
**2011 ANNUAL OPERATION, MAINTENANCE AND
MONITORING REPORT**

**LCP BRIDGE STREET SITE (OU-1)
Solvay, New York**

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TABLE OF CONTENTS

	<u>Page</u>
ACRONYMS	iii
1.0 INTRODUCTION	1
2.0 SYSTEM OPERATION	1
3.0 MAINTENANCE	1
4.0 MONITORING	3
4.1 Groundwater	3
4.2 Surface Water	3
4.3 Sediment	4
4.4 Soil	4
4.5 Biota	4
4.6 Wetlands Monitoring	4
5.0 MAINTENANCE PROGRAM SUCCESS	5
6.0 REFERENCES	5

**TABLE OF CONTENTS
(CONTINUED)****LIST OF TABLES**

Table 1	Monthly Pumping Summary
Table 2	Soil Sampling Analytical Results
Table 3	Piezometer Static Water Elevations
Table 4	Piezometer Analytical Results
Table 5	Monitoring Well Analytical Results
Table 6	Surface Water Analytical Results
Table 7	Sediment Analytical Results
Table 8	Biota Analytical Results

LIST OF FIGURES

Figure 1	Piezometer/Monitoring Well Locations
Figure 2	LCP 2011 OM&M Removal Areas
Figure 3	West Ditch Sample Results and Excavation Plan
Figure 4	West Ditch 2 Sample Results and Excavation Plan
Figure 5	Wetland A & MW-26 Sample Results and Excavation Plan
Figure 6	West Flume Sample Results and Excavation Plan
Figure 7	Annual Surface Water/Sediment Sampling Locations
Figure 8	Mercury Concentrations in Tissue Biota Samples

LIST OF APPENDICES

**APPENDIX A WETLAND DELINEATION REPORT FOR THE DREDGE SPOILS
AREA LCP BRIDGE STREET SITE**

APPENDIX B WETLANDS MONITORING REPORT YEAR 4-2011

ACRONYMS

CQAPP	Construction Quality Assurance Procedures Plan
CSAP	Construction Sampling and Analysis Plan
LCP	Linden Chemicals and Plastics
METRO	Metropolitan Wastewater Treatment Facility
NYSDEC	New York State Department of Environmental Conservation
OM&M	Operation Maintenance & Monitoring
OU-1	Operating Unit One
TES	Terrestrial Environmental Specialists

2011 ANNUAL OPERATION, MAINTENANCE AND MONITORING REPORT

1.0 INTRODUCTION

The maintenance program being implemented at the Linden Chemicals and Plastics (LCP) Bridge Street (OU-1) site in Solvay, New York has been effective. This report details the operation, maintenance and monitoring (OM&M) activities conducted at the site in 2011. It has been prepared in conjunction with the LCP OM&M Plan (Parsons, 2009a) and is intended to provide summaries of the collected data and status of OM&M activities.

Under direction of the New York State Department of Environmental Conservation (NYSDEC), the remediation of LCP involved a combination of sewer system closure, mercury removal from soil on the former plant property, excavation of impacted sediments in surrounding areas with relocation to the soil/sediment containment area, construction of an underground cut-off wall and low-permeability soil cover over the soil/sediment containment area, and installation of an onsite groundwater collection system. As part of the project, excavation areas were restored to provide habitats for wading birds, ducks, amphibians, fish, and mammals (Parsons, 2009b).

OM&M operations consist of site and equipment maintenance in addition to monitoring of groundwater, sediment, surface water, wetlands and biota. Upgrades to the site systems are performed as needed, more detail is provided in the respective sections below.

2.0 SYSTEM OPERATION

Groundwater extracted by the 15 pumping wells within the soil/sediment containment area was pumped to two 10,000-gallon tanks in the onsite extraction building (Figure 1). On January 21, 2010, the LCP pre-treatment system began operation. The pre-treatment system consists of a filter feed pump, two 5-micron bag filters, two fiberglass-reinforced plastic granular activated carbon vessels and a flow meter. The design pumping rate is approximately 5 to 25 gpm. Pre-treated groundwater is discharged to the Onondaga County West Side Trunk Sewer from which it flows to the Onondaga County Metropolitan Wastewater Treatment Facility (METRO). In 2011, approximately 2,474,896 gallons were pre-treated onsite and sent to METRO.

In addition to the groundwater pre-treated onsite, approximately 7,710 gallons were hauled to the Willis Avenue Treatment Plant. Monthly summaries are provided in Table 1 of this report.

3.0 MAINTENANCE

The OM&M contractor providing maintenance activities for the specified period was CH2M HILL OMI. Maintenance conducted included system equipment maintenance, cap mowing and snow removal. Maintenance conducted to system equipment was described in the weekly inspection, operation and monitoring reports generated by OMI and submitted to the NYSDEC and associated distribution list with the monthly reports for the LCP OU-1 site.

In 2011, additional soil/sediment removals were conducted in the West Ditch, Wetland A, and the Dredge Spoils Area to address impacted material identified during previous OM&M sampling events (Figure 2). Removals were completed in accordance with the *LCP OU-1 Proposed Soil Removal – West Ditch, Wetland A and Dredge Spoils Areas* (Parsons, 2011).

Prior to removals, a wetland delineation was performed within the Dredge Spoils Area of the site. This delineation was conducted in accordance with the NYSDEC-approved Revised Final Work Plan, Wetlands/ Floodplain Assessment, Onondaga Lake (O'Brien and Gere/Parsons, 2004). Results of this delineation are provided in Appendix A of this report.

Soils/sediment removed during remedial excavation were relocated to the LCP landfill and managed with the Geddes Brook IRM sediment. For the West Ditch, Wetland A and Dredge Spoils Area 3, removals were completed in 2011 and the areas were restored in accordance with the above referenced work plan. Removals were also completed within Dredge Spoils Area #2 in 2011, excavation in Dredge Spoils Area 1 will be completed in 2012 and both areas #1 and #2 will be restored during the 2012 construction season. Following excavation, post-excavation samples were collected in accordance with the remedial work plan indicated above. As agreed upon by Honeywell and NYSDEC, confirmatory sample results are summarized in Table 2 and tag maps are provided as Figures 3 through 6.

Several issues during excavation of the Dredge Spoil area north of the West Flume resulted in expansion of the remedial activities. The original scope of work called for the removal of approximately 12,000 to 12,500 CY of material from this area. Previous sampling in the area that was used to delineate remedial areas indicated a clay layer at approximately 2 ft in depth. During remedial construction, it became evident, based upon confirmatory sampling that this was a reworked layer intermingled with mercury-impacted material. Excavation depths increased to remove this impacted material and prevent recontamination of the remediated areas. Excavation depths continued through the reworked material into a native silty clay layer. It was also observed that in areas along the western limits of the excavation the silty clay layer dropped significantly in elevation as it was excavated. Based upon the presence of abandoned utilities, it was believe that this is the result of historic excavation in this area for the installation of these utilities. In addition, areal limits of excavation were expanded in some areas based upon confirmatory sampling results throughout the site. The majority of the samples that failed clean-up goals were composite samples of the reworked and waste materials that were removed in the Dredge Spoils Area. In the West Ditch and Wetland A portions of the site, elevated sidewall samples occurred in mainly fill materials. Some additional areal removals were mitigated by installing a low-permeability material to be protective of existing utilities and infrastructure that were in close proximity to the excavations as shown on Figures 3 and 6. Approximately 10,500 CY of additional material was removed resulting in a total of approximately 25,000 CY of soils/sediments removed during 2011.

4.0 MONITORING

4.1 Groundwater

Containment of impacted sediments in the soil/sediment containment area is monitored both hydraulically and analytically using the piezometer and monitoring well network shown in Figure 1.

Final checks to the piezometer monitoring system are ongoing at the time of this report, in the interim static water levels were measured manually and included in the monthly reports submitted to the NYSDEC (and associated distribution list). The static water level elevations presented in each monthly report have been consolidated and provided in Table 3 of this report.

During the time period covered by this report, water levels measured by the piezometers have remained generally consistent and below the elevation of the top of the cut-off wall. An inward gradient will be achieved when the interior shallow, intermediate, and deep piezometer readings are less than the corresponding exterior shallow, intermediate, and deep piezometer readings. It is anticipated that it will take several years after the final low-permeability cap is constructed to fully achieve an inward and upward gradient at the site.

The piezometers outside of the cut-off wall along the north side of the containment area (PZ 1B: shallow, intermediate and deep through PZ 4B: shallow, intermediate and deep) were sampled quarterly by CH2M HILL OMI and analyzed for total mercury by SW 846 Method 7470. The analytical results are provided in Table 4 of this report.

The analytical results for the exterior piezometer sampling are predominantly non-detect and generally within the same range or lower than the pre-remediation mercury results presented in the RI for the LCP OU-1 site. The exterior shallow piezometer data ranges from non-detect to 3.3 µg/L. The exterior intermediate piezometer data ranges from non-detect to 0.16 µg/L. The exterior deep piezometer data ranges from non-detect to 0.094 µg/L. The piezometer data indicates that the cut-off wall is effectively containing contaminated groundwater.

In addition to the exterior piezometers, monitoring wells 34D, 35D, and 36D located within the containment area were sampled by CH2M HILL OMI quarterly and analyzed for total mercury by SW 846 Method 7470. The monitoring well results are provided in Table 5 of this report. During each sampling event, the monitoring wells were also inspected for elemental mercury by the use of a copper probe. Elemental mercury was not detected during the sample events. The total mercury concentrations in the wells have been stable.

4.2 Surface Water

Nine annual monitoring locations (Figure 7) have been established in the West Flume and Wetland A/B complex for total mercury, methylmercury, and dissolved mercury. Annual surface water samples were collected at the monitoring locations in August 2011. The data range for total mercury from the West Flume (excluding the upstream sample location (LCP1-SW-63)) was 1.8 ng/L to 4.5 ng/L, 16 ng/L to 29 ng/L for Wetland A and 2.7 ng/L to 18 ng/L for Wetland B. Individual sample results are provided in Table 6 of this report.

4.3 Sediment

Sediment was also sampled at the nine annual monitoring locations and analyzed for total and methyl mercury by SW 846 Method 7471 and EPA 1630. Samples were collected in August 2011. The total mercury data ranges for the West Flume (excluding the upstream sample location (LCP1-SW-63)) were 0.24 mg/kg to 0.42 mg/kg, 0.24 to 4.2 mg/kg for Wetland A and 0.075 mg/kg to 0.68 mg/kg for Wetland B. Individual sample results are provided in Table 7 of this report.

4.4 Soil

As indicated above in Section 3.0, post excavation confirmatory samples were collected in the West Ditch, Wetland A and Dredge Spoils Area following removals. The samples were collected in accordance with the NYSDEC approved Construction Sampling and Analysis Plan (CSAP) and the Construction Quality Assurance Procedures Plan (CQAPP) (Parsons, 2004). The results of the sampling are presented in Table 2 of this report.

4.5 Biota

Biota in and around the West Flume and Wetland A/B complex is sampled annually as part of OM&M. Baseline (or pre-remediation) samples were collected in 2005; four annual sampling events (post remediation) have been conducted following completion of initial remedial activities in 2007. As noted above, remedial activities continued in 2011 in the West Ditch, Wetland A, and the Dredge Spoils Area. The presence of contamination in these areas since 2007 and the remedial activity work in 2011 may have impacted mercury concentrations in the biota included in the sampling program.

In general, field crews target organisms captured during the baseline monitoring event to provide consistent comparisons between organisms. Mercury concentrations in biota that were most consistently sampled from year to year are presented in Figure 8. Individual sample results are provided in Table 8 of this report.

4.6 Wetlands Monitoring

Wetland A, Wetland B and the West Flume were restored following the removal of impacted sediments by placement of 1 ft. of clean imported topsoil. Following placement of topsoil, the areas were restored to a variety of habitat types, including a wet meadow/scrub-shrub fringe, emergent wetland, aquatic bed, open water, and drainage channel. These habitat types were created by developing various water depth zones according to the wetland restoration plan. The restoration plan places an emphasis on the development of aquatic bed and deep emergent marsh habitat types in order to limit invasive species (EPA, 2009)

During the OM&M period, the restored wetland areas are being monitored annually to evaluate the success of the restoration. The monitoring program began in 2008 and consists of three monitoring events per year during the early, mid and later parts of the growing season (Parsons, 2009a). The parameters monitored include:

- Vegetation (type, percent cover, and frequency)
- Hydrology

- Invasive species (species, location, and approximate size of patch)
- Wildlife usage

Similar to previous years, the wetland assessments in 2011 were made by Terrestrial Environmental Specialists (TES). The number of plant species recorded each year has increased steadily from 77 species in 2008, 97 in 2009, 115 in 2010 and up to 148 observed in 2011. This is substantially more than the *Phragmites*-dominated system that existed prior to remedial efforts. The 2011 wetlands report generated by TES is provided in Appendix B of this report.

