Remedial Investigation/ Alternatives Analysis Report/ Interim Remedial Measures Report

For The

111 Hydraulic Street Project

Site No. C915235

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1.0 INTRODUCTION

This Remedial Investigation/Alternatives Analysis Report/Interim Remedial Measures (RI/AAR/IRM) Report has been prepared on behalf of 598 Main Street, LLC for the 111 Hydraulic Street Site in the City of Buffalo, New York (see Figures 1 and 2).

598 Main Street, LLC elected to pursue cleanup and redevelopment of the Site under the New York State Brownfield Cleanup Program (BCP), and executed a Brownfield Cleanup Agreement (BCA) in June 2010 (BCP No. C915235). The RI/IRM Work Plan was approved by the NYSDEC on August 10, 2010, and AFI Environmental (AFI) provided engineering oversight of the RI/IRM activities at the Site between August 2010 and March 2011 to date.

1.1 PURPOSE AND SCOPE

This RI/AAR/IRM Report has been prepared on behalf of 598 Main Street, LLC to describe and present the findings of the 2010/2011 RI and IRM activities, and evaluate the IRM as the final remedial alternative for the Site.

This report contains the following sections:

- Section 2.0 summarizes the IRM activities
- Section 3.0 presents the approach for the soil and groundwater investigation
- Section 4.0 describes the physical characteristics of the Site as they pertain to the investigation findings
- Section 5.0 presents the investigation results by media
- Section 6.0 describes the fate and transport of the constituents of primary concern (COPCs)
- Section 7.0 presents the qualitative risk assessment
- Section 8.0. presents an overall summary of the findings of the Remedial Investigation
- Section 9.0 presents the RI/AAR/IRM summary and conclusions
- Section 10.0 provides a list of references for this report.

1.2 BACKGROUND

1.2.1 Property and Site Description

The site is located in the City of Buffalo, County of Erie, New York (See Figure 1). The 2.02^{+}/- acre Brownfield Cleanup Program (BCP) property is comprised of seven (7) contiguous Parcels as identified below.

797/799 Seneca Street – SBL No. 122.27.6.2

819 Seneca Street – SBL No. 122.27.6.3

111 Hydraulic Street – SBL No. 122.27.6.11

105 Hydraulic Street – SBL No. 122.27.6.10

742 Carroll Street – SBL No. 122.27.6.9

746 Carroll Street – SBL No. 122.27.6.8

764 Carroll Street – SBL No. 122.27.6.7

The site is bordered by Seneca Street to the north, Hydraulic Street to the west, Griffin Street to the east, and Carroll Street to the south (see Figures 1 and 2) The Site is currently vacant but was historically used as a commercial laundering facility and as an automobile repair facility.

1.2.2 Previous Investigations

A series of 'Limited' Phase II Environmental Site Assessments (ESAs) were completed by AFI Environmental (AFI) in June 2006 and April 2007 to assess Recognized Environmental Conditions (RECs) identified during the Phase 1 ESA which was completed by AFI and dated July 2004 (updated February 2010). The Phase 1 ESA identified RECs pertaining to the potential presence of underground storage tanks (USTs) at the site through visual observations of mounds, exposed piping and historical records, an open NYSDEC spill case, areas of concern including onsite disposal of metals and sand blasting waste, improper storage of petroleum products from gas tank removal and storage, and off site (adjacent, up-gradient, and cross-gradient) areas of concern related to dry cleaning and commercial uniform cleaning operations.

Phase II ESA field activities were performed in June 2006 and April 2007 through the advancement of soil borings, hand auger investigations and the collection of soil samples for laboratory analysis. Test Pit installation was conducted in November 2009 and January 2010 to

evaluate the condition of the soils to depth and to determine if USTs were buried at the site, exterior to the former 'Door Store', in the areas of concern.

Soil Sample analytical results indicated concentrations of Volatile Organic Compounds (VOCs), Polycyclic Aromatic Hydrocarbons (PAHs) and Arsenic, Barium, Chromium, Lead, and Mercury exceeding the New York State Department of Environmental Conservation Recommended Soil Cleanup Objectives (RSCOs) and NYSDEC BCP Track 1 Soil Cleanup Objectives.

1.3 CONSTITUENTS OF PRIMARY CONCERN (COPCS)

Based on the data collected to date, Constituent of Primary Concern (COPCs) for the Site are petroleum-related (VOCs), PAHs and metals in soil.

2.0 INTERIM REMEDIAL MEASURES (IRM)

An IRM was implemented at the 111 Hydraulic Street Site concurrent with RI activities in accordance with the NYSDEC-approved RI/IRM Work Plan. Based on the nature and extent of impacted soil/fill, the Work Plan called for: scrapping and removal of the top 6" to 18" of soils across the site, excavation and removal of mounds of sandblasting sands, UST system removal; petroleum-impacted soil source removal via collection of discarded gas tanks, excavation of soils beneath storage areas; and off-site disposal of all impacted soils. The lateral extent of the impacted area as shown on Figure 4 was excavated and disposed off-site to achieve the restricted residential SCOs as per the approved Work Plan. Specific elements of the IRM, as implemented, included:

- Asbestos Survey for Asbestos Containing Materials (ACMs) in accordance with NYSDOL Code Rule 56 and EPA Protocols of:
  - Single family residence at 746 Carroll St;
  - Former 'Good Door Store' Building at 797 Seneca St;
  - 111 Hydraulic (residential 2-car garage)
- Asbestos Abatement of ACMs in accordance with NYSDOL Code Rule 56 and EPA Protocols of:
  - Single family residence at 746 Carroll St;
  - Former 'Good Door Store' Building at 797 Seneca St;
- Inventory, consolidation, collection and disposal of discarded automobile gas tanks, auto and truck parts, 20# propane tanks, lubricating oils, paints, coatings, flammable liquids, roof coatings and other miscellaneous wastes;
- Inventory, consolidation and removal of leaking drums re-packed into over-pack containers;
- Demolition and removal of all buildings and structures including the removal of: underground and overhead utilities, concrete footers, foundations, floor pads, driveways, and parking lots;
- Recycling of approximately 2660 tons of clean concrete and asphalt removed from the paved parking areas, building footers, foundation walls and concrete floor slabs;
- Testing, pumping and disposal of liquids and sludges from USTs by NOCO Recovery and Safety-Kleen;
- Cleaning and removal of eleven (11) Underground Storage Tanks (USTs);
- Closure of Historic Petroleum Spill # 0650564 through the cleaning of the concrete UST Tank Vault, removal of approximately 1400 tons of petroleum impacted soils, and sampling of the clean vault floor;

- On-site excavation of impacted soil/fill began after the buildings and parking areas were demolished and the concrete floor slabs were removed. Primary excavation consisted of the scrapping and disposal of the top 6" to 18" of visually impacted surface soil across the entire site. Initially the excavation was conducted in phases and extended to the depth limits identified in the RI/IRM Work Plan with additional focus in areas previously identified as 'hotspots'. The depths of excavation in these areas extended to 8' to 10' and continued laterally until clean side walls were encountered. Once the excavation had achieved the depth limits outlined in the RI/IRM Work Plan; investigative soil sampling and visual observation of the excavated areas was conducted. The results of the visual observations and soil testing indicated that the initial excavation had not achieved the desired remedy (restricted residential SCO). As such, the Applicant made the decision to expand the lateral and vertical limits of the excavation, across the entire site, until a visually clean bottom of native soils (clay) was exposed, or until the excavation and clean bottom soil had extended past the property lines on all sides of the site. This resulted in the excavation and disposal of over 14,630 tons of material and resulted in a clean (native clay) floor across the excavated area.
- Upon completion of the excavation activities (exposing a clean, native-clay floor); post excavation soil sampling was conducted. On-site, post excavation soil samples were collected from the floor of the excavation utilizing a DEC approved sampling grid. Additionally, discrete soil samples were collected from offsite to evaluate the chemistry of the excavation sidewalls. The offsite, sidewall sample locations were selected by the DEC. (See Tables 1 and 2 respectively).
- The site was backfilled after confirmatory sampling results indicated the remedial measures had achieved the Restricted Residential SCOs. Backfilling consisted of the placement and compaction of approximately 655 tons of 1"-3" crusher run stone delivered from Buffalo Crushed Stone, Inc.'s quarry at 8615 Wehrle Drive in Lancaster, NY, and 13,299.55 tons of approved compactable backfill from McEwan Trucking and Gravel's mine (NYSDEC 90489), and approximately 200 tons of virgin clay delivered and tested by Viscone Contracting (virgin source). Backfilling was placed and compacted to establish temporary, positive drainage and to reduce potential for pooling water in low areas.

As a result of the extensive excavation and sampling activities to remove soils containing metals and PAHs, and the removal of all source material and (11) USTs and associated petroleum impacted soils; Tract 2 Restricted Residential SCOs have been confirmed across the entire site and no further remedial activities are warranted.

The Final Engineering Report (FER), to be submitted as a separate document, includes additional details of the IRM.

3.0 INVESTIGATION APPROACH

The purpose of the RI field activities was to more fully define the nature and extent of contamination on the BCP Site, and to collect data of sufficient quantity and quality to perform the remedial alternatives evaluation. On-site field activities included: surface soil sampling; monitoring well installation; groundwater sampling of newly installed monitoring wells; and, collection of hydraulic data.

Field team personnel collected environmental samples in accordance with the rationale and protocols described in the Quality Assurance Project Plan (QAPP) submitted with the RI/IRM Work Plan. USEPA and NYSDEC-approved sample collection and handling techniques were used. Samples collected for chemical analysis were analyzed in accordance with USEPA SW-846 methodology with an equivalent Category B deliverable package to meet the definitive-level data requirements. Analytical results were evaluated by a third-party data validation expert in accordance with provisions described in the QAPP.

3.1 FIELD INVESTIGATION ACTIVITIES

3.1.1 Soil/Fill Investigation

Initially, the site remedy (excavation and offsite disposal) proceeded in phases (See Figure 3) with excavation of surface soils and 'hotspot' areas across the entire site to the depths identified in the IRM WP. Upon completion of the early phases of excavation and the previously identified 'hotspot' areas, interim soil sampling and analysis for COPCS was conducted to chart remedial progress. A review of the initial test results indicated that additional excavation or other alternatives may be required to achieve the proposed Remedial Soil Cleanup Objectives. Based on the planned future disposition of the property; the Volunteer Applicant made the decision to expand and continue the lateral and vertical limits of excavation; until a visually clean bottom of native soil was exposed across the entire site and the achievement of the Restricted Residential Track 2 SCOs were obtained.

The outcome of the additional excavation directive resulted in the excavation of additional impacted soil and exposure of virgin clay floor across the entire site which was continued to slightly past the property boundaries ending with the side walls of the excavation located just outside the project limits (offsite).

Post excavation soil samples were collected from the floors and sidewalls of the excavated areas under the guidance and observation of the DEC program manager. The DEC approved, sampling

approach called for analysis of six (6) offsite samples, collected from the excavation sidewalls, and twenty-one (21) onsite samples collected from the floor of the excavation utilizing a DEC approved sampling grid. Results of verification sampling confirmed the expanded IRM excavation activities achieved Track 2 Restricted Residential SCOs across the site. See Figure 6 and 7 for the sample locations and Tables 1 and 2 for exceedances of Unrestricted SCOs.

3.1.2 Soil/Fill Analyses

Soil/fill samples were collected using dedicated stainless steel sampling tools. Soil samples were placed in pre-cleaned laboratory provided sample bottles, cooled to 4ºC in the field, and transported under chain-of-custody command to Phoenix Environmental Laboratories, Inc., located in Manchester, Connecticut, a New York State Department of Health (NYSDOH) ELAP-certified analytical laboratory.

