WSP
ENGINEERING OF
NEW YORK, P.C.

March 20, 2009

Mr. Jaspal Walia
Project Manager
New York State Department of Environmental Conservation
270 Michigan Avenue
Buffalo, NY 14203

Re: Supplemental Groundwater Investigation Report– MW-09 Area
Former Buffalo Service Center and Related Sites
Buffalo, New York

Dear Mr. Walia,

On behalf of QLT Buffalo LLC, WSP Engineering of New York, P.C. prepared this report to present the findings of the supplemental groundwater investigation in the vicinity of MW-09 on the school property near the former Buffalo Service Center (BSC) and 4 New Seventh Street (Seventh Street) sites. The scope of work was outlined in the Supplemental Groundwater Investigation Work Plan – MW-09 Area submitted to the New York State Department of Environmental Conservation (NYSDEC) on October 21, 2008. Field work was conducted during the week of December 15, 2008. The objectives outlined in the work plan were to determine the source of benzene in groundwater samples from MW-09 and to identify action that would be appropriate to reduce the benzene concentrations in the vicinity of MW-09 relatively quickly.

The scope of work outlined in the supplemental investigation work plan included the installation of three soil boreholes, the collection of three grab groundwater samples from the temporary boreholes, depth to water measurements from monitoring wells MW-03, MW-09, MW-11, BCP-MW-02, BCP-MW-04, and BCP-MW-05, and the collection of groundwater samples for laboratory analysis from MW-03, MW-09, and MW-11.

Background Information for the MW-09 Area

The MW-09 Area (Figure 1) has been used for industrial and commercial purposes since the 1800s. The location is surrounded by known remediation sites and transected by sanitary sewers. The location is west of the Seventh Street site, north of the Former BSC and south of the Fourth Street Project.

The Seventh Street site was used as a fuel filling station (i.e., source of petroleum release). The Seventh Street site was remediated under the NYSDEC Brownfield Cleanup Program (BCP, C915203). The remediation consisted of an excavation program in which petroleum impacted soil/fill material at the Seventh Street site was removed. As indicated by confirmation samples #2, #3, and #5, soils/fill material left in place due to a utility corridor along the northern edge of the excavation remain contaminated by the historic petroleum release[1].

The Former BSC site was a former Manufactured Gas Plant (MGP) site and was cleaned up under the BCP. The soils at the Former BSC site were remediated to the site-specific cleanup standard. Certificates of Completion were issued by the NYSDEC in 2006.

The Fourth Street Project was a NYSDEC remediation of another MGP site. Similar to the Seventh Street site, the area was excavated as close to utilities in the area as possible. Due to the location of the utilities and the contamination, some contaminated material remained in place.

A combined sewer pipeline (sanitary and storm water), the Swan Trunk sewer, is directly adjacent to MW-09. The location of the pipeline prevented complete excavation of known contamination at the Seventh Street and Fourth Street sites (Figures 1 and 2).

Historical groundwater elevations depicted in Attachment A (i.e., before the remedial excavation, dewatering, and redevelopment activities) indicate that MW-09 was located downgradient of both the Former BSC and the Seventh Street sites. With respect to the Seventh Street site, historical groundwater data indicated that elevated concentrations of benzene were limited to samples from MW-31 (replaced by MW-03) east of MW-09 (Figure 1); and petroleum impacted soil/fill material that was present upgradient of MW-31/MW-03.

The groundwater data collected before remediation from wells located on the Former BSC site (MW-01-26, MW-00-09, and MW-00-10) did not contain elevated concentrations of benzene. The nearest remedial excavation conducted at the Former BSC site is shown on Figure 1. This excavation was required due to elevated polycyclic aromatic hydrocarbons concentrations ([PAHs] i.e., total PAHs exceeded 500,000 micrograms per kilogram). Benzene was not detected or was only detected below site-specific action levels at this location before remediation.

Groundwater Elevation Measurements

In accordance with the work plan, depth to groundwater measurements were collected from MW-03, MW-09, MW-11, BCP-MW-02, BCP-MW-04, and BCP-MW-05. Table 1 presents a summary of well installation information, including the surveyed top-of-casing elevations, depths to water, and ground elevations.

A groundwater elevation contour map of the aquifer underlying the sites was not completed due to the variable groundwater elevations measurements that have been observed since the three large remediation projects surrounding this location were completed in 2005 and 2006. The nature of the flow is more likely the result of the massive dewatering that occurred during the remedial program; anthropogenic influences; deep sewer lines to the north, south and east immediately adjacent to the property line and the buried Wilkeson slip and Erie Canal to the to the north and west. The sites have undergone significant excavation, complete dewatering, backfilling, deep foundations construction, and building and hardscape construction activities. Nearly 90 percent of the Former BSC site is now covered with hardscape and the Waterfront

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[1] Benchmark Environmental Engineering & Science, PLLC and LCS Inc., Final Engineering Report (IRM Report) Site No. C915203. December 2006.

School covers the areas to the west dramatically altering the local recharge at the sites and subsequent groundwater flow characteristics.

Groundwater elevations are higher in monitoring wells towards the southeast (MW-03) and east (BCP-MW-04 and BCP-MW-05), an indication that MW-09 may be affected by conditions in these areas.

Drilling Activities

Three borings (DP-08-04, DP-08-05, and DP-08-06) were advanced with a direct-push drill rig. Continuous soil samples were collected from all borings with a Macro-Core® sampler (or similar) equipped with a disposable acetate line. The soils were screened with a portable flame ionization detector for organic vapors and logged using the USCS classification system; boring logs are presented in Attachment B. No organic vapors were detected in the soils collected from the three boreholes.

The locations of borings DP-08-04 and DP-08-06 were slightly modified from the proposed locations on Figure 1 to the locations shown on Figure 2 due to the proximity of the combined sewer lines in the area. Once investigation activities were complete, the boreholes were backfilled with bentonite chips and capped with asphalt, concrete, or topsoil. All downhole equipment was decontaminated before commencing site activities and between boreholes with a non-phosphate soap wash, followed by a potable water rinse. Investigation derived waste (IDW) was containerized in labeled drums for disposal off site.

Groundwater Purging and Sampling

Grab groundwater samples were collected from the borehole locations via dedicated,1-inch temporary wells instead of the screen point sampler described in the work plan. This alteration occurred because of the low yield encountered when the first screen point sampler was installed. The 1-inch temporary wells were constructed of polyvinyl chloride material with 5 foot screened intervals. A minimum of one well volume was purged from each boring location before sample collection using a peristaltic pump and dedicated tubing.

In addition to the grab groundwater samples, monitoring wells MW-03, MW-09, MW-11 were sampled, per the work plan. A minimum of three well volumes were purged from each well using a peristaltic pump and dedicated tubing. Water quality parameters were measured before, during, and after purging; the final measurements are presented in Table 2. The IDW generated during the monitoring well sampling was containerized in labeled drums for disposal off site.

After collection, the samples were placed in iced coolers and delivered to TestAmerica Analytical, Inc. of Buffalo, New York on December 19, 2008. The analytical results are discussed in the following section.

Laboratory Analytical Results

In accordance with the work plan, analyses for benzene, toluene, ethylbenzene, and total xylenes, PAHs, and turbidity were performed using Environmental Protection Agency (EPA) Methods 8260, 8270, and 180.1 Total dissolved solids was inadvertently analyzed by EPA Method 2540C instead of total suspended solids by EPA method 160.2 as stated in the work plan and requested on the chain of custody. The laboratory analytical data package is included as Attachment C. Table 3 presents the summary of the results; Table 4 includes historical results from the monitoring wells (MW-03 and MW-09) that are routinely sampled as part of the quarterly groundwater monitoring programs for the Former BSC site and Seventh Street site. Ambient Water Quality Standards and Guidance Values (http://www.dec.ny.gov/chemical/23853.html; June 1998) are included on Tables 3 and 4 for reference purposes.

The data was validated by ECT.CON, Inc of Imperial Pennsylvania. No data were rejected based on the data validation. Data presented in Tables 3 and 4 include data validation changes; a summary of the data validation is also included in Attachment C.

Benzene was detected in all groundwater samples and exceeded NYSDEC values (1 µg/l) in all samples, except those collected from MW-11 and DP-08-05 (Figure 2). The benzene concentration in the sample collected from DP-08-04 (1.1 µg/l) only slightly exceeded the NYSDEC comparison value. In the vicinity of MW-09, the highest benzene concentration was detected in the sample from MW-09 (670 µg/l, Figure 2).Toluene, ethylbenzene, and total xylenes exceeded the NYSDEC values in the sample collected from MW-03, only.

Several PAHs were detected at elevated concentrations in the grab groundwater collected from DP-08-05; naphthalene was detected at an elevated concentration in the sample from MW-03. PAHs were also detected at levels that exceeded the NYSDEC values in the remaining sample locations; however, these detections were several orders of magnitude lower than the detections in DP-05-08 and MW-03.

Findings

The supplemental investigation in the MW-09 area did not identify a definitive continued source of benzene affecting groundwater conditions. Based on the concentrations of benzene in samples surrounding MW-09, a contiguous plume has not been traced to a definitive source. The benzene in groundwater is limited in aerial extent.

Swan Trunk Combined Sewer Line

The Swan Trunk is an 8-foot diameter combined sewer line constructed of brick extending from the northern edge of the Seventh Street site excavation, past the MW-09 area and continues to the Fourth Street site (Figure 3). A smaller 5.25-foot feeder line constructed of brick connects the former Wilkeson Slip to the Swan Trunk combined sewer line and passes adjacent to MW-09. Boring DP-08-06 was relocated due to the presence of this feeder line. According to the Duke Realty Corporation redevelopment drawing C-4 Utility Plan[2] and the As-Builts for the Fourth Street site, inverts surveyed in the Swan Trunk combined sewer line range in elevation from 568.41 feet mean sea level (ft-MSL) to 568.79 ft-MSL; the top of the brick sewer survey elevations range from 577.33 ft-MSL to 576.79 ft-MSL. Recent groundwater elevations near the Swan Trunk measured during this supplemental investigation, quarterly groundwater sampling events for the Former BSC site and Seventh Street site, and annual groundwater sampling events for the Fourth Street site (conducted by the NYSDEC) indicate that groundwater elevations range from 573.63 ft-MSL (MW-7, Fourth Street site) to 574.66 ft-MSL (MW-09); therefore, the Swan Trunk combined sewer line is located within groundwater beneath the sites.

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[2] C&S Engineers, Inc. Drawing Titled “HealthNow New York Inc. Buffalo, New York Utility Plan”, Drawing number C4, dated September 30, 2005.

The presence of the Swan Trunk combined sewer line prevented the removal of contaminated soil/fill material as part of remedial activities at the Fourth Street site, which were conducted concurrent with remedial activities at the Former BSC and Seventh Street sites. The Swan trunk combined sewer line intersected the proposed excavation limits of the Fourth Street site and, as a result, material beneath the Swan Trunk sewer was not removed. Verification samples collected on the remediation excavation slope walls along the utility corridor indicated that benzene was detected and, in some samples, present at levels above the Fourth Street site soil cleanup objectives to protect groundwater quality[3]. However, the benzene concentrations in soil left behind are not significant enough to cause the elevated concentrations of benzene observed in groundwater at MW-09.