5.0 MAINTENANCE PROGRAM SUCCESS

To date, the maintenance program being implemented at the LCP site has been effective. For the year 2012, it is anticipated that the remainder of the removals and restoration in the Dredge Spoils Area will be complete.

6.0 REFERENCES

- EPA. 2009. First Five Year Review Report, LCP Bridge Street Subsite (OU5) Onondaga Lake Site Village of Solvay, Town of Geddes Onondaga County New York. Prepared by the U.S. Environmental Protection Agency Region 2, October 2009.
- O'Brien and Gere/Parsons, 2004. Revised Final Work Plan Wetlands/Floodplain Assessment, Onondaga Lake. September 3, 2004.
- Parsons. 2009a. Operation, Maintenance, and Monitoring Plan for the LCP Bridge Street Site. Prepared for Honeywell, Syracuse, New York. January 2009.
- Parsons. 2009b. Operation, Maintenance and Monitoring Sampling Data Report and Supplemental Sampling Plan. Prepared for Honeywell.
- Parsons. 2011. LCP OU-1 Proposed Soil Removal – West Ditch, Wetland A and Dredge Spoils Areas. Prepared for Honeywell, Syracuse, New York. May, 2011.

TABLES

TABLE 1: MONTHLY PUMPING SUMMARY		
Month	Pre-Treatment System - METRO	Trucked to Willis Avenue Treatment Plant
January	260,114	
February	264,403	7,710
March	364,754	
April	438,529	
May	291,187	
June	165,908	
July	119,161	
August	97,085	
September	79,862	
October	98,492	
November	123,189	
December	172,212	
Sub-Totals	2,474,896	7,710
Total	2,482,606	

TABLE 2: SOIL SAMPLING ANALYTICAL RESULTS				
	Depth (ft)		Mercury	Qualifier
	Start	End	Result (mg/kg)	
<i>West Ditch Area 1</i>				
LCP1-WDA1-SS-01	0	0.5	0.93	
LCP1-WDA1-SS-02	0	0.5	3.2	
LCP1-WDA1-SS-03	0	0.5	0.13	
LCP1-WDA1-SS-04	0	0.5	6.8	
LCP1-WDA1-SS-05	0	0.5	0.34	
LCP1-WDA1-SS-06	0	0.5	0.034	J
LCP1-WDA1-SS-07	0	0.5	0.79	
LCP1-WDA1-SS-08	0	0.5	0.036	J
LCP1-WDA1-SS-09	0	0.5	0.1	J
LCP1-WDA1-SS-10	0	0.5	0.12	
LCP1-WDA1-SS-11	0	0.5	1.4	
LCP1-WDA1-SS-12	0	0.5	0.19	
LCP1-WDA1-SS-13	0	0.5	3.3	
LCP1-WDA1-SS-14	0	0.5	0.25	
LCP1-WDA1-SS-15	0	0.5	0.5	
LCP1-WDA1-SS-16	0	0.5	0.073	J
LCP1-WDA1-SS-17	0	0.5	0.39	
LCP1-WDA1-SS-18	0	0.5	2.5	
LCP1-WDA1-SS-19	0	0.5	0.049	J
LCP1-WDA1-SS-20	0	0.5	0.037	J
LCP1-WDA1-SS-21	0	0.5	0.05	J
LCP1-WDA1-SS-22	0	0.5	0.36	
LCP1-WDA1-SS-23	0	0.5	0.064	J
LCP1-WDA1-SS-24	0	0.5	0.15	
LCP1-WDA1-SS-25	0	0.5	0.11	J
LCP1-WDA1-SS-26	0	0.5	0.62	
LCP1-WDA1-SS-27	0	0.5	0.43	
LCP1-WDA1-SS-28	0	0.5	0.79	
LCP1-WDA1-SS-29	0	0.5	2.4	
LCP1-WDA1-SS-30	0	0.5	4.5	
LCP1-WDA1-SS-31	0	0.5	0.19	
LCP1-WDA1-SS-32	0	0.5	0.12	J
<i>West Ditch Area 2</i>				
LCP1-WDA2-SS-01	0	0.5	0.045	J
LCP1-WDA2-SS-02	0	0.5	0.89	
LCP1-WDA2-SS-03	0	0.5	1.5	
LCP1-WDA2-SS-04	0	0.5	1.3	
LCP1-WDA2-SS-05	0	0.5	0.9	
LCP1-WDA2-SS-06	0	0.5	0.11	J
LCP1-WDA2-SS-07	0	0.5	0.21	
LCP1-WDA2-SS-08	0	0.5	1.2	
LCP1-WDA2-SS-09	0	0.5	0.58	
LCP1-WDA2-SS-10	0	0.5	1.9	
LCP1-WDA2-SS-11	0	0.5	3.4	
LCP1-WDA2-SS-12	0	0.5	0.49	
LCP1-WDA2-SS-13	0	0.5	2.1	
LCP1-WDA2-SS-14	0	0.5	11	
LCP1-WDA2-SS-15	0	0.5	1.2	
LCP1-WDA2-SS-16	0	0.5	2.4	
LCP1-WDA2-SS-17	0	0.5	0.16	

TABLE 2: SOIL SAMPLING ANALYTICAL RESULTS				
	Depth (ft)		Mercury	Qualifier
	Start	End	Result (mg/kg)	
	LCP1-WDA2-SS-18	0	0.5	
LCP1-WDA2-SS-19	0	0.5	9.7	
LCP1-WDA2-SS-20	0	0.5	0.11	J
LCP1-WDA2-SS-21	0	0.5	0.13	
LCP1-WDA2-SS-22	0	0.5	0.42	
LCP1-WDA2-SS-23	0	0.5	4	
LCP1-WDA2-SS-24	0	0.5	2.1	
LCP1-WDA2-SS-25	0	0.5	33	
LCP1-WDA2-SS-26	0	0.5	3.8	
LCP1-WDA2-SS-27	0	0.5	0.63	
LCP1-WDA2-SS-28	0	0.5	0.31	
LCP1-WDA2-SS-29	0	0.5	3	
LCP1-WDA2-SS-30	0	0.5	0.073	J
LCP1-WDA2-SS-31	0	0.5	0.38	
LCP1-WDA2-SS-32	0	0.5	0.23	
LCP1-WDA2-SS-33	0	0.5	1.4	
LCP1-WDA2-SS-34	0	0.5	0.05	J
LCP1-WDA2-SS-35	0	0.5	1	
LCP1-WDA2-SS-36	0	0.5	0.65	J
LCP1-WDA2-SS-37	0	0.5	0.17	J
LCP1-WDA2-SS-38	0	0.5	18	
LCP1-WDA2-SS-39	0	0.5	0.13	
LCP1-WDA2-SS-40	0	0.5	0.09	J
<i>Wetland Area 1</i>				
LCP1-WLA1-SS-01	0	0.5	0.66	
LCP1-WLA1-SS-02	0	0.5	0.46	
LCP1-WLA1-SS-03	0	0.5	1	
LCP1-WLA1-SS-04	0	0.5	0.25	
LCP1-WLA1-SS-05	0	0.5	0.31	
LCP1-WLA1-SS-06	0	0.5	0.28	
LCP1-WLA1-SS-07	0	0.5	2	
LCP1-WLA1-SS-08	0	0.5	0.49	
LCP1-WLA1-SS-09	0	0.5	0.14	
<i>Wetland Area 2</i>				
LCP1-WLA2-SS-01	0	0.5	0.039	J
LCP1-WLA2-SS-02	0	0.5	0.15	
LCP1-WLA2-SS-03	0	0.5	0.19	
LCP1-WLA2-SS-04	0	0.5	0.23	
LCP1-WLA2-SS-05	0	0.5	0.05	J
LCP1-WLA2-SS-06	0	0.5	0.043	J
LCP1-WLA2-SS-07	0	0.5	0.081	J
LCP1-WLA2-SS-08	0	0.5	0.039	J
LCP1-WLA2-SS-09	0	0.5	0.064	J
LCP1-WLA2-SS-10	0	0.5	0.12	
LCP1-WLA2-SS-11	0	0.5	0.072	J
LCP1-WLA2-SS-12	0	0.5	0.05	J
LCP1-WLA2-SS-13	0	0.5	0.068	J
LCP1-WLA2-SS-14	0	0.5	1.1	
LCP1-WLA2-SS-15	0	0.5	0.64	

TABLE 2: SOIL SAMPLING ANALYTICAL RESULTS				
	Depth (ft)		Mercury	Qualifier
	Start	End	Result (mg/kg)	
	<i>Dredge Spoils Area</i>			
LCP1-DSA2-SS-13	0	0.5	0.057	J
LCP1-DSA2-SS-14	0	0.5	0.058	J
LCP1-DSA2-SS-15	0	0.5	0.057	J
LCP1-DSA2-SS-16	0	0.5	0.044	J
LCP1-DSA2-SS-17	0	0.5	0.045	J
LCP1-DSA2-SS-18	0	0.5	0.051	J
LCP1-DSA2-SS-19	0	0.5	0.058	J
LCP1-DSA2-SS-20	0	0.5	0.057	J
LCP1-DSA2-SS-21	0	0.5	0.031	J
LCP1-DSA2-SS-22	0	0.5	0.039	J
LCP1-DSA2-SS-23	0	0.5	0.04	J
LCP1-DSA2-SS-24	0	0.5	0.043	J
LCP1-DSA2-SS-25	0	0.5	0.052	J
LCP1-DSA2-SS-26	0	0.5	0.03	J
LCP1-DSA2-SS-27	0	0.5	0.043	J
LCP1-DSA2-SS-28	0	0.5	0.071	J
LCP1-DSA2-SS-29	0	0.5	0.13	J
LCP1-DSA2-SS-30	0	0.5	0.088	J
LCP1-DSA2-SS-31	0	0.5	0.035	J
LCP1-DSA2-SS-32	0	0.5	0.039	J
LCP1-DSA2-SS-33	0	0.5	0.1	J
LCP1-DSA2-SS-34	0	0.5	0.091	J
LCP1-DSA2-SS-35	0	0.5	0.071	J
LCP1-DSA2-SS-36	0	0.5	0.087	J
LCP1-DSA2-SS-37	0	0.5	0.12	J
LCP1-DSA2-SS-38	0	0.5	0.19	J
LCP1-DSA2-SS-39	0	0.5	0.22	J
LCP1-DSA2-SS-40	0	0.5	0.086	J
LCP1-DSA2-SS-41	0	0.5	0.066	J
LCP1-DSA2-SS-42	0	0.5	0.096	J
LCP1-DSA2-SS-43	0	0.5	0.1	J
LCP1-DSA2-SS-44	0	0.5	0.09	J
LCP1-DSA2-SS-45	0	0.5	0.16	J
LCP1-DSA2-SS-46	0	0.5	0.098	J
LCP1-DSA2-SS-47	0	0.5	0.11	J
LCP1-DSA2-SS-48	0	0.5	0.13	J
LCP1-DSA2-SS-49	0	0.5	0.13	J
LCP1-DSA2-SS-50	0	0.5	0.076	J
LCP1-DSA2-SS-51	0	0.5	0.057	J
LCP1-DSA2-SS-52	0	0.5	0.096	J
LCP1-DSA2-SS-53	0	0.5	0.084	J
LCP1-DSA2-SS-54	0	0.5	0.054	J

