REMEDIAL INVESTIGATION / INTERIM REMEDIAL MEASURES AND ALTERNATIVES ANALYSIS REPORT

FOR

BCP SITE NO. C915302
1360 NIAGARA STREET SITE
CITY OF BUFFALO, ERIE COUNTY, NEW YORK

Prepared by:

C&S ENGINEERS, INC.
141 ELM STREET, SUITE 100
BUFFALO, NEW YORK 14203

Prepared on Behalf of:

1360 NIAGARA STREET OWNER LLC
350 ESSJAY ROAD
WILLIAMSVILLE, NEW YORK 14221

AND

CIMINELLI REAL ESTATE CORPORATION
350 ESSJAY ROAD
WILLIAMSVILLE, NEW YORK 14221

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ACRONYM LIST

AAR	Alternatives Analysis Report
ACM	Asbestos-containing Material
ASP	Analytical Services Protocol
BGS	Below Ground Surface
BSA	Buffalo Sewer Authority
CAMP	Community Air Monitoring Plan
CPP	Citizen Participation Plan
DER	Department of Environmental Remediation
DUSR	Data Usability and Summary Report
EDD	Electronic Data Deliverable
ELAP	Environmental Laboratory Accreditation Program
HASP	Health and Safety Plan
IRM	Interim Remedial Measures
MS/MSD	Matrix Spike / Matrix Spike Duplicate
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
PAH	Polycyclic Aromatic Hydrocarbons
PID	Photo-ionization Detector
RI	Remedial Investigation
SCO	Soil Cleanup Objective
Site	1.804-Acre portion of Niagara Street, Buffalo, New York
SVOC	Semi-volatile Organic Compound
U.S. EPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound

EXECUTIVE SUMMARY

This document presents the Remedial Investigation (RI), Interim Remedial Measures (IRM), and Alternatives Analysis Report for the Brownfield Cleanup Program Site No. C915302 located on a 1.804-acre portion of Niagara Street in Buffalo, New York (the "Site"). The RI Report reports on the data and findings resulting from implementation of the RIWP; the IRM Report reports on the completion of the approved IRM for the Site; and the Alternatives Analysis reviews remedial alternatives and recommends final remedial actions for the Site. The project details are summarized below:

Contaminant Source and Constituents

The only contamination exceeding soil cleanup objectives was found to be associated with urban fill located on the Site. Constituents in the fill requiring remediation include semi-volatile organic compounds (SVOCs) and metals. Additionally, groundwater at the Site contains volatile organic compounds (VOCs), the source of which is a spill at an up-gradient site.

Extent of Contamination

The urban fill containing elevated concentrations of contaminants generally extends to one to seven feet below grade and is present across the Site. The contaminated groundwater is located in the northern portion of the Site at depths of 20 – 25 feet below grade or more.

Proposed Site Redevelopment

The Site's developers intend to renovate the existing 80,000-square-foot structure to accommodate approximately 50 residential apartment units with first floor retail and/or commercial space of approximately 3,200 square feet.

Remedial Investigation

To characterize site conditions and identify the appropriate remedy for the Site, a Remedial Investigation (RI) was implemented. The RI included the collection and analysis of urban fill, native soil, and groundwater samples.

Urban fill and contaminated soil are present at the Site at depths ranging from approximately one to twelve feet below grade. Contaminated urban fill extends horizontally throughout the entire Site. Based on the RI, the known contaminants of concern in the urban fill include VOCs, SVOCs, and metals including arsenic, chromium, copper, lead, manganese, mercury, nickel, selenium, silver, and zinc.

Sub-slab soil samples were collected from underneath the basement floor of the building. Sample results indicate fill material used underneath the floor slab meets Unrestricted Use Soil Cleanup Objectives.

Groundwater contamination exists at the Site at 20 - 25 feet below grade that consists of a groundwater plume containing chlorinated solvents emanating and migrating from the ChemCore Site, located up-gradient of this Site. Groundwater sample results show that the plume from the ChemCore Site still impacts the fractured bedrock underneath the 1360 Niagara Street Site. It is unlikely that contaminated groundwater will be a health concern. Groundwater is located deep into the bedrock which is underneath an impermeable clay layer. Both these geological features provide a significant barrier to human exposure. In addition, samples were collected to evaluate soil vapor conditions underneath the floor of the building. Sub-slab soil vapor samples indicate that contaminated vapors from off-site groundwater contamination are not impacting the Site.

Interim Remedial Measures

Because the contaminants are understood to exist within the urban fill at the Site, the remediation for the Site consisted of mass excavation of all contaminated material to a depth that meets Unrestricted Use Soil Cleanup Objectives. The IRM achieved the following:

- All contaminated urban fill was properly excavated up to the BCP Boundary and the foundation of the building. Removal of approximately 21,693.43 tons of contaminated soil and urban fill for off-site disposal at a regulated facility.

- Backfill materials met NYSDEC requirements for backfill at BCP sites. A total of 10,280.35 tons of crushed stone and total of 1,827 cubic yards of clean sand material was used to backfill the Site.

- Removal of 5,000-gallon, 4,500-gallon and 7,500-gallon underground storage tanks.

- Removal of 4,500-gallon tank used for storing mineral oil.

- Confirmatory soil sampling generated during the RI and IRMs to show compliance with the Unrestricted Use Soil Cleanup Objective. All 35 confirmatory samples indicate soils remaining at the Site contain analyte concentrations below the Unrestricted Use SCOs. The IRMs were effective in removing the most contaminated materials at the Site. In addition, the confirmatory sampling, conducted during the RI, indicated that remediation required by the IRM Work Plan was achieved.

- A total of 27 groundwater monitoring wells were decommissioned on-site. These monitoring wells were used to evaluate off-site groundwater contamination from the Chem-core Site. These monitoring wells were used to evaluate off-site groundwater contamination from the Chem-core Site. The known groundwater contamination from the Chem-core Site is not the responsibility of the site owner and is being addressed by others.

- Mitigation of asbestos containing materials and addressing lead-based paint within the building.

Conclusions

Based on the work described in this document, the urban fill across the Site has been addressed through removal across the Site. Soil vapor and indoor air sampling has shown that the groundwater contaminants from an off-site source present below the Site have not impacted air quality at the Site. As such, the Site has achieved a Track 1 level of cleanup.

1 INTRODUCTION

C&S Engineers, Inc. (C&S) has prepared this Remedial Investigation/Interim Remedial Measures (RI/IRM) Report (and the later discussed Alternatives Analysis) on behalf of the applicants for the Brownfield Cleanup Program (BCP) Site No. C915302, 1360 Niagara Street Owner, LLC and Ciminelli Real Estate Corporation (hereafter known as “Applicants”), for the 1360 Niagara Street Site located at 1336, 1340, and 1360 Niagara Street in the City of Buffalo, New York (the “Site”). On February 9, 2016, the Applicants, acting as BCP Volunteers, submitted a BCP Application to remediate and develop a portion of the Site. At the time of the application, the approximately 1.804-acre Site contained urban fill with elevated concentrations of various contaminants.

Prior to entrance into the BCP, C&S conducted site characterization efforts to assess contaminant concentrations at the Site during a Phase I and Phase II Environmental Site Assessment (ESA) in 2015. The characterization program consisted of the advancement of 22 soil borings within the Site at depths of approximately 16 feet below grade or to the top of bedrock, including some borings on the portion of Brace Street (owned by the City of Buffalo) between 1340 and 1360 Niagara Street. The program also consisted of sampling and analysis of 23 soil/fill samples. Each soil sample was analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs) and metals. This limited site characterization is discussed in **Section 2.1.3**.

In January 2017, C&S prepared a Remedial Investigation/Interim Remedial Measures Work Plan (RI/IRM WP) to describe the proposed approach to more thoroughly assess site contaminant conditions. The RI included the soil and groundwater evaluation which consisted of sampling urban fill, underlying native soils, and groundwater. The IRM Work Plan included excavation of the urban fill and backfilling the excavation to address the contamination known to exist in the urban fill.

Based on the presence of urban fill across the Site, the proposed remedy included removal of impacted material to a depth ranging from one to seven feet below ground surface (bgs) for off-site disposal. Confirmatory samples were collected for comparison to NYSDEC Soil Cleanup Objectives before clean backfill was placed in the excavated areas up to the existing grade. Confirmatory sampling was conducted during the performance of the RI.

This Remedial Investigation Report and Interim Remedial Measures Report (RI/IRM) presents the results of the Remedial Investigation and the Interim Remedial Measures. This report is organized in two sections with the results of the RI and IRM each presented as separate chapters.

2 REMEDIAL INVESTIGATION

2.1 Project Background

2.1.1 Site Description

The 1360 Niagara Street Site is located in the City of Buffalo’s West Side along Niagara Street. The Site currently consists of a four-story building with a basement and a parking area, which is a combined total of approximately 80,000-square-feet. Vacant land on the southern portion of the Site was previously developed with buildings, but were demolished prior to the Site entering the BCP.

Figure 1 shows the location of the Site and **Figure 2** shows the Site map and sample grid, including the Site boundaries.

Currently, the Site is unoccupied. Plans for the Site include the redevelopment of the former industrial building into a mixed use residential and commercial use building.

2.1.2 Site History

The land comprising the Site was first developed as multiple residential properties and a lubricating factory by 1889. According to historical Sanborn Maps, from 1889 to 1986 the Site was occupied by a planing mill. In 1919, the Mentholatum Building was constructed, which operated as a health and wellness company that manufactured various pharmaceutical and skin care products until 1998. Garrett Leather purchased the property in 2001, with operations including custom designing and warehousing of bulk leather products.

2.1.3 Previous Investigations

Asbestos and lead-based paint surveys were completed for the Site by AMD in 2015. A Phase I and Phase II ESA was completed for the Site by C&S in September 2015. The Phase I ESA indicated areas containing Recognized Environmental Conditions (RECs) under ASTM Standard E-1527-13 which were subsequently investigated in the Phase II ESA. The associated documents are summarized below and attached in **Appendix A**. **Figure 3** shows the site characterization results from 2015.

SEPTEMBER 2015 – PRE-RENOVATION ASBESTOS SAMPLING REPORT

AMD conducted pre-renovation asbestos bulk sampling for the Site for suspect materials to be affected by planned renovations. New York State asbestos regulations (12 NYCRR 56-5) require that asbestos surveys are conducted to determine whether or not the building or structure, or portion(s), to be demolished, renovated, or remodeled contain ACM, PACM, or asbestos materials. AMD surveys were intended to determine, to a reasonable extent, the presence, locations, quantity, and condition of accessible asbestos containing materials. Asbestos containing materials (ACMs) were identified above 1% in materials that were sampled by AMD Environmental.

AUGUST 2015 – LIMITED RENOVATION RELATED LEAD BASED PAINT INSPECTION REPORT

AMD conducted testing and sampling activities for lead-based paint at the Site. Per USHUD 1012 requirements for Subpart J (Rehabilitation), a review of the results of the representative renovation/rehabilitation related paint testing indicated that lead based paint was found in areas tested. Building components that consistently tested positive for lead included:

- walls (concrete, plaster, brick, and drywall);
- concrete columns;
- door components (door, casing, and jamb); and
- radiators.

Therefore, all components found on the lead based paint summary as well as components of the same likeness should be considered as lead containing and be treated as such.

SEPTEMBER 2015 – PHASE I/II ENVIRONMENTAL SITE ASSESSMENT

C&S conducted site characterization efforts to assess contaminant concentrations at the Site during a Phase I and Phase II Environmental Site Assessment. The characterization program consisted of the advancement of 22 soil borings within the Site at depths of approximately 16 feet below grade or to the top of bedrock, including some borings on the portion of Brace Street between 1340 and 1360 Niagara Street. The program also consisted of sampling and analysis of 23 soil/fill samples. Each soil sample was analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs) and metals.

The urban fill at the Site was found to contain concentrations of certain metals above the Commercial and Industrial Use SCOs and PCBs above Commercial Use SCOs. Native clay material was observed directly beneath the fill. Impacts to groundwater were not determined as significant amounts of groundwater were not encountered during the boring program.