There is the potential that the Swan Trunk combined sewer line presents a preferential migration pathway of groundwater that has contacted historically contaminated material at both the Fourth Street site and the Seventh Street site. In addition, the composition of the Swan Trunk combined sewer line is brick and a mortar/grout material, neither of which is considered an impermeable material, especially given the age of the combined sewer line, which has been in place and, presumably, intersecting groundwater or beneath the groundwater table since the late 1800s. Therefore, there is the potential for material within the sewer to also migrate to the groundwater in the surrounding vicinity.

Newly Installed Combined Sewer Line

As part of the construction of the HealthNow building and parking garage, the combined sewer line that traversed the Seventh Street site from southeast to northeast, west of MW-31/MW-03, was rerouted as shown on Figure 4. The new combined sewer line is adjacent to the northern section of the Seventh Street site excavation and connects to the Swan Trunk combined sewer line via a feeder line in the vicinity of MW-09 (Figure 4). As discussed above, petroleum contaminated soil/fill associated with historical activities at the Seventh Street site was not removed due to the presence of utilities, including the Swan Trunk combined sewer line. However, based on theoretical calculation methods, the benzene concentrations in soil confirmation samples indicate that the remaining soil could not produce the benzene concentrations observed in groundwater at MW-09. In addition, the Seventh Street Site excavation indicated xylene was the primary VOC remaining in the excavation sidewall; no xylene is present in MW-09.

According to the Duke Redevelopment Drawings[4], the bedding material for the new combined sewer line is NYSDOT #1 Stone, which is more permeable than the surrounding excavation backfill. The new combined sewer line is sloped from east to west (i.e., along the northern extent of the excavation area of the Seventh Street site towards MW-09) and, similar to the Swan Trunk combined sewer line, is beneath the groundwater table.

There is the potential that a preferential pathway was created along this new combined sewer line via the pipe bedding material or along the interface between the combined sewer line and the surrounding soil. Historically, concentrations of benzene in samples from BCP-MW-04, north of the combined sewer line, have exceeded the NYSDEC criterion; however, the

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[3] Ecology and Environmental Engineering, P.C. Remedial Action Summary Report Fourth Street Inactive Hazardous Waste Site NYSDEC Site No. 9-15-167. September 2006.

[4] C&S Engineers, Inc. Drawing Titled “HealthNow New York Inc. Buffalo, New York Site Details”, Drawing number C5, dated September 30, 2005.

concentrations were an order of magnitude less than those detected in MW-09. This difference may be attributed to the elevation of the screened intervals of MW-09 and BCP-MW-04. The screened interval of monitoring well BCP-MW-04 extends from 582.17 feet mean sea level (ft-MSL) to 572.17 and located within clayey fill material; the screened interval of MW-09 extends from 571.55 ft- MSL to 561.55 ft-MSL and located within sandy material (Figure 4). The elevations of the sewer inverts closest to BCP-MW-04 (572.04 ft-MSL and 571.94 ft-MSL) are not within the screened interval of this well, while the screened interval of MW-09 intersects the combined sewer line inverts of the closest sewer manhole.

Elevated PAHs in DP-08-05

The elevated detections of PAHs in the groundwater sample collected from DP-08-05 appear to be an isolated condition separate from the Former BSC site or the Seventh Street Site. The samples collected from MW-09, MW-11, DP-08-04, and DP-08-06 do not contain concentrations of PAHs similar to those detected in DP-08-05. These locations are between DP-08-05 and the nearest excavations associated with the Former BSC site (shown on Figure 1). While a limited list of PAHs were detected historically in groundwater samples from monitoring wells in the vicinity of this excavation (MW-00-09, MW-00-10, and MW-01-26), the concentrations are orders of magnitude less than those detected in DP-08-05. Confirmation samples collected from this excavation met the site-specific cleanup goals prescribed for the Former BSC and are therefore unlikely to be the source of PAHs in DP-08-05.

Recommendations

While no definitive source of benzene was identified as a result of this investigation, potential sources associated with the historical conditions of the Fourth Street site, the Seventh Street site and the area in the vicinity of MW-03 (formerly MW-31) which was historically heavily industrialized were identified. Potential preferential pathways influenced by old and new sewer lines may also have historically contributed to the conditions at MW-09. However, the current and historical data collected and reviewed during this investigation, indicate that the benzene detected in MW-09 is limited and has not been traced to a definitive source. Based on the excavation confirmation sample results, the post-remedial soil conditions at the Seventh Street and Fourth Street sites (specifically benzene concentrations in soil) do not appear to be a component of the groundwater conditions observed at MW-09. The contaminants of concern in the Former BSC site excavation area closest to MW-09 were PAHs. No PAHs were detected at elevated concentrations at MW-09.

To address environmental conditions, massive volumes of contamination were removed via soil/fill excavation and groundwater extraction for dewatering purposes during the implementation of four remediation projects surrounding the MW-09 area. Approximately 75% of the BSC site was excavated to bedrock, the backfill material within the former Wilkeson Slip was completely removed from beneath the school building to the utility corridor along Fourth Street, and both the Seventh Street site and Fourth Street sites were similarly excavated. The excavation efforts satisfied numerical cleanup objectives required by the NYSDEC, with the exception of areas where existing sewer lines on the Seventh Street and Fourth Street sites prevented complete removal. Combining all activities from all four sites, more than 225,000 tons of contaminated material were excavated and properly disposed of offsite. Further, dewatering activities for excavations removed approximately 3 million gallons of groundwater from below the site. The limits of the excavations were primarily dictated by satisfying numerical cleanup criteria for each site (i.e., the contamination was “chased” by the excavation efforts).

The known sources of impacts to groundwater were removed and the excavations were backfilled with clean fill. As such, a naturally improving trend in groundwater conditions is expected to become evident, over time.

In accordance with the Site Management Plan, groundwater must be “evaluated qualitatively while considering that satisfying numerical standards is not realistic”. As the site is surrounded by other industrial legacy sites, “achievement of a defined numerical standard is unlikely and is not considered a reasonable goal for this site”. As a result, no numerical cleanup objective for groundwater was identified for these projects. A preliminary pathways identification analysis does not reveal a realistic exposure to receptors due to the isolated conditions at the MW-09 area. Numerous indoor air samples collected from within the crawl space of the school before, during, and after the excavation work did not reveal any indoor air concerns. Conservatively, a sub slab vapor extraction system was installed beneath the concrete floor of the crawl space. The entire excavation from beneath the school was backfilled with low permeability flowable fill. If there was no identified risk to the Waterfront School occupants before and during the remediation, it appears that there are no realistic current or future risks given the stringent and conservative remedial measures conducted, including continued operation of the sub slab vapor extraction system. As described, significant removal and engineering controls were conducted and put into place, in part, to address the known conditions of groundwater in the MW-09 area. Given the efforts already put forth and without the identification of a real potential risk, there does not appear to be a valid reason to actively address this isolated groundwater condition. The latest benzene concentration of the sample collected from MW-09 during this supplemental investigation (670 µg/l) is one of the lowest concentrations identified since the well was installed.

An Alternatives Analysis Report (AAR) was already prepared and approved by the NYSDEC (letter dated October 11, 2005) to address soil and groundwater conditions associated with the BSC site. The AAR indicated that no complete exposure pathways exist which result in unacceptable risk to human health and the environment. The AAR identified groundwater monitoring coupled with institutional controls (environmental easements) that prohibit the use of groundwater as components to the overall site remedy. The environmental easement associated with the BSC site was recorded with the Erie County Clerk’s office on September 7, 2006. In summary, the overall remedy included general response actions (institutional controls, site management plan, storm water management, and surface treatment management), source removal (excavation of soil/fill), and groundwater monitoring.

On behalf of QLT Buffalo, WSP Engineering recommends moving forward with the original NYSDEC-approved plan and complete the 2-year groundwater monitoring program and conduct a focused qualitative risk assessment, thereafter. Future actions will be assessed while taking into consideration the results of the monitoring program and conclusions drawn by the risk assessment. The removal of more than 225,000 tons of contamination combined with the placement of clean backfill has greatly improved environmental conditions over the extent of the four remediation projects. It was understood that while this work eliminated the sources, it would take years for the groundwater to respond and attenuate. We believe the investigations have shown the limited extent of the impact to groundwater and that overall conditions are responding positively to the remedial actions.

The recommendations are consistent with the scope of work identified by the work plans for these projects. If you have any questions, please do not hesitate to contact me at (412) 604-1040.

Sincerely,

Glen E Rieger

Glen E. Rieger
Senior Project Director

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Enclosures

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Brian Reilley, City of Buffalo
Reynolds Renshaw, Renshaw Consulting Group, LLC

Figures

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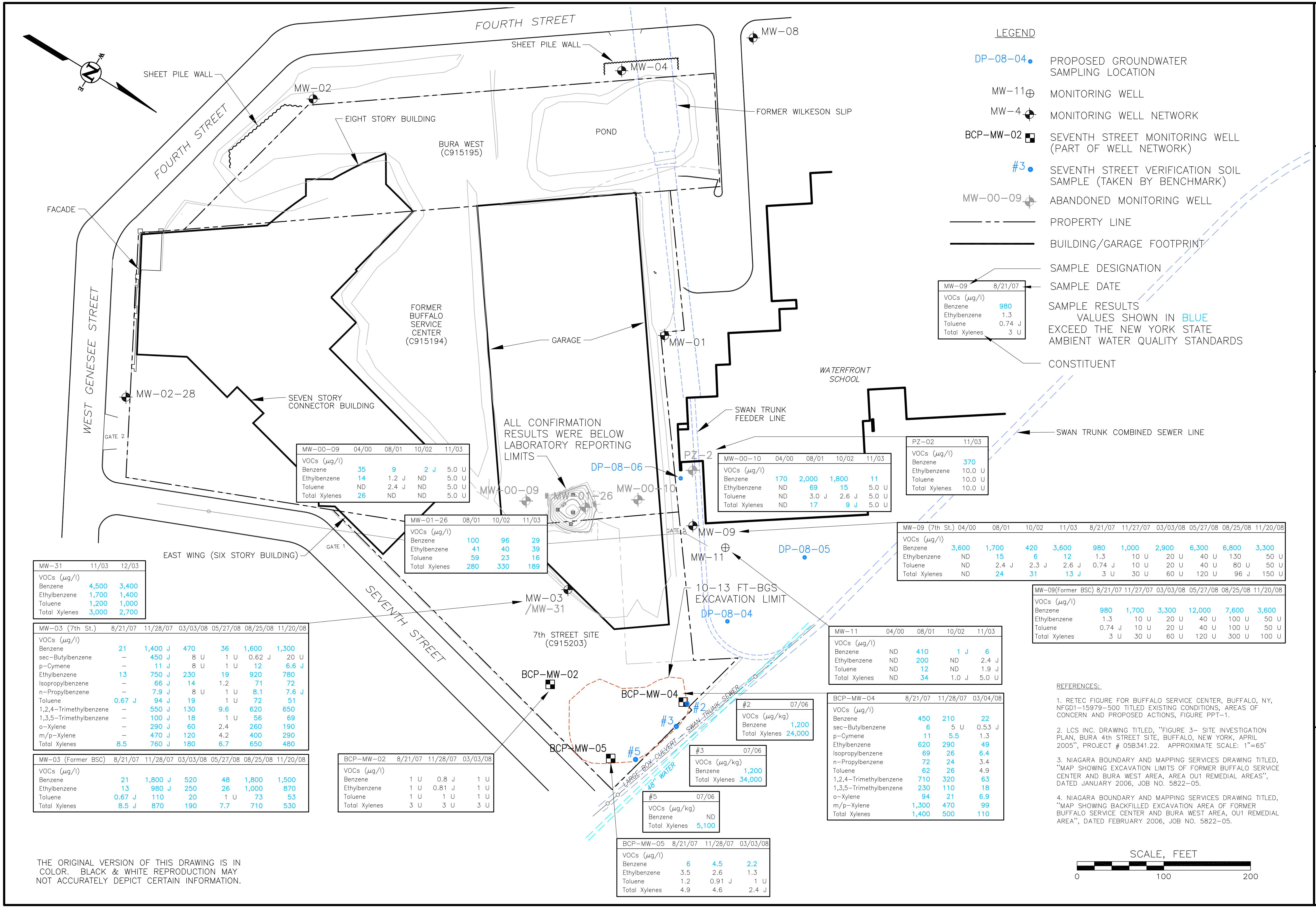