TABLE 2: SOIL SAMPLING ANALYTICAL RESULTS				
	Depth (ft)		Mercury	Qualifier
	Start	End	Result (mg/kg)	
	LCP1-DSA2-SS-55	0	0.5	
LCP1-DSA2-SS-56	0	0.5	0.11	J
LCP1-DSA2-SS-57	0	0.5	0.1	J
LCP1-DSA2-SS-58	0	0.5	0.13	J
LCP1-DSA2-SS-59	0	0.5	0.044	J
LCP1-DSA2-SS-60	0	0.5	0.058	J
LCP1-DSA2-SS-61	0	0.5	0.073	J
LCP1-DSA2-SS-62	0	0.5	0.047	J
LCP1-DSA2-SS-63	0	0.5	0.14	J
LCP1-DSA2-SS-64	0	0.5	0.076	J
LCP1-DSA2-SS-65	0	0.5	0.16	
LCP1-DSA2-SS-66	0	0.5	0.058	J
LCP1-DSA2-SS-67	0	0.5	0.11	J
LCP1-DSA2-SS-68	0	0.5	0.051	J
LCP1-DSA2-SS-69	0	0.5	0.054	J
LCP1-DSA2-SS-70	0	0.5	0.053	J
LCP1-DSA2-SS-71	0	0.5	0.055	J
LCP1-DSA2-SS-72	0	0.5	0.046	J
LCP1-DSA2-SS-73	0	0.5	0.038	J
LCP1-DSA2-SS-74	0	0.5	0.084	J
LCP1-DSA2-SS-75	0	0.5	0.043	J
LCP1-DSA2-SS-76	0	0.5	0.1	J
LCP1-DSA2-SS-77	0	0.5	0.11	J
LCP1-DSA2-SS-78	0	0.5	6	
LCP1-DSA2-SS-79	0	0.5	23	
LCP1-DSA2-SS-80	0	0.5	0.11	J
LCP1-DSA2-SS-81	0	0.5	0.11	J
LCP1-DSA2-SS-82	0	0.5	0.1	J
LCP1-DSA2-SS-83	0	0.5	0.16	
LCP1-DSA2-SS-84	0	0.5	0.16	
LCP1-DSA2-SS-85	0	0.5	0.16	
LCP1-DSA2-SS-86	0	0.5	90	
LCP1-DSA2-SS-87	0	0.5	0.18	
LCP1-DSA2-SS-88	0	0.5	43	
LCP1-DSA2-SS-89	0	0.5	40	
LCP1-DSA2-SS-90	0	0.5	0.27	
LCP1-DSA2-SS-91	0	0.5	4.7	
LCP1-DSA2-SS-92	0	0.5	14	
LCP1-DSA2-SS-93	0	0.5	0.25	
LCP1-DSA2-SS-94	0	0.5	0.31	
LCP1-DSA2-SS-95	0	0.5	0.22	
LCP1-DSA2-SS-96	0	0.5	0.12	J
LCP1-DSA2-SS-97	0	0.5	0.038	J
LCP1-DSA2-SS-98	0	0.5	0.14	J
LCP1-DSA2-SS-99	0	0.5	0.12	J
LCP1-DSA2-SS-100	0	0.5	0.11	J
LCP1-DSA2-SS-101	0	0.5	0.093	J
LCP1-DSA2-SS-102	0	0.5	0.041	J
LCP1-DSA2-SS-103	0	0.5	0.096	J

TABLE 2: SOIL SAMPLING ANALYTICAL RESULTS				
	Depth (ft)		Mercury	Qualifier
	Start	End	Result (mg/kg)	
	LCP1-DSA2-SS-104	0	0.5	
LCP1-DSA2-SS-105	0	0.5	0.054	
LCP1-DSA2-SS-106	0	0.5	0.15	
LCP1-DSA2-SS-107	0	0.5	0.14	
LCP1-DSA2-SS-108	0	0.5	0.1	
LCP1-DSA2-SS-109	0	0.5	0.17	

Table Notes:

J: Result is considered an estimate.

- All highlighted sample concentrations represent final bottom of excavation validated concentrations, non-highlighted concentrations indicate areas where additional excavation was conducted based on agreement between Honeywell and the NYSDEC.

Table 3: Piezometer Static Water Elevations

	PZ-1 Wall Top	PZ-1A- Shallow	PZ-1A- Mid	PZ-1A- Deep	PZ-1B- Shallow	PZ-1B- Mid	PZ-1B- Deep		PZ-2 Wall Top	PZ-2A- Shallow	PZ-2A- Mid	PZ-2A- Deep	PZ-2B- Shallow	PZ-2B- Mid	PZ-2B- Deep
1/20/11	393.3	389.4	374.5	374.5	383.9	374.4	374.5		392.5	382.5	374.6	374.2	377.7	374.1	374.3
1/31/11	393.3	389.1	374.2	374.3	383.9	374.1	374.2		392.5	382.3	374.3	374.0	377.5	373.9	374.0
2/25/11	393.3	390.3	374.9	374.9	384.0	374.7	374.8		392.5	383.1	374.9	374.6	378.0	374.5	374.7
3/10/11	393.3	390.8	375.3	375.3	384.2	375.2	375.3		392.5	383.3	375.4	375.1	378.3	375.0	375.2
4/15/11	393.3	390.0	375.0	375.1	384.0	374.9	375.0		392.5	382.8	375.1	374.8	378.1	374.7	374.9
5/20/11	393.3	390.4	375.3	375.3	384.1	375.2	375.3		392.5	383.1	375.4	375.1	378.3	375.0	375.2
5/31/11	393.3	390.0	374.8	374.8	384.0	374.7	374.8		392.5	382.8	374.9	374.6	377.9	374.4	374.7
6/17/11	393.3	389.5	374.4	374.4	384.3	374.2	374.3		392.5	382.6	374.4	374.1	377.3	373.9	374.2
7/1/11	393.3	389.2	374.4	374.4	383.9	374.2	374.2		392.5	382.8	374.5	374.0	377.5	373.8	374.1
7/15/11	393.3	389.0	373.9	373.9	383.7	373.7	373.8		392.5	382.3	374.0	373.6	376.7	373.4	373.7
7/29/11	393.3	388.9	373.8	373.7	383.5	373.6	373.6		392.5	382.3	373.8	373.4	376.4	373.3	373.5
8/12/11	393.3	388.7	374.0	374.0	383.8	373.8	373.9		392.5	382.3	374.1	373.7	377.4	373.5	373.8
8/26/11	393.3	388.7		373.7	383.8	373.8	373.9		392.5	382.5	374.1	373.6	377.5	373.5	373.7
9/9/11	393.3	388.7	374.8	374.7	383.9	374.5	374.6		392.5	382.7	374.9	374.4	378.2	374.2	374.4
9/23/11	393.3	388.8	374.3	374.2	383.8	374.0	374.0		392.5	382.7	374.3	373.8	377.4	373.7	373.9
10/7/11	393.3	388.7	374.5	374.4	383.8	374.2	374.2		392.5	382.7	374.5	374.0	377.9	373.9	374.1
10/21/11	393.3	388.7	374.6	374.6	384.0	374.3	374.3		392.5	383.0	374.7	374.1	378.1	374.0	374.2
11/4/11	393.3	388.8	374.5	374.5	384.2	374.2	374.3		392.5	382.9	374.5	374.0	377.7	373.9	374.1
11/18/11	393.3	388.7	374.4	374.3	383.9	374.2	374.2		392.5	382.8	374.5	374.0	377.7	373.8	374.0
12/1/11	393.3	388.8	374.6	374.5	384.0	374.4	374.4		392.5	383.3	374.7	374.2	378.0	374.0	374.3
12/22/11	393.3	388.8	374.5	374.5	384.1	374.28	374.3		392.5	383.1	374.6	374.1	377.9	374.0	374.2

Table 3: Piezometer Static Water Elevations

	PZ-3 Wall Top	PZ-3A- Shallow	PZ-3A- Mid	PZ-3A- Deep	PZ-3B- Shallow	PZ-3B- Mid	PZ-3B- Deep		PZ-4 Wall Top	PZ-4A- Shallow	PZ-4A- Mid	PZ-4A- Deep	PZ-4B- Shallow	PZ-4B- Mid	PZ-4B- Deep
1/20/11	393.0	388.8	374.5	374.3	386.1	374.1	374.2		393.5	389.1	374.6	376.2	384.2	374.8	376.2
1/31/11	393.0	388.5	374.4	374.1	388.7	373.8	373.9		393.5	388.8	374.3	376.0	384.0	374.5	376.0
2/25/11	393.0	389.8	374.9	374.7	389.2	374.4	374.6		393.5	390.4	375.0	376.5	384.7	375.2	376.6
3/10/11	393.0	390.2	375.4	375.3	389.2	375.0			393.5	390.8	375.4	377.1	385.2	375.7	377.1
4/15/11	393.0	389.4	375.1	374.9	387.8	374.6	374.9		393.5	389.8	375.1	376.7	384.0	375.3	376.7
5/20/11	393.0	390.0	375.3	375.3	388.0	374.9	375.1		393.5	390.5	375.4	377.1	384.8	375.7	377.1
5/31/11	393.0	389.8	374.9	374.7	386.6	374.4	374.6		393.5	390.0	374.9	376.6	384.1	375.1	376.6
6/17/11	393.0	389.2	374.4	374.2	385.9	373.5	374.5		393.5	389.4	374.5	376.1	383.3	374.6	376.1
7/1/11	393.0	389.0	374.6	374.1	386.3	373.8	374.0		393.5	389.1	374.7	375.9	383.5	374.5	376.0
7/15/11	393.0	388.6	373.9	373.6	385.4	373.4	373.6		393.5	388.8	374.0	375.5	382.9	374.1	375.6
7/29/11	393.0	388.7	373.8	373.5	384.9	373.3	373.5		393.5	388.8	373.9	375.4	382.9	373.9	375.4
8/12/11	393.0	388.5	374.1	373.8	387.3	373.5	373.7		393.5	388.6	374.2	375.6	383.9	374.2	375.6
8/26/11	393.0	388.1	374.1	373.8	386.9	373.5	373.7		393.5	388.5	374.2	375.5	383.8	374.2	375.6
9/9/11	393.0	388.6	374.9	374.5	387.8	374.3	374.4		393.5	388.8	375.1	376.1	384.5	374.9	376.1
9/23/11	393.0	388.5	374.4	373.9	385.8	373.7	373.9		393.5	388.6	374.6	375.7	383.9	374.3	375.7
10/7/11	393.0	388.4	374.7	374.1	385.4	373.9	374.0		393.5	388.6	374.8	375.9	384.0	374.5	375.8
10/21/11	393.0	388.4	374.8	374.2	387.8	374.0	374.2		393.5	388.6	374.9	376.0	384.2	374.6	376.0
11/4/11	393.0	388.4	374.5	374.1	385.8	373.9	374.1		393.5	388.5	374.7	376.0	384.1	374.5	376.0
11/18/11	393.0	388.2	374.5	374.1	386.1	373.9	374.0		393.5	388.3	374.7	375.9	384.0	374.4	375.9
12/1/11	393.0	388.4	374.7	374.3	387.8	374.1	374.2		393.5	388.5	374.8	376.1	384.2	374.7	376.1
12/22/11	393.0	388.4	374.5	374.2	388.7	374.0	374.1		393.5	388.6	374.7	376.1	384.3	374.6	376.1

Table 3: Piezometer Static Water Elevations

	PZ-5 Wall Top	PZ-5A- Shallow	PZ-5A- Mid	PZ-5A- Deep	PZ-5B- Shallow	PZ-5B- Mid	PZ-5B- Deep		PZ-6 Wall Top	PZ-6A- Shallow	PZ-6A- Mid	PZ-6A- Deep	PZ-6B- Shallow	PZ-6B- Mid	PZ-6B- Deep
1/20/11	394.8	390.0	374.7	383.6	388.0	378.0	381.6		393.4	390.1	375.2	380.5	390.5	378.0	390.3
1/31/11	394.8	389.6	374.5	383.2	388.0	377.8	381.3		393.4	389.7	375.0	380.3	390.3	377.7	389.8
2/25/11	394.8	390.6	375.1	384.1	388.4	378.3	381.5		393.4	391.1	375.6	381.3	390.6	378.3	391.7
3/10/11	394.8	391.7	375.5	384.5	388.5	378.9	381.9		393.4	391.7	376.0	381.9	391.1	378.9	392.4
4/15/11	394.8	390.3	375.3	384.1	388.3	378.5	382.1		393.4	390.5	375.7	381.4	390.5	378.5	391.4
5/20/11	394.8	388.1	374.5	384.7	388.1	378.8	382.4		393.4	391.0	374.8	382.0	390.6	378.8	392.0
5/31/11	394.8	389.7	375.1	384.2	388.0	378.3	382.2		393.4	390.5	375.5	381.4	390.8	378.3	391.3
6/17/11	394.8	389.1	374.6	383.4	387.5	377.8	381.4		393.4	390.0	375.1	380.7	389.9	377.8	390.1
7/1/11	394.8	388.9	374.8	384.0	387.4	377.8	381.0		393.4	389.5	375.2	380.8	390.3	377.7	390.5
7/15/11	394.8	388.4	374.2	381.6	387.2	377.3	380.3		393.4	389.2	374.6	380.0	389.6	377.2	
7/29/11	394.8	388.1	374.1	382.1	386.8	377.1	380.1		393.4	388.9	374.5	379.8	389.4	377.1	389.1
8/12/11	394.8	389.6	374.4	383.3	387.5	377.5	380.3		393.4	388.7	374.7	380.7	390.3	377.3	391.0
8/26/11	394.8	388.9	374.4	383.0	388.0	377.5	380.7		393.4	388.9	374.8	380.5	390.2	377.3	390.2
9/9/11	394.8	389.6	375.1	383.1	388.3	378.0	380.7		393.4	389.1	375.5	381.5	390.1	378.0	392.3
9/23/11	394.8	388.4	374.7	383.1	388.0	377.6	380.8		393.4	389.0	375.0	380.8	389.6	377.5	390.0
10/7/11	394.8	388.8	374.9	383.3	388.4	377.9	380.9		393.4	388.7	375.1	381.4	389.9	377.7	390.9
10/21/11	394.8	389.2	375.1	383.4	388.4	378.0	381.0		393.4	388.8	375.5	381.6	390.5	377.8	391.2
11/4/11	394.8	388.6	374.8	383.5	388.3	377.9	381.2		393.4	389.0	375.3	381.6	390.4	377.8	390.8
11/18/11	394.8	388.7	374.8	383.1	388.2	376.9	380.9		393.4	388.8	375.3	381.4	390.4	377.7	390.7
12/1/11	394.8	389.1	375.0	383.5	388.5	378.1	381.1		393.4	388.9	375.4	381.8	390.6	377.9	391.2
12/22/11	394.8	389.8	374.9	383.4	388.4	378.0	381.0		393.4	389.1	375.2	381.5	390.7	377.9	390.8