Onsite Sampling for Full list of Parameters

The 'Seneca Frontage Basement' sample and C106-S-Supplemental sample, were both analyzed for the full list of parameters as outlined in the RI/IRM Work Plan. The list of analysis included: Target Analytes (TAL) Metals, TCL VOCs, TCL SVOCs, Petroleum Hydrocarbons, PCBs, and Cyanide. Analytical results are presented in Table 1 and are included in Appendix C. All samples were collected and analyzed in accordance with the RI/IRM Work Plan or as directed by DEC Project Manager.

Onsite Confirmatory Sampling

Onsite confirmatory floor samples C101, C102, C103, C104, C105, C107-S-Supplemental, C108, C109, C110, C111, and C112 were analyzed for RCRA Metals, Petroleum Hydrocarbons, Chlorinated Solvents, and PAHs. Samples C113 and C114 were analyzed for Priority Pollutant List Metals, Chlorinated Solvents, PAHs, and Petroleum Hydrocarbons. Soil samples SL#1, SL#6, and SL#9 were analyzed for Priority Pollutant List Metals, Hexavalent Chromium and Cyanide. Sample SL#21 was analyzed for TAL Metals, Cyanide, Petroleum Hydrocarbons, Chlorinated Solvents, and PAHs. The composite floor sample from the 'UST Tank Pit Floor' was analyzed for 8260-STARS (VOCs) and 8270-STARS (SVOCs). Sample SL#5 was analyzed for Hexavalent Chromium, PAHs, Priority Pollutant List Metals and Cyanide.

Offsite Sampling

Off-site sidewall soil sample, West Sidewall #1, was analyzed for RCRA Metals, Petroleum Hydrocarbons, Chlorinated Solvents, and PAHs. Two off-site sidewall samples, East Sidewall #1 and South Sidewall #1, were analyzed for RCRA Metals and PAHs. Two off-site sidewall samples, SL#4 and SL#11, were analyzed for Priority Pollutant Metals, Cyanide and Hexavalent Chromium. Sample SL#7 was analyzed for Metals, Cyanide, Hexavalent Chromium and 8270-STARS (SVOCs) per the DEC request. The Results for the off-site samples are summarized in Table 2 and lab reports are included in Appendix C.

3.1.3 Groundwater Investigation

Prior to the current RI/IRM activities AFI personnel provided oversight for the installation of a total of ten (10) overburden monitoring wells (MW-1 through MW-5 and MW-7 through MW-11) within the project boundaries. Eight (8) of the wells were installed on November 17 and 18, 2009 and two (2) were installed December 18, 2009. The construction details, sampling methodology, and analytical results of AFI's previous investigation are detailed in AFI's February 2010 Report, "*Summary of November and December 2009 Well Installation Activities for Property comprised of 105 and 111 Hydraulic St, 777 and 797 Seneca St, 742 and 746 Carroll St, Buffalo, NY,"*. During this prior investigation overburden monitoring wells MW#3 and MW#11were sampled and results indicated slightly elevated levels of cis-1,2-Dichloroethene and Vinyl Chloride in MW#11.

AFI personnel also provided oversight for the installation of four (4) onsite Bedrock Wells (BR-12, BR-15, BR-16, BR-17). BR-12 was completed on June 24, 2010, BR-15 on June 28, 2010, and BR-16 on June 29, 2010 which was prior to RI/IRM activities. BR-17 was installed on December 17, 2010 (to replace BR-16 which was damaged during IRM excavation activities).

As a result of IRM excavation activities Most of the overburden wells were removed (destroyed). The remaining wells were: overburden monitoring wells MW-4 and MW-7 and bedrock wells (BR-12, BR-15 and BR-17). Figure 5 shows the locations of the remaining monitoring wells which were sampled after the completion of IRM activities.

3.1.4 Monitoring Well Installation

Monitoring wells were installed in accordance with the approved RI/IRM Work Plan. Monitoring well construction details for the remaining overburden (MW-4 and MW-7) and bedrock

(BR-12, BR-15, and BR-17), wells are presented on the Monitoring Well Installation Logs in Appendix B.

3.1.5 Groundwater Sample Collection

Project specific monitoring wells were developed prior to sampling to remove residual sediments and ensure good hydraulic connection with the water-bearing zone. A minimum of three well volumes were removed from each well. Prior to sample collection, static water levels were measured and recorded from all on-site monitoring wells. Following water level measurement, AFI personnel purged and sampled monitoring wells with dedicated hand bailers.

Prior to and immediately following collection of groundwater samples, field measurements for pH, specific conductance, temperature, turbidity, and water level as well as visual and olfactory field observations were recorded. All collected groundwater samples were placed in pre-cleaned, pre-preserved laboratory provided sample bottles, cooled to 4°C in the field, and transported under chain-of-custody to Phoenix Environmental Laboratories.

3.1.6 Groundwater Sample Analysis

Groundwater samples were collected from overburden wells MW-4 and MW-7 and bedrock wells BR-12, BR-15 and BR-17. Groundwater samples were analyzed for TCL VOCs, TCL SVOCs, TAL Metals, petroleum Hydrocarbons, PCBs and Total Cyanide. Insufficient sample volume due to slow well recovery at BR-15 was discussed with the Department and it was decided to eliminate the testing for PCBs and Total Cyanide based on Site history.

All samples were collected and analyzed in accordance with USEPA SW-846 methodology with equivalent NYSDEC Category B deliverables to allow for independent third-party data usability assessment.

3.1.7 Field Specific Quality Assurance/Quality Control Sampling

In addition to the soil/fill and groundwater samples described above, field-specific quality assurance/quality control (QA/QC) samples were collected and analyzed to ensure the reliability of the generated data as described in the QAPP and to support the required third-party data usability assessment effort. Site-specific QA/QC samples included matrix spikes, matrix spike duplicates,

blind duplicates, and trip blanks.

3.2 SITE MAPPING

A Site map was developed during the RI field investigation. All sample points and relevant Site features were located on the map. AFI employed Professional Land Surveyor Larry J. Zygaj, PLS, PC to locate and plot the locations of all soil borings and the location and final elevations of the top of the well casings for the newly installed wells relative to State Planar Grid Coordinates and the distance above mean sea level (USGS Vertical datum). The Surveyor identified the elevations of the top of the well risers to the nearest .01 of an inch. A Groundwater Flow Direction Map showing the general direction of groundwater flow was prepared based on water level measurements collected by AFI personnel during the onsite sampling events and is presented relative to USGS vertical datum (see Figure 10).

4.0 SITE PHYSICAL CHARACTERISTICS

The physical characteristics of the Site observed during the RI are described in the following sections.

4.1 SITE TOPOGRAPHY AND DRAINAGE

The Site is generally flat lying with limited distinguishable Site features. Precipitation (i.e., rain or melting snow) moves via surface flow to pre-existing onsite and offsite storm drains located along Seneca Street, Hydraulic Street, and Carroll Street. Surface and shallow groundwater flow are likely to be impacted by various cycles of development and backfilling, as well as the existing hydraulic stormwater raceway juxtaposed to northwest corner of the site.

4.2 GEOLOGY AND HYDROGEOLOGY

4.2.1 Geologic Setting

The Site incorporates approximately 2.02 acres of fairly level land situated in the City of Buffalo, Erie County, New York. According to the United States Geological Survey (USGS) Topographic Map, the Site lies at approximately 580 to 590 feet above Mean Sea Level.

The Site is generally flat and is situated approximately one mile north of the Buffalo River. The unconsolidated geologic materials (soil) encountered at the Site range in thickness from approximately 16 to 20 feet thick.

The geology at the Site is generally described as fill materials overlying dense brown and reddish/reddish-brown silty clay. The fill materials consist of silt, sand, and gravel with varying amounts of brick fragments at depths ranging from 1.5 to 5 feet below ground surface (fbgs). Native materials consist of dense silty clay with varying amounts of sand and gravel to depths up to 20 fbgs.

The Site is situated in the Central Lowlands Physiographic Province, characterized by nearly flat lying rocks of Devonian, Silurian and Ordovician Age. Bedrock underlying the Site is mapped as middle Devonian Onondaga Limestone.

4.2.2 Hydrogeologic Setting

Subsurface investigation activities conducted at the Site indicate that the uppermost

groundwater bearing unit is situated at or near the interface between the soil and bedrock. Groundwater elevation data suggest that groundwater flows toward the south with an interpreted hydraulic gradient of 0.05 feet per foot (ft/ft). This southward flow direction is consistent with the expectation that groundwater may be locally controlled by the Buffalo River, which is located less than one mile south of the Site.

5.0 INVESTIGATION RESULTS BY MEDIA

The following sections discuss the Post-Remedial Activities/Remedial Investigation analytical results. Tables 1, 2 and 3 summarize the onsite soil, offsite soil, and groundwater analytical data, respectively. Table 1 includes the onsite post-excavation floor sample results that were used for RI soil characterization, per the approved alternative sampling program. Appendix C includes the laboratory analytical data packages. Onsite sample locations are shown on Figure 6.

5.1 SOIL/FILL

Table 1 presents the analytical results for onsite soil samples and a comparison of detected chemical parameters to the Unrestricted Use Soil Cleanup Objectives (SCOs) and Restricted Residential SCOs for protection of public health per regulations contained in 6NYCRR Part 375-6 (December 2006). Although the Site is intended to be used for restricted-residential/commercial purposes, evaluating a more restricted-use scenario is a requirement of the BCP; soil analytical data compared to Part 375 Unrestricted SCOs. Sample results are described below according to contaminant class. The full set of analytical data is included in Appendix C.

5.1.1 Volatile Organic Compounds

The levels for all seventeen (17) samples analyzed for VOCs were reported at or below the Unrestricted SCOs or Restricted Residential SCOs. All VOC sample results were below the reporting detection limits except those listed below.

The Seneca Frontage Basement sample had three chemical constituents that were above the laboratory reporting limit of 6.4 ug/L; Trichloroethene (51 ug/L), cis-1,2-Dichlororethene (130 ug/L) and Tetrachloroethene (13 ug/L). Although these analytes were positively identified by the lab, the DUSR report shows that the numerical value is only an approximate concentration of the analyte in the sample.

The UST Tank Pit Floor sample only contained trace (below Unrestricted SCOs) levels of n-Butylbenzene, sec-Butylbenzene, N-Propylbenzene and Isopropylbenzene at 16.2, 37.0, 28.4 and 14.0 ug/kg respectively.

Sample C101 contained trace (below Unrestricted SCOs) levels of Tetrachloroethene (54.2 ug/Kg). Samples C101 through C114 all contained trace levels of Methylene chloride at levels well below Unrestricted SCOs. All levels of Methylene chloride were found by the DUSR data validator

to be positively identified but the numerical values are approximate concentrations of the analyte in the sample.

No other chemical constituents were above the laboratory detection limits after DUSR data validation.

5.1.2 Semi-Volatile Organic Compounds

All of the seventeen (17) samples analyzed for SVOCs were reported at or below the laboratory detection limit. As such all sample concentrations were below Part 375 Unrestricted and Restricted Residential SCOs.

5.1.3 Metals and Cyanide

Ten (10) of the nineteen (19) samples analyzed for Metals were below the Unrestricted SCOs for all reported Metals.