2.1.4 Remedial Investigation Objectives, Scope, and Rationale

The objectives of the RI were to evaluate contaminant impacts to soil and identify and evaluate appropriate remedial actions necessary to redevelop the Site. The investigation work included evaluating the magnitude and extent of contaminant impacts, conducting a qualitative exposure assessment for actual or potential exposures to contaminants at the Site and/or emanating from the Site, and producing data that will support the development of an acceptable RI Report and subsequent Alternatives Analysis Report (AAR). The IRM portion of this document details the remedial methods proposed to address the contamination present at the Site.

The RI scope of work was based on information previously gathered regarding historical operations conducted at the Site, the results of the limited site characterization, and the project objectives. The RI included the following:

- Soil Evaluation – This task consisted of three primary elements: urban fill, underlying native soils, and site perimeter soils.
    - The urban fill was characterized to identify the extent and magnitude of contamination within the fill. This material was also the subject of waste characterization sampling because subsequent remedial activities included the excavation and off-site disposal of the urban fill.
    - The underlying native soils were characterized to determine the depth of impacts from the overlying urban fill and the depths at which remedial efforts may be terminated.
    - The perimeter soils (assumed to be urban fill) were characterized to assess the condition of off-site soil.
- Groundwater Evaluation – Subsequent to completing the above tasks, existing groundwater monitoring wells were utilized on Site to confirm previous sampling results and evaluated for on-site urban soil impacts on groundwater quality.

The RI activities were completed in accordance with NYSDEC Division of Environmental Remediation: Technical Guidance for Site Investigation and Remediation dated May 2010 (DER-10).

2.2 Methodology

The RI intended to characterize site conditions by the advancement of soil borings and collecting and analyzing soil and groundwater samples.

2.2.1 Soil Characterization

Boring Advancement

Soil borings were advanced across the Site to facilitate the characterization of native material and fill material. To ensure complete coverage of the Site, a 50-foot by 50-foot grid was established across the Site, as shown on **Figure 2**, resulting in 26 grid locations. From the borings, fill and native soil samples were collected to document Site conditions.

A direct-push drilling rig was used to advance the borings. Each boring location was continuously sampled in four-foot intervals using a two-inch by four-foot steel sampling tube fitted with a disposable acetate liner. All non-disposable sampling equipment was decontaminated between runs and between drill locations to avoid potential cross contamination of samples.

Soils from the borings were screened in the field for visible impairment, olfactory indications of impairment, evidence of non-aqueous phase liquids (NAPLs), and/or indication of detectable VOCs with a photoionization detector (PID), collectively referred to as “evidence of impairment” and the results were recorded on boring logs.

Soil boring logs were prepared and include soil description, PID readings, etc. The boring logs are included in **Appendix B**.

Fill Sampling

Fill samples were collected from the borings based on evidence of impairment and to provide characterization across the Site. In 15 of the 26 grids, urban fill samples was collected and analyzed for the following:

- Target Compound List (TCL) volatile organic compounds (VOCs)
- TCL semivolatile organic compounds (SVOCs)
- TCL pesticides
- Polychlorinated biphenyls (PCBs)
- Target Analyte List (TAL) metals
- Total mercury
- Total cyanide
- Hexavalent chromium (from 4 of 15 samples only)

Additionally, four samples were collected from the urban fill for waste disposal characteristics. The waste characterization analysis included:

- Toxicity Characteristic Leaching Procedure (TCLP) VOCs

- TCLP SVOCs
- TCLP pesticides/herbicides
- PCBs
- TCLP metals
- Reactivity
- Corrosivity
- Ignitability

Fill samples were also collected from the perimeter of the Site to characterize off-site conditions. A total of 14 perimeter fill samples were collected and analyzed for the following:

- TCL SVOCs
- TAL metals

Native Soil Sampling

Native soil was visually assessed and sampled in each of the 26 grid locations. In order to assess the impact of fill on the underlying native soil, a soil sample was collected from the top two feet of native material in each grid location. In nine grid locations, an additional native soil sample was taken at a depth of 15 feet below grade. The 35 native soil samples were collected and analyzed for:

- TCL VOCs
- TCL SVOCs
- TCL pesticides
- PCBs
- TAL metals
- Total mercury
- Total cyanide
- Hexavalent chromium (from 12 of 35 samples only)

Based on the results, the 35 native soil samples also served as the final confirmatory samples during the subsequent remedial activities.

In addition to the samples collected at the top of the native material, three additional samples were collected at one-foot intervals below the first native soil sample. These deeper samples were submitted to the laboratory but held until the uppermost native sample was analyzed. When analytes exceeded the respective SCOs, the next deeper sample was analyzed for only the compounds that exceeded the SCO. When the concentrations in that sample also exceeded the SCOs, the next lower sample was analyzed and the results compared to the SCOs. The process was repeated for the third sample when necessary. The intent of this sampling scheme was to identify the depth of remedial investigation and used the sampling results as the confirmatory sample results for the IRMs.

2.2.2 Groundwater Characterization

To characterize groundwater conditions at the Site, five previously installed wells were sampled. The wells were distributed across the Site, as shown in **Figure 2.**

Groundwater sampling was conducted using low-flow purging and sampling techniques. Before purging the well, water levels were measured using an electric water level sounder capable of measuring to the 0.01-foot accuracy. Calibration times, purging volumes, water levels and field measurements were recorded in a field log and are included in **Appendix C**.

The first round of groundwater sampling was completed on February 9-10, 2017. The second round of groundwater sampling was completed approximately four weeks later on March 9-10, 2017.

The groundwater samples were analyzed for the following analytes:

- TCL VOCs
- TCL SVOCs
- TCL pesticides
- PCBs
- TAL metals
- Total mercury
- Total cyanide
- Hexavalent chromium

Well development and purge fluids were not allowed to infiltrate the ground surface of the Site. Water collected during sampling was placed in a specified on-site drum.

2.2.3 Quality Assurance/Quality Control Program

Table 1 summarizes the sampling program described in the sections above. Additionally, Quality Assurance/Quality Control (QA/QC) samples were collected based on the following minimum number of samples per media type:

- Soil samples (excluding waste characteristic samples)
    - Blind duplicate – 5%
    - Matrix Spike/Matrix Spike Duplicate (MS/MSD) – 5%
- Groundwater samples
    - Trip blank – 1 per shipment
    - Blind Duplicate – 5%
    - Matrix Spike/Matrix Spike Duplicate (MS/MSD) – 5%

Paradigm Environmental Services, Inc., a New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) certified laboratory, performed the analytical testing. The laboratory results for the samples were reported in a Category B deliverables package to facilitate validation of the data, and a third party validator reviewed the laboratory data to prepare a Data Usability Summary Report (DUSR). The validator evaluated the analytical results for the field samples and quality assurance/quality control samples and compared the findings to USEPA guidance to determine the accuracy and validity of the results.

A summary of the RI activities was submitted to the NYSDEC as monthly progress reports and will be included in the Final Engineering Report. All data submitted to the NYSDEC was in approved electronic data deliverable (EDD) format.

2.3 Findings

2.3.1 Geology and Hydrogeology

2.3.1.1 Site Geology

The following geologic information is based on observations made during the 2015 limited site characterization and the 2017 RI.

The Site generally slopes to the west at an approximate elevation of 593 feet above mean sea level. Urban fill is present at the Site at depths ranging from about one to seven feet below grade. Urban fill is defined as material coming from anthropogenic sources of the material re-worked to build a site to a defined grade. The urban fill material at the Site contains:

- Crushed Rock
- Sand
- Silt
- Clay
- Plastics
- Construction Debris
- Lumber Ash/Cinders
- Ceramics
- Bricks
- Metal

Native soil encountered beneath the fill consisted of Silty Clay – organic clays of medium to high plasticity and variable silt content with a reddish brown clay appearance.

Bedrock was encountered at depths ranging from 15 to 30 feet below grade. Bedrock was identified as dolostone with argillaceous partings and was characterized as light gray, thin to medium bedded, fine to medium grained dolomite. It also contained thin beds of dark gray, medium hard, thinly bedded shale. The upper several feet of bedrock have been mapped as the Akron Dolostone (Buehler and Tesmer 1963). Although difficult to discern, the contact with the underlying Bertie Formation appears to be 30 feet below ground surface. The upper portions of the Bertie Formation consist of dark gray shale and dolostone beds of variable thickness. Bedrock surface slopes steeply toward the Black Rock Canal from the Site.

2.3.1.2 Site Hydrogeology

The primary hydrogeologic unit identified beneath the Site is the unconfined water-table aquifer present in the Akron Dolostone and Bertie Formation. Groundwater was encountered at depths approximately 20 to 25 feet below ground surface. Groundwater in the bedrock flows through primarily secondary porosity features in the rock including faults, joints, solution cavities and bedding planes. Both the Akron Dolostone and Bertie Formation have little primary porosity so groundwater flow is controlled by the distribution of fractures within the rock.

Groundwater flows generally westerly towards the Black Rock Canal. Hydraulic conductivities from the bedrock wells ranged from 6.8 x 10-3 cm/second in MW-8D to 1.5 x 10-4cm/second in MW-13S.

2.3.2 Analytical Results

The following sections summarize and discuss the analytical results generated during the RI. Fill material, native soil, and groundwater samples were collected for chemical analysis to determine the magnitude and extent of potential contamination occurring in various media at the Site. A summary of the Phase I RI sampling program, including the number and type of QA/QC samples, is presented in **Table 1**.

For discussion purposes, this data was compared with the Standards Criteria and Guidance values (SCGs) applicable to each medium sampled, and included:

- Soil/Fill: NYSDEC's 6NYCRR Part 375 Environmental Remediation Programs: Part 375-6.8: Unrestricted, Residential, Restricted Residential, Commercial and Industrial Use Soil Cleanup Objectives; and

- Groundwater: NYSDEC's June 1998 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations in the Technical and Operational Guidance Series (TOGS) 1.1.1.

The associated Data Usability Summary Reports (DUSR) is included in **Appendix D**.

Consistent with NYSDEC guidelines, the ASP Category B deliverables are not presented as appendices to the RI Report. The data has been transmitted electronically to the NYSDEC in a format consistent with the Electronic Data Deliverable (EDD) Manual.

2.3.2.1 Subsurface Soil

Table 2 summarizes the analytical results and **Figure 4** shows the sampling locations and results. RI soil sampling totals include the following:

Urban Fill	11 Samples
Native / Confirmatory	35 Samples
Perimeter	14 Samples
Sub-slab	5 Samples

A total of 11 samples were collected from soil borings to further characterize the urban fill material. In addition, fill samples were collected from five locations beneath the concrete floor in the basement of the building.

2.3.2.1.1 Urban Fill

VOCs

One or more VOCs, including acetone, ethylbenzene, methylene chloride, tetrachloroethylene, toluene, trichloroethylene, 1,3,5-trimethylbenzene and trans-chlordane, were detected in nine of the 11 fill samples (sub-slab samples not included). Three samples contained concentrations of VOCs exceeding Unrestricted Use SCOs.

SVOCs

SVOCs were detected in eight of 11 fill samples. SVOCs, mainly PAHs, with concentrations exceeding Residential Use, Restricted Residential Use and Commercial Use were detected in four of the 11 fill samples. Of those, SVOCs were detected at concentrations exceeding Industrial Use SCOs in three samples.

Pesticides

Pesticides were detected in all 11 of the fill samples. Five samples contained one or more pesticides at concentrations that exceeded the Unrestricted Use SCOs. Analytes detected at concentrations that exceeded the Unrestricted Use SCOs included DDE in one sample, DDT in five samples, DDD in two samples, and dieldrin in one sample.

PCBs

PCBs were detected in one of the 11 fill samples. However, no analytes were detected at concentrations that exceeded the Unrestricted Use SCOs.

Metals

Metals were detected in all of the 26 sample grid locations. Analytes detected at concentrations that exceeded the Unrestricted Use SCOs included arsenic, chromium, copper, lead, manganese, mercury, nickel, selenium, silver, and zinc. Arsenic was also detected at a concentration that exceeded the Industrial Use SCOs in one sample. Chromium was also detected at a concentration that exceeded the Residential Use SCO in one sample. Copper was also detected at a concentration that exceeded the Commercial Use SCO in one sample.

2.3.2.1.2 Perimeter Soil

Fourteen fill samples were collected from the perimeter of the Site to characterize off-site conditions. Each of the samples were analyzed for TCL SVOCs and TAL metals. **Table 3** summarizes the analytical results, and **Figure 4** shows the sampling locations and results.