Table 3: Piezometer Static Water Elevations

	PZ-7 Wall Top	PZ-7A- Shallow	PZ-7A- Mid	PZ-7A- Deep	PZ-7B- Shallow	PZ-7B- Mid	PZ-7B- Deep
1/20/11	394.4	389.9	374.7	377.9	385.6	374.8	377.6
1/31/11	394.4	389.4	374.5	377.7	385.7	374.5	377.3
2/25/11	394.4	391.0	375.1	378.3	385.8	375.1	377.9
3/10/11	394.4	391.4	375.6	378.8	386.7	375.6	378.3
4/15/11	394.4	390.3	375.3	378.5	385.9	375.3	378.1
5/20/11	394.4	391.0		379.0	386.0	375.6	378.5
5/31/11	394.4	390.3	375.1	378.5	385.7	375.1	378.0
6/17/11	394.4	389.7	374.6	378.1	385.4	374.6	377.5
7/1/11	394.4	389.3	374.7	377.9	385.6	374.6	377.4
7/15/11	394.4	388.9	374.1	377.5	384.9	374.1	376.9
7/29/11	394.4	389.0	374.0	377.4		373.9	376.8
8/12/11	394.4	389.0	374.3	377.5	385.0	374.2	376.9
8/26/11	394.4	388.6	374.3	377.4	385.5	374.2	376.9
9/9/11	394.4	389.2	375.0	377.9	386.4	374.9	377.4
9/23/11	394.4	389.2	374.6	377.6	384.7	374.3	377.0
10/7/11	394.4	389.0	374.7	377.7	385.6	374.5	377.2
10/21/11	394.4	389.2	374.9	377.9	386.5	374.7	377.3
11/4/11	394.4	389.0	374.9	378.0	386.5	374.6	377.4
11/18/11	394.4	389.1	374.8	377.9	386.6	374.6	377.3
12/1/11	394.4	389.2	375.0	378.1	387.1	374.8	377.6
12/22/11	394.4	389.3	374.8	378.1	387.4	374.7	377.5

TABLE 4: PIEZOMETER ANALYTICAL RESULTS								
	1st Quarter (March) 2011		2nd Quarter (May) 2011		3rd Quarter (August) 2011		4th Quarter (October) 2011	
	Mercury		Mercury		Mercury		Mercury	
	Result ug/L	Qualifier	Result ug/L	Qualifier	Result ug/L	Qualifier	Result ug/L	Qualifier
PZ-1B-S	Not Sampled		ND (0.038)	U	Not Sampled		ND (0.038)	U
PZ-1B-I	ND (0.038)	U	ND (0.038)	U	ND (0.038)	U	0.072	J
PZ-1B-D	ND (0.038)	U	ND (0.038)	U	ND (0.038)	U	0.062/ND (0.038)	J/U
PZ-2B-S	3.3		2.8		2.9		3.2	
PZ-2B-I	0.046	J	0.044	J	ND (0.038)	U	ND (0.038)	U
PZ-2B-D	0.052	J	ND (0.038)	U	ND (0.038)	U	0.041	J
PZ-3B-S	ND (0.038)	U	R		ND (0.038)	U	0.13	J
PZ-3B-I	ND (0.038)	U	R		ND (0.038)	U	0.084	J
PZ-3B-D	0.065	J	ND (0.038)	U	ND (0.038)	U	0.094	J
PZ-4B-S	Not Sampled		R		Not Sampled		Not Sampled	
PZ-4B-I	0.046/0.044	J	R		0.047	J	0.16	J
PZ-4B-D	ND (0.038)	U	R		ND (0.038)	U	0.093	J

Table Notes:

ND: Non-Detect, method detection limit shown in paranthesis.

U: Not detected.

J: Result is considered an estimate.

R: Rejected analytical results. The sampling crew submitted the same chain of custody on 2 consecutive days causing sample ambiguity. These results were considered unusable, because the field notes did not match the chain of custodies.

TABLE 5: MONITORING WELL ANALYTICAL RESULTS												
	1st Quarter (March) 2011			2nd Quarter (May) 2011			3rd Quarter (August) 2011			4th Quarter (October) 2011		
	Mercury		elemental mercury detected? (y/n)	Mercury		elemental mercury detected? (y/n)	Mercury		elemental mercury detected? (y/n)	Mercury		elemental mercury detected? (y/n)
	Result ug/L	Qualifier		Result ug/L	Qualifier		Result ug/L	Qualifier		Result ug/L	Qualifier	
MW-34D	1.4		N	1.1/1.1		N	0.97/0.98		N	Not Sampled		N
MW-35D	7.1		N	9.2		N	Not Sampled		N	Not Sampled		N
MW-36D	9.7		N	12		N	5.9		N	6.5		N

Table Notes:

ND: Non-Detect, method detection limit shown in paranthesis.

U: Not detected.

J: Result is considered an estimate.

TABLE 6: SURFACE WATER ANALYTICAL RESULTS						
August 2011						
	Total Mercury		Methyl Mercury		Dissolved Mercury	
	Result ng/L	Qualifier	Result ng/L	Qualifier	Result ng/L	Qualifier
<i>West Flume</i>						
LCP1-SW-60	3.4		0.19		3.4	
LCP1-SW-61	1.8		0.22		1.8	
LCP1-SW-62	4.5		0.17		1.8	
LCP1-SW-63	4.8		0.071		1.4	
<i>Wetland B</i>						
LCP1-SW-64	18.0	J	0.66		18	J
LCP1-SW-65	2.7		0.5	J	1.8	J
LCP1-SW-66	4.9		0.62	J	4.8	J
<i>Wetland A</i>						
LCP1-SW-67	16		0.12	J	11	J
LCP1-SW-68	29		0.18	J	1.9	J

Table Notes:

J: Result is considered an estimate.

U: Not detected.

ND: Non-Detect, method detection limit shown in paranthesis.

TABLE 7: SEDIMENT ANALYTICAL RESULTS				
Location ID	August 2011			
	Mercury		Methyl Mercury	
	Result mg/kg	Qualifier	Result ng/g	Qualifier
<i>West Flume</i>				
LCP1-SW-60	0.42		2.6	
LCP1-SW-61	0.24		2.3	
LCP1-SW-62	0.3		2.1	
LCP1-SW-63	0.54		5	
<i>Wetland B</i>				
LCP1-SW-64	0.075	J	1	
LCP1-SW-65	0.68		1.8	
LCP1-SW-66	0.077	J	1.8	
<i>Wetland A</i>				
LCP1-SW-67	0.24		3.7	
LCP1-SW-68	4.2		14	

Table Notes:

J: Result is considered an estimate.

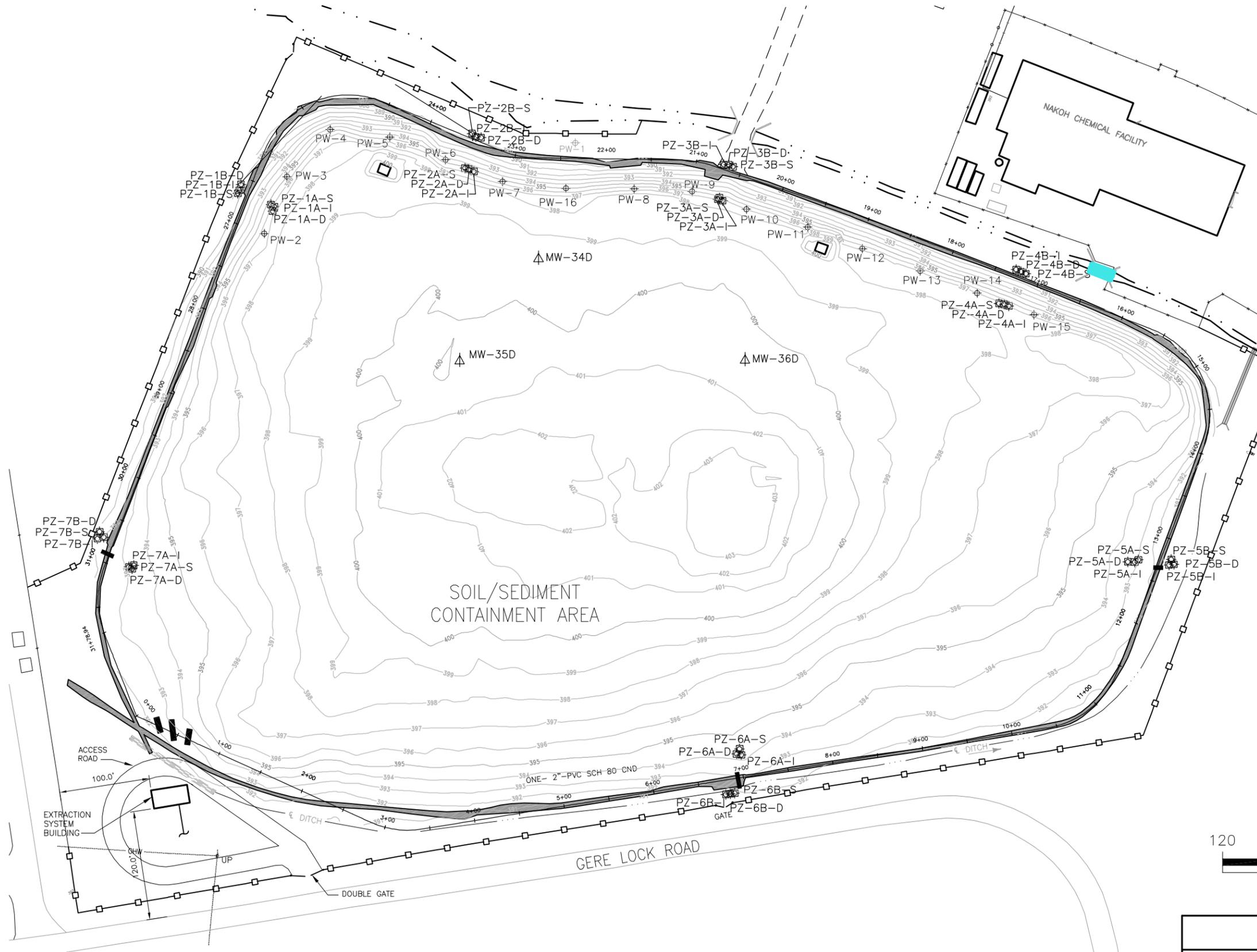
TABLE 8: BIOTA RESULTS					
August 2011					
Location	Mercury		Methyl Mercury		Organism
	Result mg/kg	Qualifier	Result ug/kg	Qualifier	
West Flume Reach A	0.3	J			Creek chub
West Flume Reach A	0.25	J			Creek chub
West Flume Reach A	0.16	J			Creek chub
West Flume Reach A	0.15	J			Brook Stickleback
West Flume Reach A	0.21	J			Brook Stickleback
West Flume Reach A	0.054	J	53	J	Crayfish
West Flume Reach A	0.066	J	80	J	Crayfish
West Flume Reach A	0.075	J			Crayfish
West Flume Reach A	0.1	J			Dragonfly Nymphes
West Flume Reach B	0.32	J			Creek chub
West Flume Reach B	0.23	J			Creek chub
West Flume Reach B	0.3	J			Creek chub
West Flume Reach B	0.29	J			Creek chub
West Flume Reach B	0.092	J			Creek chub
West Flume Reach B	0.04	J	42	J	Crayfish
West Flume Reach B	0.064	J	73	J	Crayfish
West Flume Reach B	0.14	J			Crayfish
West Flume Reach B	0.072	J	71	J	Crayfish
West Flume Reach B	0.062	J	74	J	Crayfish
West Flume Reach C	0.31	J			Creek chub
West Flume Reach C	0.31	J			Creek chub
West Flume Reach C	0.35	J			Creek chub
West Flume Reach C	0.25	J			Brook Stickleback
West Flume Reach C	0.16	J			Brook Stickleback
West Flume Reach C	0.054	J	52	J	Crayfish
West Flume Reach C	0.06	J	52	J	Crayfish
West Flume Reach C	0.04	J	38	J	Crayfish
West Flume Reach C	0.057	J	91	J	Crayfish
West Flume Reach C	0.028	J	42	J	Crayfish
Wetland A	0.22	J			Dragonfly Nymphes
Wetland A	0.24	J			Crayfish
Wetland B	0.06	J			Creek chub
Wetland B	0.06	J			Creek chub
Wetland B	0.09	J			Brook Stickleback
Wetland B	0.27	J			Brook Stickleback
Wetland B	0.14	J			Brook Stickleback
Wetland B	0.075	J	78	J	Dragonfly Nymphes
Wetland B	0.038	J	49	J	Crayfish
Wetland A/B	0.2	J			Earthworms
Wetland A/B	0.71	J			Earthworms
Wetland A/B	0.01	UJ			Deer Mouse
Wetland A/B	0.01	UJ			Meadow Vole
Wetland A/B	0.09	J			Shrew
Wetland A/B	0.11	J			Shrew
Wetland A/B	0.01	UJ			Meadow Vole