MW-31	11/03	12/03
VOCs (µg/l)		
Benzene	4,500	3,400
Ethylbenzene	1,700	1,400
Toluene	1,200	1,000
Total Xylenes	3,000	2,700

MW-03 (7th St.)	8/21/07	11/28/07	03/03/08	05/27/08	08/25/08	11/20/08
VOCs (µg/l)						
Benzene	21	1,400 J	470	36	1,600	1,300
sec-Butylbenzene	–	450 J	8 U	1 U	0.62 J	20 U
p-Cymene	–	11 J	8 U	1 U	12	6.6 J
Ethylbenzene	13	750 J	230	19	920	780
Isopropylbenzene	–	66 J	14	1.2	71	72
n-Propylbenzene	–	7.9 J	8 U	1 U	8.1	7.6 J
Toluene	0.67 J	94 J	19	1 U	72	51
1,2,4-Trimethylbenzene	–	550 J	130	9.6	620	650
1,3,5-Trimethylbenzene	–	100 J	18	1 U	56	69
o-Xylene	–	290 J	60	2.4	260	190
m/p-Xylene	–	470 J	120	4.2	400	290
Total Xylenes	8.5	760 J	180	6.7	650	480

MW-03 (Former BSC)	8/21/07	11/28/07	03/03/08	05/27/08	08/25/08	11/20/08
VOCs (µg/l)						
Benzene	21	1,800 J	520	48	1,800	1,500
Ethylbenzene	13	980 J	250	26	1,000	870
Toluene	0.67 J	110	20	1 U	73	53
Total Xylenes	8.5 J	870	190	7.7	710	530

MW-00-09	04/00	08/01	10/02	11/03
VOCs (µg/l)				
Benzene	35	9	2 J	5.0 U
Ethylbenzene	14	1.2 J	ND	5.0 U
Toluene	ND	2.4 J	ND	5.0 U
Total Xylenes	26	ND	ND	5.0 U

MW-01-26	08/01	10/02	11/03
VOCs (µg/l)			
Benzene	100	96	29
Ethylbenzene	41	40	39
Toluene	59	23	16
Total Xylenes	280	330	189

MW-00-10	04/00	08/01	10/02	11/03
VOCs (µg/l)				
Benzene	170	2,000	1,800	11
Ethylbenzene	ND	69	15	5.0 U
Toluene	ND	3.0 J	2.6 J	5.0 U
Total Xylenes	ND	17	9 J	5.0 U

PZ-02	11/03
VOCs (µg/l)	
Benzene	370
Ethylbenzene	10.0 U
Toluene	10.0 U
Total Xylenes	10.0 U

MW-09 (7th St.)	04/00	08/01	10/02	11/03	8/21/07	11/27/07	03/03/08	05/27/08	08/25/08	11/20/08
VOCs (µg/l)										
Benzene	3,600	1,700	420	3,600	980	1,000	2,900	6,300	6,800	3,300
Ethylbenzene	ND	15	6	12	1.3	10 U	20 U	40 U	130	50 U
Toluene	ND	2.4 J	2.3 J	2.6 J	0.74 J	10 U	20 U	40 U	80 U	50 U
Total Xylenes	ND	24	31	13 J	3 U	30 U	60 U	120 U	96 J	150 U

MW-09(Former BSC)	8/21/07	11/27/07	03/03/08	05/27/08	08/25/08	11/20/08
VOCs (µg/l)						
Benzene	980	1,700	3,300	12,000	7,600	3,600
Ethylbenzene	1.3	10 U	20 U	40 U	100 U	50 U
Toluene	0.74 J	10 U	20 U	40 U	100 U	50 U
Total Xylenes	3 U	30 U	60 U	120 U	300 U	100 U

MW-11	04/00	08/01	10/02	11/03
VOCs (µg/l)				
Benzene	ND	410	1 J	6
Ethylbenzene	ND	200	ND	2.4 J
Toluene	ND	12	ND	1.9 J
Total Xylenes	ND	34	1.0 J	5.0 U

BCP-MW-04	8/21/07	11/28/07	03/04/08
VOCs (µg/l)			
Benzene	450	210	22
sec-Butylbenzene	6	5 U	0.53 J
p-Cymene	11	5.5	1.3
Ethylbenzene	620	290	49
Isopropylbenzene	69	26	6.4
n-Propylbenzene	72	24	3.4
Toluene	62	26	4.9
1,2,4-Trimethylbenzene	710	320	63
1,3,5-Trimethylbenzene	230	110	18
o-Xylene	94	21	6.9
m/p-Xylene	1,300	470	99
Total Xylenes	1,400	500	110

BCP-MW-02	8/21/07	11/28/07	03/03/08
VOCs (µg/l)			
Benzene	1 U	0.8 J	1 U
Ethylbenzene	1 U	0.81 J	1 U
Toluene	1 U	1 U	1 U
Total Xylenes	3 U	3 U	3 U

#2	07/06
VOCs (µg/kg)	
Benzene	1,200
Total Xylenes	24,000

#3	07/06
VOCs (µg/kg)	
Benzene	1,200
Total Xylenes	34,000

#5	07/06
VOCs (µg/kg)	
Benzene	ND
Total Xylenes	5,100

BCP-MW-05	8/21/07	11/28/07	03/03/08
VOCs (µg/l)			
Benzene	6	4.5	2.2
Ethylbenzene	3.5	2.6	1.3
Toluene	1.2	0.91 J	1 U
Total Xylenes	4.9	4.6	2.4 J

THE ORIGINAL VERSION OF THIS DRAWING IS IN COLOR. BLACK & WHITE REPRODUCTION MAY NOT ACCURATELY DEPICT CERTAIN INFORMATION.

LEGEND

DP-08-04 ● PROPOSED GROUNDWATER SAMPLING LOCATION
MW-11 ⊕ MONITORING WELL
MW-4 ⊕ MONITORING WELL NETWORK
BCP-MW-02 ▨ SEVENTH STREET MONITORING WELL (PART OF WELL NETWORK)
#3 ● SEVENTH STREET VERIFICATION SOIL SAMPLE (TAKEN BY BENCHMARK)
MW-00-09 ⊕ ABANDONED MONITORING WELL
— - — PROPERTY LINE
—— BUILDING/GARAGE FOOTPRINT

MW-09	8/21/07
VOCs (µg/l)	
Benzene	980
Ethylbenzene	1.3
Toluene	0.74 J
Total Xylenes	3 U

SAMPLE DESIGNATION
SAMPLE DATE
SAMPLE RESULTS
VALUES SHOWN IN BLUE EXCEED THE NEW YORK STATE AMBIENT WATER QUALITY STANDARDS
CONSTITUENT

REFERENCES:

1. RETEC FIGURE FOR BUFFALO SERVICE CENTER, BUFFALO, NY, NFGD1-15979-500 TITLED EXISTING CONDITIONS, AREAS OF CONCERN AND PROPOSED ACTIONS, FIGURE PPT-1.

2. LCS INC. DRAWING TITLED, "FIGURE 3- SITE INVESTIGATION PLAN, BURA 4th STREET SITE, BUFFALO, NEW YORK, APRIL 2005", PROJECT # 05B341.22. APPROXIMATE SCALE: 1"=65'

3. NIAGARA BOUNDARY AND MAPPING SERVICES DRAWING TITLED, "MAP SHOWING EXCAVATION LIMITS OF FORMER BUFFALO SERVICE CENTER AND BURA WEST AREA, AREA OU1 REMEDIAL AREAS", DATED JANUARY 2006, JOB NO. 5822-05.

4. NIAGARA BOUNDARY AND MAPPING SERVICES DRAWING TITLED, "MAP SHOWING BACKFILLED EXCAVATION AREA OF FORMER BUFFALO SERVICE CENTER AND BURA WEST AREA, OU1 REMEDIAL AREA", DATED FEBRUARY 2006, JOB NO. 5822-05.