Nine (9) of the nineteen (19) samples collected and analyzed for Metals exceeded Unrestricted SCOs, but were below the Restricted SCO levels. The exceedances of the Unrestricted SCOs were limited to one reported value of Arsenic at 14.7 mg/kg, one reported value of Copper 54.5 mg/kg, one reported value for Nickel 32.0 mg/kg, six (6) locations where Lead was detected 64.4 to 386 mg/kg, Mercury in five (5) locations .222 mg/kg to .81 mg/kg, and three (3) locations with Zinc 130 mg/kg to 369 mg/kg.

All five (5) samples collected and analyzed for Cyanide were reported below the laboratory detection limit.

None of the soil/fill samples exceeded the Part 375 Restricted Residential SCOs for Metals or Cyanide.

5.1.4 Polychlorinated Biphenyls

All samples analyzed for PCBs were reported as non-detectable (below the laboratory detection limits).

5.1.5 Summary

The entire 111 Hydraulic Street Project Site was excavated to varying depths until a layer of clean native clay was exposed. As described above, all concentrations of post-excavation VOCs, SVOCs, and PCBs were well below Part 375 Unrestricted SCOs. Verification sampling confirmed the remediation to be consistent with Track #2, Restricted Residential SCOs. The achieved cleanup objectives are consistent with the intended use of the site.

Onsite residual contamination with levels above the ***Unrestricted*** SCOs is minimal, and includes only a limited list of Metals (See Table 1 and Figure 6). As a result, the remaining onsite contamination is characterized as de-minimus and does not warrant institutional or engineering controls.

5.2 GROUNDWATER

Table 3 presents a comparison of the detected groundwater parameters collected from onsite monitoring wells compared with Class GA Groundwater Quality Standards (GWQS) per NYSDEC TOGS 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations (June 1998). The analytical results for groundwater monitoring completed in January 2011 (MW-4, MW-7, BR-12, BR-15, and BR-17) and February 2011 (MW-7), conducted after the completion of IRM activities are discussed in the following sections.

5.2.1 Volatile Organic Compounds

January 2011

Two VOCs (Acetone, and Methyl Ethyl Ketone) were detected at concentrations above GWQS in the sample collected from overburden well MW-7 during the January 2011 groundwater sampling event. This result was suspected as being a lab anomaly and the 3rd party DUSR validator indicated that this sample had been subjected to improper dilution by the lab and improperly reported; they listed the data as 'Not Usable'. As such, MW-7 was re-sampled in February 2011 to collect usable data. (See discussion below)

February 2011

No VOCs were detected above GWQS in the overburden or bedrock during the re-sampling of MW-7 conducted in February 2011. The second set of data for this sampling event and location

was deemed useable after DUSR review and the results are presented in Table 3 and are included in Appendix D.

5.2.2 Semi-Volatile Organic Compounds

Slightly elevated levels of Benz(a)anthracene (0.07 ug/L), Benzo(b)fluoranthene (0.07 ug/L), Benzo(k)fluoranthene (0.03 ug/L), Chrysene (0.07 ug/L), and Indeno (1,2,3-cd)pyrene (0.04 ug/L) were detected above the GWQS in overburden well MW-7 during the February 2011 sampling.

All other SVOCs were detected below the GWQS in the overburden and bedrock.

5.2.3 Volatile Organic Compounds

In overburden well MW-4,analytical results showed trace amounts of acetone (2.5 ug/L) and Methyl t-butyl ether (MTBE) (5.9 ug/L).

In the bedrock well BR-12, analytical results showed trace amounts of acetone (.66 ug/L), Benzene (.81 ug/L), cis-1,2-Dichloroethene (1.1 ug/L) and Vinyl Chloride (.70 ug/L).

Bedrock well BR-15 revealed trace amounts of acetone (47 ug/L), Benzene (.50 ug/L), cis-Carbon Disulfide (.56 ug/L) m&p-Xylene (.92 ug/L), Methyl ethyl ketone (7.4 ug/L), MTBE (.58 ug/L), and Toluene (.70 ug/L).

Bedrock well BR-17 revealed trace amounts of cis-1,2-Dichloroethene (.38 ug/L) and Vinyl Chloride (.24 ug/L).

All VOCs were below the GWQS in the overburden and in bedrock.

5.2.4 Metals and Cyanide

All Metals and Cyanide were detected below the GWQS in the overburden and bedrock.

5.2.5 Polychlorinated Biphenyls

No PCBs were detected above the GWQS in the overburden or bedrock.

5.2.5 Summary

As described above and presented in Table 8, all reported levels of PCBs, Metals, VOCs and most SVOCs in overburden and bedrock monitoring wells were below GWQS except the slightly elevated concentrations of several SVOCs detected in monitoring well MW-7, which is a down-gradient, overburden monitoring well location (See Section 7.2.2 above). The low level exceedances were limited to the following; of Benz(a)anthracene (0.07 ug/L), Benzo(b)fluoranthene (0.07 ug/L), Benzo(k)fluoranthene (0.03 ug/L), Chrysene (0.07 ug/L), and Indeno (1,2,3-cd)pyrene (0.04 ug/L), are thought to be a remnant of the previous petroleum spill located within 20 ft of the well location. All levels located within ten feet of this well were all non-detect and below reportable levels. All leaking USTs, discarded gas and diesel fuel tanks and other source material; along with over 1,400 tons of petroleum contaminated soil, which was associated with this previously reported petroleum spill, have been exhumed, removed, and/or excavated to clean clay. Based on the level of remedial activities conducted in this area (extensive excavation to clean clay at 16-17 ft) and the nature of the recorded GWQS exceedances (slightly elevated levels of SVOCs) no additional remedial action, institutional or engineering controls or environmental easements above the limitations consistent with 'Restricted Residential Development' are warranted. This recommendation is supported by the fact that the area is supplied with municipal water from the City of Buffalo and that there are No Public Potable Water Supply wells within the general vicinity. It is also consistent with the future intended use of the site as Restricted Residential/Commercial building, which is planned to cover the entire site.

5.3 DATA USABILITY SUMMARY

In accordance with the RI Work Plan, the laboratory analytical data from this investigation was independently assessed and, as required, submitted for independent review. KR Applin & Associates performed the data usability summary assessment, which involved a review of the summary form information and sample raw data, and a limited review of associated QC raw data. Specifically, the following items were reviewed:

- Laboratory Narrative Discussion
- Custody Documentation
- Holding Times
- Surrogate and Internal Standard Recoveries

- Matrix Spike Recoveries/Duplicate Recoveries
- Field Duplicate Correlation
- Preparation/Calibration Blanks
- Control Spike/Laboratory Control Samples
- Instrumental IDLs
- Calibration/CRI/CRA Standards
- ICP Interference Check Standards
- ICP Serial Dilution Correlations
- Sample Results Verification

The Data Usability Summary Report (DUSR) was conducted using guidance from the USEPA Region 2 validation Standard Operating Procedures, the USEPA National Functional Guidelines for Data Review, as well as professional judgment.

In summary, 99% of the soil and 94.8% of the water sample results are usable as reported, or with minor qualification. However, several results (37 of the 3,708 soil analytes and 34 of 1,231 water analytes tested) were identified as 'not usable', and were rejected. This label was based on the lack of detections of certain chemical parameters in duplicated samples that were analyzed. In cases where the data for a critical sample location or media was listed as 'not useable' a separate sampling event was scheduled and a full set of a samples was collected, at that location, and included duplicates and trip blanks. DUSR was again conducted on these supplemental samples and these 'useable' results are presented. As such, the rejected data has not compromised or affected the achievement of our data objectives. All data qualifications have been incorporated into the summary data tables. Appendix D includes the complete DUSR.

6.0 FATE AND TRANSPORT OF COPCS

The soil/fill and groundwater sample analytical results were incorporated with the physical characterization of the Site to evaluate the fate and transport of COPCs in Site media. The mechanisms by which the COPCs can migrate to other areas or media are briefly outlined below.

6.1 FUGITIVE DUST GENERATION

Volatile and non-volatile chemicals present in soil can be released to ambient air as a result of fugitive dust generation. However, the site soil has been removed to meet restricted residential standards and the excavation was backfilled with imported virgin sand and gravel. Furthermore, the Site will be developed for residential/commercial land use, and the majority of the Site will be covered by structures, asphalt, concrete, and grass/ornamental landscaping. This migration pathway is therefore not considered relevant under the current and reasonably anticipated future land use.

6.2 VOLATILIZATION

Volatile chemicals present in soil/fill and groundwater may be released to ambient or indoor air through volatilization either from or through the soil/fill underlying current or future building structures. Volatile chemicals typically have a low organic-carbon partition coefficient, low molecular weight, and a high Henry's Law constant.

No volatile organic compounds were detected in on-Site soils above 6NYCRR Part 375 Unrestricted use SCOs, thus eliminating the pathway for of VOCs.

6.3 SURFACE WATER RUNOFF

The potential for soil particle transport with surface water runoff is low, as the Site has been cleaned up to restricted-residential standards, and the majority of Site will be covered with asphalt and building foundations. Furthermore, the Site is serviced by the Buffalo Sewer Authority's (BSA's) combined sanitary/storm water collection system. BSA's collection system provides a mechanism for controlled surface water transport that will ultimately result in sediment capture in the BSA's grit chambers followed by disposal at a permitted sanitary landfill. As such, surface water runoff is not considered a relevant migration pathway.

6.4 LEACHING

Leaching refers to chemicals present in soil/fill migrating downward to groundwater as a result of infiltration of precipitation. However, all source area soils have been removed from the Site during IRM activities to below restricted residential standards. As such, leaching is not considered a relevant migration pathway.

6.5 GROUNDWATER TRANSPORT

Groundwater underlying the Site migrates generally to the south. Chemicals present in groundwater may be transported across the Site via this pathway.

The site and surrounding area are serviced by a municipal (supplied) water service, with no evidence of potable wells within 1 mile of the subject property. Therefore, onsite and offsite exposure via ingestion of contaminated groundwater is unlikely.

6.6 EXPOSURE PATHWAYS

Based on the analysis of chemical fate and transport provided above, potential exposure pathways by which contaminants may reach onsite and offsite receptors include ingestion of contaminated groundwater, dermal contact with contaminated groundwater. However, the site and surrounding area are serviced by a municipal supplied potable water source. Therefore, onsite and offsite exposure via ingestion of contaminated groundwater is unlikely.

Excavation depths and clean clay were exposed at depths below conventional foundation and buried utility construction exposure depths. Exposure of the low levels of exceedances above the Un-Restricted Residential SCOs to onsite or offsite receptors via incidental dermal contact is also unlikely.

7.0 QUALITATIVE RISK ASSESSMENT

7.1 POTENTIAL HUMAN HEALTH RISKS

The identification of potential human receptors is based on the characteristics of the Site, the surrounding land uses, and the probable future land uses. The 111 Hydraulic Street Project Site is currently vacant. Under unremediated Site use conditions, human contact with site-related COPCs can be expected to occur primarily by three type of receptors: trespassers who may traverse or use the property; on-Site commercial workers; and, construction workers that may access subsurface soil and/or groundwater at the Site. Trespassers may be comprised of children, adolescents, and adults, whereas construction workers would be limited to adults. However, trespassers could be considered receptors only if the existing backfill were compromised, such as during subsurface construction activities.

In terms of planned future use, of the now remediated Site; the current Site owner (598 Main Street LLC) intends to redevelop the Site for residential/commercial use. This planned use is consistent with surrounding property use and Site zoning. Accordingly, the reasonably anticipated future use of the Site is for restricted residential/commercial purposes.