FIGURES



LEGEND:

-  PUMPING WELL LOCATIONS
-  PIEZOMETER LOCATIONS
-  GROUNDWATER MONITORING WELL LOCATIONS



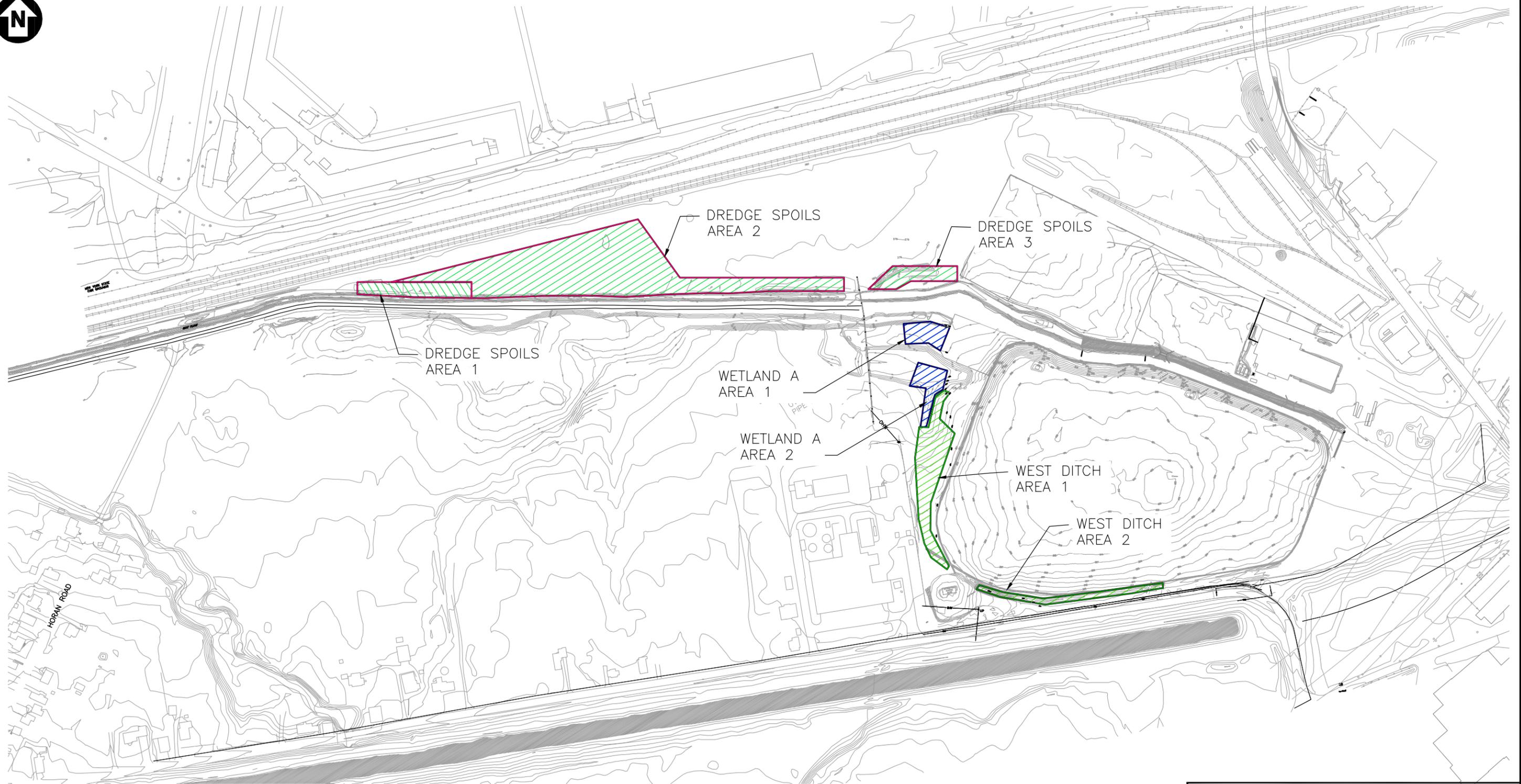
SCALE: 1"=120'

FIGURE 1

Honeywell FORMER LINDEN CHEMICAL PLANT
SOLVAY, NEW YORK

PIEZOMETER/MONITORING
WELL LOCATIONS

PARSONS
301 PLAINFIELD ROAD, SUITE 350, SYRACUSE, N.Y. 13212, PHONE: 315-451-9560



SCALE: 1"=300'

PRELIMINARY DRAFT
SETTLEMENT CONFIDENTIAL
NOT INTENDED FOR PUBLIC REVIEW

FIGURE 2

Honeywell

LCP OM&M REMOVALS 2011

LCP 2011 OM&M
REMOVAL AREAS

PARSONS

310 PLAINFIELD ROAD * SUITE 350 * SYRACUSE, NY 13212 * 315/451-9560
OFFICES IN PRINCIPAL CITIES



OVERHEAD
PIPE RACK

OHW

50'

WEST DITCH
AREA 2

- LEGEND**
- REMOVAL BOUNDARY
 - CONFIRMATORY SAMPLING AREA
 - (0.120) SAMPLE RESULT (mg/kg)
 - (0.120) SAMPLE RESULT EXCEEDS CRITERIA (mg/kg)
 - ◆ SIDEWALL SAMPLE

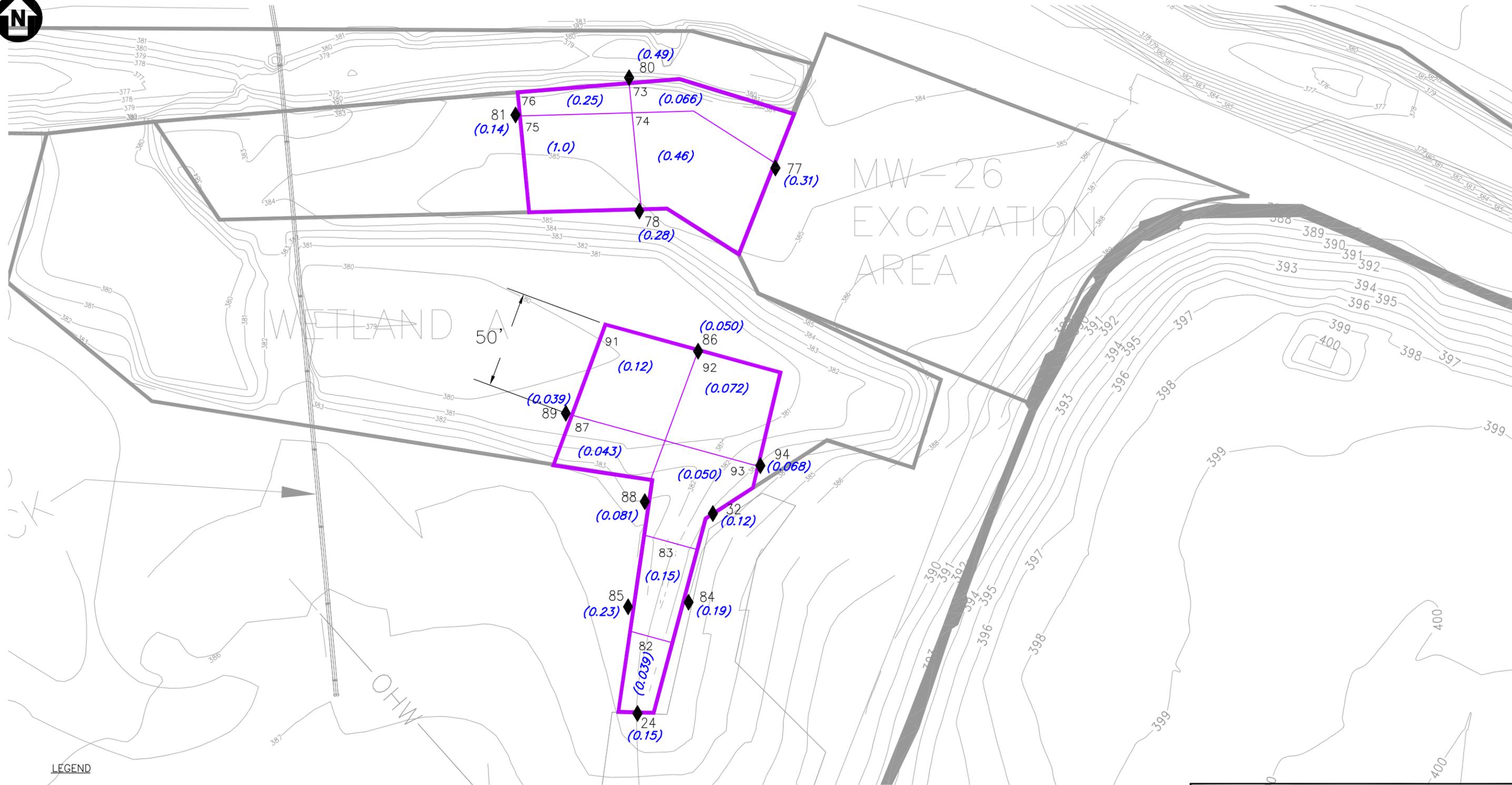


PRELIMINARY DRAFT
SETTLEMENT CONFIDENTIAL
NOT INTENDED FOR PUBLIC REVIEW

FIGURE 4

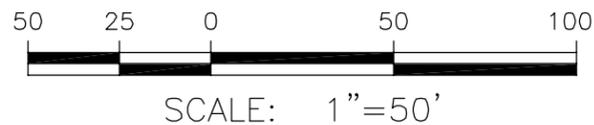
Honeywell
LCP OM&M REMOVALS 2011
WEST DITCH 2 SAMPLE RESULTS
AND EXCAVATION PLAN

PARSONS
310 PLAINFIELD ROAD * SUITE 350 * SYRACUSE, NY 13212 * 315/451-9560
OFFICES IN PRINCIPAL CITIES



LEGEND

- REMOVAL BOUNDARY
- CONFIRMATORY SAMPLING AREA
- (0.120)** SAMPLE RESULT (mg/kg)
- (0.120)** SAMPLE RESULT EXCEEDS CRITERIA (mg/kg)
- SIDEWALL SAMPLE