SCALE, FEET
0 100 200

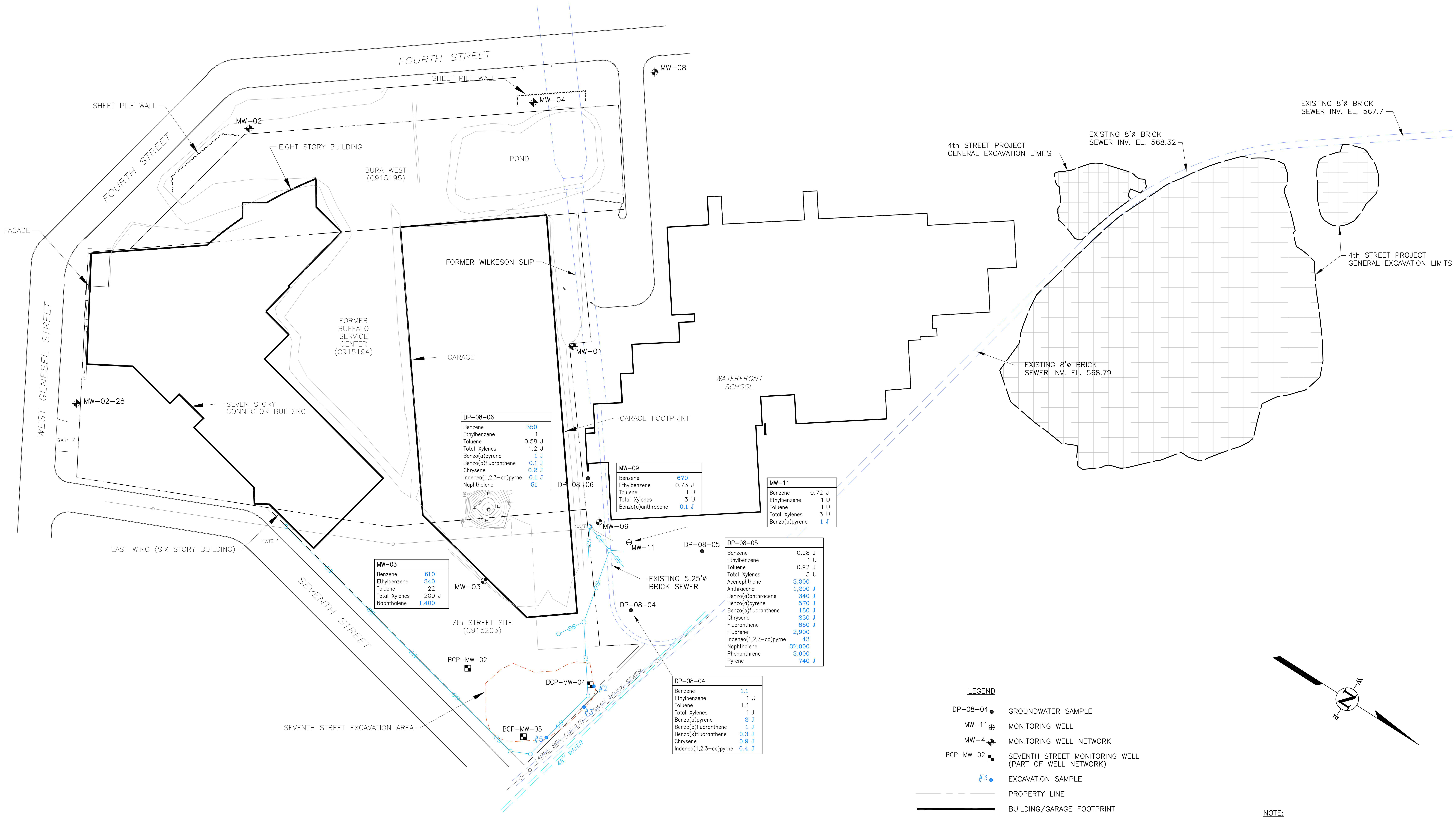
WSP
Engineering of
New York, P.C.
750 Holiday Drive, Suite 410
Pittsburgh, PA 15220 412-604-1040

FIGURE 1

HISTORICAL GROUNDWATER SAMPLING RESULTS
MW-09 AREA SUPPLEMENTAL INVESTIGATION

WATERFRONT SCHOOL PROPERTY
BUFFALO, NEW YORK
PREPARED FOR
QLT BUFFALO LLC
BUFFALO, NEW YORK

Drawn By: RAZ 022509
Checked:
Approved:
DWG Name: 080190-B13



DP-08-06	
Benzene	350
Ethylbenzene	1
Toluene	0.58 J
Total Xylenes	1.2 J
Benzo(a)pyrene	1 J
Benzo(b)fluoranthene	0.1 J
Chrysene	0.2 J
Indeneo(1,2,3-cd)pyrne	0.1 J
Naphthalene	51

MW-09	
Benzene	670
Ethylbenzene	0.73 J
Toluene	1 U
Total Xylenes	3 U
Benzo(a)anthracene	0.1 J

MW-11	
Benzene	0.72 J
Ethylbenzene	1 U
Toluene	1 U
Total Xylenes	3 U
Benzo(a)pyrene	1 J

MW-03	
Benzene	610
Ethylbenzene	340
Toluene	22
Total Xylenes	200 J
Naphthalene	1,400

DP-08-05	
Benzene	0.98 J
Ethylbenzene	1 U
Toluene	0.92 J
Total Xylenes	3 U
Acenaphthene	3,300
Anthracene	1,200 J
Benzo(a)anthracene	340 J
Benzo(a)pyrene	570 J
Benzo(b)fluoranthene	180 J
Chrysene	230 J
Fluoranthene	860 J
Fluorene	2,900
Indeneo(1,2,3-cd)pyrne	43
Naphthalene	37,000
Phenanthrene	3,900
Pyrene	740 J

DP-08-04	
Benzene	1.1
Ethylbenzene	1 U
Toluene	1.1
Total Xylenes	1 J
Benzo(a)pyrene	2 J
Benzo(b)fluoranthene	1 J
Benzo(k)fluoranthene	0.3 J
Chrysene	0.9 J
Indeneo(1,2,3-cd)pyrne	0.4 J

LEGEND

DP-08-04 ●	GROUNDWATER SAMPLE
MW-11 ⊕	MONITORING WELL
MW-4	MONITORING WELL NETWORK
BCP-MW-02	SEVENTH STREET MONITORING WELL (PART OF WELL NETWORK)
#3 ●	EXCAVATION SAMPLE
— — —	PROPERTY LINE
———	BUILDING/GARAGE FOOTPRINT
—CS—	NEW COMBINED SEWER LINE
= = =	SWAN TRUNK COMBINED SEWER LINE
MW-11	SAMPLE DESIGNATION
	SAMPLE RESULTS VALUES SHOWN IN BLUE EXCEED THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION VALUE
	CONSTITUENT

MW-11	
Benzene	0.72 J
Ethylbenzene	1 U
Toluene	1 U
Total Xylenes	3 U
Benzo(a)pyrene	1 J

NOTE:

8'ø AND 5.25'ø BRICK SEWER LOCATIONS ARE APPROXIMATE, LOCATED FROM A DRAWING DATED JUNE 8, 1882. SEE REFERENCE 5.

THE ORIGINAL VERSION OF THIS DRAWING IS IN COLOR. BLACK & WHITE REPRODUCTION MAY NOT ACCURATELY DEPICT CERTAIN INFORMATION.

SCALE, FEET
60 30 0 60 120

REFERENCES:

1. RETEC FIGURE FOR BUFFALO SERVICE CENTER, BUFFALO, NY, NFGD1-15979-500 TITLED EXISTING CONDITIONS, AREAS OF CONCERN AND PROPOSED ACTIONS, FIGURE PPT-1.

2. LCS INC. DRAWING TITLED, "FIGURE 3- SITE INVESTIGATION PLAN, BURA 4th STREET SITE, BUFFALO, NEW YORK, APRIL 2005", PROJECT # 05B341.22. APPROXIMATE SCALE: 1"=65'

3. NIAGARA BOUNDARY AND MAPPING SERVICES DRAWING TITLED, "MAP SHOWING EXCAVATION LIMITS OF FORMER BUFFALO SERVICE CENTER AND BURA WEST AREA, AREA OU1 REMEDIAL AREAS", DATED JANUARY 2006, JOB NO. 5822-05.

4. NIAGARA BOUNDARY AND MAPPING SERVICES DRAWING TITLED, "MAP SHOWING BACKFILLED EXCAVATION AREA OF FORMER BUFFALO SERVICE CENTER AND BURA WEST AREA, OU1 REMEDIAL AREA", DATED FEBRUARY 2006, JOB NO. 5822-05.

5. CITY OF BUFFALO, DIVISION OF ENGINEERING, BUFFALO, NEW YORK DRAWING TITLED, "PLAN & PROFILE OF THE BUFFALO TRUNK SEWER", DATED JUNE 8, 1882.

REVISIONS				
REV	DESCRIPTION			
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ⓑ		Revised:	Chkd:	Appr.:
ⓒ		Revised:	Chkd:	Appr.:

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DRAWN BY	RAZ 012309
CHECKED	–
APPROVED	–

PROPERTY OF WSP ENGINEERING OF NEW YORK, P.C.

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GROUNDWATER SAMPLING RESULTS

MW-09 AREA SUPPLEMENTAL INVESTIGATION
BUFFALO, NEW YORK

PREPARED FOR
QLT BUFFALO LLC
BUFFALO, NEW YORK

WSP
Engineering of
New York, P.C.
750 Holiday Drive, Suite 410
Pittsburgh, Pennsylvania 15220
(412) 604-1040

FIGURE 2

Drawing Name
080190-D02

REFERENCES:

1. RETEC FIGURE FOR BUFFALO SERVICE CENTER, BUFFALO, NY, NFGD1-15979-500 TITLED EXISTING CONDITIONS, AREAS OF CONCERN AND PROPOSED ACTIONS, FIGURE PPT-1.
2. LCS INC. DRAWING TITLED, "FIGURE 3- SITE INVESTIGATION PLAN, BURA 4th STREET SITE, BUFFALO, NEW YORK, APRIL 2005", PROJECT # 05B341.22. APPROXIMATE SCALE: 1"=65'
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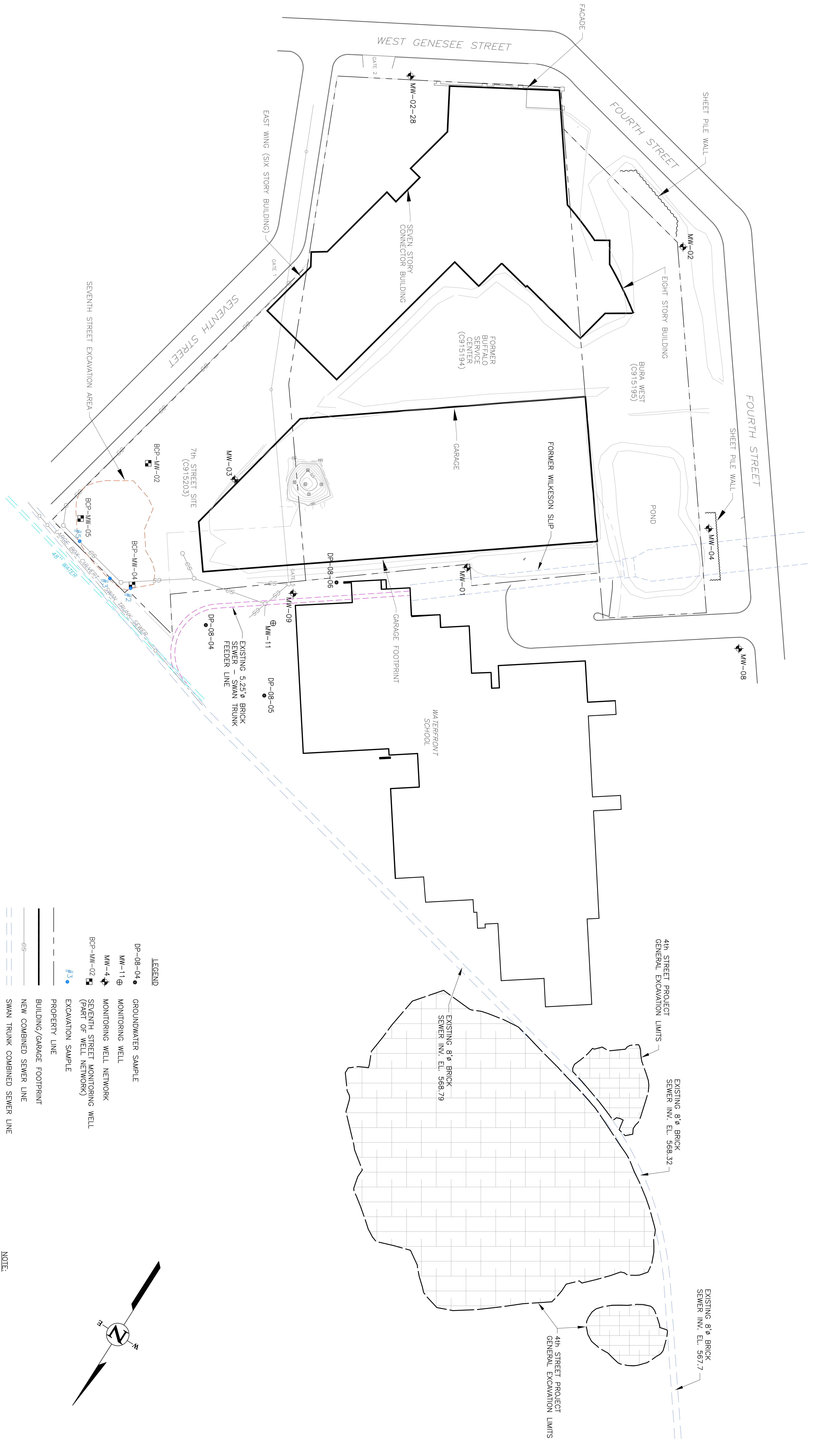

NOTE:
8'ø AND 5.25'ø BRICK SEWER LOCATIONS ARE APPROXIMATE, LOCATED FROM A DRAWING DATED JUNE 8, 1882. SEE REFERENCE 5.

