOR-1260	ug/kg	N	120	U	130	U	200	UJ	170	UJ	150	U
SW8082	11100-14-4	AROCLOR-1268	ug/kg	N	120	U	130	U	200	UJ	170	UJ	150	U
SW8082	1336-36-3	PCBS, N.O.S.	ug/kg	N	120	U	130	U	1090	J	170	UJ	150	U
SW8260	87-61-6	1,2,3-TRICHLOROBENZENE	ug/kg	N	1100	U	1200	U	442	J	276	J	1300	U
SW8260	120-82-1	1,2,4-TRICHLOROBENZENE	ug/kg	N	131	J	1200	U	2800		1070	J	139	J
SW8260	95-50-1	1,2-DICHLOROBENZENE	ug/kg	N	1670		1320		4150		11300	J	1850	
SW8260	108-70-3	1,3,5-TRICHLOROBENZENE	ug/kg	N	1100	U	1200	U	1000	U	1600	UJ	1300	U
SW8260	541-73-1	1,3-DICHLOROBENZENE	ug/kg	N	46.0	J	240	U	3710		259	J	111	J
SW8260	106-46-7	1,4-DICHLOROBENZENE	ug/kg	N	2880		2540		6810		7390	J	2730	
SW8260	71-43-2	BENZENE	ug/kg	N	3440		3150		1160		2000	J	577	
SW8260	108-90-7	CHLOROBENZENE	ug/kg	N	3900		1550		4780		7170	J	1170	
SW8260	100-41-4	ETHYLBENZENE	ug/kg	N	2260		1720		2140		2130	J	865	
SW8260	91-20-3	NAPHTHALENE	ug/kg	N	88500		59500		79400		154000	J	69200	
SW8260	95-47-6	O-XYLENE	ug/kg	N	12200		8790		6610		7340	J	2700	
SW8260	108-88-3	TOLUENE	ug/kg	N	5970		4720		1750		2350	J	1050	
SW8260	XYLENES1314	XYLENES, M & P	ug/kg	N	39000		29700		18100		21700	J	7890	
SW8260	1330-20-7	XYLENES, TOTAL	ug/kg	N	51200		38500		24700		29000	J	10600	
SW8270D-SIM	83-32-9	ACENAPHTHENE	ug/kg	N	8.9	U	9.4	U	532		12	UJ	10	U
SW8270D-SIM	208-96-8	ACENAPHTHYLENE	ug/kg	N	1070		1740		853		641	J	524	
SW8270D-SIM	120-12-7	ANTHRACENE	ug/kg	N	419		558		1650		377	J	347	
SW8270D-SIM	56-55-3	BENZO(A)ANTHRACENE	ug/kg	N	282		338		2720		269	J	328	
SW8270D-SIM	50-32-8	BENZO(A)PYRENE	ug/kg	N	142		190		2470		133	J	236	
SW8270D-SIM	205-99-2	BENZO(B)FLUORANTHENE	ug/kg	N	260		320		3070		279	J	328	
SW8270D-SIM	191-24-2	BENZO(G,H,I)PERYLENE	ug/kg	N	79.5		107		1470		73.0	J	146	
SW8270D-SIM	207-08-9	BENZO(K)FLUORANTHENE	ug/kg	N	94.6		115		1050		76.1	J	119	
SW8270D-SIM	218-01-9	CHRYSENE	ug/kg	N	269		405		3380		262	J	366	
SW8270D-SIM	53-70-3	DIBENZO(A,H)ANTHRACENE	ug/kg	N	24.3		30.1		319		26.9	J	41.2	
SW8270D-SIM	206-44-0	FLUORANTHENE	ug/kg	N	962		1170		6130		772	J	926	
SW8270D-SIM	86-73-7	FLUORENE	ug/kg	N	8.9	U	9.4	U	8.5	U	12	UJ	10	U
SW8270D-SIM	193-39-5	INDENO(1,2,3-CD)PYRENE	ug/kg	N	75.7		103		1320		77.7	J	150	
SW8270D-SIM	85-01-8	PHENANTHRENE	ug/kg	N	2030		2590		6250		1410	J	1390	
SW8270D-SIM	108-95-2	PHENOL	ug/kg	N	8480		8690		4370		14900	J	2200	
SW8270D-SIM	129-00-0	PYRENE	ug/kg	N	675		925		5880		667	J	850	