For the trespasser and construction worker scenarios, health-risk based lookup values specifically addressing these types of receptors are not widely published, since estimates of exposure frequency and duration tend to be site-specific in nature. However, the NYSDEC has published health risk-based lookup values for several chemicals under various exposure scenarios in the June 2006 document entitled “New York State Brownfield Cleanup Program Development of Soil Cleanup Objectives Technical Support Document” (a.k.a., “Technical Support Document”). The Technical Support Document forms the basis for the health-based SCOs presented in 6NYCRR Part 375-6. Based on incorporation of these types of receptors and exposures, the restricted residential commercial health-based SCOs presented in the Technical Support Document are considered protective of human health under both the current and future site use condition.

7.2 POTENTIAL ECOLOGICAL RISKS

The 111 Hydraulic Street Site is a former commercial/industrial facility located within a highly developed, urban area in the City of Buffalo. The Site is currently vacant, providing little or no wildlife habitat or food value. No natural waterways are present on or adjacent to the Site. The

reasonably anticipated future use is residential/commercial with the majority of the Site covered by buildings, concrete sidewalks and asphalt. As such, no unacceptable ecological risks are anticipated under the current or reasonably anticipated future use scenario.

8.0 OVERALL SUMMARY OF RI FINDINGS

The RI data suggest no onsite source of groundwater impact from the 111 Hydraulic Street Site or conditions requiring groundwater remedial measures. The trace levels of SVOCs detected in overburden monitoring well MW-7 are likely a remnant of the previously recorded NYSDEC petroleum spill which was identified in close proximity to the well location, or it may be a result of fugitive releases migrating onsite from offsite locations with published documentation of the same elevated chemical constituents in groundwater (i.e. the American Linen BCP Site which is hydraulically up-gradient).

No soil/fill analytes were detected above restricted-residential SCOs following IRM activities. In fact, only a few select metals were identified at concentration which were slightly above the levels for unrestricted SCOs; all other results were well below restricted residential SCOs.

Based on the RI findings, AFI concludes that no further groundwater or soil vapor investigation activities are necessary to complete the Remedial Investigation.

Assessment of chemical fate and transport indicates that chemicals of concern in the 111 Hydraulic Street site area are not migrating offsite at significant concentrations and/or rates. Qualitative risk assessment yields no unacceptable health risks under the current or reasonably anticipated future use scenario. No unacceptable ecological risks were indicated based on the cover type and Site setting.

9.0 ALTERNATIVE ANALYSIS REPORT

The 111 Hydraulic Street Project site has already been subjected to interim remedial measures in the form of soil/fill excavation, contaminant source and UST removal.

9.1 REMEDIAL ACTION OBJECTIVES

The final remedial measure for the Site must satisfy Remedial Action Objectives (RAOs), which are site-specific statements that convey the goals for minimizing or eliminating substantial risks to public health and the environment. For the 111 Hydraulic Street Site, appropriate RAOs are:

- Removal of on-site impacted soil/fill to levels protective of human health.
- Prevent migration of contaminants that may result in groundwater contamination.

In addition to achieving RAOs, the remedy is evaluated against the following criteria per the approved RI/AAR Work Plan consistent with 6NYCRR Part 375-1.8(f):

- **Overall Protection of Public Health and the Environment**. This criterion is an evaluation of the remedy's ability to protect public health and the environment, assessing how risks posed through each existing or potential pathway of exposure are eliminated, reduced, or controlled through removal, treatment, engineering controls, or institutional controls.
- **Compliance with Standards, Criteria, and Guidance (SCGs)**. Compliance with SCGs addresses whether a remedy will meet applicable environmental laws, regulations, standards, and guidance.
- **Long-Term Effectiveness and Permanence**. This criterion evaluates the long-term effectiveness of the remedy after implementation. If wastes or treated residuals remain on-site after the selected remedy has been implemented, the following items are evaluated: (i) the magnitude of the remaining risks (i.e., will there be any significant threats, exposure pathways, or risks to the community and environment from the remaining wastes or treated residuals), (ii) the adequacy of the engineering and institutional controls intended to limit the risk, (iii) the reliability of these controls, and (iv) the ability of the remedy to continue to meet RAOs in the future.
- **Reduction of Toxicity, Mobility or Volume with Treatment**. This criterion evaluates the remedy's ability to reduce the toxicity, mobility, or volume of site contamination. Preference

is given to remedies that permanently and significantly reduce the toxicity, mobility, or volume of the wastes at the site.

- **Short-Term Effectiveness**. Short-term effectiveness is an evaluation of the potential short-term adverse impacts and risks of the remedy upon the community, the workers, and the environment during construction and/or implementation. This includes a discussion of how the identified adverse impacts and health risks to the community or workers at the site will be controlled, and the effectiveness of the controls. This criterion also includes a discussion of engineering controls that will be used to mitigate short term impacts (i.e., dust control measures), and an estimate of the length of time needed to achieve the remedial objectives.
- **Implementability**. The implementability criterion evaluates the technical and administrative feasibility of implementing the remedy. Technical feasibility includes the difficulties associated with the construction and the ability to monitor the effectiveness of the remedy. For administrative feasibility, the availability of the necessary personnel and material is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, etc.
- **Cost**. Capital, operation, maintenance, and monitoring costs are estimated for the remedy and presented on a present worth basis.

9.2 ALTERNATIVES EVALUATION

Because the IRM achieved removal of all impacted soil/fill on-site to levels below Part 375 restricted residential use SCOs, and in most locations below unrestricted levels; the IRM successfully achieved the above-described remedial action objectives. Accordingly a “No Further Action” alternative is screened below.

In developing and screening the remedial alternatives, NYSDEC’s Part 375 regulations also require that the reasonableness of the anticipated future land use be factored into the evaluation. The regulations identify 16 criteria that must be considered. These criteria and the resultant outcome for the 111 Hydraulic Street Site are presented in Appendix E. As indicated, Appendix E supports Restricted Residential use as the reasonably anticipated future use of the 111 Hydraulic Street property.

9.2.1 No Further Action

"No further action" is defined as conducting no additional cleanup activities at the Site.

Overall Protection of Public Health and the Environment – Since the IRM achieved removal of all on-site impacted soil/fill to residential use SCOs, the No Further Action alternative is protective of human health and the environment and successfully achieves the RAOs for the Site.

Compliance with SCGs – The IRM was performed in accordance with applicable, relevant, and appropriate standards, guidance, and criteria. Accordingly, the "No Further Action" alternative satisfies this criterion.

Long-Term Effectiveness and Permanence – The IRM achieved removal of all source material (i.e., impacted soil/fill and an underground storage tank). As such, the No Further Action alternative is expected to provide long-term effectiveness and permanence.

Reduction of Toxicity, Mobility, or Volume with Treatment – Through removal of all on-site impacted soil/fill, the IRM permanently and significantly reduced the toxicity, mobility, and volume of Site contamination. Accordingly, the "No Further Action" alternative satisfies this criterion.

Short-Term Effectiveness – The short-term adverse impacts and risks to the community, workers, and environment during implementation of the IRM were effectively controlled. Temporary safety construction fencing was placed around the outer perimeter of the work area to distinguish the work zone and discourage trespassing. During soil/fill excavation and loading activities, dust monitoring was performed to assure conformance with NYSDOH-approved community air monitoring action levels. Erosion and sedimentation control were accomplished at the work perimeter by excavating the perimeter to below surrounding grade and installation of silt fencing. The potential for chemical exposures and physical injuries were reduced through safe work practices, proper personal protection, environmental monitoring, establishment of work zones and site control, and appropriate decontamination procedures. The IRM achieved the RAOs for the Site in approximately 20 weeks.

Implementability – No technical or action-specific administrative Implementability issues were associated with implementation of the IRM.

Cost – The capital cost of the IRM was approximately $2,500,000. No capital or operation and maintenance costs are associated with the No Further Action alternative.

9.3 RECOMMENDED REMEDIAL MEASURE

Based on the above screening and the conclusions of the Remedial Investigation and Final Engineering Report, the IRM satisfies the remedial action objectives and is protective of human health and the environment. Accordingly, **"No Further Action"** is the recommended final remedial approach for the 111 Hydraulic Street Site. Most locations achieved Unrestricted Residential SCOs, and all locations achieved Restricted Residential SCOs. Most confirmatory soil sample locations achieved Track 1 Unrestricted SCOs, and all locations achieved Restricted Residential SCOs. The minimal residual metals contamination remaining on-site does not warrant institutional or engineering controls, a site management plan or specific Environmental Easements.

10.0 REFERENCES

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2. AFI Environmental, *Brownfield Cleanup Program RI/IRM Work Plan For The 111 Hydraulic Street Project Site No. C915235*, August 2010.

3. AFI Environmental, *Environmental Investigation Report, Summary of November 2009 & January 2010 Test Pit Installation Activities for Property Comprised of the Following Addresses: 105 and 111 Hydraulic St, 777 and 797 Seneca St, 742 and 746 Carroll St, Buffalo, New York 14210,* February 2010.

4. AFI Environmental, *Environmental Investigation Report; Summary of November & December 2009 Monitoring Well Installation Activities, Property Comprised of the Following Addresses: 105 and 111 Hydraulic St, 777 and 797 Seneca St, 742 and 746 Carroll St, Buffalo, New York 14210,* February 2010.

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18. U.S. Environmental Protection Agency. *Requirements for Quality Assurance Project Plans for Environmental Data Operations (EPA QA/R-5).* October 1998.

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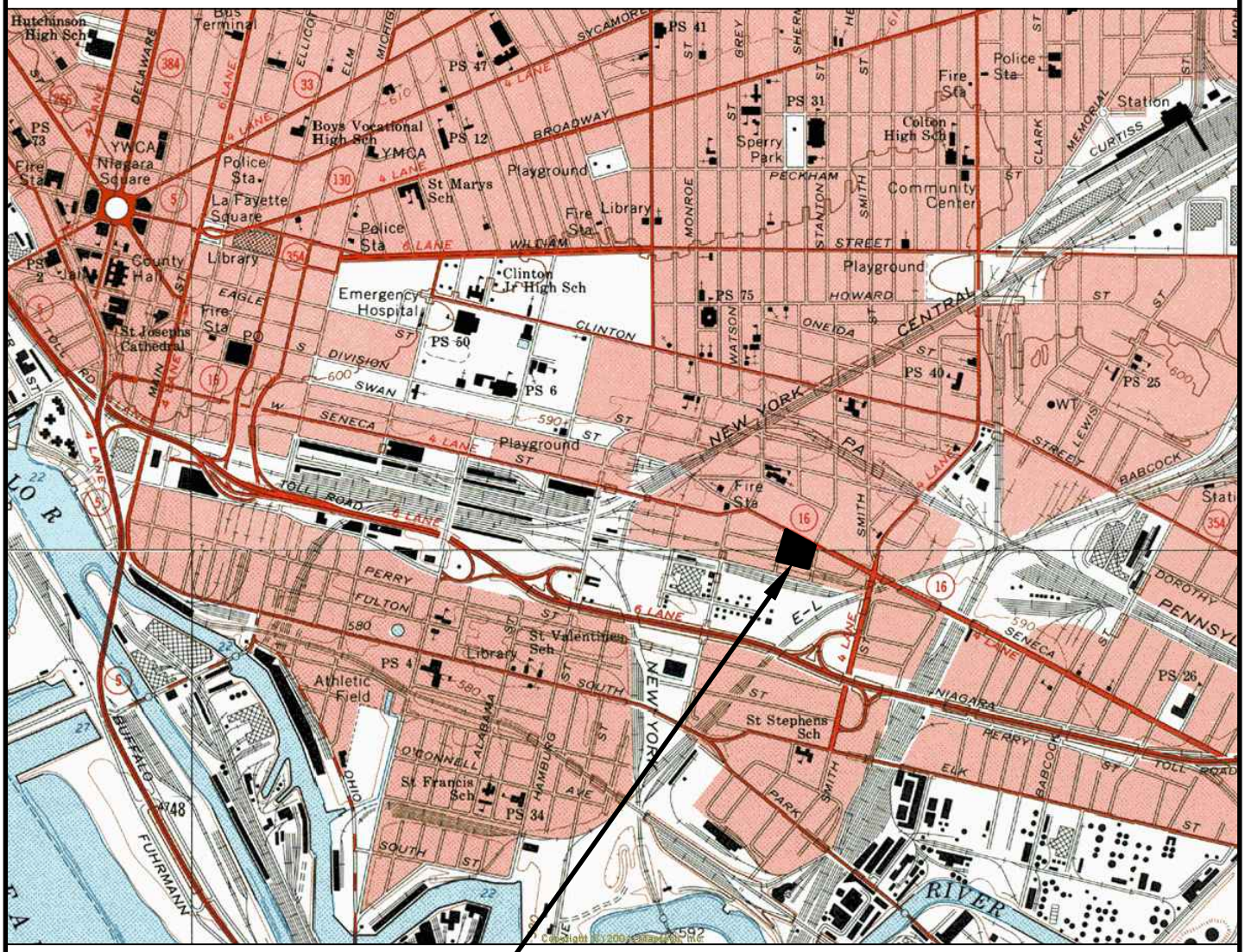
20. United States Department of Agriculture, Soil Conservation Service. 2007. *Soil Survey of Erie County, New York.* July