THE ORIGINAL VERSION OF THIS DRAWING IS IN COLOR. BLACK & WHITE REPRODUCTION MAY NOT ACCURATELY DEPICT CERTAIN INFORMATION.

080190-D04
Drawing Name

FIGURE 3

WSP
Engineering of
New York, P.C.
750 Holiday Drive, Suite 410
Pittsburgh, Pennsylvania 15220
(412) 604-1040

SWAN TRUNK COMBINED SEWER LOCATION

MW-09 AREA SUPPLEMENTAL INVESTIGATION
BUFFALO, NEW YORK
PREPARED FOR
QLT BUFFALO LLC
BUFFALO, NEW YORK

DRAWN BY	RAZ 013009
CHECKED	—
APPROVED	—

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REFERENCES:

1. RETEC FIGURE FOR BUFFALO SERVICE CENTER, BUFFALO, NY, NFGD1-15979-500 TITLED EXISTING CONDITIONS, AREAS OF CONCERN AND PROPOSED ACTIONS, FIGURE PPT-1.

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3. NIAGARA BOUNDARY AND MAPPING SERVICES DRAWING TITLED, "MAP SHOWING EXCAVATION LIMITS OF FORMER BUFFALO SERVICE CENTER AND BURA WEST AREA, AREA OU1 REMEDIAL AREAS", DATED JANUARY 2006, JOB NO. 5822-05.

4. NIAGARA BOUNDARY AND MAPPING SERVICES DRAWING TITLED, "MAP SHOWING BACKFILLED EXCAVATION AREA OF FORMER BUFFALO SERVICE CENTER AND BURA WEST AREA, OU1 REMEDIAL AREA", DATED FEBRUARY 2006, JOB NO. 5822-05.

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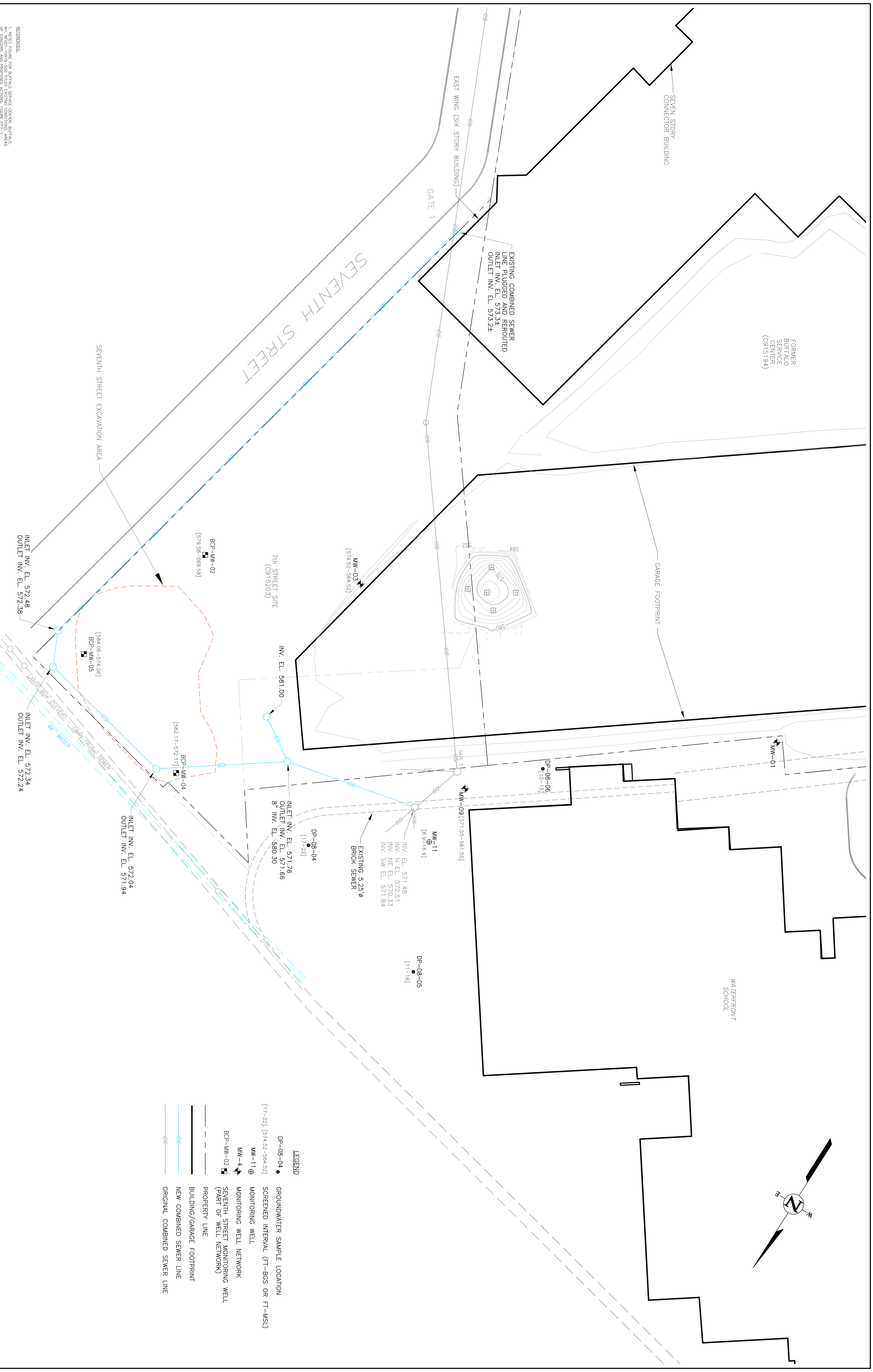

NOTES:

1. 8'ø AND 5.25'ø BRICK SEWER LOCATIONS ARE APPROXIMATE, LOCATED FROM A DRAWING DATED JUNE 8, 1882. SEE REFERENCE 5.

2. THE WATERFRONT SCHOOL FOOTPRINT EXTENDS FURTHER TO THE SOUTH BUT IS NOT DEPICTED ON THIS FIGURE.

LEGEND

DP-08-04 ●	GROUNDWATER SAMPLE LOCATION
[17-22], [574.52-564.52]	SCREENED INTERVAL (FT-BGS OR FT-MSL)
MW-11 ⊕	MONITORING WELL
MW-4 ⊕	MONITORING WELL NETWORK
BCP-MW-02 ▨	SEVENTH STREET MONITORING WELL (PART OF WELL NETWORK)
— — —	PROPERTY LINE
━━━	BUILDING/GARAGE FOOTPRINT
—CS—	NEW COMBINED SEWER LINE
—CS—	ORIGINAL COMBINED SEWER LINE

THE ORIGINAL VERSION OF THIS DRAWING IS IN COLOR. BLACK & WHITE REPRODUCTION MAY NOT ACCURATELY DEPICT CERTAIN INFORMATION.

080190-D03
Drawing Name

FIGURE 4

WSP Engineering of New York, P.C.
750 Holiday Drive, Suite 410
Pittsburgh, Pennsylvania 15220
(412) 604-1040

NEW COMBINED SEWER LOCATION

MW-09 AREA SUPPLEMENTAL INVESTIGATION
BUFFALO, NEW YORK

PREPARED FOR
QLT BUFFALO LLC
BUFFALO, NEW YORK

DRAWN BY	RAZ 012409
CHECKED	—
APPROVED	—

PROPERTY OF WSP ENGINEERING OF NEW YORK, P.C.
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	Revised:	Chkd:	Appr.:

Tables

Table 1

Summary of Monitoring Well Construction Details and Groundwater Elevations
QLT Buffalo
Buffalo, New York (a)

	New York State Plane Coordinates		Ground Surface Elevation	Top-of-Casing Elevation	Total Depth		Screen Length	Screen Interval			December 2008	
Location	**Easting**	**Northing**	**(ft-MSL)**	**(ft-MSL)**	**(ft-TOC)**	**(ft-MSL)**	**(ft)**	**ft-MSL**		**ft-MSL**	**Depth to Groundwater (ft-**	**Groundwater Elevation (ft-MSL)**
MW-03	1068135.0	1051838.9	584.30	584.28	19.76	564.52	10	574.52	-	564.52	7.94	576.34
MW-09	1067997.2	1051923.5	580.59	580.25	18.7	561.55	10	571.55	-	561.55	5.59	574.66
MW-11	NA	NA	NA	NA	21.3	NA	10	NA	-	NA	7.92	NA
BCP-MW-02	1068238.9	1051878.3	584.53	583.9	14.32	569.58	10	579.58	-	569.58	7.67	576.23
BCP-MW-04	1068176.5	1052019.9	586.99	586.69	14.52	572.17	10	582.17	-	572.17	10.98	575.71
BCP-MW-05	1068275.5	1051982.3	586.09	585.67	11.61	574.06	10	584.06	-	574.06	10.21	575.46

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a/ ft-MSL = feet mean sea level; ft-TOC = feet top of casing; ft = feet; NA = not available.

Table 2
Summary of Field Parameters
QLT Buffalo
Buffalo, New York (a)

Well	Temperature (^oC)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/l)	pH (s.u.)	ORP (mV)	Turbidity (NTUs)	Purge Volume (gal)
MW-03	12.66	2.184	0.26	6.81	-218.9	6.5	5.49
MW-09	10.00	1.756	0.56	6.96	-56.6	22.3	6.42
MW-11	12.27	1.25	0.50	6.94	-9.5	16	6.54

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a/ ^oC = degrees Celsius; mS/cm = milliSiemens per centimeter; mg/l = milligrams per liter; s.u. standard units; mV = milliVolts
NTUs = nephelometric turbidity units; gal = gallon.