SVOCs

SVOCs were detected in ten of the fourteen perimeter fill samples. Seven samples contained two or more SVOCs at concentrations exceeding Unrestricted Use SCOs. Analytes detected at concentrations that exceeded Unrestricted Use SCOs included benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, and indeno(1,2,3-c,d)pyrene.

Metals

Metals were detected in all fourteen perimeter fill samples. Ten samples contained one or more metals at concentrations exceeding Unrestricted Use SCOs. Analytes detected at concentrations that exceeded Unrestricted Use SCOs included arsenic in three samples, chromium in one sample, copper in six samples, lead in seven samples, manganese in one sample, mercury in eight samples, and zinc in six samples.

2.3.2.1.3 Sub-Slab Soil Sampling

Five sub-slab samples were collected from within the building. Each of the samples were analyzed for TCL VOCS, SVOCs, pesticides, PCBs, TAL metals, total cyanide (total cyanide sampled in four of five samples), total mercury, and hexavalent chromium (hexavalent chromium sampled in one of five samples). **Table 4** summarizes the analytical results and **Figure 4** shows the sampling locations and results.

VOCs

VOCs were detected in three of the five sub-slab soil samples. Analytes detected included acetone, chloroform, tert-butyl methyl ether, and tetrachloroethylene (PCE). However, no analytes were detected at concentrations that exceeded the Unrestricted Use SCOs.

SVOCs

SVOCs were detected in two of the five sub-slab soil samples. Analytes detected included chrysene, fluoranthene, and pyrene. However, no analytes were detected at concentrations that exceeded the Unrestricted Use SCOs.

Pesticides

Pesticides were detected in three of the five sub-slab soil samples. Analytes detected included DDD, cis-chlordane, endosulfan sulfate, and endrin. However, no analytes were detected at concentrations that exceeded the Unrestricted Use SCOs.

PCBs

No PCBs were detected.

Metals

Metals were detected in all five sub-slab soil samples. Analytes detected included arsenic, barium, beryllium, chromium, copper, lead, manganese, mercury, nickel, silver, and zinc. However, no analytes were detected at concentrations that exceeded the Unrestricted Use SCOs.

While VOCs, SVOCs, pesticides, and metals were detected, no analytes were detected at concentrations exceeding the Unrestricted Use SCOs beneath the existing structure.

2.3.2.1.4 Native Soil

Table 2 summarizes the analytical results and **Figure 5** shows the sampling locations and results.

VOCs

One or more VOCs were detected in 16 of the 35 native soil samples. The VOCs detected include acetone, methylene chloride, tetrachloroethylene and trichloroethylene. However, all concentrations, except for those in two samples, were below Unrestricted Use SCOs. Acetone was detected in concentrations exceeding Unrestricted Use SCOs in D1 12 feet and F2 5-6 feet. Acetone concentrations in D1 12 feet slightly exceeded SCOs, a second sample was collected from this location at 12 feet below ground surface and analyzed for VOCs only. Acetone concentrations were not detected in the second D1 sample. The next interval (6-7 feet) for F2 contained no acetone concentrations.

SVOCs

SVOCs, primarily polycyclic aromatic hydrocarbons (PAHs), were detected in four of the 35 native soil samples below Unrestricted Use SCOs.

Pesticides

Two samples of the 35 native samples contained pesticides. However, sample concentrations of the pesticides were below the Unrestricted Use SCOs.

PCBs

There were no PCBs detected in the native soil samples.

Metals

More than one metal was detected in all 35 native soil samples. Ten of the 35 native soil samples contained one or more metal concentrations above Unrestricted Use SCOs. Deeper soil samples were analyzed for the specific metal that exceeded SCOs. This process was continued until the metal concentrations were analyzed below Unrestricted Use SCOs (**Figure 7** presents estimated excavation depths to achieve Unrestricted Use SCOs).

2.3.2.2 Groundwater

Two groundwater sampling events took place in February 2017 and March 2017. Groundwater samples were collected from the existing five monitoring wells. The groundwater samples were analyzed for TCL VOCs, SVOCs, pesticides, PCBs, TAL metals, total mercury, total cyanide, and hexavalent chromium. **Table 5** summarizes the analytical results for the groundwater samples, and the locations of monitoring wells are depicted on **Figure 6**.

VOCs

VOCs were detected in all wells, but only four of the five wells (MW-16, MW-17, MW-11, and MW-3) contained VOCs at concentrations that exceeded NYS TOGS.

The first groundwater sample from MW-16, located on 1340 Niagara Street, contained concentrations of PCE (10.9 ug/L), cis-1,2-DCE (286 ug/L), and vinyl chloride (273 ug/L). The standards are 5.0 ug/L, 5.0 ug/L, and 2.0 ug/L, respectively. PCE was not detected in the second round of sampling. Increased concentrations were detected in the second round for cis-1,2-DCE (437 ug/L) and vinyl chloride (298 ug/L).

MW-17, also located on 1340 Niagara Street, contained only vinyl chloride (7.3 ug/L) at concentrations that exceeded NYS TOGS. Vinyl chloride concentrations decreased to 4.58 ug/L in the second round of sampling; this concentration still exceeded NYS TOGS.

The first groundwater sample collected from MW-11, located on 1360 Niagara Street, has concentrations of 1,1-DCE (88.2 ug/L), cis-1,2-DCE (14.8 ug/L) and vinyl chloride (68.7 ug/L), which are above NYS TOGS values of 5.0 ug/L, 5.0 ug/L, and 2.0 ug/L, respectively. The second round of groundwater sampling indicates increased concentrations to the same analytes: 1,1-DCE (121 ug/L); cis-1,2-DCE (19.5 ug/L); and vinyl chloride (96 ug/L).

The first groundwater sample from MW-3, located on 1360 Niagara Street and the closest monitoring well to the ChemCore Site, contained acetone (11,000 ug/L), cis-1,2-DCE (128 ug/L), and methyl ethyl ketone (4,980 ug/L) at concentrations that exceeded NYS TOGS which are 50 ug/L, 5 ug/L, and 50 ug/L, respectively. The second round of groundwater sampling indicated a decrease in the concentration of acetone (9,560 ug/L) and an increase to cis-1,2-DCE (139 ug/L) and methyl ethyl ketone (8,700 ug/L).

SVOCs

SVOCs were detected only in MW-3 and at concentrations that exceeded NYS TOGS.

The first groundwater sample from MW-3 detected phenol at a concentration of 5,570 ug/L while the second groundwater sample detected an increase in concentration to 10,700 ug/L. The NYS TOGS for phenol is 1.0 ug/L.

Pesticides

Pesticides were detected only in MW-3 and at concentrations that exceeded NYS TOGS.

Multiple pesticides were detected in the first round of sampling in MW-3 above NYS TOGS which included: DDD, alpha-BHC, lindane, and heptachlor. The second round of sampling only detected one pesticide, alpha-BHC, at a concentration above NYS TOGS.

PCBs

No PCBs were detected.

Metals

Metals were detected in all wells, but only two of the five wells (MW-17 and MW-3) contained metals at concentrations that exceeded NYS TOGS.

The first groundwater sample from MW-17 detected selenium (12 ug/L) at a concentration that exceeded the NYS TOGS value of 10.0 ug/L. Selenium was not detected in the second round of sampling.

The first groundwater sample from MW-3 detected barium (5,120 ug/L), manganese (1,720 ug/L) and selenium (21.6 ug/L) at concentrations above NYS TOGS which are 1000 ug/L, 300 ug/L, and 10 ug/L, respectively. The second round of sampling indicated these concentrations were similar to the first round.

2.3.2.3 Sub-Slab Soil Vapor

Three sub-slab soil vapor samples were collected from basement and first floor of the building. **Table 6** summarizes chlorinated volatile organic compound (CVOC) results regulated by the

NYSDOH. **Figures 8 and 9** shows the sample locations. NYSDOH organizes CVOC standards in matrices based on analytes detected in sub-slab and indoor air samples. Indoor air samples were not requested for this assessment. Moreover, the building is undergoing major renovations; collecting indoor air samples at this time would not accurately represent the future indoor atmosphere while the building is occupied by tenants. Some CVOCs were detected in sub-slab samples; however, these concentrations are low and, based on the NYSDOH matrices, would not require further action.

These results corroborate an earlier study at the Site. On October 3, 2015 Watts Architecture & Engineering collected two air samples from the basement. A sub-slab sample was collected in the northwestern portion of the basement in the Boiler Room and an indoor air sample was collected at the northeastern portion of the basement. These samples were collected prior to renovations and when the building was operated by Garrett Leather. One analyte, methylene chloride, was detected in the indoor air sample above NYSDOH guidance; however, as noted in the Watts Report, the basement was used as a wood shop and machine shop. Chemicals used in these areas could have impacted the indoor air sample. Additionally, methylene chloride is not one of the CVOCs of concern at the Chem-core Site. As part of the reuse of the building, all existing chemicals in the basement were removed and properly disposed.

2.3.3 Contaminant Assessment

2.3.3.1 Nature, Extent, and Source of Contamination

Subsurface Soil

Urban fill and contaminated soil are present at the Site at depths ranging from approximately one to seven feet below grade. Contaminated urban fill extends horizontally throughout the entire Site. Based on the RI, the known contaminants of concern in the urban fill include VOCs, SVOCs, and metals including arsenic, chromium, copper, lead, manganese, mercury, nickel, selenium, silver, and zinc.

The variation in analyte concentrations across the Site indicates that the source of contamination in soil samples is the variable urban fill material and no discrete source is located on-site or off-site. Contaminated soil is expected to be limited to the fill material.

Groundwater

Groundwater contamination exists at the Site at 20 - 25 feet below grade within the bedrock due to a migrating groundwater plume containing chlorinated solvents emanating from ChemCore Site. Groundwater sample results show that the plume from the ChemCore Site still impacts the fractured bedrock underneath the 1360 Niagara Street Site. Recent sampling has shown that the vast majority of the contaminant impacts remain within the groundwater on the ChemCore Site. However, the remedial efforts at the ChemCore Site have significantly reduced the groundwater contaminant concentrations at the 1360 Niagara Street Site, although concentrations above the TOGS values continue to exist at the Site.

In addition to the chlorinated solvent contamination, other contaminants were observed only in MW-3. The anomalous results in the samples collected from MW-3 suggest that anaerobic fermentation of the vegetable oil has created conditions in MW-3 that resulted in producing concentrations of VOCs, SVOC and metals above NYS TOGS. This conclusion is based on the following:

- Previous reports show that bioremediation was conducted using the vegetable oil product EOSTM manufactured by EOS Remediation LLC. EOSTM is a water-mixable vegetable oil which based on the manufacturers claim, “provides a long lasting source of carbon for enhanced in situ anaerobic bioremediation.” This product was used as the food source for anaerobic bacteria to facilitate the de-chlorination of PCE and TCE.

- Research into the use of vegetable oil for bioremediation of chlorinated solvents has indicated that a possible consequence of poor delivery of the injection fluid into the subsurface with low permeability and/or low groundwater flow can result in the formation of excess organic acids which lowers the local pH of the groundwater around the injection point and creates an environment suitable for fermentation-based reactions.1 “This environment can create low pH conditions that are detrimental to methanogenic bacteria. Thus the formation of undesirable byproducts, including acetone and 2-butanone has been observed at sites where reagent dosing has commenced without careful monitoring of groundwater conditions near the injection wells.”2

- Slow rates of groundwater flow have clearly not removed the vegetable oil from MW-3 and have resulted in producing conditions in which anaerobic bacteria flourish. This has resulted in byproducts, acetone and 2-butanone, from anaerobic fermentation. Concentrations of acetone and 2-butanone now exceed NYS TOGS.

- Phenol is typically produced through commercial methods by chemical oxidation of cumene to produce phenol and acetone. It is possible for naturally occurring yeasts to produce a variety of phenolic compounds that could have resulted in the production of phenol and its detection by the laboratory.3 Other studies have shown that phenol can be produced by bacteria if given a sufficient resource of amino acids.4 Therefore, the injected vegetable oil could provide the nutrients needed for specific bacteria and/or yeasts to produce phenol and other phenolic compounds that were detected by the laboratory.

- A further consequence of anaerobic fermentation is the creation a weak acidic environment in groundwater surrounding the bedrock. This acidic environment may have increased the solubility of certain metals from the surrounding bedrock, causing the higher concentrations of barium, manganese and selenium.