111 HYDRAULIC STREET PROJECT SITE
SITE NO. C915235



PROJECT SITE

N42°–52'–30"±
W078°–50'–50"±

Survey Date	Revision Date	Comment

Project Site Map

Figure 1

City of Buffalo County of Erie
State of New York

LAWRENCE J. ZYGAJ, PLS, PC
NYS Land Surveyor – License No. 049714–1
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Cowlesville, New York 14037
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Date: 1/8/2011	Scale: 1" = 2000'+/–	Drawn by:	LJZ
Job No.: 03014	Drawing: Figure1.dwg	Checked by:	LJZ

BCP Parcel Boundary Approximate

Not to Scale

AFI ENVIRONMENTAL
7815 BUFFALO AVE
P.O. BOX 4049
NIAGARA FALLS, NY 14304
(716) 283-7645

PROJECT NO.: YB-111HYDRAULICBCP

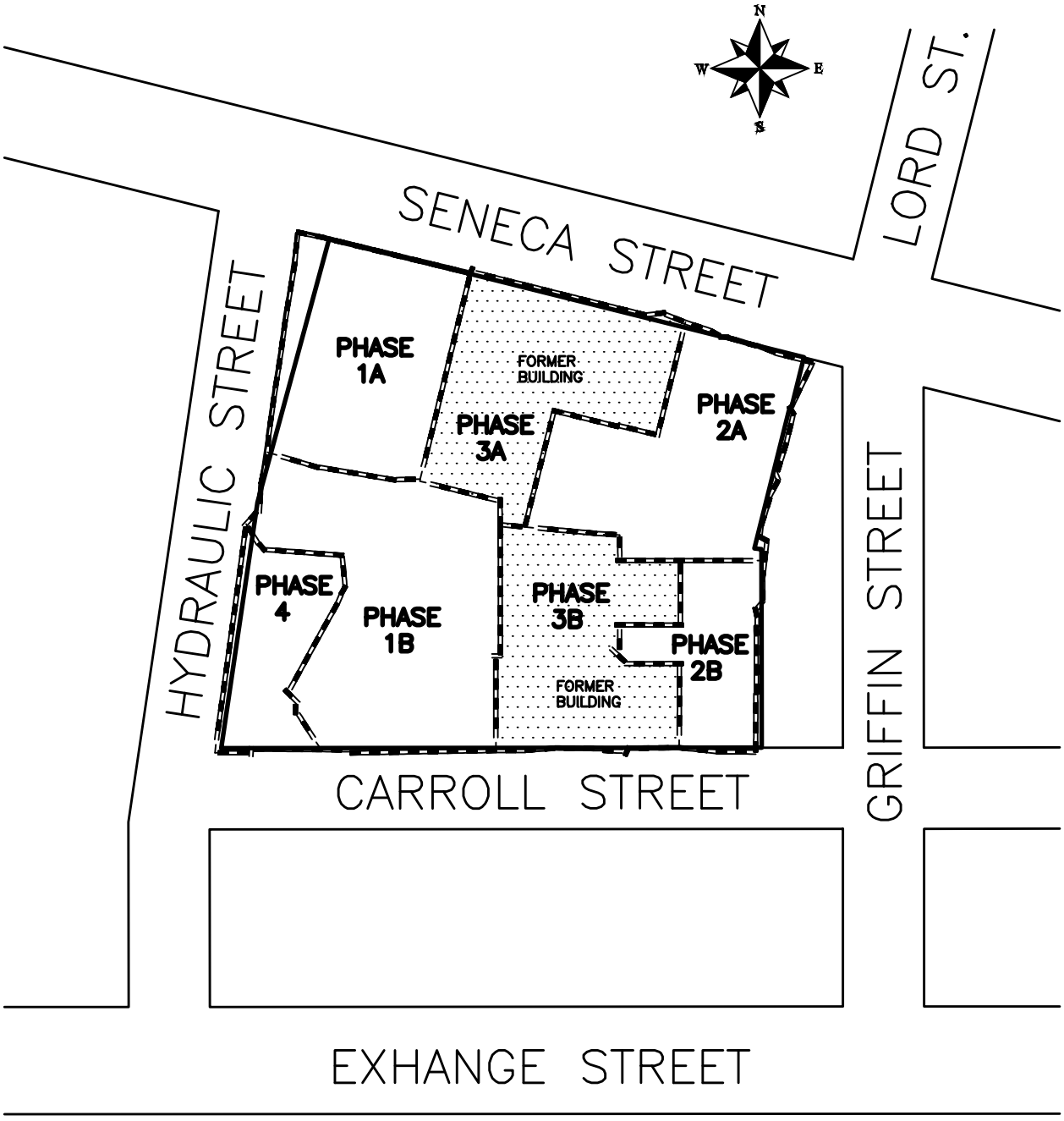
DRAFTED BY: GSH

SITE PLAN (AERIAL)

RI / AAR / IRM REPORT

111 HYDRAULIC STREET SITE
BCP SITE No.: C915236
BUFFALO, NY 14210
PREPARED FOR
598 MAIN STREET LLC

FIGURE 2



Survey Date	Revision Date	Comment

Project Phasing Map

Figure 3

City of Buffalo County of Erie
State of New York

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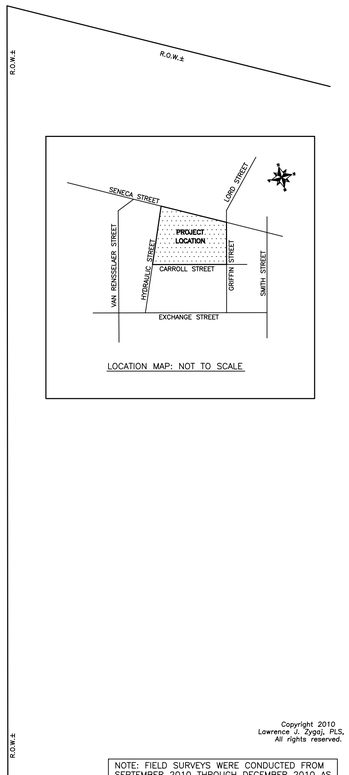
Job No.: 03014	Drawing: Figure3.dwg	Checked by: LJZ

Volume Report Sun Nov 21 09:59:53 2010
Comparing Grid: C:/Documents and Settings/All Users/Documents/Jobs/Jobs 2003/03014/2010SenecaStreet/Excavation/FebSurface.grd
and Grid: C:/Documents and Settings/All Users/Documents/Jobs/Jobs 2003/03014/2010SenecaStreet/Excavation/03014BotExcav.grd
Grid corner locations: 5000.00,5200.00 to 5400.00,5555.00
Grid resolution X: 80, Y: 71 Grid cell size X: 5.00, Y: 5.00
Area in Cut : 89,971.1 S.F., 2.07 Acres
Area in Fill: 921.5 S.F., 0.02 Acres
Total inclusion area: 90,892.6 S.F., 2.09 Acres
Cut to Fill ratio: 1457.76
Average Cut Depth: 3.32 Average Fill Depth: 0.22
Max Cut Depth: 17.49 Max Fill Depth: 0.48
Cut (C.Y.) / Area (acres): 5307.53
Fill (C.Y.) / Area (acres): 3.64
Cut volume: 299,017.8 C.F., 11,074.73 C.Y.
Fill volume: 205.1 C.F., 7.60 C.Y.

111 HYDRAULIC STREET PROJECT SITE
SITE NO. C915235



LOCATION MAP: NOT TO SCALE

LEGEND	
———	CONTOUR OF BOTTOM EXCAVATION
- - - - -	GRADE PRIOR TO IRM
■	UST LOCATIONS
———	BCP PROPERTY BOUNDARY

NOTE: FIELD SURVEYS WERE CONDUCTED FROM SEPTEMBER 2010 THROUGH DECEMBER 2010 AS SITE EXCAVATION PROGRESSED.

Survey Date	Revision Date	Comment
2/15/2010		Initial topographic survey
2/15/2010	11/2/2010	Survey bottom of excavation
2/15/2010	12/10/2010	Add UST (underground storage tanks) 1–11

Contour Map of Final Excavations with UST Locations

Figure 4
Part of Lot 15 Township 11 Range 8 H.L.C.
City of Buffalo County of Erie
State of New York