SW9045	PH	pH	S.U.	N	10.21		11.01		9.50		11.02	J	8.66	

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				Location ID	OL-RAD-VC-012		OL-RAD-VC-013		OL-RAD-VC-013		OL-RAD-VC-014		OL-RAD-VC-014	
				Field Sample ID	OL-2231-09		OL-2231-10		OL-2231-11		OL-2231-12		OL-2231-13	
				Depth (ft)	0.13 - 0.5		0 - 0.13		0.13 - 0.5		0 - 0.13		0.13 - 0.5	
				Sampled	05/08/2015		05/08/2015		05/08/2015		05/08/2015		05/08/2015	
				SDG	JB94396		JB94396		JB94396		JB94396		JB94396	
				Matrix	SOIL		SOIL		SOIL		SOIL		SOIL	
				Purpose	REG		REG		REG		REG		REG	
				Type	SED		SED		SED		SED		SED	
Method	Parameter Code	Parameter Name	Units	Leached										
Lloyd Kahn	FRACOC	FRACTION ORGANIC CARBON	%	N	1.53	J	1.02		1.48		0.0844		0.798	
Lloyd Kahn	TOC	TOTAL ORGANIC CARBON	mg/kg	N	15300	J	10200		14800		844		7980	
SM2540G	SOLID	SOLIDS, PERCENT	%	N	28.4		67.8		36.6		73.5		48.9	
SW7471	7439-97-6	MERCURY	mg/kg	N	1.6	J	1.2		0.21	J	0.34		1.2	J
SW8082	12674-11-2	AROCLOR-1016	ug/kg	N	35	UJ	13	UJ	130	U	32	U	93	U
SW8082	11104-28-2	AROCLOR-1221	ug/kg	N	35	UJ	13	UJ	130	U	32	U	93	U
SW8082	11141-16-5	AROCLOR-1232	ug/kg	N	35	UJ	13	UJ	130	U	32	U	93	U
SW8082	53469-21-9	AROCLOR-1242	ug/kg	N	35	UJ	13	UJ	130	U	32	U	93	U
SW8082	12672-29-6	AROCLOR-1248	ug/kg	N	35	UJ	13	UJ	130	U	32	U	93	U
SW8082	11097-69-1	AROCLOR-1254	ug/kg	N	98.0	J	24.7	J	130	U	32	U	93	U
SW8082	11096-82-5	AROCLOR-1260	ug/kg	N	35	UJ	13	UJ	130	U	32	U	93	U
SW8082	11100-14-4	AROCLOR-1268	ug/kg	N	35	UJ	13	UJ	130	U	32	U	93	U
SW8082	1336-36-3	PCBS, N.O.S.	ug/kg	N	98.0	J	24.7	J	130	U	32	U	93	U
SW8260	87-61-6	1,2,3-TRICHLOROBENZENE	ug/kg	N	1500	UJ	490	U	1100	U	860	U	1500	U
SW8260	120-82-1	1,2,4-TRICHLOROBENZENE	ug/kg	N	1500	UJ	94.0	J	133	J	860	U	1500	U
SW8260	95-50-1	1,2-DICHLOROBENZENE	ug/kg	N	7610	J	1430		3060		605		5370	
SW8260	108-70-3	1,3,5-TRICHLOROBENZENE	ug/kg	N	1500	UJ	490	U	1100	U	860	U	1500	U
SW8260	541-73-1	1,3-DICHLOROBENZENE	ug/kg	N	143	J	37.7	J	220	U	77.1	J	97.6	J
SW8260	106-46-7	1,4-DICHLOROBENZENE	ug/kg	N	6860	J	1730		3800		707		4670	
SW8260	71-43-2	BENZENE	ug/kg	N	1470	J	1400		4480		535		1850	
SW8260	108-90-7	CHLOROBENZENE	ug/kg	N	2960	J	4770		15200		787		4240	
SW8260	100-41-4	ETHYLBENZENE	ug/kg	N	2300	J	1510		8290		397		1950	
SW8260	91-20-3	NAPHTHALENE	ug/kg	N	196000	J	80400		569000		19400		118000	
SW8260	95-47-6	O-XYLENE	ug/kg	N	7210	J	9650		73900		1090		6580	
SW8260	108-88-3	TOLUENE	ug/kg	N	2460	J	2990		19600		447		1620	