Table 3

Summary of MW-09 Area Supplemental Investigation Results
QLT Buffalo
Buffalo, New York (a)

	Sample I.D.:	DP-08-04	DP-08-05	DP-08-06	MW-03		MW-09	MW-11
	Sample Date:	12/18/08	12/17/08	12/17/08	12/17/08 (b)	12/17/08 (b)	12/18/08	12/18/08
Parameters	**NYSDEC Values (c)**							
Volatile Organic Compounds (µg/l)								
Benzene	1	1.1	0.98 J (d)	350	610	600	670	0.72 J
Ethylbenzene	5	1 U	1 U	1	340	330	0.73 J	1 U
Toluene	5	1.1	0.92 J	0.58 J	22	22	1 U	1 U
Total Xylenes	5	1 J	3 U	1.2 J	200 J	190	3 U	3 U
Total BTEX (e)	-	3.7	3.9	353	1,172	1,142	673	3.22
Polycyclic Aromatic Hydrocarbons (µg/l)								
Acenaphthene	20 (f)	0.9 J	3,300	5 U	2 J	2 J	9	5 U
Acenaphthylene	-	0.2 J	150 J	5 U	3 J	3 J	5 U	5 U
Anthracene	50 (f)	1 J	1,200 J	0.2 J	0.1 J	0.1 J	0.2 J	5 U
Benzo(a)anthracene	0.002 (f)	5 U	340 J	5 U	5 U	5 U	0.1 J	5 U
Benzo(a)pyrene	0.002 (f,g)	2 J	570 J	1 J	5 U	5 U	5 U	1 J
Benzo(b)fluoranthene	0.002 (f)	1 J	180 J	0.1 J	5 U	5 U	5 U	5 U
Benzo(ghi)perylene	-	0.6 J	38	0.2 J	5 U	5 U	5 U	5 U
Benzo(k)fluoranthene	0.002 (f)	0.3 J	5 U	5 U	5 U	5 U	5 U	5 U
Chrysene	0.002 (f)	0.9 J	230 J	0.2 J	5 U	5 U	5 U	5 U
Dibenzo(a,h)anthracene	-	2 J	8	5 U	5 U	5 U	5 U	5 U
Fluoranthene	50 (f)	2 J	860 J	0.2 J	5 U	5 U	0.4 J	5 U
Fluorene	50 (f)	0.9 J	2,900	0.1 J	2 J	2 J	2 J	5 U
Indeno(1,2,3-cd)pyrene	0.002 (f)	0.4 J	43	0.1 J	5 U	5 U	5 U	5 U
2-Methylnaphthalene	-	1 J	13,000	0.5 J	10	11	5 U	5 U
Naphthalene	10 (f)	4	37,000	51	1,300	1,400	5 U	5 U
Phenanthrene	50 (f)	3 J	3,900	0.2 J	2 J	2 J	5 U	5 U
Pyrene	50 (f)	2 J	740 J	5 U	5 U	5 U	0.2 J	5 U
Total PAHs (e)	-	24.7	64,462	68.8	1,344	1,445	37.9	38.8
Total Dissolved Solids (mg	-	700	748	1,210	1,400	1,460	1,070	828
Turbidity (NTUs)	-	1,630	1,680 J	3,490 J	58.6 J	45.4 J	12.8	3.7

Boxed value indicates concentration greater than NYSDEC Ambient Water Quality Standards and Guidance Values

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a/ I.D. = identification; NYSDEC = New York State Department of Environmental Conservation; µg/l = micrograms per liter;
BTEX = benzene, toluene, ethylbenzene, total xylenes; '-' indicates no criterion developed; PAHs = polycyclic aromatic hydrocarbons;
mg/l = milligrams per liter; NTUs =nephelometric turbidity units.

b/ Sample and duplicate.

c/ NYSDEC Ambient Water Quality Standards and Guidance Values. Technical and Operational Guidance Series (1.1.1).
June 1998 and as updated.

d/ Data Qualifiers:
U = constituent not detected at reported detection limit
J = estimated concentration

e/ Total BTEX and PAHs were calculated by summing the detected concentrations and half the reported detection limit.

f/ Comparison criterion is a guidance value.

g/ Guidance value protective of drinking water source from surface water.

Table 4

Summary of Historical Groundwater Sampling Results
MW-09 Investigation Area
QLT Buffalo
Buffalo, New York (a)

Sample I.D.:		**DP-08-04**	**DP-08-05**	**DP-08-06**	**MW-03**																
					QLT Buffalo Site Data										**7th Street Site Data**						
Sample Date:		**12/18/08**	**12/17/08**	**12/17/08**	**08/21/07**	**11/28/07 (b,e)**	**11/28/07 (b,e)**	**03/03/08 (b,e)**	**03/03/08 (b,e)**	**05/27/08 (b,e)**	**05/27/08 (b,e)**	**08/25/08 (b,e)**	**08/25/08 (b,e)**	**11/20/08 (e)**	**11/28/07 (e)**	**03/03/08 (e)**	**05/27/08 (e)**	**08/25/08 (e)**	**11/20/08 (e)**	**12/17/08 (b)**	**12/17/08 (b)**
Parameters	**NSYDEC Criteria (c)**																				
Volatile Organic Compounds (µg/l)																					
Benzene	1	1.1	0.98 J	350	21	1,800	1,800 J	520	490	48	42	1,600	1,800	1,500	1,400 J	470	36	1,600	1,300	610	600
n-Butylbenzene	5	-	-	-	-	-	-	-	-	-	-	-	-	-	8 UJ	8 U	1 U	1 U	20 U	-	-
sec-Butylbenzene	5	-	-	-	-	-	-	-	-	-	-	-	-	-	450 J	8 U	1 U	0.62 J	20 U	-	-
p-Cymene	5	-	-	-	-	-	-	-	-	-	-	-	-	-	11 J	8 U	1 U	12	6.6 J	-	-
Ethylbenzene	5	1 U	1 U	1	13	960	980 J	250	230	26	22	920	1,000	870	750 J	230	19	920	780	340	330
Isopropylbenzene	5	-	-	-	-	-	-	-	-	-	-	-	-	-	66 J	14	1.2	71	72	-	-
Methyl-t-Butyl Ether (MT	10	-	-	-	-	-	-	-	-	-	-	-	-	-	8 UJ	8 U	1 UJ	1 U	20 U	-	-
n-Propylbenzene	5	-	-	-	-	-	-	-	-	-	-	-	-	-	7.9 J	8 U	1 U	8.1	7.6 J	-	-
Toluene	5	1.1	0.92 J	0.58 J	0.67 J	100	110	20	19 J	1 U	1 U	72	73	53	94 J	19	1 U	72	51	22	22
1,2,4-Trimethylbenzene	5	-	-	-	-	-	-	-	-	-	-	-	-	-	550 J	130	9.6	620	650	-	-
1,3,5-Trimethylbenzene	5	-	-	-	-	-	-	-	-	-	-	-	-	-	100 J	18	1 U	56	69	-	-
o-Xylene	5	-	-	-	-	-	-	-	-	-	-	-	-	-	290 J	60	2.4	260	190	-	-
m/p-Xylenes	5	-	-	-	-	-	-	-	-	-	-	-	-	-	470 J	120	4.2	400	290	-	-
Total Xylenes	5	1 J	3 U	1.2 J	8.5	850	870	190	170	7.7	6.9	650	710	530	760 J	180	6.7	650	480	200 J	190
Semi-Volatile Organic Compounds (µg/l)																					
Acenaphthene	20	0.9 J	3,300	5 U	5 U	3 J	3 J	0.8 J	0.7 J	5 U	0.1 J	2 J	2 J	2	-	-	-	-	-	2 J	2 J
Acenaphthylene	-	0.2 J	150 J	5 U	5 U	3 J	3 J	0.8 J	0.7 J	5 U	5 U	2 J	2 J	2	-	-	-	-	-	3 J	3 J
Anthracene	50	1 J	1,200 J	0.2 J	5 U	5 U	5 U	0.1 J	0.1 J	5 U	5 U	5 U	5 U	1 U	-	-	-	-	-	0.1 J	0.1 J
Benzo(a)anthracene	0.002	5 U	340 J	5 U	0.2 J	0.3 J	0.4 J	0.6 U	0.5 U	0.3 J	0.3 J	5 U	5 U	1 U	-	-	-	-	-	5 U	5 U
Benzo(a)pyrene	0.002	2 J	570 J	1 J	5 U	5 U	5 U	0.9 J	0.4 J	0.2 J	0.2 J	0.1 J	0.1 J	1 U	-	-	-	-	-	5 U	5 U
Benzo(b)fluoranthene	0.002	1 J	180 J	0.1 J	5 U	0.2 J	5 U	1 J	0.4 J	0.2 J	0.2 J	5 U	5 U	1 U	-	-	-	-	-	5 U	5 U
Benzo(ghi)perylene	-	0.6 J	38	0.2 J	5 U	5 U	5 U	3 J	0.2 J	5 U	5 U	5 U	5 U	1 U	-	-	-	-	-	5 U	5 U
Benzo(k)fluoranthene	0.002	0.3 J	5 U	5 U	5 U	5 U	5 U	0.5 J	0.2 J	0.1 J	5 U	5 U	5 U	1 U	-	-	-	-	-	5 U	5 U
Chrysene	0.002	0.9 J	230 J	0.2 J	5 U	5 U	5 U	0.4 J	0.3 J	5 U	5 U	5 U	5 U	1 U	-	-	-	-	-	5 U	5 U
Dibenzo(a,h)anthracene	-	2 J	8	5 U	5 U	5 U	5 U	2 J	5 U	5 U	5 U	5 U	5 U	1 U	-	-	-	-	-	5 U	5 U
Fluoranthene	50	2 J	860 J	0.2 J	0.2 J	0.4 J	5 U	0.9 J	0.6 J	5 U	5 U	0.1 J	0.1 J	1 U	-	-	-	-	-	5 U	5 U
Fluorene	50	0.9 J	2,900	0.1 J	5 U	2 J	2 J	0.5 J	0.3 J	5 U	5 U	2 J	1 J	1 J	-	-	-	-	-	2 J	2 J
Indeno(1,2,3-cd)pyrene	0.002	0.4 J	43	0.1 J	5 U	5 U	5 U	2 J	0.2 J	5 U	5 U	5 U	5 U	1 U	-	-	-	-	-	5 U	5 U
2-Methylnaphthalene	-	1 J	13,000	0.5 J	5 U	11	13	1 J	1 J	5 U	5 U	8	10	-	-	-	-	-	-	10	11
Naphthalene	10	4	37,000	51	5 U	2,500	2,700	270	260	20	22	840	1,200	650 E	-	-	-	-	-	1,300	1,400
Phenanthrene	50	3 J	3,900	0.2 J	0.4 J	1 J	1 J	0.6 J	0.5 J	0.2 J	0.2 J	0.4 J	0.5 J	1 J	-	-	-	-	-	2 J	2 J
Pyrene	50	2 J	740 J	5 U	0.3 J	0.3 J	0.3 J	0.7 J	0.4 J	0.3 J	0.3 J	0.1 J	0.1 J	1 U	-	-	-	-	-	5 U	5 U
Total Dissolved Solids (mg/l)		700	748	1,210	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,400	1,460
Turbidity (NTUs)		1,630	1,680 J	3,490 J	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	58.6 J	45.4 J