PRELIMINARY DRAFT
SETTLEMENT CONFIDENTIAL
NOT INTENDED FOR PUBLIC REVIEW

FIGURE 5

Honeywell

LCP O&M REMOVALS 2011

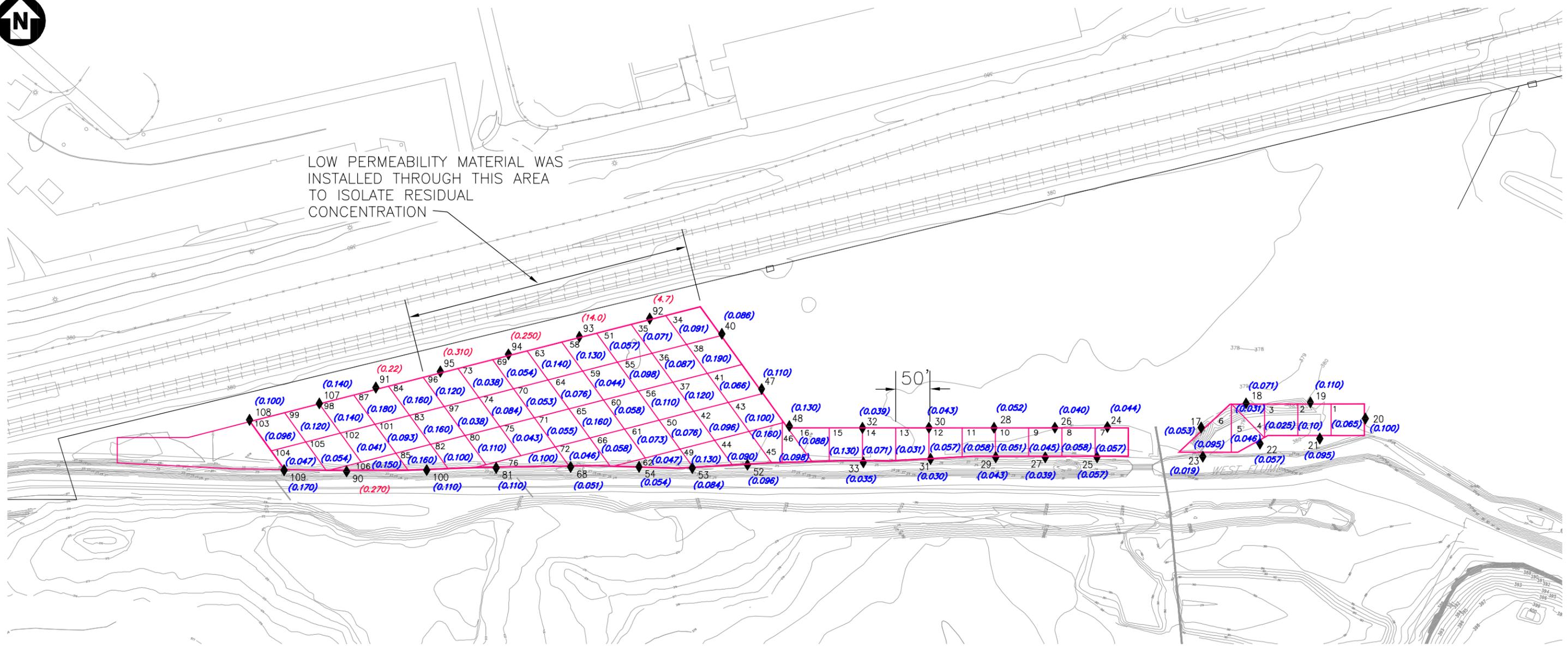
WETLAND A & MW-26 SAMPLE RESULTS AND EXCAVATION PLAN

PARSONS

310 PLAINFIELD ROAD * SUITE 350 * SYRACUSE, NY 13212 * 315/451-9560
OFFICES IN PRINCIPAL CITIES

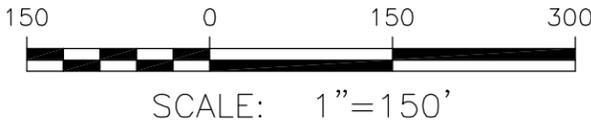


LOW PERMEABILITY MATERIAL WAS
INSTALLED THROUGH THIS AREA
TO ISOLATE RESIDUAL
CONCENTRATION



LEGEND

- REMOVAL BOUNDARY
- 50x50 SQUARE USED FOR CONFIRMATORY SAMPLING
- C4 SAMPLE NUMBER
- (0.120) SAMPLE RESULT (mg/kg)
- (0.120) SAMPLE RESULT EXCEEDS CRITERIA (mg/kg)
- SIDEWALL SAMPLE



PRELIMINARY DRAFT
SETTLEMENT CONFIDENTIAL
NOT INTENDED FOR PUBLIC REVIEW

FIGURE 6

Honeywell
LCP O&M REMOVALS 2011
WEST FLUME SAMPLE RESULTS
AND EXCAVATION PLAN

PARSONS
310 PLAINFIELD ROAD * SUITE 350 * SYRACUSE, NY 13212 * 315/451-9560
OFFICES IN PRINCIPAL CITIES

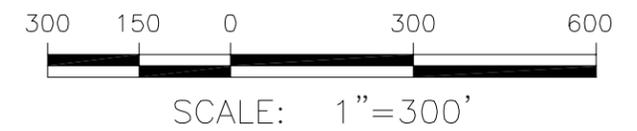
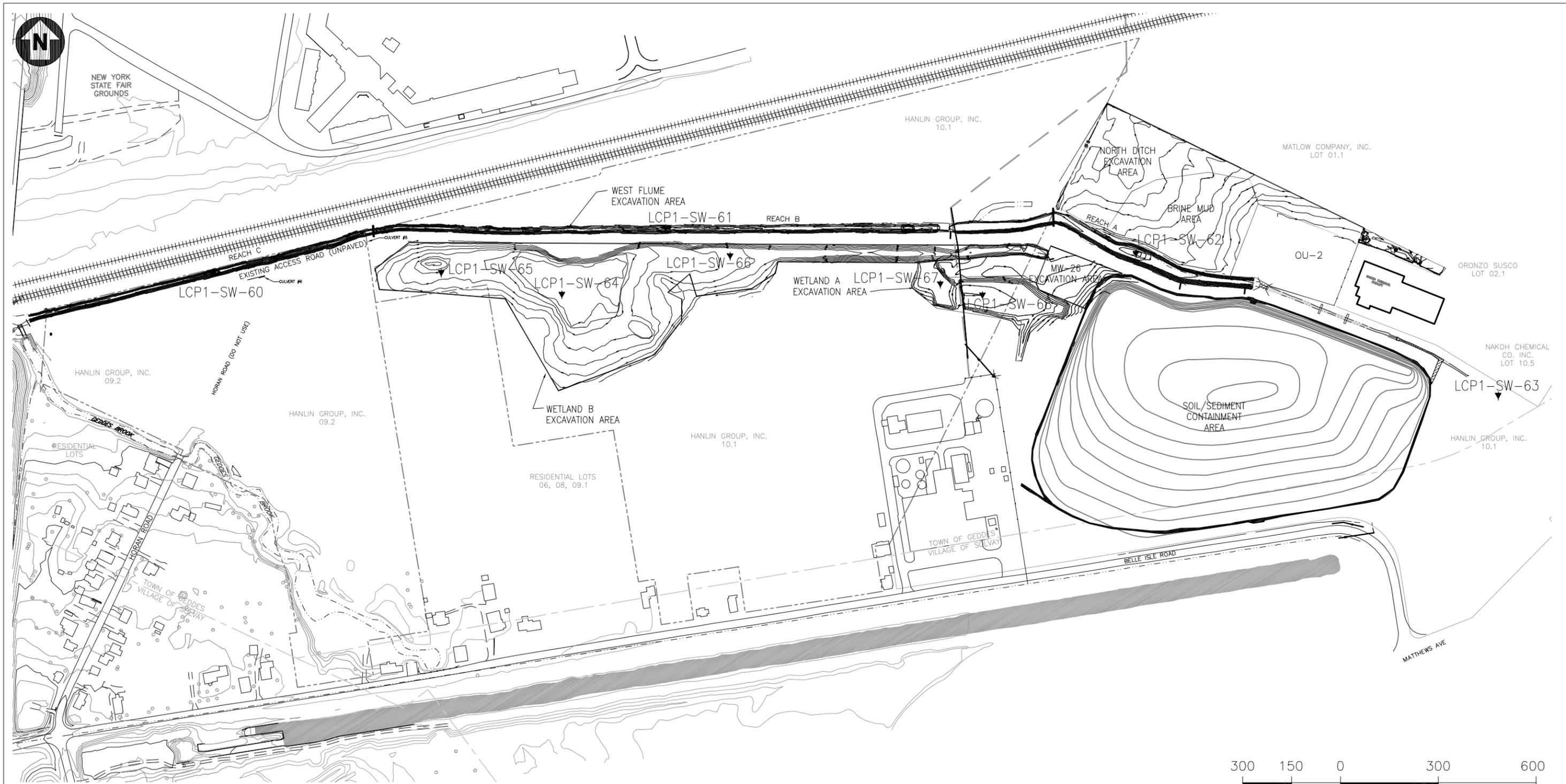


FIGURE 7

Honeywell FORMER LINDEN CHEMICAL PLANT
SOLVAY, NEW YORK

ANNUAL SURFACE WATER/SEDIMENT
SAMPLING LOCATION

PARSONS
301 PLAINFIELD ROAD, SUITE 350, SYRACUSE, N.Y. 13212, PHONE: 315-451-9560

APPENDIX A

**WETLAND DELINEATION REPORT FOR THE DREDGE SPOILS AREA
LCP BRIDGE STREET SITE**

**WETLAND DELINEATION REPORT
FOR THE DREDGE SPOILS AREA
LCP BRIDGE STREET SITE**

**TOWN OF GEDDES, ONONDAGA COUNTY,
NEW YORK**

Prepared for:

**PARSONS.
301 Plainfield Road, Suite 350
Syracuse, New York 13212**

Prepared by:

**TERRESTRIAL ENVIRONMENTAL SPECIALISTS, INC.
23 County Route 6, Suite A
Phoenix, New York 13135**

January 2012

TABLE OF CONTENTS

	Page
1.0 INTRODUCTION	1
2.0 BACKGROUND INFORMATION REVIEW	1
3.0 METHODS	1
4.0 RESULTS	3
4.1 Site Description.....	3
4.2 Site Ecology	4
4.3 Wetlands Descriptions	4
5.0 SUMMARY	5
6.0 REFERENCES	6

APPENDIX A - Photographs

APPENDIX B - Field Data Sheets

LIST OF FIGURES

(all figures follow text)

- Figure 1.** Site Location
- Figure 2.** NYS Freshwater Wetlands Map
- Figure 3.** National Wetlands Inventory Map
- Figure 4.** Soil Survey Map
- Figure 5.** Surface Water Classification Map
- Figure 6.** Site Location, LCP Dredge Spoil Area
- Figure 7.** 2009 Aerial Photograph Showing Wetland Locations, LCP Dredge Spoil Area
- Figure 8.** 2009 Aerial Photograph Showing Wetland Location and Sample Plot and Photograph Locations, LCP Dredge Spoil Area

1.0 INTRODUCTION

Terrestrial Environmental Specialists, Inc. (TES) was contracted by Parsons. to perform a wetland investigation on the Dredge Spoils Area (DSA) at the LCP Bridge Street Site in the Town of Geddes, Onondaga County, New York. The study area consists of two areas of the LCP Bridge Street Site; the areas total approximately 3.8 acres and are located west of Bridge Street and south of the New York State Fair Grounds (Figures 1 and 6). The larger of the two areas is approximately 3.5 acres in size, while the smaller area is approximately 0.3 acre in size.

The TES wetland investigation consisted of a review of available background information and a field delineation of wetlands and other regulated waters. This report addresses the results of the background information review and the wetland delineation. A variety of figures are included with this report, along with photographs and field data sheets.

2.0 BACKGROUND INFORMATION REVIEW

Prior to the field investigation at the site, TES assembled and reviewed available background information. This information included:

- the New York State Department of Transportation (NYSDOT) Topographic map (Syracuse West quadrangle) (Figure 1);
- the New York State Department of Environmental Conservation (NYSDEC) New York State Freshwater Wetlands map (Figure 2);
- the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory map (Figure 3);
- the Onondaga County Soil Survey map prepared by the Natural Resources Conservation Service (Figure 4);
- the New York State Surface Water Classification map (Figure 5); and
- a 2009 aerial photograph obtained from the New York State GIS Clearinghouse (Figures 7).

All the background maps were developed into figures and are provided after the text.

3.0 METHODS

The agency resource information maps, soils descriptions, and the aerial photograph discussed above were used during the field review of the site. These maps and information assisted in the initial identification of potential wetland areas.

Delineation of the wetlands on the site and data collection along the boundaries were performed by TES on August 17, 2011. The boundaries were delineated using the state and federal criteria for delineating wetlands (NYSDEC 1995, U.S. Army Corps of Engineers 2009, Environmental Laboratory 1987, Reed 1988, USDA NRCS 2010, NRCS 2011).

Surveyor's ribbons were placed along the wetland boundaries based on observations of vegetation, soils, and hydrology conditions. These observations were made along transects

located perpendicular to the wetland boundaries. Additional observations of vegetation, soils, and hydrology were made at intermediate locations between the transects for the placement of additional flagging. Each wetland flag was labeled with a letter identifier of the wetland and was numbered consecutively (for example, A-1, A-2, A-3, etc.). Thew Associates and Surveyors surveyed the flagged wetland boundaries.