The most likely explanation for the concentrations of VOC, SVOC and metals in MW-3 is from the inefficient application of vegetable oil into the fractured bedrock. In addition to VOCs, SVOCs and metals, some pesticides were detected only in MW-3. The presence of pesticides only in this location suggests that these concentrations are isolated to MW-3; however, the cause of these concentrations is unknown at this time.

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[1] Suthersan, Suthan S., Lutes, Christopher C., Palmer, Peter L., Lenzo, Frank, Payne, Fredrick C., Liles, David S., and Burdick, Jeffrey, “Final: Technical Protocol for Using Soluble Carbohydrates to Enhance Reductive Dechlorination of Chlorinated Aliphatic Hydrocarbons,” Air Force Center for Environmental Excellence and Environmental Security Technology Certification Program (2002): 59.
[2] Suthersan, 59.
[3] Ghosh, Suman, Kebaara, Bessie W., Atkin, Audrey L., and Nickerson, Kenneth W., “Regulation of Aromatic Alcohol Production in *Candida albicans*.” American Society for Microbiology (2008).
[4] Wierckx, Nick J., Ballerstedt, Hendrik, de Bont, Jan A.M., and Wery, Jan, “Engineering of Solvent-Tolerant *Pseudomonas putida* S12 for Bioproduction of Phenol from Glucose.” American Society for Microbiology (2005).

Sub-Slab Soil Vapor

Based on the previous indoor air sampling and the recent sub-slab vapor sampling, soil vapor intrusion is not a concern at the Site.

The likely reasons for the lack of soil vapor intrusion impacts at the Site is related to the depth of groundwater and the Site's geology. **Figures 10, 11 and 12** presents geological cross-sections of the Site. The following can be ascertained from the geological cross-sections:

- Water levels are generally 25 feet below ground surface.
- Top of bedrock is generally 10 – 11 feet below ground surface.
- The water table exists approximately 15 feet into the bedrock.
- Overtop the bedrock is dense clay soil that is approximately 6 – 8 feet thick.

The remaining contamination from the Chem-core Site is limited to the groundwater located in the fractured bedrock. Considering the depth of groundwater and dense impermeable clay layer over top of the bedrock, it is reasonable to conclude these geological characteristics will greatly reduce the potential for soil vapor intrusion from contaminated groundwater.

2.3.3.2 Contaminant Fate and Transport

The probable fate and transport of contaminants detected on the Site is a function of the properties of the individual contaminants and available pathways for the contaminants to migrate. The Site is currently unoccupied. Redevelopment of the industrial building to a mixed use residential and commercial structure is planned. The degree to which, as well as the route by which, contaminants migrate is dependent on the physical characteristics of the site and the type and distribution of contaminants. The following sections discuss the probable fate and transport of contaminants in the different types of media at the Site.

Contaminants of concern were associated with urban fill located on the Site. Constituents in the fill included VOCs, SVOCs, and metals. Additionally, groundwater at the Site contained VOCs from a spill at an upgradient site.

The PAHs detected are characterized by low water solubilities and, therefore, have a tendency to adsorb onto soil particles. Because of their low vapor pressures, compounds with five or more aromatic rings, which include a majority of the detected PAHs, will exist mainly adsorbed to airborne particulate matter, such as fly ash and soot. Those with four or fewer rings, such as benzo(a)anthracene, will occur both in the vapor phase and adsorbed to particles. The detected compounds have relatively low vapor pressures and are expected to remain in a solid or liquid state and undergo degradation via naturally occurring microbes. Due to the low solubility, these contaminants are not expected to impact groundwater quality or migrate substantially into the subsurface. This is supported by the lack of these compounds in the on-site groundwater.

Heavy metals, such as arsenic, chromium, nickel and lead, are non-biodegradable pollutants, that are generally transported through anthropogenic activities. In contaminated soils, they tend to persist for many years in the surface layers of soil. In aquatic systems, heavy metals may become blocked as sinks in bottom sediments, where they may remain for many years. Metals can be remobilized in water if the pH falls increasing heavy metal solubility increases. Due to the low solubility, these contaminants are not expected to impact groundwater quality or migrate substantially into the subsurface. This is supported by the lack of these compounds in the on-site groundwater.

Contaminants of concern in the groundwater at the Site include VOCs. Groundwater sampling indicated that contaminants from the ChemCore Site, including PCE, TCE and its common daughter compounds (1,1-Dichloroethane, cis-1,2-Dichloroethene, trans-1,2-Dichloroethene and vinyl chloride) still impact the groundwater within the fractured bedrock underneath the ChemCore and 1360 Niagara Street Sites at depths of approximately 30 to 50 feet below grade.

Chlorinated VOCs are not strongly sorbed to soil and will transport easily through the soil into saturated zones. Due to chemical properties of chlorinated VOCs, such as trichloroethylene, a portion of the chlorinated VOC will solubilize in water, while the rest will continue to move downward through the water column until a low permeability layer is encountered. Chlorinated VOCs degrade by hydrolysis and biologically through anaerobic dehalogenation; however, depending on environmental conditions, complete degradation may take years.

Based on the recent remediation of the ChemCore Site, including the removal of the contaminant source, concentrations of chlorinated VOCs are expected to continue to decrease.

2.3.3.3 Evaluation of Potential Receptors

The 1360 Niagara Street Site is located in the City of Buffalo’s West Side along Niagara Street in an area that is characterized by commercial uses and vacant industrial and commercial uses. A vacant commercial lot is located to the north, an auto dealer, auto body shop, Buffalo Sewer Authority metering station, and restaurant to the east, shop and vacant industrial land to the south, and the railroad, Interstate-190, and Niagara River to the west. The surrounding area is serviced by the municipal water supply system from the City of Buffalo.

The Site currently consists of a four-story building with a basement and a parking area, which is a combined total of approximately 80,000-square-feet. Vacant land that was previously developed with buildings, which have since been demolished, is located on the southern portion of the Site. Currently, the Site is unoccupied. Redevelopment of the industrial building to a mixed use residential and commercial structure is planned. Access to the Site is currently restricted by perimeter fencing. However, access to trespassers is possible if they should climb the fence.

Under current conditions, potential human receptors include persons working or trespassing on the Site; persons living and working in the area surrounding the Site; and persons involved in utility work on and adjacent to the Site. In addition, potential environmental receptors include wildlife living on and migrating through the Site (e.g., rodents, birds, etc.). The Site and surrounding area within one-quarter mile of the Site consists of urban land that is proximate to the Niagara River. A review of information concerning endangered and threatened species in Erie County, available via the NYSDEC Environmental Resource Mapper indicated that rare plants and rare animals were identified on the site according to the State’s databases. Wildlife present at the Site was determined using the NYSDEC Nature Explorer. The information in New York Nature Explorer was prepared by the New York State Department of Environmental Conservation using the data currently available. In addition, the species and locations reported by online tool are not a definitive statement about the presence or absence of all plants and animals, including rare or state-listed species, and of all significant natural communities. According to the NYSDEC

Nature Explorer, this generalized area is a waterfowl winter concentration area. Nonetheless, the Site is not located in or substantially contiguous to a Critical Environmental Area designated pursuant to Article 8 or the ECL and 6 NYCRR 617, nor are any state or federally designated wetlands located on or adjacent to the project site.

The planned future use of the Site is for a mixed use commercial and residential development. The redevelopment of the Site will need not be controlled through the implementation of engineering or institutional controls due to Unrestricted Use cleanup.

2.3.3.4 Potential Exposure Pathways

Surface Soil

Under the current use, persons living and working in the vicinity of the project site and/or persons trespassing on the site could be exposed to SVOCs and metals in the surface soil via inhalation of airborne particles, incidental ingestion of, or dermal contact with the contaminated media.

Construction workers, site visitors and persons living, working and traveling through the area near the project site could be exposed to the SVOCs and metals in the surface soil during excavation of the contaminated soil in connection with site redevelopment. Potential exposure routes for these receptors include inhalation of contaminated dust and incidental ingestion of, and/or dermal contact with the contaminated soil/fill. However, the use of appropriate personal protective equipment, dust suppression techniques and personal/air monitoring, and the development and implementation of a Health and Safety Plan (**Appendix I**) would minimize the risk of exposure during this stage of the project.

No complete exposure pathways to the chemical contaminants in the surface soil have been identified in connection with the post-redevelopment period.

Urban Fill

The presence of elevated concentrations of VOCs, SVOCs, and metals in subsurface fill is not interpreted to represent a human or environmental exposure risk because no complete exposure pathways were identified under the current use scenario for the Site. This is a function of the subsurface disposition of the contamination, which effectively minimizes the potential for the incidental ingestion of, or dermal contact with the contaminated media. These factors also reduce the potential for the emission of vapors and particulates that could pose an exposure risk via inhalation. This applies to persons living, working and traveling through the area surrounding the Site, as well as persons visiting, working or trespassing on the Site.

During excavation of the contaminated soil/fill in connection with site redevelopment activities, environmental receptors, construction workers, site visitors and persons living, working and traveling through the project site could be exposed to VOCs, SVOCs, pesticides, and metals in the subsurface soil/fill. Potential exposure routes for these receptors include inhalation of contaminated dust and incidental ingestion of and/or dermal contact with the contaminated soil/fill. However, the use of appropriate personal protective equipment, dust suppression techniques and personal/air monitoring, and the development of a Health and Safety Plan would minimize the risk of exposure during this stage of the project.

Groundwater

There is a ban on groundwater use as a public drinking water supply in the City of Buffalo; therefore, no groundwater in the vicinity of the project site is utilized as a source of potable water. Therefore, no human exposure via ingestion of contaminated groundwater is likely.

Sub-Slab Soil Vapor

The present conditions at the Site support the conclusion that soil vapor intrusion for the Site will not be a health risk or concern in the future for the following reasons:

- All SVI testing to date has shown no CVOC levels in excess of NYSDOH action levels.
- There are no sources of CVOCs on site.
- There is no potable water use in the City of Buffalo.
- The impermeable clay layer between the building and the groundwater, which is present 20 to 25 feet below grade in the bedrock, will act as a significant barrier to vapor migration.
- The present project planned for the Site has a parking level at the ground floor, thus also eliminating soil vapor concerns for this building.

2.3.3.5 QA/QC/DUSR

Quality control samples were collected from the samples to characterize the contamination and document the RI activities. The RI Work Plan stated that 10% of the samples would be collected for QA/QC.

Ninety-three (93) soil samples were collected during the RI activities; 11 QA/QC samples were taken, 6 blind duplicates and 5 Matrix Spike/Matrix Spike Duplicates; meeting the 10% criteria. Over two groundwater sampling events, a total of ten groundwater samples were taken with an additional four QA/QC samples, two blind duplicates and two MS/MSD; also meeting the 10% criteria.

A third-party data consultant, Data Validation Services, is currently preparing the Data Usability and Summary Report ("DUSR") as required in the RI/IRM Work Plan. Once complete, the DUSR will be included as **Appendix D.** The following items will be reviewed:

- Laboratory Narrative Discussion
- Custody Documentation
- Holding Times
- Surrogate Standard Recoveries
- Matrix Spike Recoveries. Duplicate Recoveries
- Blind Field Duplicate Correlations
- Preparation/calibration Blanks
- Laboratory Control Samples (LCSs)
- Calibration/Low Level Standards

- ICP Serial Dilution
- Instrument MDLs
- Sample Result Verification

3 INTERIM REMEDIAL MEASURES

3.1 Introduction

Interim Remedial Measures were implemented to remove contaminated fill material across the Site. As part of the IRMs, the following were identified as steps to remediate the soil at the Site:

- Removal of approximately 21,693.43 tons of contaminated soil and urban fill for off-site disposal or treatment at a regulated facility.
- Removal of 5,000-gallon, 4,500-gallon and 7,500-gallon underground storage tanks.
- Removal of 4,500-gallon tank used for storing mineral oil.
- Confirmatory soil sampling generated during the RI and IRMs to show compliance with the Unrestricted Use Soil Cleanup Objective.
- A total of 27 groundwater monitoring wells were decommissioned on-site. These monitoring wells were used to evaluate off-site groundwater contamination from the Chem-core Site.
- Mitigation of asbestos containing materials and addressing lead-based paint within the building.

This section of the report will identify the steps taken to remediate the Site and how successful the actions were to achieve the stated Unrestricted Use Soil Cleanup Objective set forth in the IRM Work Plan. The IRM Work Plan proposed excavation and disposal of contaminated soil and solid materials.