Boxed value indicates concentration greater than NYSDEC Ambient Water Quality Standards and Guidance Values

Table 4 (continued)

Summary of Historical Groundwater Sampling Results
MW-09 Investigation Area
QLT Buffalo
Buffalo, New York

Sample I.D.:		MW-09																	MW-11
		QLT Buffalo Site Data											7th Street Site Data						
		Pre-Remediation				Post-Remediation													
Sample Date:		April 2000	Aug 2001	Oct 2002	Nov 2003	08/20/07 (f)	08/21/07	11/27/07 (e)	03/03/08 (e)	05/27/08 (e)	08/25/08 (e)	11/20/08 (e)	11/27/07 (e)	03/03/08 (e)	05/27/08 (e)	08/25/08 (e)	11/20/08 (e)	12/18/08	12/18/08
Parameters	**NSYDEC Criteria**																		
Volatile Organic Compounds (µg/l)																			
Benzene	1	3,600	1,700	420	3,600	4,000 D	980	1,700	3,300	12,000	7,600	3,600 D	1,000	2,900	6,300	6,800	3,300	670	0.72 J
n-Butylbenzene	5	-	-	-	-	-	-	-	-	-	-	-	10 U	20 U	40 U	80 U	50 U	-	-
sec-Butylbenzene	5	-	-	-	-	-	-	-	-	-	-	-	10 U	20 U	40 U	80 U	50 U	-	-
p-Cymene	5	-	-	-	-	-	-	-	-	-	-	-	10 U	20 U	40 U	80 U	50 U	-	-
Ethylbenzene	5	ND	15	6.1	12	6	1.3	10 U	20 U	40 U	100 U	50 U	10 U	20 U	40 U	130	50 U	0.73 J	1 U
Isopropylbenzene	5	-	-	-	-	-	-	-	-	-	-	-	10 U	20 U	40 U	80 U	50 U	-	-
Methyl-t-Butyl Ether (MT	10	-	-	-	-	-	-	-	-	-	-	-	10 U	20 U	40 UJ	80 U	50 U	-	-
n-Propylbenzene	5	-	-	-	-	-	-	-	-	-	-	-	10 U	20 U	40 U	80 U	50 U	-	-
Toluene	5	ND	2.4 J	2.3 J	2.6 J	2	0.74 J	10 U	20 U	40 U	100 U	50 U	10 U	20 U	40 U	80 U	50 U	1 U	1 U
1,2,4-Trimethylbenzene	5	-	-	-	-	-	-	-	-	-	-	-	10 U	20 U	40 U	120	50 U	-	-
1,3,5-Trimethylbenzene	5	-	-	-	-	-	-	-	-	-	-	-	10 U	20 U	40 U	80 U	50 U	-	-
o-Xylene	5	-	-	-	-	-	-	-	-	-	-	-	10 U	20 U	40 U	31 J	50 U	-	-
m/p-Xylenes	5	-	-	-	-	-	-	-	-	-	-	-	20 U	40 U	80 U	65 J	100 U	-	-
Total Xylenes	5	ND	24	31	13.1 J	3.1	3 U	30 U	60 U	120 U	300 U	150 U	30 U	60 U	120 U	96 J	150 U	3 U	3 U
Semi-Volatile Organic Compounds (µg/l)																			
Acenaphthene	20	11	17	16	13	6	7	11	4 J	2 J	4 J	6	-	-	-	-	-	9	5 U
Acenaphthylene	-	ND	ND	ND	10 U	5 U	5 U	5 U	5 U	5 U	5 U	1 U	-	-	-	-	-	5 U	5 U
Anthracene	50	ND	ND	ND	10 U	5 U	5 U	5 U	5 U	5 U	5 U	1 U	-	-	-	-	-	0.2 J	5 U
Benzo(a)anthracene	0.002	ND	ND	ND	10 U	5 U	5 U	5 U	0.2 U	5 U	5 U	1 U	-	-	-	-	-	0.1 J	5 U
Benzo(a)pyrene	0.002	ND	ND	ND	10 U	5 U	5 U	5 U	5 U	5 U	5 U	1 U	-	-	-	-	-	5 U	1 J
Benzo(b)fluoranthene	0.002	ND	ND	ND	10 U	5 U	5 U	5 U	5 U	5 U	5 U	1 U	-	-	-	-	-	5 U	5 U
Benzo(ghi)perylene	-	ND	ND	ND	10 U	5 U	5 U	5 U	5 U	5 U	5 U	1 U	-	-	-	-	-	5 U	5 U
Benzo(k)fluoranthene	0.002	ND	ND	ND	10 U	5 U	5 U	5 U	5 U	5 U	5 U	1 U	-	-	-	-	-	5 U	5 U
Chrysene	0.002	ND	ND	ND	10 U	5 U	5 U	5 U	5 U	5 U	5 U	1 U	-	-	-	-	-	5 U	5 U
Dibenzo(a,h)anthracene	-	ND	ND	ND	10 U	5 U	5 U	5 U	5 U	5 U	5 U	1 U	-	-	-	-	-	5 U	5 U
Fluoranthene	50	ND	1 J	1 J	10 U	5 U	0.2 J	0.3 J	0.2 J	5 U	5 U	1 U	-	-	-	-	-	0.4 J	5 U
Fluorene	50	ND	5 J	5 J	4 J	5 U	2 J	4 J	1 J	0.6 J	0.9 J	1 J	-	-	-	-	-	2 J	5 U
Indeno(1,2,3-cd)pyrene	0.002	ND	ND	ND	10 U	5 U	5 U	5 U	5 U	5 U	5 U	1 U	-	-	-	-	-	5 U	5 U
2-Methylnaphthalene	-	ND	ND	ND	10 U	5 U	5 U	5 U	0.4 J	5 U	5 U	-	-	-	-	-	-	5 U	5 U
Naphthalene	10	ND	5 J	2 J	7 J	5	1 J	1 U	1 J	10	3 J	1 U	-	-	-	-	-	5 U	5 U
Phenanthrene	50	ND	6 J	6 J	5 J	5 U	5 U	5 U	0.2 J	5 U	5 U	1 U	-	-	-	-	-	5 U	5 U
Pyrene	50	ND	1 J	1 J	10 U	5 U	5 U	5 U	5 U	0.2 J	5 U	1 U	-	-	-	-	-	0.2 J	5 U
Total Dissolved Solids (n	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,070	828
Turbidity (NTUs)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12.8	3.7

Boxed value indicates concentration greater than NYSDEC Ambient Water Quality Standards and Guidance Values

Table 4 (continued)

Summary of Historical Groundwater Sampling Results
MW-09 Investigation Area
QLT Buffalo
Buffalo, New York

Sample I.D.:		BCP-MW-02						BCP-MW-04						BCP-MW-05					
Sample Date:		8/21/2007	11/28/07	03/03/08	05/27/08	08/25/08	11/20/08	8/21/2007	11/28/07	03/04/08	05/27/08	08/25/08	11/20/08	8/21/2007	11/28/07	03/03/08	05/27/08	08/25/08	11/20/08
Parameters	NSYDEC Criteria																		
Volatile Organic Compounds (µg/l)																			
Benzene	1	1 U (e)	0.8 J	1 U	1 U	1 U	1 U	$\boxed{450}$	$\boxed{210}$	$\boxed{22}$	$\boxed{62}$	$\boxed{150}$	$\boxed{240\ D}$	$\boxed{6}$	$\boxed{4.5}$	$\boxed{2.2}$	$\boxed{2}$	$\boxed{3}$	$\boxed{2.8}$
n-Butylbenzene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 UJ	1 U	1.4	0.92 J	1 U	1 U	1 U	1 U	1 U	1 U
sec-Butylbenzene	5	1 U	1 U	1 U	1 U	1 U	1 U	$\boxed{6}$	5 U	0.53 J	0.97 J	2.1	2.8	1 U	1 U	1 U	1 U	1 U	1 U
p-Cymene	5	1 U	1 U	1 U	1 U	1 U	1 U	$\boxed{11}$	$\boxed{5.5}$	1.3	1.6	3.6	3.4	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	5	1 U	0.81 J	1 U	1 U	1 U	1 U	$\boxed{620}$	$\boxed{290}$	$\boxed{49}$	$\boxed{52}$	$\boxed{180}$	$\boxed{300\ D}$	3.5	2.6	1.3	1.2	1.5	1.3
Isopropylbenzene	5	1 U	1 U	1 U	1 U	1 U	1 U	$\boxed{69}$	$\boxed{26}$	$\boxed{6.4}$	$\boxed{9.1}$	$\boxed{21}$	$\boxed{34}$	1.6	1.5	0.86 J	0.76 J	0.73 J	0.89 J
Methyl-t-Butyl Ether (MT	10	1 U	1 U	1 U	1 UJ	1 U	1 U	1 U	5 U	1 U	1 UJ	1 U	2 U	1 U	1 U	1 U	1 UJ	1 U	1 U
n-Propylbenzene	5	1 U	1 U	1 U	1 U	1 U	1 U	$\boxed{72}$	$\boxed{24}$	3.4	$\boxed{6.2}$	$\boxed{20}$	$\boxed{32}$	1.3	1.4	0.75 J	0.71 J	0.8 J	0.89 J
Toluene	5	1 U	1 U	1 U	1 U	1 U	1 U	$\boxed{62}$	$\boxed{26}$	4.9	$\boxed{5.9}$	$\boxed{10}$	$\boxed{20}$	1.2	0.91 J	1 U	1	0.53 J	1 U
1,2,4-Trimethylbenzene	5	1 U	0.68 J	1 U	1 U	1 U	1 U	$\boxed{710}$	$\boxed{320}$	$\boxed{63}$	$\boxed{60}$	$\boxed{69}$	$\boxed{180}$	3.1	3.3	1.7	1.8	1.7	1.7
1,3,5-Trimethylbenzene	5	1 U	1 U	1 U	1 U	1 U	1 U	$\boxed{230}$	$\boxed{110}$	$\boxed{18}$	$\boxed{9.8}$	$\boxed{27}$	$\boxed{20}$	1.2	1.2	0.82 J	0.81 J	0.6 J	0.58 J
o-Xylene	5	1 U	1 U	1 U	1 U	1 U	1 U	$\boxed{94}$	$\boxed{21}$	$\boxed{6.9}$	$\boxed{5.3}$	3.9	$\boxed{13}$	1.4	1.3	0.7 J	0.88 J	0.72 J	0.56 J
m/p-Xylenes	5	2 U	2 U	2 U	2 U	2 U	2 U	$\boxed{1,300}$	$\boxed{470}$	$\boxed{99}$	$\boxed{54}$	$\boxed{110}$	$\boxed{250}$	3.5	3.3	1.7 J	2	1.7 J	1.5 J
Total Xylenes	5	3 U	3 U	3 U	3 U	3 U	3 U	$\boxed{1,400}$	$\boxed{500}$	$\boxed{110}$	$\boxed{59}$	$\boxed{110}$	$\boxed{260}$	4.9	4.6	2.4 J	2.9 J	2.4 J	2.1 J
Semi-Volatile Organic Compounds (µg/l)																			
Acenaphthene	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Acenaphthylene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Anthracene	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(a)anthracene	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(a)pyrene	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(b)fluoranthene	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(ghi)perylene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(k)fluoranthene	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chrysene	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dibenzo(a,h)anthracene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fluoranthene	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fluorene	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2-Methylnaphthalene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naphthalene	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phenanthrene	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pyrene	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (n	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Turbidity (NTUs)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Boxed value indicates concentration greater than NYSDEC Ambient Water Quality Standards and Guidance Values

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a/ I.D. = identification; NYSDEC = New York State Department of Environmental Conservation; µg/l = micrograms per liter;
mg/l = milligrams per liter; '-' indicates no criterion developed; NTUs =nephelometric turbidity units.

b/ Sample and duplicate.

c/ NYSDEC Ambient Water Quality Standards and Guidance Values. Technical and Operational Guidance Series (1.1.1).
June 1998 and as updated.