To further support the wetland boundaries, data on vegetation, soils, and hydrology were collected during the field effort in plots along transects located perpendicular to the wetland boundaries on the site. TES sampled 8 plots in and around the wetlands and in other representative areas of the site. Plots were generally located on the wetland and upland sides of the flagged wetland boundaries. The plot data were recorded on data sheets similar to those used in the regional supplement (U.S. Army Corps of Engineers 2009).

Vegetation data were collected in all the plots. Ocular estimates of the percent areal cover by plant species for each vegetation layer (tree, shrub, and herbaceous layers) were recorded. The plots varied in size by vegetation layer being sampled. The sizes were: 30-foot radius for the trees, 15-foot radius for the shrubs, and 5-foot radius for the herbaceous layer.

The presence of wetland vegetation was determined when more than 50 percent of the dominant species in a sample plot had an indicator status of obligate (OBL), facultative-wet (FACW), or facultative (FAC). The dominant species for each layer in a plot were determined by ranking the species in decreasing order of percent cover and recording those species which, when cumulatively totaled, immediately exceeded 50 percent of the total cover of that layer. Additionally, any plant species that comprised 20 percent or more of the total cover for each layer was considered to be a dominant species.

Scientific nomenclature for plant species follows *A Checklist of New York State Plants* (Mitchell and Tucker 1997). The indicator status for each dominant plant species was determined using the *National List of Plants that Occur in Wetlands: Northeast (Region 1)* (Reed 1988), excluding the positive (+) or negative (-) modifiers for facultative indicator categories. For any species not included in the list, the indicator status was designated using the *Manual of Vascular Plants of Northeastern United States and Adjacent Canada* (Gleason and Cronquist 1991), *New Britton and Brown Illustrated Flora* (Gleason 1952), and *Gray's Manual of Botany* (Fernald 1950).

Soil and hydrology data were collected in soil pits or soil borer holes to a minimum depth of 20 inches within each sample plot. Soil characteristics were noted along the soil profile at the depth specified by the Corps criteria (U.S. Army Corps of Engineers 2009). Procedures for identifying hydric soils as outlined in the *Field Indicators of Hydric Soils in the United States* (USDA NRCS 2010) were also followed. Soil colors were determined by using the Munsell color chart. Primary and secondary indicators of hydrology were also noted at each sample plot. The wetland boundaries were refined on the basis of intermediate soil borer holes along each transect.

4.0 RESULTS

The following section of the report provides a site description and wetland descriptions at the DSA.

4.1 Site Description

The NYSDOT topographic map (Figure 1) shows the site located west of Bridge Street and south of the New York State Fair Grounds in the Town of Geddes, Onondaga County, New York. The study area is generally flat at an elevation of approximately 280 feet above mean sea level (amsl). The West Flume is located south of the study area, with a drainage ditch to the north along the railroad right-of-way, which appears to flow northwest into Geddes Brook. Geddes Brook flows north into Ninemile Creek, which flows into Onondaga Lake.

The NYSDEC New York State Freshwater Wetlands map (Figure 2) shows one state-regulated wetlands on the study area. This state-regulated wetland (SYW-14), a Class III wetland, occupies a large portion of the study area.

No wetlands are mapped in the study area on the USFWS NWI map (Figure 3).

The Onondaga County Soil Survey map prepared by the Natural Resources Conservation Service indicates that the following three different soils occur on the site (Figure 4):

- Fonda mucky silty clay loam (Fo);
- Niagara silt loam, 0 to 4 percent slopes (NgA); and
- Urban lands (Ub).

Fonda mucky silty clay loam is recognized as a hydric (wetland) soil. This soil is located in the northern and western portions of the larger area within the study area.

The New York State Surface Water Classification map (Figure 5) shows the West Flume adjacent to the southern edge of the study area. It flows northwest into Geddes Brook. This tributary is designated with a water quality classification of Class C with C Standards by the NYDEC. It is not a state-protected waterbody since it does not have a Class or Standard of CT (trout) or higher.

The 2009 aerial photograph (Figure 7) shows that the site is undeveloped land. The majority of the study area is open field with portions of scrub shrub and young deciduous forest.

4.2 Site Ecology

The study area consisted of open field, scrub-shrub uplands, and wetlands. The majority of the study area is open field. Perennial rye (*Lolium perenne*), Alsike clover (*Trifolium hybridum*), and common reed (*Phragmites australis*) were the dominant species found in the open field.

The scrub-shrub cover type was located in the southeast portion of the study area. Within the scrub-shrub area common buckthorn (*Rhamnus cathartica*) was the dominant species in the shrub layer. White avens (*Geum canadense*) and lesser burdock (*Arctium minus*) were the dominant species found in the herbaceous layer of the scrub-shrub community.

4.3 Wetlands Descriptions

Two wetlands were found on the site and are referred to as Wetland 1 and Wetland 2. The wetland boundaries were flagged with coded surveyor's ribbon using the state and federal criteria for delineating wetlands (NYSDEC 1995, U.S. Army Corps of Engineers 2009, Environmental Laboratory 1987, Reed 1988, NRCS 2011). The delineated wetland boundaries are shown on Figure 7 and were surveyed by Thew Associates and Surveyors. Wetlands 1 and 2 total approximately 1.49 acres in size.

Wetland sample plot and photograph locations are shown on Figure 8. Photographs and field data sheets are provided in Appendix A and Appendix B, respectively.

Wetland 1

Wetland 1 is a small swale approximately 0.09 acre in size, and is found in the small portion of the study area (Figure 7). Wetland 1 has two sections connected by a culvert and contained emergent wetlands. This wetland flows west into the West Flume.

Common reed dominated Wetland 1. It contained no trees and the shrub layer consisted of silky dogwood (*Cornus amomum*).

Soils in Wetland 1 are mapped as Niagara silt loam and urban lands (Figure 4). Soils consisted of black (10YR 4/1) silt loam in the topsoil layer and dark gray (10YR 5/1) clay loam in the subsoil layer. The subsoil also contained dark yellowish brown (10YR 4/4) mottles that were common in the soil matrix. This soil fits the NRCS F3 indicator (Depleted Matrix).

Hydrology indicators throughout Wetland 1 included surface water, saturation within the upper 12 inches, and water stained leaves.

Wetland 2

Wetland 2 is approximately 1.42 acres in size, and is found along the northwest portion of the study area (Figure 7). Wetland 2 is an emergent wetland and contains no tree or shrub layers. Common reed and Pennsylvania smartweed (*Polygonum pennsylvanicum*) dominated the herbaceous layer.

Soils in Wetland 2 are mapped as Niagara silty loam and Fonda mucky silty clay loam. The Fonda mucky silty clay loam is a hydric soil. Soils consist of very dark gray (10YR 3/1) silt loam and loam in the topsoil layer and light gray (10YR 7/1) waste material in the subsoil layer. This soil fits the NRCS F3 indicator (Depleted Matrix).

Hydrology indicators in this wetland include surface water, saturation, water marks, sediment deposits, algal mat or crust, and water stained leaves.

Wetland 2 is part of state-regulated wetland SYW-14. Since both Wetlands 1 and 2 have an apparent surface water connection to a tributary system of navigable waters, they are not isolated wetlands. Therefore, TES considers these wetlands to be Corps-jurisdictional areas.

5.0 SUMMARY

Terrestrial Environmental Specialists, Inc. (TES) was contracted by Parsons to perform a wetland investigation on a site at the LCP Bridge Street Site Dredge Spoil area in the Town of Geddes, Onondaga County, New York. The study area, which consisted of two portions, is approximately 3.8 acres in size and is located west of Bridge Street, and south of the New York State Fair Grounds.

TES collected and reviewed available background information and maps, including topographic map, wetland maps, soils map and descriptions, stream classification map, and an aerial photograph to locate potential wetlands on the site. There is one mapped state-regulated wetlands on the study area, SYW-14.

Flagging of the wetlands on the study area and data collection along the boundaries were performed by TES on August 17, 2011. The boundaries were delineated using the federal and state criteria.

Two wetlands were delineated in the study area and are referred to as Wetland 1 (0.09 acre) and Wetland 2 (1.42 acre). Wetland 1 is associated with the West Flume, a tributary of Geddes Brook/Ninemile Creek. This wetland is a federal-jurisdictional area since it is associated with tributary systems to navigable waters. The West Flume is designated with a water quality of Class C with C Standards by the NYDEC. It is not a state-protected waterbody since it does not have a Class or Standard of CT (trout) or higher. Wetland 2 is part of NYSDEC regulated wetland SYW-14. Wetland 1 and Wetland 2 are emergent wetlands in an area of prior disturbance. Common reed grass is the dominant plant species in these wetlands.

6.0 REFERENCES

- Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.
- Fernald, M. L. 1950. Gray's Manual of Botany, 8th Edition. American Book Company, New York, NY.
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- U.S. Army Corps of Engineers. 2009. Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region, ed. J. S. Wakeley, R. W. Lichvar, and C. V. Noble. ERDC/EL TR-09-19. Vicksburg, MS: U.S. Army Engineer Research and Development Center.
- USDA NRCS. 2010. *Field Indicators of Hydric Soils in the United States*, Version 7.0. L.M. Vasilas, G.W. Hurt, and C.V. Noble (eds.). USDA, NRCS, in cooperation with the National Technical Committee for Hydric Soils.



Approximate Site Location



QUADRANGLE LOCATION

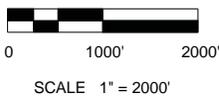
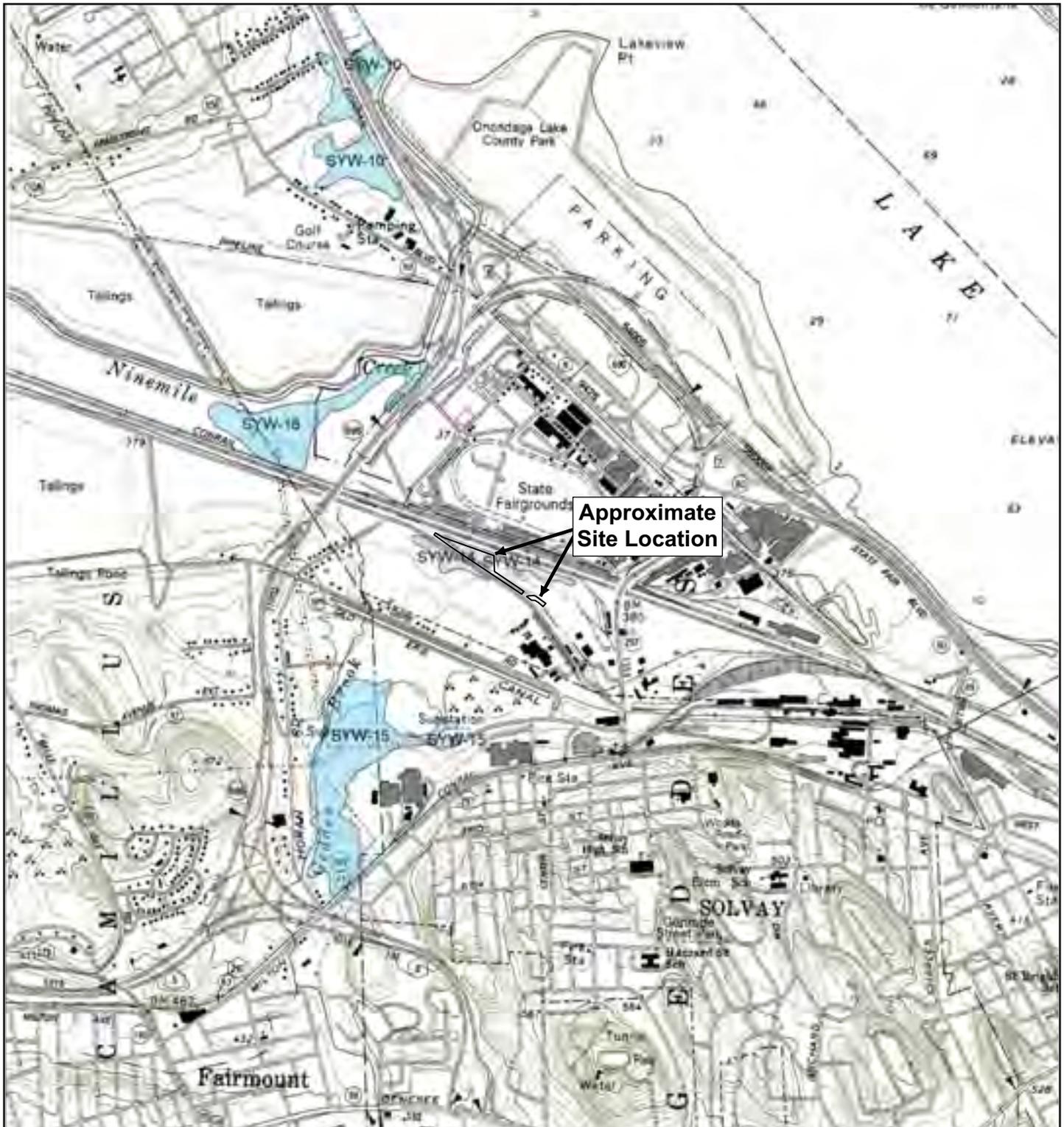