The NYSDEC Soil Cleanup Objectives ("SCOs") outlined in 6NYRR Part 375-6.8(b), effective December 14, 2006, include SCOs that are based on protection of human health, groundwater, and ecological resources. The SCOs are based on the following site uses:

Unrestricted Use: This land use category is intended to be representative of pre-disposal conditions and requires no restrictions on the use of the site. The unrestricted use soil cleanup objectives represent the concentration of a contaminant in soil which will require no use restrictions on the site for the protection of public health, groundwater and ecological resources due to the presence of contaminants in the soil.

Residential Use: This land use category is intended for single family housing and requires the fewest restrictions on the use of the site. It allows only two restrictions: a groundwater use restriction and / or a prohibition against producing animal products for human consumption.

Restricted-Residential Use: This land use category is intended for apartments, condominium, co-operative or other multi-family / common property control residential development. In addition to the restrictions for residential use, this use prohibits vegetable gardens, unless planted in gardens where the soil achieves the residential use soil cleanup objectives; and a prohibition of single-family housing. Restricted-Residential use is the appropriate use category for the following:

- Day care or other child care facilities;
- Elementary or secondary schools; or
- College or boarding school residential buildings; and

This use allows for active recreational uses, which includes recreational activities with a reasonable potential for soil contact, such as:

- Designated picnic areas;
- Playgrounds; or
- Natural grass sports playing fields, including surrounding unpaved spectator areas.

The results of the Remedial Investigation, as discussed above, were used to pre-determine the extent of excavation. Although initially planning to reach Restricted Residential Use SCOs, the RI encountered native soils that met the Unrestricted Use SCOs at relatively reasonable depths. Based on these findings, the IRMs achieved an Unrestricted Use, or Track 1, Cleanup for the entire Site.

3.2 Site Preparation

Site preparation activities included installation of perimeter fencing and site clearing including the removal of debris, shrubs, and vegetation (including root masses) from the remedial excavation areas using an excavator and chainsaw. This wood debris was staged on the southeast portion of the Site until it was disposed. In addition, the concrete lot was removed prior to excavation of the soil.

SJB were on-site from April 18, 2017 through April 20, 2017 to close existing groundwater monitoring wells. A total of 27 monitoring wells were grouted in-place using the tremie grout technique. Monitoring wells were grouted to ground surface with at least five feet of casing removed during the mass excavation.

3.3 Excavation/Removal

3.3.1 Urban Fill Removal

Soil excavation was initiated on April 10, 2017. The excavation was conducted to remove all contaminated soil and fill material for off-site disposal. Fill excavated from the Site was not reused at other sites. The depth of the excavation was based on the sampling completed during the RI and was originally estimated to be one to seven feet. Since the RI sampling included one native soil sample from each 50-foot by 50-foot grid location, these native samples were used as confirmation samples for the IRM portion. The work included the removal of **all** contaminated soils and fill material in the southern portion of the Site as well as around the former Garrett Leather Building.

During excavation, a former basement containing fill material was discovered. The excavation in this portion of the Site was deeper, to bedrock 14 feet below ground surface, than expected and extended to below the former basement floor.

Excavated fill was direct-loaded onto trucks for off-site disposal. Good housekeeping practices were followed during excavation activities to prevent leaving contaminated material on the ground surface and from being tracked onto the road during transportation. Transportation of all wastes was completed by properly permitted vehicles. To the extent practicable, trucks traveled along routes that avoided residential areas.

C&S provided full-time construction observation of the excavation/removal activities. C&S created daily logs for each day on-site that described the work completed, problems encountered, and other pertinent observations. The daily logs also included photographs documenting the progress of the work. **Appendix E** contains the daily logs.

C&S collected confirmatory samples during the RI. The results were compared to the Unrestricted Use Soil Cleanup Objective in the Work Plan. Where sample concentrations exceeded that threshold, additional soil was excavated and disposed off-site. Deeper excavations were also completed based on visual observance.

Contaminated soil and fill material was loaded onto dump trucks and transported to an appropriate disposal facility. The material included:

- A total of 21,693.43 tons of contaminated soil and fill material was disposed at Tonawanda Terminals Landfill in Niagara Falls, New York.
- A total of 5.4 tons of electric poles and rail road ties was disposed at Chaffee Landfill in Chaffee, New York.
- A total of 80 truckloads of concrete was transported to Swift River in Tonawanda, New York for recycling.
- A total of nine truckloads of scrap steel was transported to Metalico Buffalo in Buffalo, New York.

The disposal manifests and weight tickets are enclosed in **Appendix F**.

3.3.2 Petroleum Storage Tank Removal

A closed steel tank of approximately 5,000 gallons was found on the 1340 Niagara Street property (grid location F5). The design of the tank indicates that it was constructed around 1945 or earlier. No records were found regarding the closing of the tank, although at some point, the tank was closed in-place and backfilled with concrete.

Soil beneath the tank was screened for visual and olfactory observation of petroleum or similar impacts. Due to the observation of a petroleum-like odor, the underlying soil was excavated to bedrock. The steel tank was removed, crushed and placed in a roll-off container to be recycled, concrete was crushed and sent to the landfill.

Two discrete samples were collected from the UST excavation on April 20, 2017 which included a sidewall and bottom (1 inch above bedrock) sample after the petroleum odor-containing soil was excavated. The samples were analyzed for VOCs and SVOCs. Neither VOCs nor SVOCs were detected in the north sidewall sample. VOCs and SVOCs were detected in the bottom sample at concentrations that did not exceed the SCOs. Detected VOCs included 1,2,4-trimethylbenzene, naphthalene, n-butylbenzene, and p-isopropyltoluene while detected SVOCs included 2-methylnaphtalene and phenanthrene. The excavation to bedrock was determined to be effective as the soil results did not exceed the SCOs.

A second tank was removed from the basement of the former Garrett Leather Building. A 4,500-gallon rectangular steel tank was installed in the northwest corner of the basement and used to store fuel oil for the heating system. The tank was emptied and dried in 1998 by the Elmwood Tank & Piping Corporation. Prior to removal, the air inside the tank was measured at multiple levels with a PID. In addition, VOC air monitoring was conducted around the outside of the tank continuously during the removal process. No VOCs were detected inside or outside the tank. As a precaution, the interior floor of the tank was covered with absorbent powder prior to removal. On Saturday May 6, 2017, the tank was cut into sections and removed from the basement and placed in a roll-off container for recycling. Once the tank was removed, the floor and walls of the basement was inspected for evidence of petroleum spills and/or leaks. The floor and walls were in good condition, no cracks were observed in the concrete, and no staining was present on the floor.

A third tank was encountered on the south side of the former Garrett Leather Building at 1360 Niagara Street. The steel tank was approximately 7,500 gallons and based on its construction the tank may have been built prior to 1945. The tank had been closed in-place with flowable fill at an unknown date. On June 28, 2017, the tank was removed and the urban fill underneath the tank exhibited a slight petroleum-like odor. The fill material was excavated to native material. Since the tank was bordered by concrete wall/foundations only a bottom sample was collected. The bottom sample was analyzed for VOCs, SVOCs and PCBs, and no analytes were detected above Unrestricted Use SCOs in the sample.

A fourth tank was removed from the basement of the former Garrett Leather Building. A 4,500-gallon rectangular steel tank was installed in the west side of the basement and used to store mineral oil. The inside of the tank was inspected by C&S. At the time of the inspection, the tank was empty and dry. Prior to removal, the air inside the tank was measured at multiple levels with a PID. In addition, VOC air monitoring was conducted around the outside of the tank continuously during the removal process. No VOCs were detected inside or outside the tank. The tank was cut into sections and removed from the basement and placed in a roll-off container for recycling. Once the tank was removed, the floor and walls of the basement was inspected for evidence of spills and/or leaks. The floor and walls were in good condition, no cracks were observed in the concrete, and no staining was present on the floor.

Table 7 summarizes the analytical results for soil samples collected around removed USTs, and the disposal manifests and weight tickets are enclosed in **Appendix F**.

3.4 Backfilling

The excavation at the Site was backfilled to grade with material such as clean sand and crushed stone. Backfill data was submitted to the NYSDEC on March 9, 2017. **Appendix G** provides backfill submittals and NYSDEC approval. Once the target depth was reached and conditions were documented and surveyed, clean fill (crushed stone and/or sand) was brought on-site and placed in multiple lifts. Backfilling occurred concurrent with excavation activities.

Sand Backfill

The native sand material originated from the 2014 construction of the new John R. Oishei Children's Hospital located at 818 Ellicott Street. This material was excavated for the installation of the building's sub-grade structures. Due to the proximity of the Children's Hospital site to a former BCP site located at 1001 Main Street, C&S was asked to screen soils, during the 2014 construction, as they were excavated. Soils that exhibited petroleum odors were segregated and disposed at a landfill.

Pinto stockpiled 4,880.84 cubic yards of clean sand material at their property located at 1070 Seneca Street. Due to the size and depth of the pile an excavator was used to dig 15 test pits across the entire pile. The sand material consists predominately of fine grain sand mixed with some silt and clay. Based on an estimated volume of 5,000 cubic yards the sampling plan included a total of fifteen (15) samples for VOCs and six (6) for full DER-10 parameters [Metals (including mercury and hexavalent chromium), cyanide, SVOCs, pesticides, PCBs].

All analytes were below Unrestricted Use SCOs.

A total of 1,827 cubic yards of clean sand material was used as backfill for the Site.

Crushed Stone

The crushed stone backfill was obtained from Buffalo Crushed Stone's Wehrle / Barton quarry in Clarence, New York. This material was produced from a virgin stone source. A total of 10,280.35 tons was used for the Site.

3.5 Air Monitoring

C&S performed air monitoring at all times when ground intrusive activities and activities associated with contaminated material removal were being conducted as per the NYSDOH Generic CAMP (CAMP).

A Community Air Monitoring Plan (**Appendix J**) was developed and implemented for this Site. Particulate monitors were placed at upwind and downwind locations, depending on the work area and wind direction. The monitors were calibrated each day. Measurements of particulate (dust) concentrations were continuously monitored and logged every 5 minutes. **Appendix H** provides logged summaries for particulate concentrations. Air monitors were moved throughout the day as needed, as winds shifted direction. In addition, VOCs were also monitored using a photoionization detector (PID) at upwind and downwind locations. The PIDs were calibrated each day.

The action threshold for VOCs established in the CAMP is 5 ppm above background No exceedances of VOC concentrations occurred during mass excavation.

A particulate monitor was also used to monitor for PM-10, the action level was set at 100 micrograms per cubic meter over background during a 15-minute average. If this limit was exceeded dust suppression techniques were employed, including using water to wet the area and sweeping sediment. In a few instances, dust concentrations began to rise and dust suppression techniques (wetting of the working area) were employed. The monitoring results indicated that these measures were successful in limiting exposure to fugitive dust during excavation and that dust did not impact downwind receptors during the course of the project.

3.6 Erosion and Dust Controls

As part of the remedial actions performed at the Site, measures were needed to limit erosion and dust generation. Erosion control and dust suppression techniques were employed as necessary to limit erosion and fugitive dust generated in disturbed areas during remediation and redevelopment activities. Such techniques were employed even if the community air monitoring results indicated that particulate levels were below action levels. In a few instances, water was applied to the haul roads to mitigate fugitive dust from the clean crushed stone backfill.

3.7 Confirmatory Sampling

The RI determined the depth of impacts from the overlying urban soil. Since excavation depths were determined from the RI results, additional confirmatory sampling was not necessary. Confirmatory samples were collected underneath and on accessible sidewalls of the two removed USTs. All confirmatory samples for the removed USTs indicate concentrations were below Unrestricted Use SCOs.

3.8 Re-grading

Following the excavation, the Site was graded. The entire southern portion of the Site was graded to achieve a topography consistent with the adjacent Brace Street portion to the north. A final site survey was completed to show final grades. **Figure 13** shows the final grading achieved following the IRM.

3.9 Asbestos and Lead-Based Paint

The IRMs included the mitigation of asbestos and lead-based paint within the building. The mitigation activities followed all appropriate local, state, and federal guidance and laws pertaining to such materials, including NYSDOL Code Rule 56.