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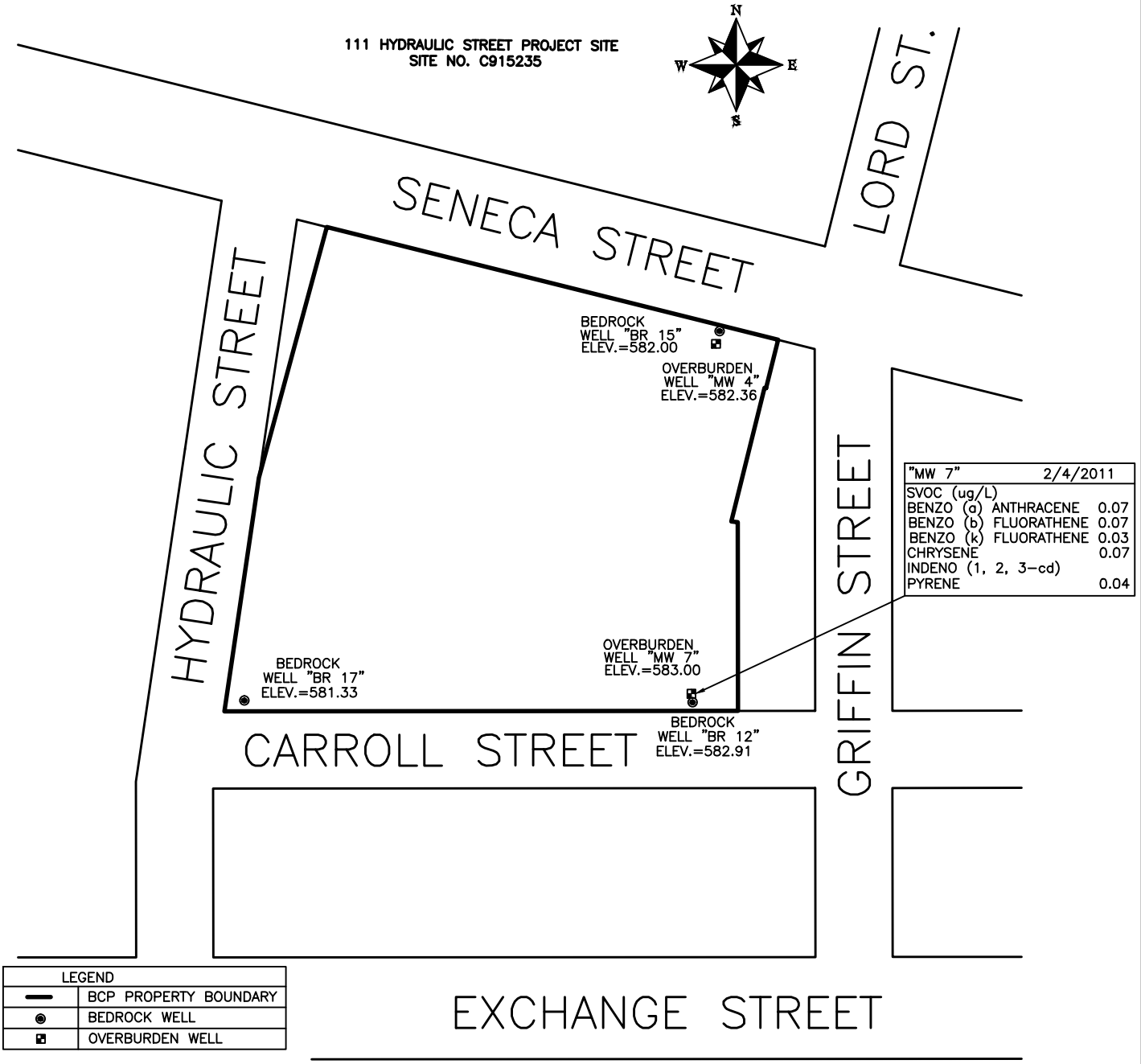
Date: 2/15/2010 Scale: 1" = 20' Drawn by: LJZ
Job No.: 03014 Drawing: Figure4.dwg Checked by: LJZ

ALL UNDERGROUND UTILITY LOCATIONS ARE APPROXIMATE. BEFORE YOU DIG, DRILL, OR BLAST, CALL UFPO AT 1–800–962–7962.

PRIMARY BENCHMARK: "X" CUT IN BOLT OF HYDRANT AT NE CORNER OF EXCHANGE AND VAN RENSSELAER STREETS. ELEVATION 585.12' PER SHEET 1 OF 7 – EXCHANGE STREET SANITARY SEWER CONSTRUCTION PLANS PREPARED BY BUFFALO SEWER AUTHORITY APRIL 1995

BENCHMARK: "X" CUT ON SOUTH BOLT OF HYDRANT; ELEVATION 586.63



Survey Date	Revision Date	Comment

Monitoring Well Location Map

Figure 5

City of Buffalo County of Erie

State of New York

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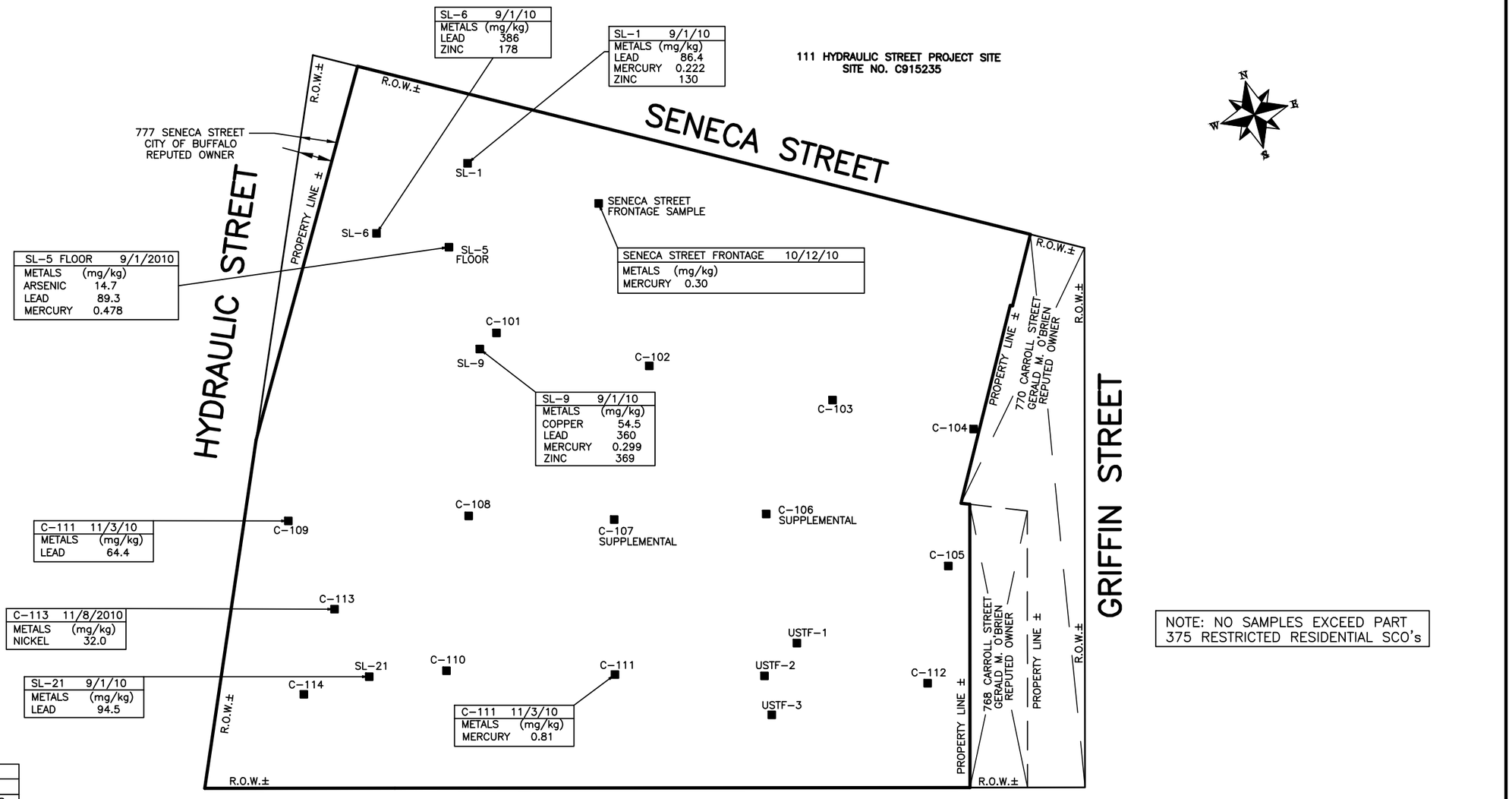
Job No.: 03014 Drawing: Figure5R1.dwg Checked by: LJZ

SAMPLE	ELEVATION
SL-1	581.20
SL-5 FLOOR	581.51
SL-6	581.59
SL-9	581.04
SL-21	580.76
C-101	580.19
C-102	578.39
C-103	579.64
C-104	580.13
C-105	580.18
C-106 SUPPLEMENTAL	575.59
C-107 SUPPLEMENTAL	577.68
C-108	579.74
C-109	579.97
C-110	579.73
C-111	580.20
C-112	580.63
C-113	576.40
C-114	574.54
USTF-1	570.82
USTF-2	571.13
USTF-3	576.67
SENECA STREET FRONTAGE SAMPLE	580.81



LEGEND	
▬	BCP PROPERTY BOUNDARY
■	FINAL ENDPOINT SAMPLE LOCATIONS

SAMPLE DESIGNATION — SAMPLE DATE

"SL 1" 1/1/2011

BENZO (a) ANTHRACENE 0.01 — SAMPLE RESULTS THAT EXCEED 6NYCRR PART 375.6.8(a) UNRESTRICTED SCO's

CONSTITUENT

Copies from the original of this survey map, not marked with the original of the Land Surveyor's seal, shall not be considered a valid true copy, and should be assumed to be an unauthorized copy.

Unauthorized alteration or addition to a survey map bearing a licensed Land Surveyor's seal is a violation of section 7209, subdivision 2, of the New York State Education Law.

0' 50' 100'

GRAPHIC SCALE 1" = 50'

Survey Date	Revision Date	Comment
11/7/2010	12/4/2010	Add C-107 Supplemental

Onsite Sample Locations with Exceedances of Unrestricted SCO's

Figure 6

City of Buffalo County of Erie
State of New York

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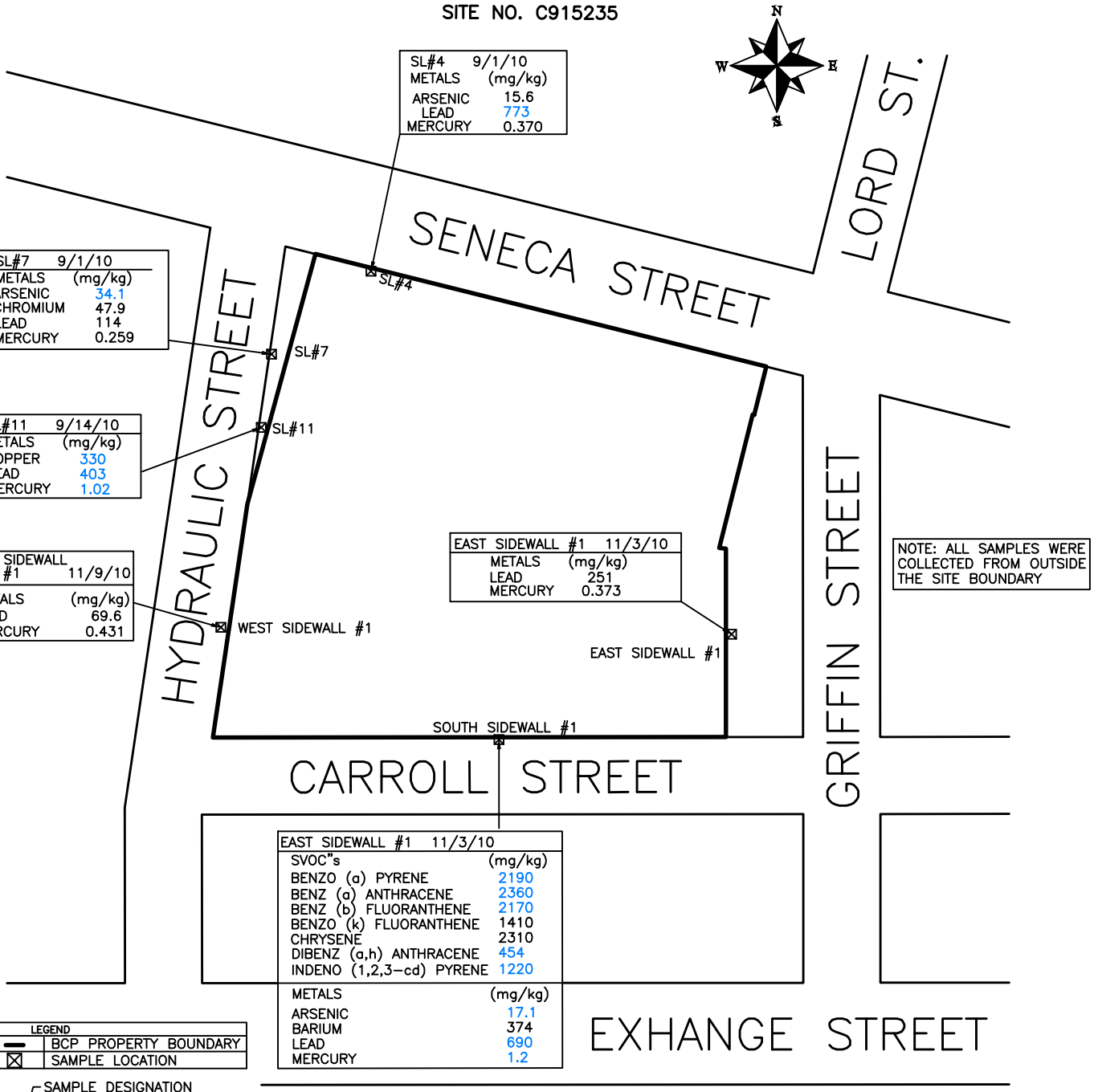
SITE NO. C915235