Figure 1.
Site Location, LCP Dredge Spoil Area

NYS DOT Topographic Map
 Syracuse West Quadrangle
 1990



Approximate Site Location



QUADRANGLE LOCATION

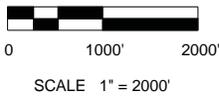


Figure 2.
NYS Freshwater Wetlands Map,
LCP Dredge Spoil Area

NYS Department of
 Environmental Conservation
cugir.mannlib.cornell.edu

Syracuse West Quadrangle
 2007



Approximate Site Location



QUADRANGLE LOCATION

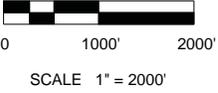


Figure 3.
National Wetlands Inventory Map,
LCP Dredge Spoil Area Area

U.S. Fish & Wildlife Service
www.fws.gov/nwi
 Syracuse West Quadrangle
 1983

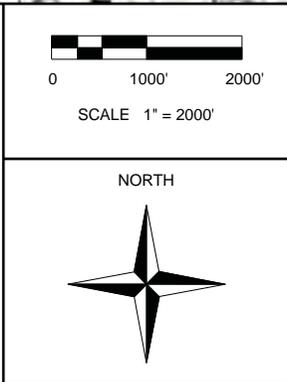
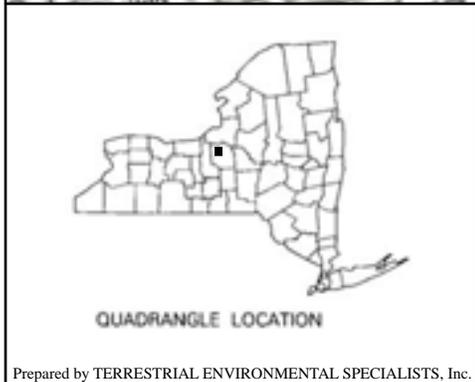
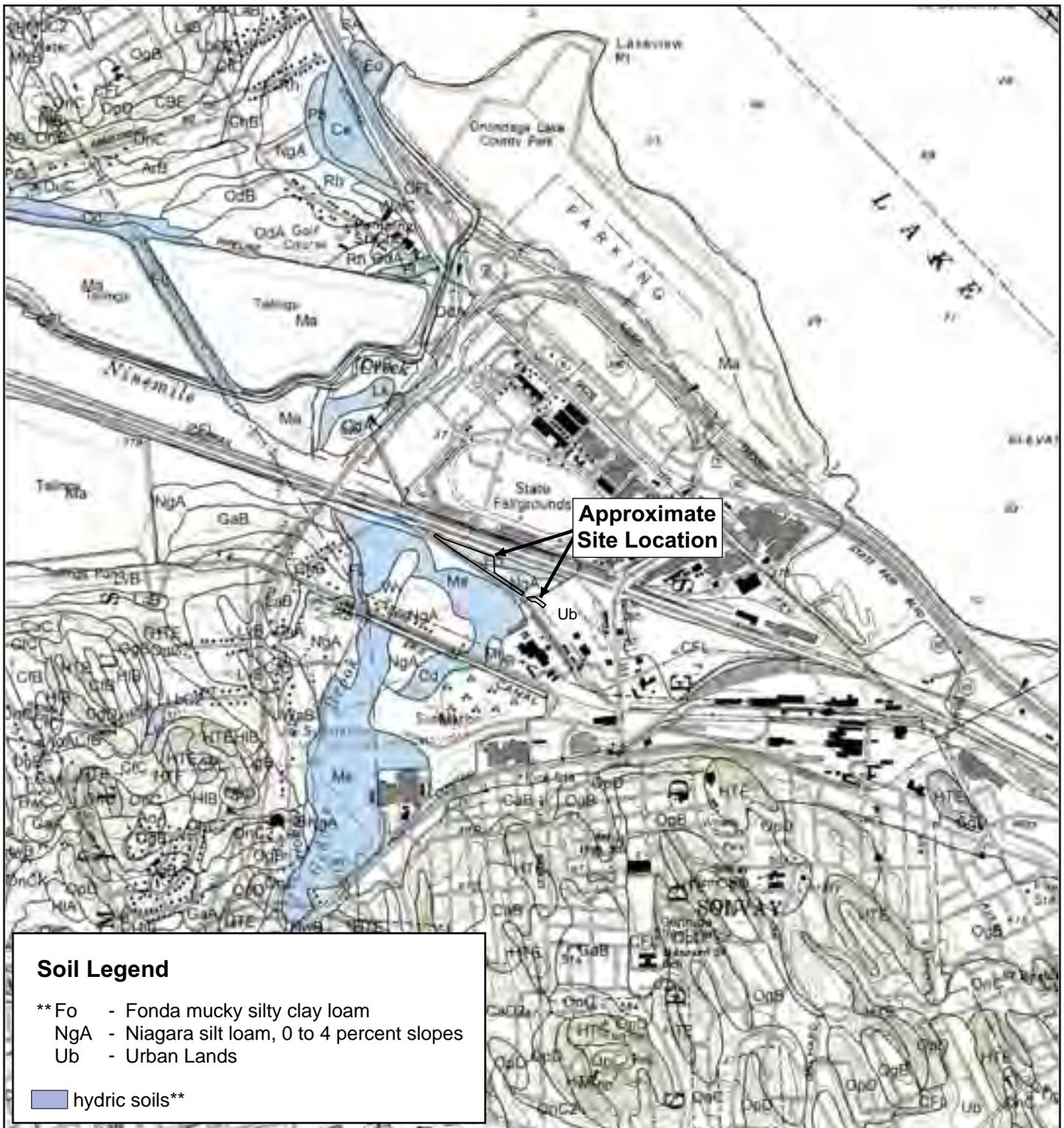


Figure 4.
Soil Survey Map, LCP Dredge Spoil Area
 Natural Resources Conservation Service
SoilDataMart.nrcs.usda.gov
 Onondaga County Soil Survey
 2010



Approximate Study Area

Item No.	Water Features Number	Name	Description	Map File No.	Class.	Symbol
87	P 154-b-2 permit	Gardias Brook	Enters Nisensie Creek from south approximately 1.0 mile from mouth. From mouth to abandoned Erie Canal.			

Title 6 NYCRR, Chapter X
Article 14, Part 895.4 (1996)

Map 4



SCALE 1" = 7822'

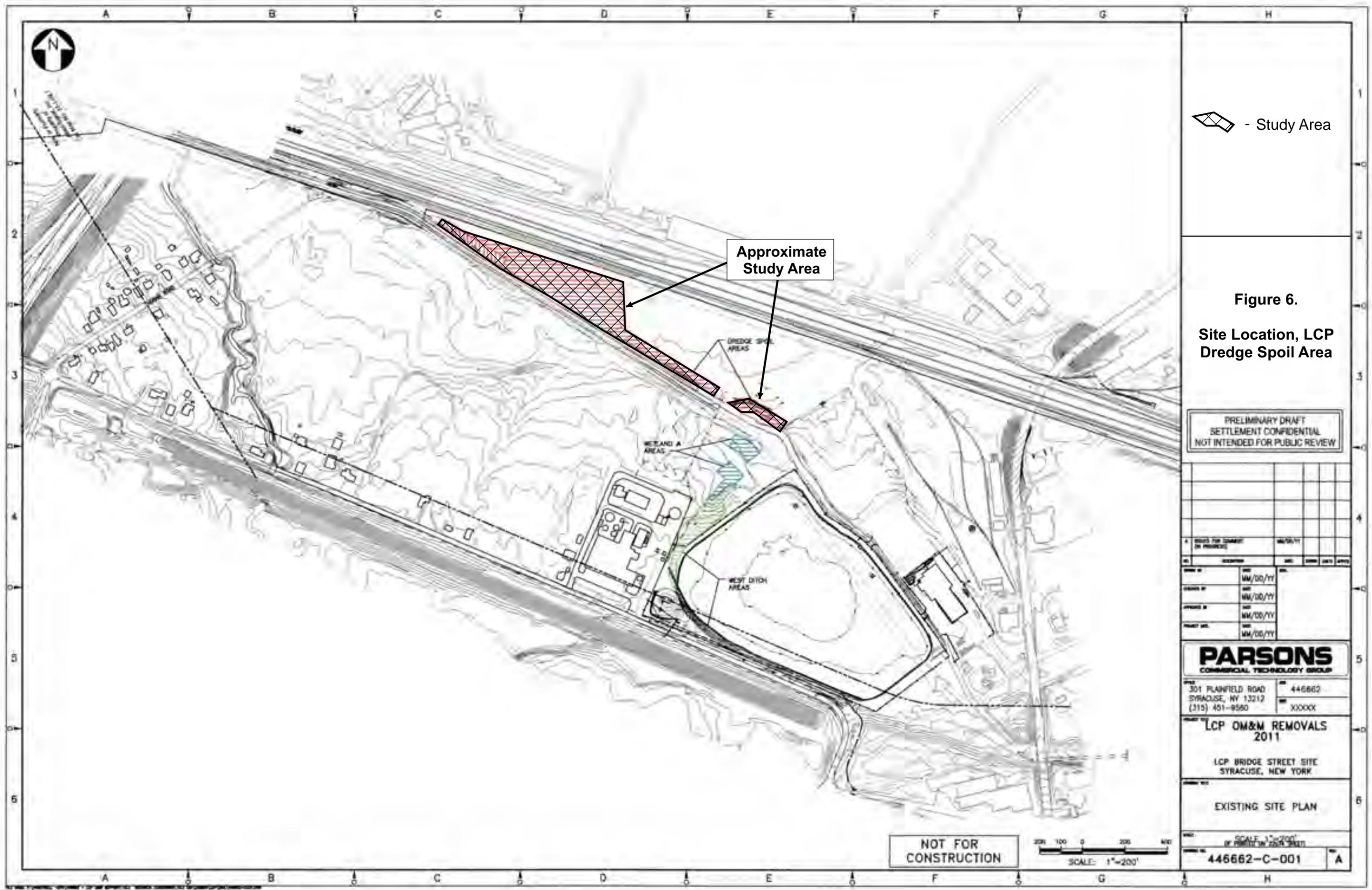
NORTH



Figure 5. Surface Water Classification Map

NYSDEC

Syracuse West Quadrangle



 - Study Area

Figure 6.
Site Location, LCP
Dredge Spoil Area

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 SETTLEMENT CONFIDENTIAL
 NOT INTENDED FOR PUBLIC REVIEW

NO.	DESCRIPTION	DATE	BY	CHKD	DATE	APPROV.
1	ISSUED FOR COMMENT (BY PROJECT)	MM/DD/YY				
2		MM/DD/YY				
3		MM/DD/YY				
4		MM/DD/YY				

PARSONS
 COMMERCIAL TECHNOLOGY GROUP

301 PLAINFIELD ROAD
 SYRACUSE, NY 13212
 (315) 451-9560

446662
 XXXXX

LCP OM&M REMOVALS
2011

LCP BRIDGE STREET SITE
 SYRACUSE, NEW YORK

EXISTING SITE PLAN

SCALE: 1"=200'
 OF PRINTED ON 24"X36" SHEET

446662-C-001

NOT FOR
CONSTRUCTION

SCALE: 1"=200'



NORTH



APPROXIMATE SCALE IN FEET

 Wetland Area
2-1 With Flag Numbers

Aerial Photograph obtained from NYS GIS Clearinghouse 2009

Surveyed by Thew Associates

Figure Prepared by Terrestrial Environmental Specialists, Inc.

Figure 7.

2009 Aerial Photograph Showing Wetland Locations, LCP Dredge Spoil Area

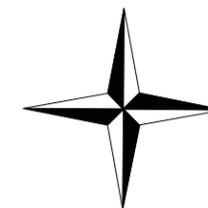


LEGEND

- 1-1W Sample Plot Location
- ① Photo Location and Direction
- Wetland Area With Flag Numbers 2-1

Surveyed by Thew Associates

NORTH



APPROXIMATE SCALE IN FEET

Aerial Photograph obtained from NYS GIS Clearinghouse 2009

Figure Prepared by Terrestrial Environmental Specialists, Inc.

Figure 8.

2009 Aerial Photograph Showing Wetland Locations and Plot and Photograph Locations, LCP Dredge Spoil Area