3.10 Summary of Interim Remedial Measures

Interim Remedial Measures were implemented to remove contaminated fill material across the Site. The IRM accomplished the following:

- All contaminated urban fill was properly excavated up to the BCP Boundary and the foundation of the building. Removal of approximately 21,693.43 tons of contaminated soil and urban fill for off-site disposal at a regulated facility.
- Backfill materials met NYSDEC requirements for backfill at BCP sites. A total of 10,280.35 tons of crushed stone and total of 1,827 cubic yards of clean sand material was used to backfill the Site.
- Removal of 5,000-gallon, 4,500-gallon and 7,500-gallon underground storage tanks.
- Removal of 4,500-gallon tank used for storing mineral oil.

- Confirmatory soil sampling generated during the RI and IRMs to show compliance with the Unrestricted Use Soil Cleanup Objective. All 35 confirmatory samples indicate soils remaining at the Site contain analyte concentrations below the Unrestricted Use SCOs. The IRMs were effective in removing the most contaminated materials at the Site. In addition, the confirmatory sampling, conducted during the RI, indicated that remediation required by the IRM Work Plan was achieved.

- A total of 27 groundwater monitoring wells were decommissioned on-site. These monitoring wells were used to evaluate off-site groundwater contamination from the Chem-core Site.

- Mitigation of asbestos containing materials and addressing lead-based paint within the building.

4 ALTERNATIVES ANALYSIS

4.1 Objectives

The objectives of this portion of the document, the Alternatives Analysis Report, are to evaluate remedial alternatives to address the contamination presented above and select remedial actions to be implemented. As defined in NYSDEC DER-10 (Section 4.0), remedial alternatives will be evaluated based on the following criteria:

a. Overall Protection of Public Health and the Environment: This criterion evaluates exposure and residual risks to human health and the environment during or subsequent to implementation of the alternative.
b. Compliance with SCGs: This criterion evaluates whether the remedial alternative will ultimately result in compliance with SCGs, to the extent practicable.
c. Long-Term Effectiveness and Permanence: This criterion evaluates if the remedy is effective in the long-term after implementation (e.g., potential rebound). In the event that residual impacts will remain as part of the alternative, then the risks and adequacy/reliability of the controls are also evaluated.
d. Reduction of Toxicity, Mobility, or Volume with Treatment: This criterion evaluates the reduction of contaminant toxicity, mobility or volume as a result of the remedial alternative. In addition, the reversibility of the contaminant destruction or treatment is evaluated.
e. Short-Term Effectives: This criterion evaluates if the remedial alternative protects the community, workers and the environment during implementation.
f. Implementability: This criterion evaluates the remedial alternative based on its suitability, implementability at the specific site, and availability of services and materials that will be required.
g. Cost: This criterion evaluates the capital, operation, maintenance, and monitoring costs for the remedial alternative. The estimated costs are presented on a present worth basis.
h. Community Acceptance: This criterion takes into account concerns of the community regarding the proposed remedy. Any public comments and overall public perception are addressed as part of the criterion.
i. Land Use: This criterion evaluates the proposed remedial approach against the current, intended, and reasonably anticipated future use of the land and its surroundings.

4.2 Remedial Action Objectives

Remedial Action Objectives (RAOs) are medium-specific objectives for the protection of public health and the environment and are developed based on contaminant-specific standards, criteria, and guidance (SCGs) established by NYSDEC and/or NYSDOH.

Fill RAOs

The RAOs for fill used in this AAR are:

- RAOs for Public Health Protection
  - Prevent ingestion/direct contact with contaminated fill.
  - Meet the NYCRR Subpart 375-6 Remedial Program Soil Cleanup Objectives for Unrestricted Use.
  - Reduce the toxicity, mobility, or volume of contaminants at the Site.
- RAOs for Environmental Protection
  - Prevent migration of contaminants that would result in groundwater or surface water contamination.

4.3 Development of Alternatives

This section identifies potential remedial alternatives being considered to address the Site. The remedial alternatives evaluated are summarized below:

4.3.1 No Action

The No Action Alternative is included as a procedural requirement and as a baseline to evaluate other alternatives. Under this alternative, no further remedial or monitoring activities would occur and no environmental easement would be recorded. The fill/soils at the Site would remain virtually as is and change in use would not be limited except by existing land use controls such as zoning.

4.3.2 Unrestricted Use – Complete Fill Removal

Under this Unrestricted Use Alternative, all fill at the Site and any contaminated layers of native soils would be excavated and disposed of at appropriately permitted off-site waste disposal facilities. Based on the results of the RI, the estimated volume of fill at the Site is 35,640 cubic yards. Assuming a conversion rate of 1.62 tons per cubic yard, the weight of this fill material is estimated at 22,000 tons.

4.4 Detailed Evaluation of Alternatives

The following sections include an evaluation of the alternatives presented in **Section 2.3.**

4.4.1 No Action Alternative

Description

The No Action Alternative is included as a procedural requirement and as a baseline to evaluate other alternatives. Under this alternative, no further remedial or monitoring activities would occur and no environmental easement would be recorded. The fill/soils at the Site would remain virtually as is and change in use would not be limited except by existing land use controls such as zoning.

Assessment

Overall Protection of Public Health and the Environment

The No Action Alternative is not protective of public health and the environment because the fill material is no longer covered with a veneer of topsoil and exposure pathways would exist.

Compliance with Standards, Criteria and Guidance (SCGs)

The No Action Alternative does not comply with the SCGs for soils because contaminants in the surface soils and fill are present at concentrations above Unrestricted Use SCOs.

Short-term Impacts and Effectiveness

The No Action Alternative is not effective in the short-term because it would leave the Site with elevated concentrations of contaminants in fill and soils with no long term monitoring or treatment. During future construction, this alternative would increase potential exposure to contamination by workers excavating the contaminated fill.

Long-term Effectiveness and Permanence

The No Action Alternative is not effective in the long-term or a permanent basis because it would leave the Site with elevated concentrations of contaminants in the fill in perpetuity.

Reduction of Toxicity, Mobility and Volume

Four methodologies must be evaluated relative to reduction of toxicity, mobility and volume:

- Destruction, on/off-site
- Separation or treatment
- Solidification or chemical fixation
- Control or Isolation

The No Action Alternative would not employ any additional methodologies and will not reduce the toxicity, mobility or volume of contamination. Therefore, this alternative would not be in compliance with the RAOs for the fill materials and contaminated soil.

Implementability

The No Action Remedial Alternative can be implemented with no technical or cost concerns.

Cost Effectiveness

There are no costs associated with this alternative. A No Action Alternative would not take any steps to reduce contamination and therefore, would not incur future remedial costs for the Site.

Community Acceptance

The public will likely not accept this alternative, due to the proximity to residential apartment buildings. The public will likely not accept when invasive activities associated with site redevelopment begin, if no action is taken to reduce contamination prior to development.

Land Use

The No Action Alternative would allow the use of the Site for residential uses.

Summary

The No Action Alternative would be the least expensive alternative. It would not limit direct human interaction with contamination in the surface soils or fill material. However, it would leave the fill in place and potentially impact site workers and those in areas surrounding the Site during redevelopment. Therefore, the No Action Alternative is not the preferred alternative.

4.4.2 Unrestricted Use Cleanup – Complete Fill Removal

Description

Under this Unrestricted Use Alternative, all of the fill and upper layers of contaminated native soil would be excavated and disposed of off-site in accordance with applicable regulations. The need for the removal of the entire volume of fill and varying depths of native soils on-site is based on the RI results, which indicate that the fill material and upper layers of native soils contain contaminants at concentrations above the Unrestricted Use SCOs.

Assessment

Overall Protection of Human Health and the Environment

This alternative would be protective of human health and the environment. All fill with contaminant concentrations above RAOs on-site would be removed and disposed of off-site.

Compliance with Standards, Criteria and Guidance (SCGs)

The alternative complies with the SCGs, as all on-site fill with contaminant concentrations above the SCOs would be removed and disposed of off-site.

Short-term Impacts and Effectiveness

This alternative increases the short-term risks for the community and the workers implementing the alternative (i.e., through the disturbance of impacted fill), because the Site will undergo complete removal of contaminated fill. However, these risks would be minimized through the implementation of appropriate fill/soil handling procedures, air monitoring, and dust suppression techniques. Furthermore, this alternative would be effective in the long-term.

Long-term Effectiveness and Permanence

The Unrestricted Use Alternative would be a permanent remedy to address the contaminant concentrations in the fill throughout the Site. It would likely have a positive impact on groundwater concentrations for metals, in the long-term.

Reduction of Toxicity, Mobility and Volume

This alternative would result in the reduction of the toxicity, mobility, and volume of contaminants in the fill. Therefore, the removal of fill and contaminated soil would be in compliance with the SCGs.

Implementability

This alternative is implementable using existing construction methods and equipment. The expected duration is less than one construction season. This alternative would result in a Site suitable for redevelopment for any use.

Cost Effectiveness

The estimated cost of this alternative at $2,825,000 requires a greater investment than the No Action Alternative but the alternative eliminates the contamination concentrations in the fill at the Site through complete removal and prepares the Site for redevelopment for any use.

Community Acceptance

Based on the findings of the studies performed to date, it is anticipated that the results of this alternative would be entirely acceptable to the community.

Land Use

This alternative would allow for the use of the parcel as a mixed use building containing residential and commercial space, which conforms to the City of Buffalo's development plans for the area. Therefore, this alternative would allow for the highest and best use of the land.

Summary

The Unrestricted Use Alternative was designed to remediate the Site to its most restrictive level – Unrestricted Use Soil SCOs – and prepare the Site for redevelopment for residential and commercial mixed uses.

4.5 Comparative Evaluation of Alternatives and Recommended Actions

This section of the report compares the remedial alternatives proposed for each of the impacted media and presents the recommended action for each media group.

The No Action Alternative will not be protective of human health and the environment and would likely not be acceptable to the community in the long term. In addition, development of the Site is anticipated to take place and, as such, impacts are likely to be encountered, which indicates a level of risk in relation to exposure to on-site workers and those working and living in the vicinity of the Site.

The Unrestricted Use Alternative would be a long-term remedy and is anticipated to be acceptable to the community. This alternative effectively reduces the toxicity, mobility, and volume of impacted media through the removal of all fill from the Site and replacement with clean material.

Therefore, the recommended remedial action for the fill at the Site is the Unrestricted Use Alternative-Complete Fill Removal Alternative, which includes:

- Site Mobilization, preparation and control;
- Site clearing and demolition;
- Investigating the nature of contamination on-site and vertical and horizontal extent of contamination;
- The excavation and off-site disposal of all fill and upper layers of contaminated native soils; and
- The placement of backfill consisting of clean fill and/or building materials to restore to original grade

4.6 Summary of Recommended Final Remedial Actions

Based on the above recommendations, this section summarizes the overall final remedial strategy for the Site.

Table 4-1: Summary of Remedial Action Costs

Category	**Recommended Remedy Estimated Cost**
Site Mobilization & Control Measures	$50,000.00
Site Demolition & Clearing	$145,000.00
Remedial Investigation	$35,000.00
Site Remediation & Interim Remedial Measures	$1,450,000.00
Interior Lead & ACM Abatement	$860,000.00
Environmental Engineer & Monitoring Services	$200,000.00
BCP Legal Services	$25,000.00
BCP Management and Oversight Fees	$60,000.00
TOTAL	**$2,825,000.00**

Subsequent to NYSDEC approval and implementing the recommended remedy, a Final Engineering Report will be prepared. No environmental easements or continuing monitoring programs such as an SMP would be required.