Survey Date	Revision Date	Comment

Offsite Sampling Locations (sidewalls)

Figure 7

City of Buffalo County of Erie
State of New York

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Job No.: 03014 Drawing: Figure7R1.dwg Checked by: LJZ

111 HYDRAULIC STREET PROJECT SITE
SITE NO. C915235

SENECA STREET
(66' WIDE)

LORD STREET

HYDRAULIC STREET
(50' WIDE)

GRIFFIN STREET
(50' WIDE)

CARROLL STREET
(FORMERLY STEUBEN STREET)
(50' WIDE)

R.O.W.

PROPERTY LINE

BEDROCK
WELL "BR 15"
ELEV.=582.00

OVERBURDEN
WELL "MW 4"
ELEV.=576.25

OVERBURDEN
WELL #7
ELEV.=583.00

BEDROCK
WELL "BR 17"
ELEV.=581.33

BEDROCK
WELL "BR 12"
ELEV.=582.91

CATCHBASIN 578.92
INVERT 577.15

MH RIM 581.82
12"PVC NE INV. 576.32

RAISED TRENCH

LEGEND	
———	BCP PROPERTY BOUNDARY
———	CONTOUR OF FINAL BACKFILL
◉	MONITORING WELL LOCATIONS

SEE DRAWING "03014SENECATOPO.DWG" LAST DATED 9/2/2010 FOR ADDITIONAL UTILITY INFORMATION

Survey Date	Revision Date	Comment

Backfill Contour Map

Part of Lot 15 Township 11 Range 8 H.L.C.
Figure 8
City of Buffalo County of Erie
State of New York

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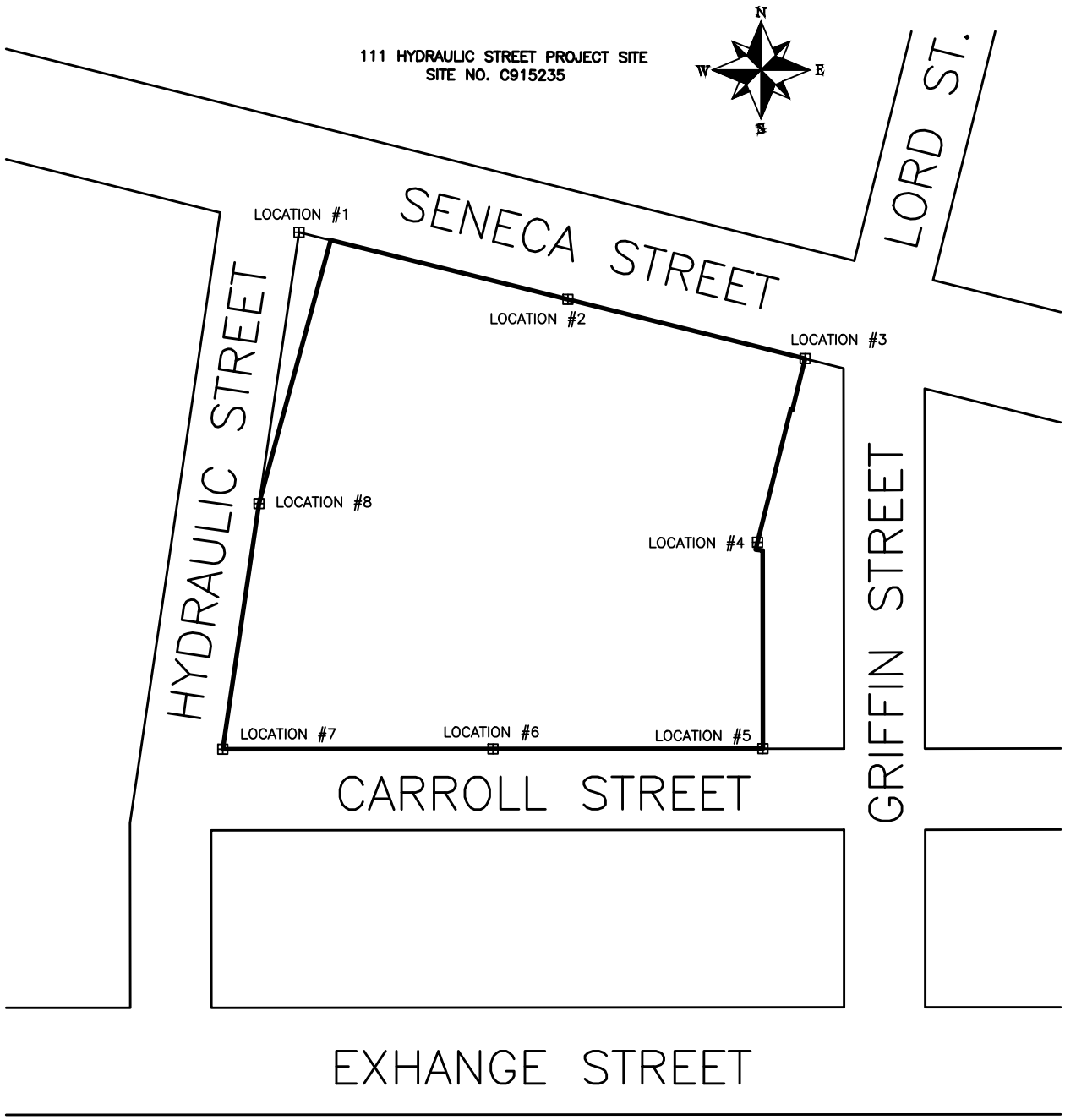

LEGEND	
⊞	PUMP LOCATIONS
━━	BCP PROPERTY BOUNDARY

Survey Date	Revision Date	Comment

Air Monitoring Station Locations

Figure 9

City of Buffalo County of Erie
State of New York

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Cowlesville, New York 14037
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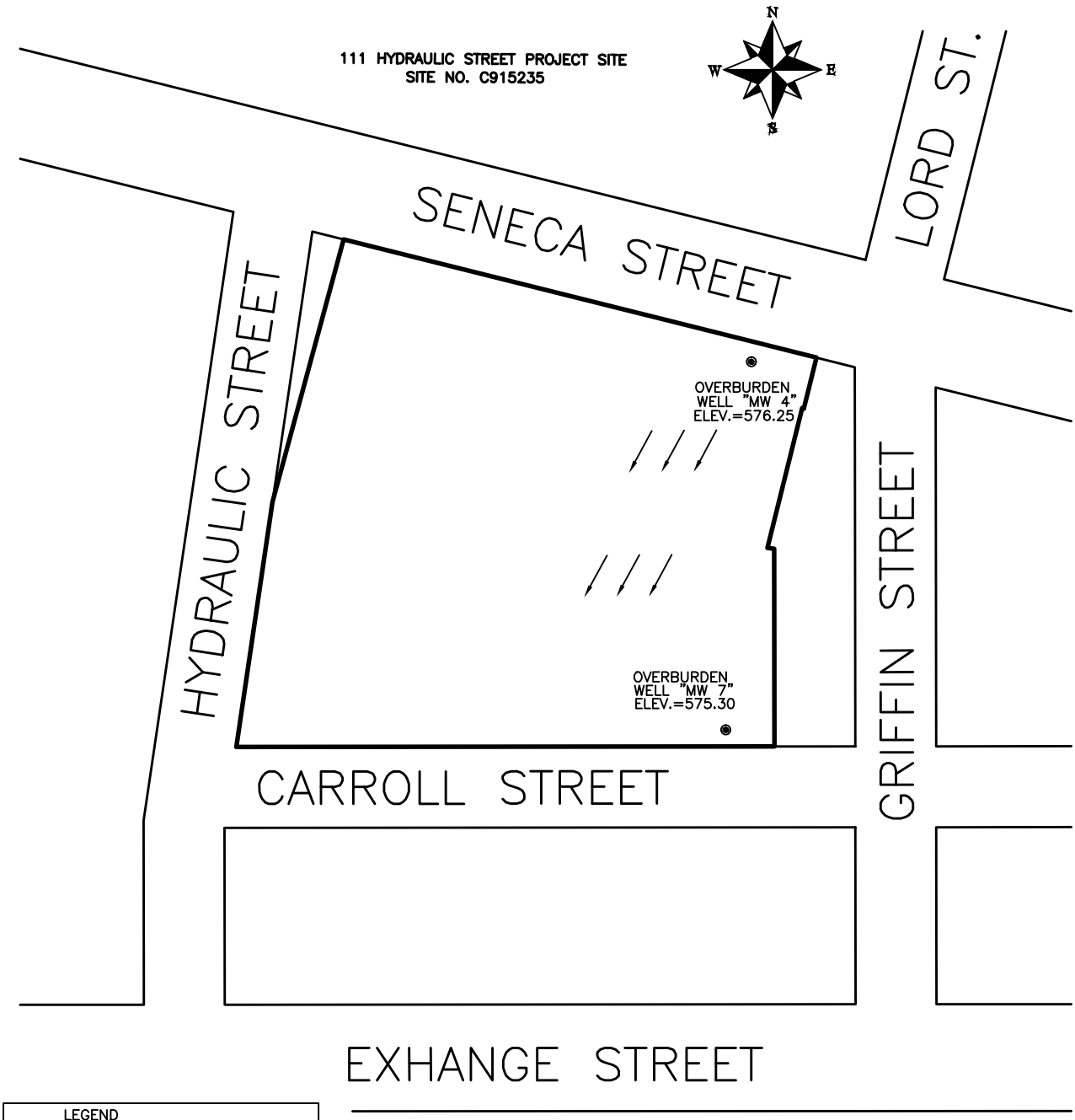
Date: 1/8/2011	Scale: 1" = 100'	Drawn by:	LJZ
Job No.: 03014	Drawing: Figure9R1.dwg	Checked by:	LJZ



LEGEND	
	BCP PROPERTY BOUNDARY
	PARCEL BOUNDARIES
◉	MONITORING WELL LOCATIONS
←	GROUNDWATER FLOW DIECTION

NOTE: GROUNDWATER FLOW IS BASED OFF OF CURRENT OVERBURDEN MEASUREMENTS.