SW8260	XYLENES1314	XYLENES, M & P	ug/kg	N	22700	J	30300		219000		3590		19100	
SW8260	1330-20-7	XYLENES, TOTAL	ug/kg	N	29900	J	40000		293000		4680		25600	
SW8270D-SIM	83-32-9	ACENAPHTHENE	ug/kg	N	12	UJ	4.9	U	9.0	U	4.2	U	6.6	U
SW8270D-SIM	208-96-8	ACENAPHTHYLENE	ug/kg	N	1450	J	852		3500		86.8		695	
SW8270D-SIM	120-12-7	ANTHRACENE	ug/kg	N	803	J	373		1120		23.5		241	
SW8270D-SIM	56-55-3	BENZO(A)ANTHRACENE	ug/kg	N	836	J	298		491		10.8		467	
SW8270D-SIM	50-32-8	BENZO(A)PYRENE	ug/kg	N	507	J	179		247		4.82		367	
SW8270D-SIM	205-99-2	BENZO(B)FLUORANTHENE	ug/kg	N	801	J	243		418		10.4		412	
SW8270D-SIM	191-24-2	BENZO(G,H,I)PERYLENE	ug/kg	N	266	J	110		158		4.2	U	139	
SW8270D-SIM	207-08-9	BENZO(K)FLUORANTHENE	ug/kg	N	286	J	101		94.2		4.2	U	157	
SW8270D-SIM	218-01-9	CHRYSENE	ug/kg	N	932	J	333		580		9.07		427	
SW8270D-SIM	53-70-3	DIBENZO(A,H)ANTHRACENE	ug/kg	N	73.4	J	34.0		61.1		4.2	U	46.1	
SW8270D-SIM	206-44-0	FLUORANTHENE	ug/kg	N	2290	J	864		1600		42.4		783	
SW8270D-SIM	86-73-7	FLUORENE	ug/kg	N	12	UJ	4.9	U	9.0	U	4.2	U	6.6	U
SW8270D-SIM	193-39-5	INDENO(1,2,3-CD)PYRENE	ug/kg	N	238	J	92.8		131		4.2	U	176	
SW8270D-SIM	85-01-8	PHENANTHRENE	ug/kg	N	3140	J	1740		5130		70.5		796	
SW8270D-SIM	108-95-2	PHENOL	ug/kg	N	11100	J	3130		12900		860		3360	
SW8270D-SIM	129-00-0	PYRENE	ug/kg	N	1880	J	596		948		28.8		653	
SW9045	PH	pH	S.U.	N	10.87	J	9.56		11.13		9.92		11.43	

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				Location ID	OL-RAD-VC-015		OL-RAD-VC-015		OL-RAD-VC-016		OL-RAD-VC-016	
				Field Sample ID	OL-2231-14		OL-2231-15		OL-2231-16		OL-2231-17	
				Depth (ft)	0 - 0.13		0.13 - 0.5		0 - 0.13		0.13 - 0.5	
				Sampled	05/08/2015		05/08/2015		05/08/2015		05/08/2015	
				SDG	JB94396		JB94396		JB94396		JB94396	
				Matrix	SOIL		SOIL		SOIL		SOIL	
				Purpose	REG		REG		REG		REG	
				Type	SED		SED		SED		SED	
Method	Parameter Code	Parameter Name	Units	Leached								
Lloyd Kahn	FRACOC	FRACTION ORGANIC CARBON	%	N	1.90		1.40		0.0713		1.26	
Lloyd Kahn	TOC	TOTAL ORGANIC CARBON	mg/kg	N	19000		14000		713		12600	
SM2540G	SOLID	SOLIDS, PERCENT	%	N	47.3		34.4		88.0		40.7	
SW7471	7439-97-6	MERCURY	mg/kg	N	2.1	J	0.40	J	0.079		5.8	J
SW8082	12674-11-2	AROCLOR-1016	ug/kg	N	100	UJ	130	U	27	U	140	UJ
SW8082	11104-28-2	AROCLOR-1221	ug/kg	N	100	UJ	130	U	27	U	140	UJ
SW8082	11141-16-5	AROCLOR-1232	ug/kg	N	100	UJ	130	U	27	U	140	UJ