FIGURES

1 2 3

C

Legend

SUBJECT PROPERTIES

PROPERTY BOUNDARIES

0 200 400 800

Feet

B

A

1 2 3

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1360 NIAGARA STREET
REMEDIAL INVESTIGATION

BUFFALO, NEW YORK

MARK	DATE	DESCRIPTION

REVISIONS

PROJECT NO: E67.018.002
DATE: JULY 14, 2017
DRAWN BY: C. MARTIN
DESIGNED BY: C. MARTIN
CHECKED BY:

SITE LOCATION

FIGURE 1

Legend

- BCP SITE BOUNDARY
- PROPERTY BOUNDARIES
- 50-FOOT SAMPLE GRID
- A GROUNDWATER MONITORING WELL
- H SOIL BORING LOCATION
- P SUB-SLAB SAMPLE LOCATION

0 50 100 200 Feet

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SAMPLING GRID AND LOCATIONS

FIGURE 2

Legend

- PROPERTY BOUNDARIES
- BCP SITE BOUNDARY
- NOT SAMPLED
- SAMPLE EXCEEDED UNRESTRICTED USE CRITERIA FOR AT LEAST ONE COMPOUND
- SAMPLE EXCEEDED RESIDENTIAL USE CRITERIA FOR AT LEAST ONE COMPOUND
- SAMPLE EXCEEDED RESTRICTED RESIDENTIAL USE CRITERIA FOR AT LEAST ONE COMPOUND
- SAMPLE EXCEEDED COMMERCIAL USE CRITERIA FOR AT LEAST ONE COMPOUND
- SAMPLE EXCEEDED INDUSTRIAL USE CRITERIA FOR AT LEAST ONE COMPOUND

0 50 100 200 Feet

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2015 SITE CHARACTERIZATION

FIGURE 3

Legend

- BCP SITE BOUNDARY
- PROPERTY BOUNDARIES
- 50-FOOT SAMPLE GRID
- A — GROUNDWATER MONITORING WELL
- FILL MATERIAL NOT SAMPLED
- SAMPLE BELOW UNRESTRICTED USE CRITERIA
- SAMPLE EXCEED UNRESTRICTED USE CRITERIA FOR AT LEAST ONE COMPOUND
- SAMPLE EXCEED RESIDENTIAL USE CRITERIA FOR AT LEAST ONE COMPOUND
- SAMPLE EXCEED RESTRICTED RESIDENTIAL USE CRITERIA FOR AT LEAST ONE COMPOUND
- SAMPLE EXCEED COMMERCIAL USE CRITERIA FOR AT LEAST ONE COMPOUND
- SAMPLE EXCEED INDUSTRIAL USE CRITERIA FOR AT LEAST ONE COMPOUND

0 50 100 200 Feet

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DESIGNED BY:	C. MARTIN
CHECKED BY:	

URBAN FILL SAMPLING RESULTS

FIGURE 4

Legend

- BCP SITE BOUNDARY
- PROPERTY BOUNDARIES
- 50-FOOT SAMPLE GRID
- A — GROUNDWATER MONITORING WELL
- H — CONFIRMATORY SAMPLE ACHIEVING TRACK 1 LEVEL CLEANUP

0 50 100 200 Feet

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NATIVE SOIL SAMPLING RESULTS

FIGURE 5

Legend

- BCP SITE BOUNDARY
- PROPERTY BOUNDARIES
- 50-FOOT SAMPLE GRID
- GROUNDWATER ELEVATION (FEET)
- A GROUNDWATER MONITORING WELL

0 50 100 200 Feet

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GROUNDWATER CONTOURS

FIGURE 6

Legend

- BCP SITE BOUNDARY
- PROPERTY BOUNDARIES
- 50-FOOT SAMPLE GRID
- A GROUNDWATER MONITORING WELL
- APPROXIMATE EXCAVATION DEPTH (FEET BELOW GROUND SURFACE)
- GRID LOCATION NEEDING REMOVAL OF NATIVE SOIL

0 50 100 200 Feet

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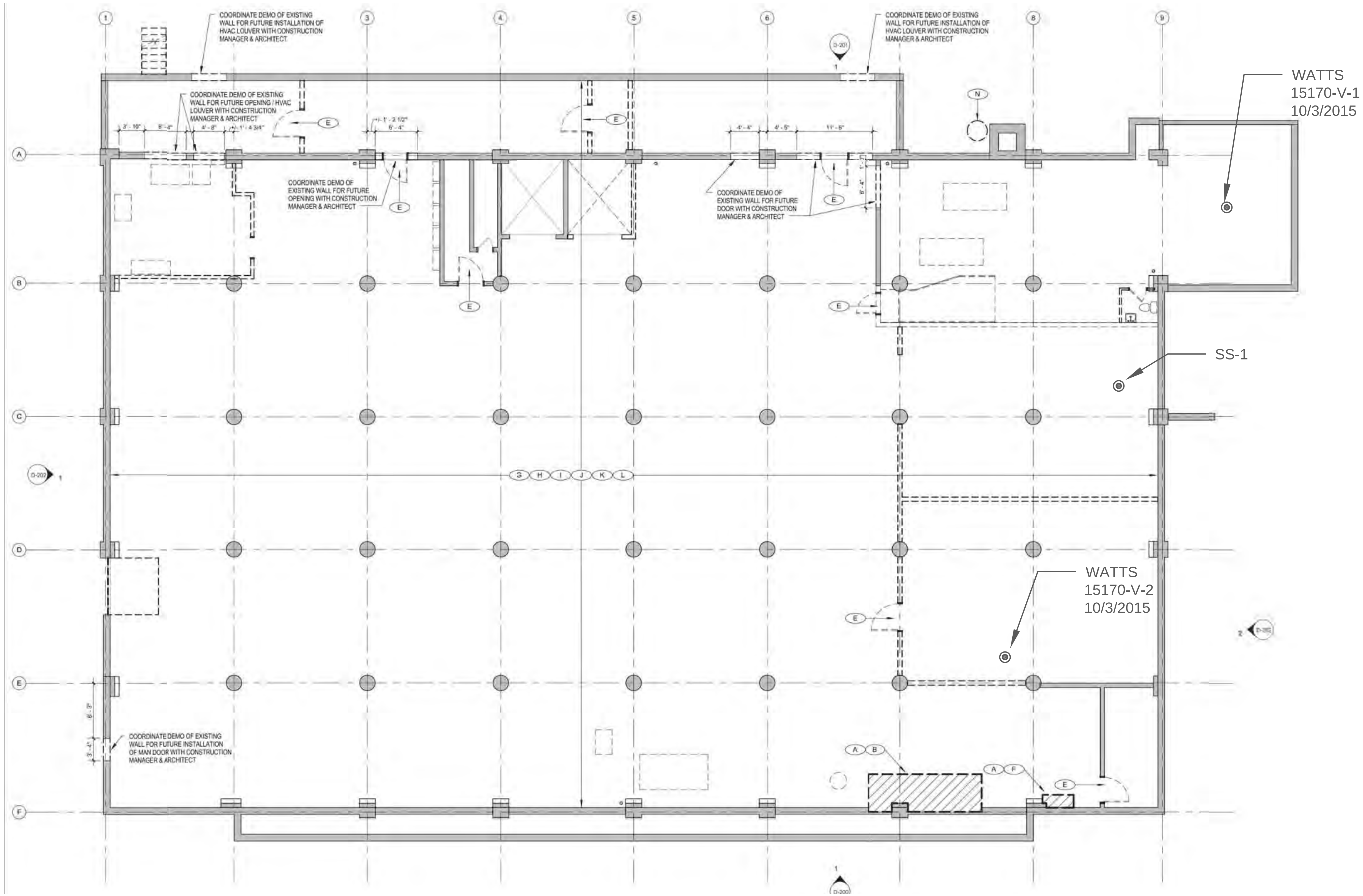
DEPTH TO UNRESTRICTED USE NATIVE SOILS

FIGURE 7



BASEMENT FLOOR

NOTES

1. DRAWING FROM CJS ARCHITECTS "BASEMENT DEMOLITION PLAN" (D-100), 4/11/2016.

F:\Project\E67 - Ciminelli Development\E67.018.002 - Garrett Leather BCP Project\Planning-Study\CADD\1 SOIL VAPOR SAMPLE LOCATIONS.dwg

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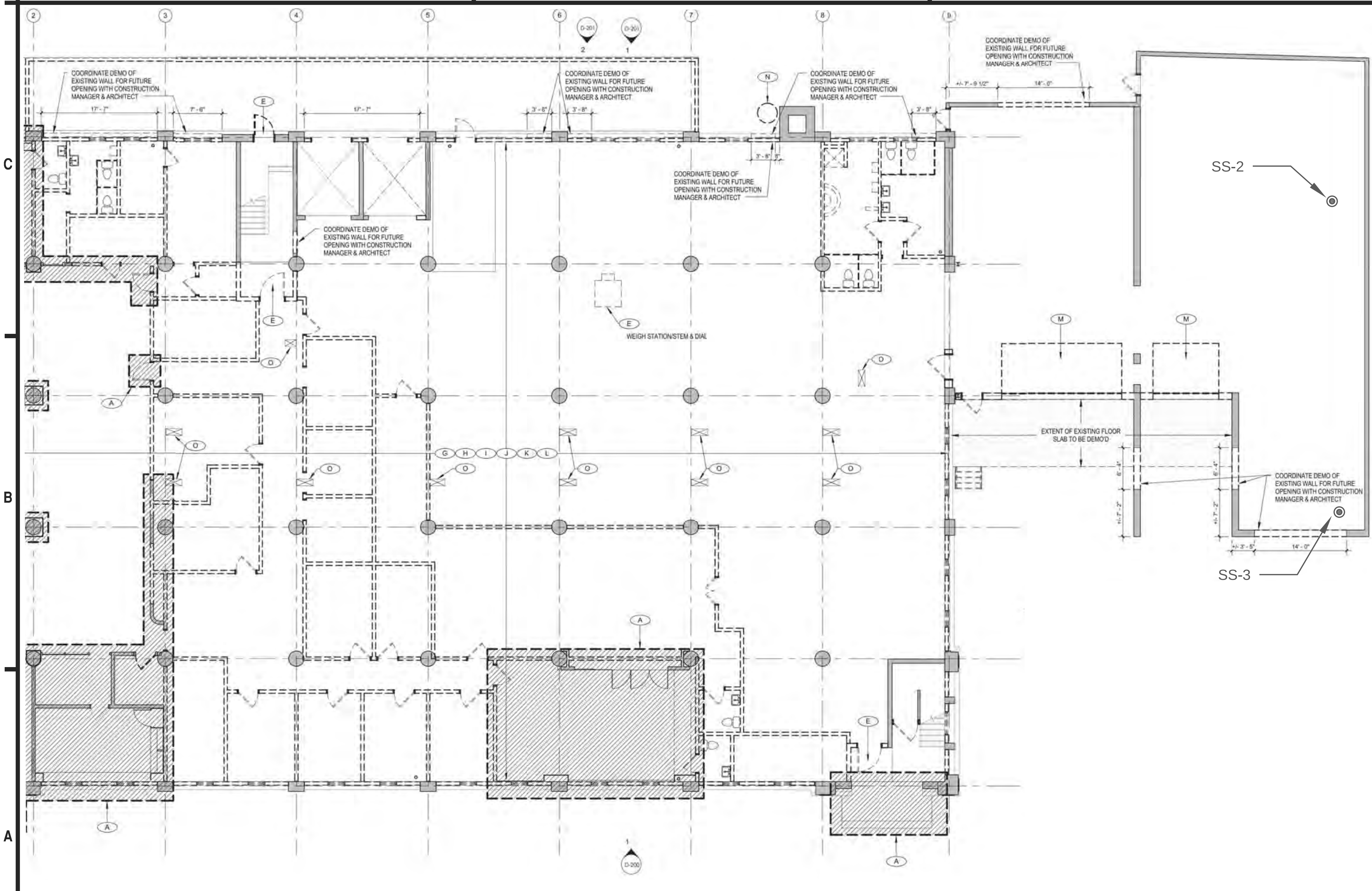
DESIGNED BY:	C. MARTIN
CHECKED BY:	D. RIKER

SUB-SLAB SOIL VAPOR SAMPLING LOCATIONS

FIGURE 8



FIRST FLOOR

NOTES

1. DRAWING FROM CJS ARCHITECTS "FIRST FLOOR DEMOLITION PLAN" (D-101), 4/11/2016.

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CHECKED BY:	D. RIKER

SUB-SLAB SOIL VAPOR SAMPLING LOCATIONS

FIGURE 9

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NOTES

1. DRAWING FROM URS CORPORATION, "PHASE I & II REMEDIAL INVESTIGATION REPORT - CHEM CORE TOTAL BTEX DETECTED IN GROUNDWATER (2001)" (FIGURE 4-26), JULY 2002.