Survey Date	Revision Date	Comment

Groundwater Flow Direction Map

Figure 10

City of Buffalo County of Erie

State of New York

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Date: 1/8/2011	Scale: 1" = 100'	Drawn by:	LJZ
Job No.: 03014	Drawing: Figure5R1.dwg	Checked by:	LJZ

TABLE #1
Summary of Onsite Remedial Investigation and Post-Excavation Soil Analytical Results
111 Hydraulic Building Site
Buffalo, New York

Final 4/7/11 rev4

PARAMETER[1, 3]	Unrestricted SCO[2]	Restricted Residential SCO[2]	C101[4]	C102[4]	C103[4]	C104[4]	C105[4]	C106-S	C107-S[4]	C108[4]	C109[4]	C110[4]	C111[4]	C112[4]	C113	C114	SL-1	SL-5	SL-6	SL-9	SL-21	UST Tank Farm Floor[5]	Seneca Frontage Basement
			3-Nov-10	3-Nov-10	3-Nov-10	3-Nov-10	3-Nov-10	4-Nov-10	18-Nov-10	3-Nov-10	3-Nov-10	3-Nov-10	3-Nov-10	3-Nov-10	8-Nov-10	9-Nov-10	1-Sep-10	1-Sep-10	1-Sep-10	1-Sep-10	8-Sep-10	12-Oct-10	12-Oct-10
Total Metals - mg/kg																							
Arsenic	**13**	**16**	10.7	8.40	2.11	7.33	9.44	3.92	3.6	9.03	7.73	5.69	2.84	11.0	8.88 J	2.99 J	6.71	14.7	8.16	11.8	7.08	NA	1.1 J
Copper	**50**	**270**	NA	NA	NA	NA	NA	18.7	NA	NA	NA	NA	NA	NA	24.4 R	13.4 R	27.4	35.1	19.2	54.5	25.4	NA	7.78 J
Lead	**63**	**400**	10.1	13.1	18.7	10.3	12.8	12.5	7.5	18.7	64.4	16.2	22.1	16.6	10.2 J	21.7 J	86.4	89.3	386	360	94.5	NA	21.4 J
Mercury	**0.18**	**0.81**	0.0137	0.0161	0.175	0.0179	0.0384	0.0219	0.10 U	0.0217	0.0853	0.0235	0.81	0.0222	0.0188	0.0207	0.222 J	0.478 J	0.0075 J	0.299 J	0.119	NA	0.30 J
Nickel	**30**	**310**	NA	NA	NA	NA	NA	23.1	NA	NA	NA	NA	NA	NA	32.0 J	16.1 J	9.53	17.1	12.6	19.6	22.2	NA	21.9 J
Zinc	**109**	**10,000**	NA	NA	NA	NA	NA	79.7	NA	NA	NA	NA	NA	NA	64.5	74.2 J	130	99.7	178	369	104	NA	87.5 J

NOTES:
1 . Only those parameters detected at concentrations exceeding Tract 1 Unrestricted SCOs, in a minimum of one sample location, are presented in this table; All analytical results for all parameters sampled are included in Appendix C.
2. Values per NYSDEC Part 375 Soil Cleanup Objectives (December 2006).
3. Parameter analysis was determined as per the DEC representative's field decisions at the time of sampling.
4. Samples were collected for RCRA Metals analysis as per the DEC Representatives Field Direction which does not include analysis of Cu, Ni or Zn.
5. Sample only analyzed for 8260 STARS and 8270 STARS as per the DEC Representatives Field Direction for closure of the UST Tank Farm and Historic Spill Number 0650564.

DEFINITIONS:
NA = Sample not analyzed for parameter.
U = The analyte was not detected at the sample quantitation limit.
J = The analyte was positively identified: the numerical value is approximate concentration of the analyte in the sample.

= Result Exceeds 6NYCRR Part 375-6.8(a) Unrestricted SCOs
= Result Exceeds 6NYCRR Part 375-6.8(b) Restricted Residential SCOs

TABLE #2
Summary of Off-Site (Sidewall) Remedial Investigatation Soil Analytical Results
111 Hydraulic Building Site
Buffalo, New York

Final 4/7/11 rev5

PARAMETER[1, 4]	Unrestricted SCO[2]	Restricted Residential SCO[2]	SL-4[3]	SL-7[3]	SL-11[3]	East Sidewall #1[3]	South Sidewall #1[3]	West Sidewall #1[3]
			1-Sep-10	1-Sep-10	14-Sep-10	3-Nov-10	3-Nov-10	9-Nov-10
Semi-Volatiles Organic Compounds - ug/kg								
Benzo(a)pyrene	**1,000**	**1000**	NA	281 J	NA	218 J	2,190	205 J
Benz(a)anthracene	**1,000**	**1000**	NA	290 J	NA	230 J	2,360	267 J
Benz(b)fluoranthene	**1,000**	**1000**	NA	276 J	NA	200 J	2,170	387 U
Benzo(k)fluoranthene	**800**	**3,900**	NA	169 J	NA	345 U	1,410	387 U
Chrysene	**1,000**	**3,900**	NA	306 J	NA	227 J	2,310	271 J
Dibenz(a,h)anthracene	**330**	**330**	NA	299 J	NA	345* U	454	387 U
Indeno(1,2,3-cd)pyrene	**500**	**500**	NA	196 J	NA	345 U	1,220	387 U
Total Metals - mg/kg								
Arsenic	**13**	**16**	15.6	34.1	8.3	11.7	17.1	6.32 J
Barium	**350**	**400**	161	147	100	148	374	153 J
Chromium	**30**	**180**	29.8	47.9	18.1	22.0	21.7	23.6
Copper	**50**	**270**	61.5	123	330	NA	NA	21.8 R
Lead	**63**	**400**	773	114	403	251	690	69.6 J
Mercury	**0.18**	**0.81**	0.370 J	0.259 J	1.02	0.373	1.2	0.431

NOTES:
1 . Only those parameters detected at concentrations exceeding Tract 1 Unrestricted SCOs, in a minimum of one sample location, are presented in this table; All analytical results
for all parameters sampled are included in Appendix P.
2. Values per NYSDEC Part 375 Soil Cleanup Objectives (December 2006).
3. Parameter selected for analysis were selected as per the DEC representative's field decisions at the time of sampling.
4. All Samples collected from beyond the site property limits. See Figure #7.
*Small variations routinely occur, and therefore reporting limits vary as well, in some cases above published method driven regulatory limits. Typically these routine small variations are expected by regulators, and do not cause any limitations in data usability.

DEFINITIONS:
NA = Sample not analyzed for parameter.
U = The analyte was not detected at the sample quantitation limit.
J = The analyte was positively identified: the numerical value is approximate concentration of the analyte in the sample.
R = The sample results are rejected due to serious deficienceies in the ability to analyze the sample and meet quality control criteria.

= Result Exceeds 6NYCRR Part 375-6.8(a) Unrestricted SCOs
= ResultExceeds 6NYCRR Part 375-6.8(b) Restricted Residential SCOs

TABLE #3
Summary of Groundwater Analytical Results
111 Hydraulic Building Site
Buffalo, New York
Final 4/7/11 rev7

CONTAMINANT[1]	CAS Number	Maximum Allowable Concentration[2]	Overburden Wells		Bedrock Wells		
			MW4	MW7[3]	BR12	BR15	BR17
			Jan-11	Feb-11	Jan-11	Jan-11	Jan-11
Volitile Organic Compounds (VOCs) - ug/L							
Acetone	67-64-1	**50**	2.5	ND	0.66	47	ND
Benzene	71-43-8	**1**	ND	ND	0.81	0.50	ND
Carbon Disulfide	75-15-0	**60**	ND	ND	ND	0.56	ND
cis-1,2-Dichloroethene	156-59-2	**5**	ND	ND	1.1	ND	0.38
m&p-Xylene	108-38-3 &	**5**	ND	ND	ND	0.92	ND
Methyl ethyl ketone	78-93-3	**50**	ND	ND	ND	7.4	ND
Methyl t-butyl ether (MTBE)	1634-04-4	**10**	5.9	ND	ND	0.58	ND
Toluene	108-88-3	**5**	ND	ND	ND	0.70	ND
Vinyl chloride	75-01-4	**2**	ND	ND	0.70	ND	0.24
Total Metals - ug/L							
Arsenic	7440-38-2	**25**	ND UJ	ND UJ	ND UJ	1.5	ND UJ
Barium	7440-39-3	**1,000**	932	46	385	841	403
Chromium	16065-831	**50**	ND J	1.9	ND J	ND U	ND J
Copper	7440-508	**200**	ND UJ	ND J	ND U	5.0	ND U
Lead	7439-92-1	**25**	1.6	ND UJ	ND	ND	1.2 J
Manganese	7439-96-5	**300**	140	114 J	23	ND U	102
Nickel	7440-02-0	**100**	1.9 J	3.2	ND	9.0	0.9
Silver	7440-22-4	**50**	ND	ND U	0.9	ND	ND
Zinc	7440-66-6	**2,000**	17	11 J	ND U	22	ND U
Semi-Volatile Organic Compounds (SVOCs) - ug/L							
Benzoic acid	65-85-0	**N/A**	ND UJ	NA	55 *J	10 J	ND UJ
Benz(a)anthracene	56-55-3	**0.002**	ND	0.07	ND	ND	ND
Benzo(a)pyrene	50-32-8	**N/A**	ND	0.05	ND	ND	ND
Benzo(b)fluoranthene	205-99-2	**0.002**	ND	0.07	ND	ND	ND
Benzo(k)fluoranthene	207-08-9	**0.002**	ND	0.03	ND	ND	ND
Bis(2-ethylhexyl)phthalate	117-81-7	**5**	ND	3.0 J	ND	4.8	ND
Chrysene	218-01-9	**0.002**	ND	0.07	ND	ND	ND
Indeno (1,2,3-cd)pyrene	193-39-5	**0.002**	ND	0.04	ND	ND	ND
Phenanthrene	85-01-8	**50**	ND	0.09	ND	0.28	ND

NOTES:
1. Only those parameters detected at a minimum of one sample location are presented in this table, all other compounds were reported as non-detect. The full set of analytical results can be found in Appendix P.
2. Values per NYSDEC TOGS 1.1.1 (Table 1 & Table 5).
3. Sample was collected again in February as well was resampled as per direction of DEC.

DEFINITIONS:
NA = Sample not analyzed for parameter.
ND = Parameter not detected above laboratory detection limit.
U = The analyte was not detected at the sample quantization limit.
J = The analyte was positively identified: the numerical value is approximate concentration of the analyte in the sample.
UJ = The analyte was not detected above reported sample quantization limit, however the reported quantization limit is approximate concentration of the analyte in the sample.
N = The analysis indicated the presence of an analyte for which there is presumptive evidence to make a "tentative identification."
R = The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.

= Result exceeds Class GA Groundwater Quality Standards (GWQS) per NYSDEC TOGS 1.1.1

TABLE # 4
Groundwater Elevation Measurements
111 Hydraulic Building Site, Buffalo NY 14210
3/30/11 rev5

Monitoring Location[1]	Grade Elevation	TOR[2] Elevation	DTW	GWE
MW - 4	582.36	582.18	5.93	576.25
MW - 7	583.00	582.70	7.40	575.30
BR - 12	582.91	582.65	9.66	572.99
BR - 15[2]	582.00	581.63	14.66	566.97
BR - 17	581.33	581.16	8.32	572.84

NOTES:
1. All elevations are measured in feet.
2. Well did not recover sufficiently from development.

DEFINITIONS:
DTW = Depth to water measured from top of well riser.
GWE = Calculated groundwater elevation, measured in feet above mean sea level.
TOR = Top of riser