SW8082	53469-21-9	AROCLOR-1242	ug/kg	N	100	UJ	130	U	27	U	140	UJ
SW8082	12672-29-6	AROCLOR-1248	ug/kg	N	100	UJ	130	U	27	U	257	J
SW8082	11097-69-1	AROCLOR-1254	ug/kg	N	176	J	130	U	27	U	318	J
SW8082	11096-82-5	AROCLOR-1260	ug/kg	N	100	UJ	130	U	27	U	140	UJ
SW8082	11100-14-4	AROCLOR-1268	ug/kg	N	100	UJ	130	U	27	U	140	UJ
SW8082	1336-36-3	PCBS, N.O.S.	ug/kg	N	176	J	130	U	27	U	575	J
SW8260	87-61-6	1,2,3-TRICHLOROBENZENE	ug/kg	N	675	J	322	J	5.7	U	2000	U
SW8260	120-82-1	1,2,4-TRICHLOROBENZENE	ug/kg	N	4050		1820	J	1.3	J	245	J
SW8260	95-50-1	1,2-DICHLOROBENZENE	ug/kg	N	138000		157000		7.8		2630	
SW8260	108-70-3	1,3,5-TRICHLOROBENZENE	ug/kg	N	4000	U	2400	U	5.7	U	2000	U
SW8260	541-73-1	1,3-DICHLOROBENZENE	ug/kg	N	1290		1060		6.0		1060	
SW8260	106-46-7	1,4-DICHLOROBENZENE	ug/kg	N	101000		85600		15.4		5100	
SW8260	71-43-2	BENZENE	ug/kg	N	1610		5800		4.2		2460	
SW8260	108-90-7	CHLOROBENZENE	ug/kg	N	92100		132000		5.9		3230	
SW8260	100-41-4	ETHYLBENZENE	ug/kg	N	2390		3460		4.6		2340	
SW8260	91-20-3	NAPHTHALENE	ug/kg	N	148000		187000		785		92900	
SW8260	95-47-6	O-XYLENE	ug/kg	N	8210		12800		10.7		5400	
SW8260	108-88-3	TOLUENE	ug/kg	N	1890		4350		4.8		3650	
SW8260	XYLENES1314	XYLENES, M & P	ug/kg	N	29800		44100		42.4		24000	
SW8260	1330-20-7	XYLENES, TOTAL	ug/kg	N	38000		56900		53.1		29400	
SW8270D-SIM	83-32-9	ACENAPHTHENE	ug/kg	N	6.8	U	9.4	U	3.8	U	8.1	U
SW8270D-SIM	208-96-8	ACENAPHTHYLENE	ug/kg	N	723		2060		10.5		471	
SW8270D-SIM	120-12-7	ANTHRACENE	ug/kg	N	334		868		5.72		343	
SW8270D-SIM	56-55-3	BENZO(A)ANTHRACENE	ug/kg	N	413		536		6.12		584	
SW8270D-SIM	50-32-8	BENZO(A)PYRENE	ug/kg	N	294		336		3.8	U	400	
SW8270D-SIM	205-99-2	BENZO(B)FLUORANTHENE	ug/kg	N	406		435		3.8	U	564	
SW8270D-SIM	191-24-2	BENZO(G,H,I)PERYLENE	ug/kg	N	173		193		3.8	U	230	
SW8270D-SIM	207-08-9	BENZO(K)FLUORANTHENE	ug/kg	N	151		197		3.8	U	127	
SW8270D-SIM	218-01-9	CHRYSENE	ug/kg	N	494		607		3.8	U	711	
SW8270D-SIM	53-70-3	DIBENZO(A,H)ANTHRACENE	ug/kg	N	53.6		53.3		3.8	U	64.6	
SW8270D-SIM	206-44-0	FLUORANTHENE	ug/kg	N	1060		1920		16.4		1390	
SW8270D-SIM	86-73-7	FLUORENE	ug/kg	N	6.8	U	9.4	U	3.8	U	8.1	U
SW8270D-SIM	193-39-5	INDENO(1,2,3-CD)PYRENE	ug/kg	N	141		176		3.8	U	185	
SW8270D-SIM	85-01-8	PHENANTHRENE	ug/kg	N	1670		3630		26.8		1940	
SW8270D-SIM	108-95-2	PHENOL	ug/kg	N	876		4490		552		8610	
SW8270D-SIM	129-00-0	PYRENE	ug/kg	N	1080		1430		14.2		1490	
SW9045	PH	pH	S.U.	N	9.57		10.45		9.01		10.81	