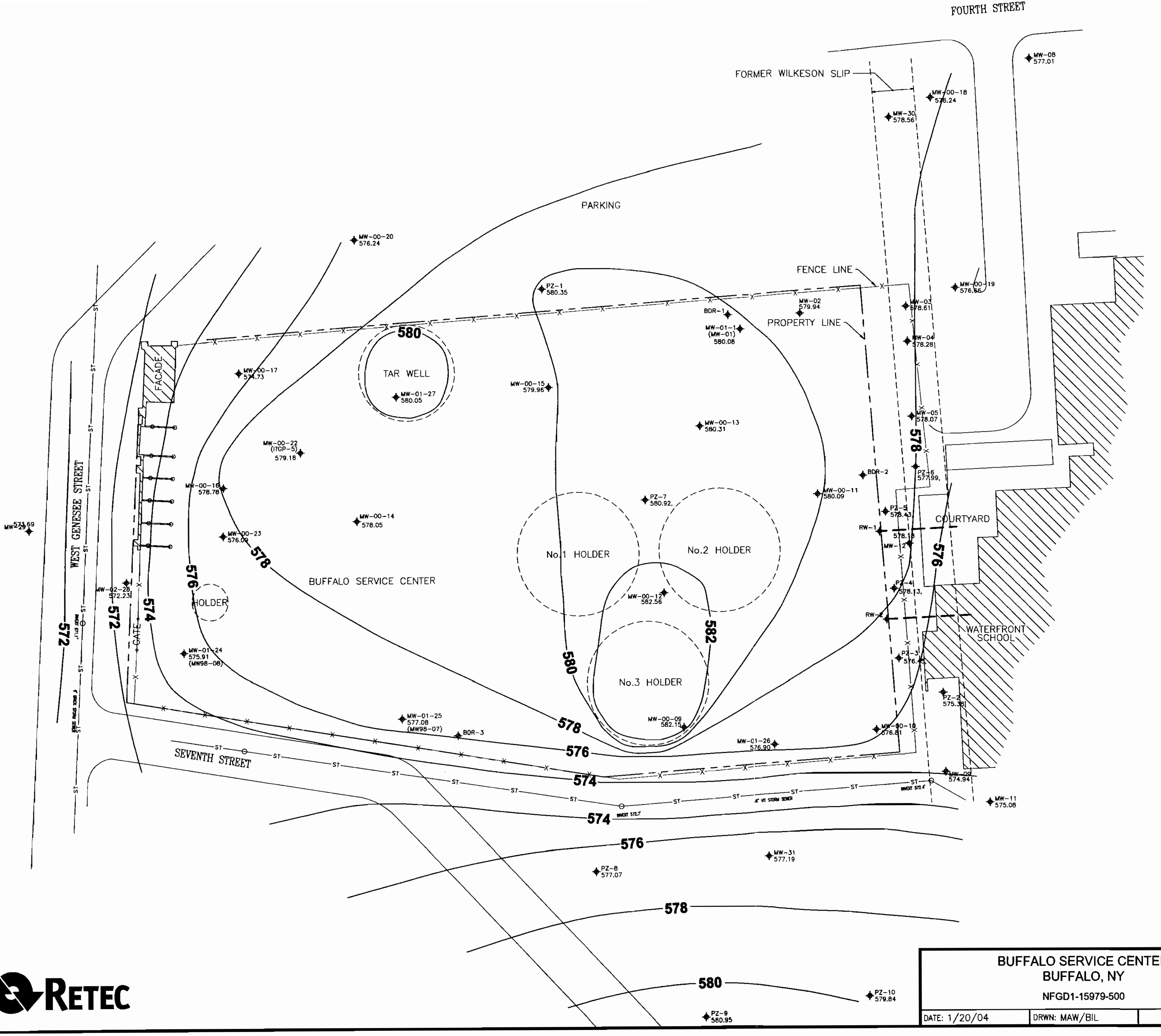
d/ Data Qualifiers:
U = constituent not detected at reported detection limit
J = estimated concentration

e/ Monitoring wells MW-03 and MW-09 are included in both the Former BSC and BURA West sites sampling program and the 7th Street site sampling program. Split samples were collected at these wells and submitted for separate analyses per the individual Site Management Plans.

f/ Results from sample collected by the NYSDEC.

Attachment A

Historical Groundwater Elevations



NOTES:

1) FIGURE BASED ON INVESTIGATION RESULTS REPORT BY IT CORP., JANUARY 2002, PRE-DESIGN INVESTIGATION FIELDWORK BY RETEC 2003, AND SURVEYS BY NIAGARA BOUNDARY L.S.P.C., AUGUST 2002 AND AUGUST 2003.

2) ELEVATION OF PZ-8, PZ-9 AND PZ-10 MEASURED DECEMBER 30TH AND ADJUSTED TO ACCOUNT FOR 0.60' RISE IN ELEVATION SINCE NOVEMBER, AS MEASURED AT MW-31.

3) BEDROCK GROUNDWATER ELEVATIONS (MEASURED AT BDR-1, BDR-2 AND BDR-3) ARE NOT INCLUDED.

LEGEND

✦	MONITORING WELL OR TEMPORARY PIEZOMETER
✦ — —	ANGLED BORING AND RECOVERY WELL
—x—	FENCE
—·—·—	NFG PROPERTY LINE
- - - -	SUBSURFACE FEATURE
— ST —	STORM SEWER

N

40 0 80

1"=80'

RETEC

BUFFALO SERVICE CENTER
BUFFALO, NY
NFGD1-15979-500

DATE: 1/20/04 DRWN: MAW/BIL

GROUNDWATER ELEVATION NOVEMBER 2003

FIGURE 10

File: J:\15979\500\GW11-03.dwg Layout: ANSL_BI-LJ User: mwilliamson Plotted: Jan 20, 2004 - 8:59am Xref's:

Attachment B

Boring Logs

Boring Log: DP-08-04

Project: QLT Buffalo

Project No.: 080190-05

Location: Buffalo, New York

Completion Date: December 17, 2008

Surface Elevation (feet AMSL*): ND

Total Depth (feet): 22

Borehole Diameter (inches): 2

**AMSL = Above mean sea level*

Sample Data					Subsurface Profile	
Depth	**Sample/Interval**	**PID/OVM (ppm)**	**Blow Count**	**% Recovery**	**Lithology**	**Description**
						Ground Surface
	1	0		100	▨	***Lean Clay (CL)*** Brown lean clay with silt, brick fragments; soft; moist; fill.
5	2	0		60	▨	***Lean Clay (CL)*** Brown lean clay with silt; soft; moist; black staining; fill.
10	3	0		100	▨	***Sandy Lean Clay (CL)*** Brown sandy lean clay, fine to medium grained sand, loose; saturated.
15	4	0		100	▨	
	5	0		100	▨	
20	6	0		100	▨	***Lean Clay (CL)*** Gray lean clay with silt; stiff; saturated; native [till].
25 30						Bottom of Boring at 22 feet Refusal at 22 feet

Geologist(s): Michael J. Gelles

Subcontractor: SJB Services, Inc.

Driller/Operator: Steve Veright

Method: Direct Push

WSP Environment & Energy
750 Holiday Drive, Suite 410
Pittsburgh, PA 15220
412-604-1040

Boring Log: DP-08-05

Project: QLT Buffalo

Project No.: 080190-05

Location: Buffalo, New York

Completion Date: December 16, 2008

Surface Elevation (feet AMSL*): ND

Total Depth (feet): 16

Borehole Diameter (inches): 2

**AMSL = Above mean sea level*

Sample Data

Depth	Sample/Interval	PID/OVM (ppm)	Blow Count	% Recovery
	1	0		100
5	2	0		100
10	3	0		100
15	4	0		100
20				
25				
30				

Subsurface Profile

Lithology	Description
	Ground Surface
▨	***Lean Clay (CL)*** Brown lean clay with silt; soft; moist; topsoil.
▨	***Sandy Lean Clay with Gravel (CL)*** Brown\gray sandy lean clay with silt, gravel; soft; moist; fill.
▨	***Lean Clay with Gravel (CL)*** Brown lean clay with silt, gravel, some sand; soft; moist; black staining; fill.
▨	***Lean Clay (CL)*** Light brown\yellow lean clay with silt; stiff; saturated.
▨	***Lean Clay (CL)*** Gray lean clay with silt; stiff, slightly plastic; saturated; native [till].

Bottom of Boring at 16 feet
Refusal at 16 feet

Geologist(s): Michael J. Gelles
Subcontractor: SJB Services, Inc.
Driller/Operator: Steve Veright
Method: Direct Push

WSP Environment & Energy
750 Holiday Drive, Suite 410
Pittsburgh, PA 15220
412-604-1040

Boring Log: DP-08-06

Project: QLT Buffalo

Project No.: 080190-05

Location: Buffalo, New York

Completion Date: December 16, 2008

Surface Elevation (feet AMSL*): ND

Total Depth (feet): 15

Borehole Diameter (inches): 2

**AMSL = Above mean sea level*

Sample Data					Subsurface Profile	
Depth	**Sample/Interval**	**PID/OVM (ppm)**	**Blow Count**	**% Recovery**	**Lithology**	**Description**
						Ground Surface
0–4	1	0		60	▨	***Lean Clay (CL)*** Brown lean clay with silt; soft; moist; topsoil. ***Sandy Lean Clay with Gravel (CL)*** Brown sandy lean clay with silt, gravel; soft; moist; fill.
5	2	0		80	▨	***Lean Clay with Gravel (CL)*** Gray lean clay with silt, gravel; soft; moist; black staining; fill.
10	3	0		60	▨	***Lean Clay with Gravel (CL)*** Gray\brown lean clay with silt, gravel; soft; moist; fill. ***Lean Clay (CL)*** Gray lean clay with silt; stiff, slightly plastic; saturated; native [till].
	4	0		80	▨	
15						Bottom of Boring at 15 feet Refusal at 15 feet
20						
25						
30						

Geologist(s): Michael J. Gelles

Subcontractor: SJB Services, Inc.

Driller/Operator: Steve Veright

Method: Direct Push

WSP Environment & Energy
750 Holiday Drive, Suite 410
Pittsburgh, PA 15220
412-604-1040

Attachment C

Laboratory Analytical Data