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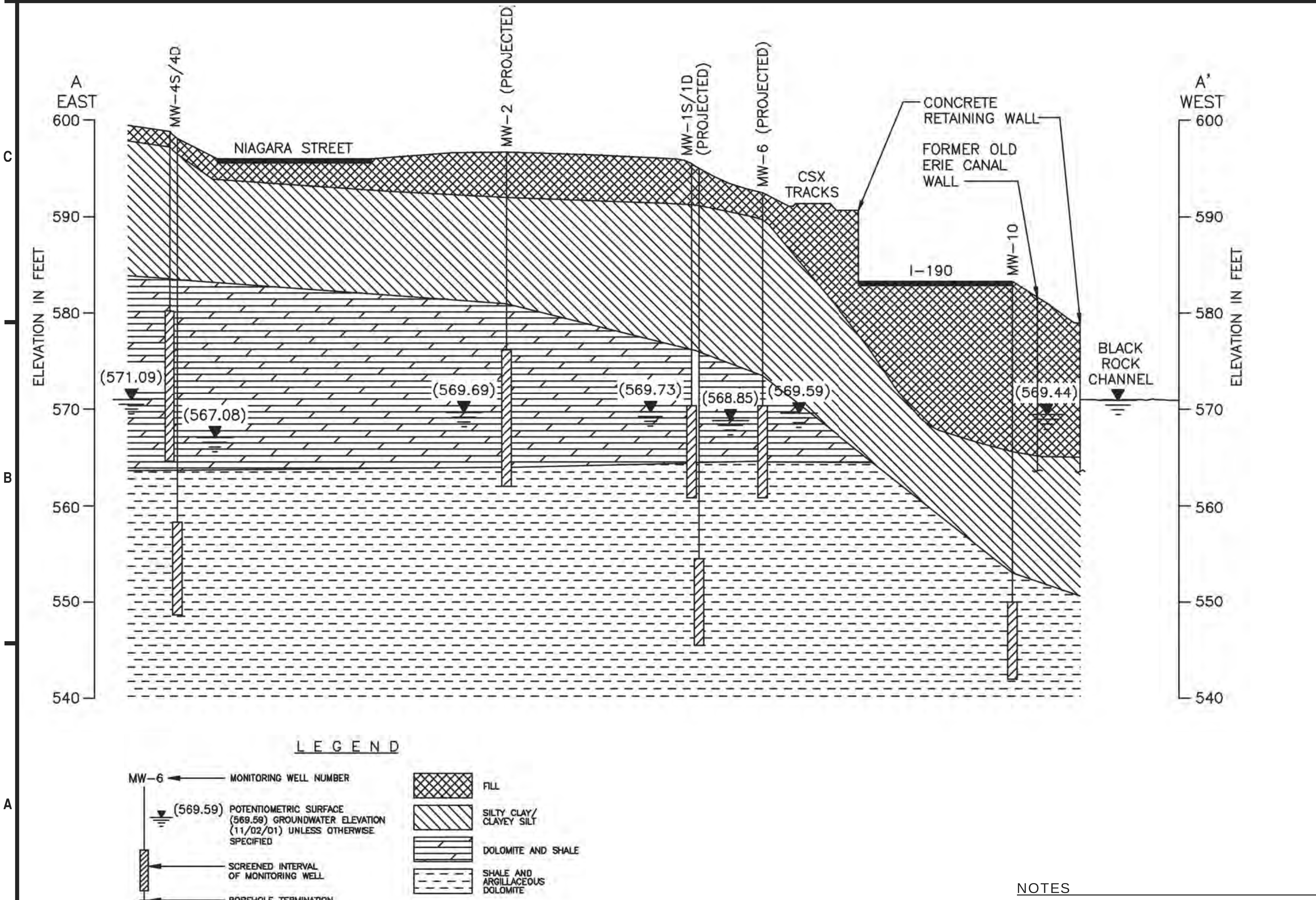
CROSS-SECTION LOCATIONS

FIGURE 10



NOTES

1. DRAWING FROM URS CORPORATION, "PHASE I & II REMEDIAL INVESTIGATION REPORT - CHEM-CORE GEOLOGICAL CROSS-SECTION A-A'," (FIGURE 3-1), JULY 2002.

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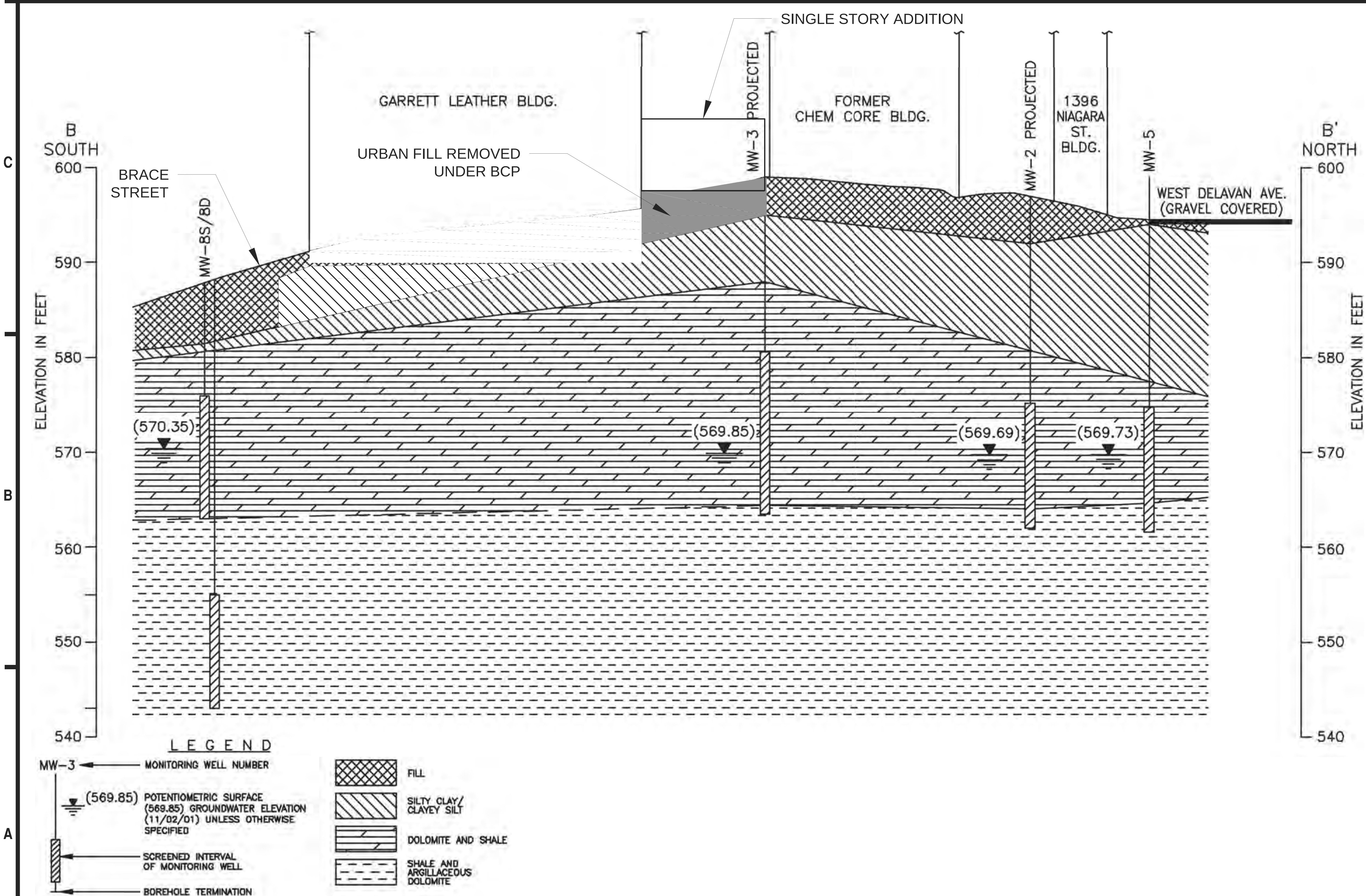
GEOLOGICAL CROSS-SECTION A - A'

FIGURE 11



NOTES

1. DRAWING FROM URS CORPORATION, "PHASE I & II REMEDIAL INVESTIGATION REPORT - CHEM-CORE GEOLOGICAL CROSS-SECTION B-B'," (FIGURE 3-2), JULY 2002.

2. MODIFIED BY C&S ENGINEERS 7/18/2017.

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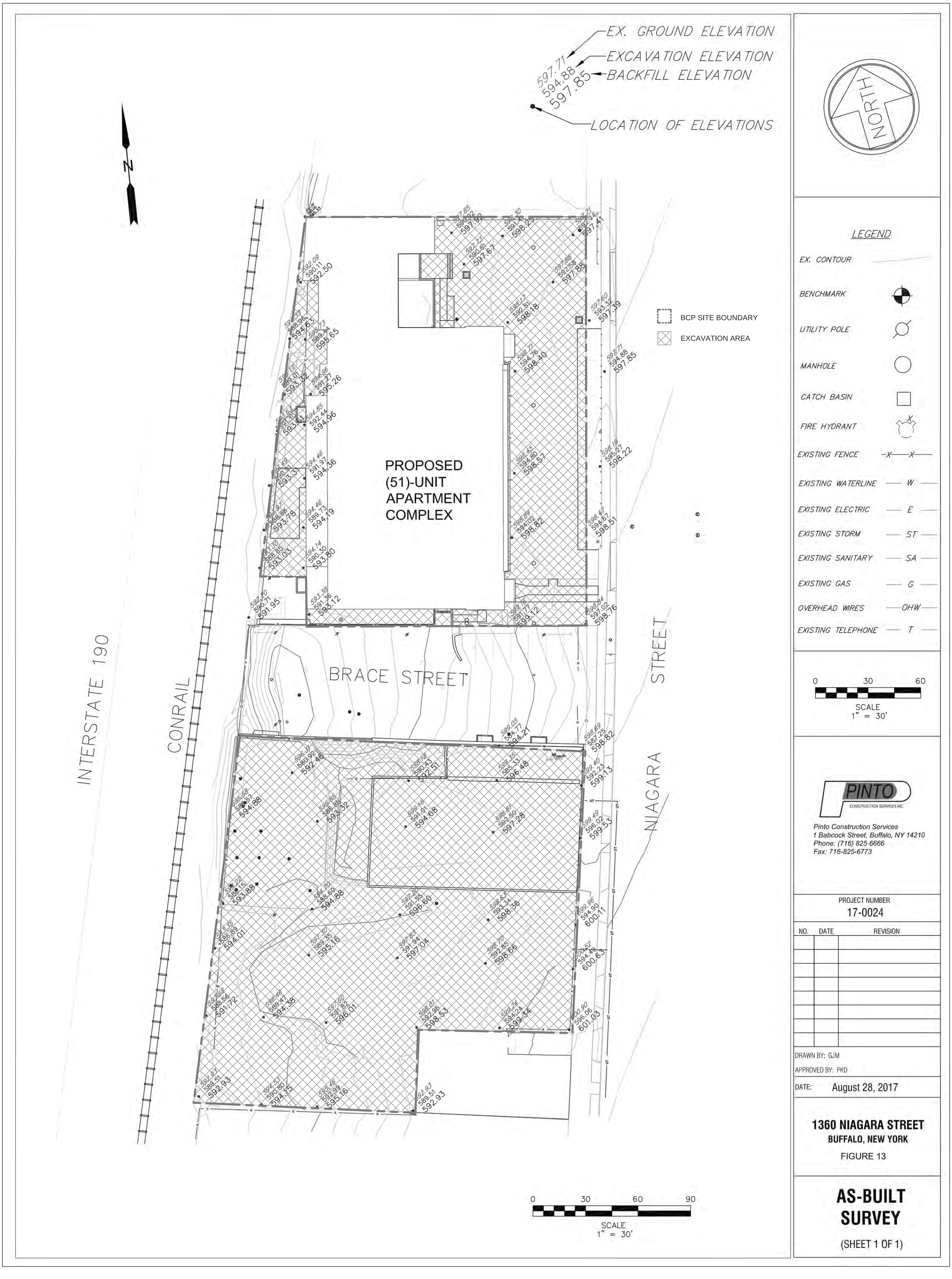
GEOLOGICAL CROSS-SECTION B - B'

FIGURE 12



EX. GROUND ELEVATION
EXCAVATION ELEVATION
BACKFILL ELEVATION
LOCATION OF ELEVATIONS
597.71
594.88
597.85
NORTH
N
BCP SITE BOUNDARY
EXCAVATION AREA
PROPOSED (51)-UNIT APARTMENT COMPLEX
BRACE STREET
NIAGARA STREET
INTERSTATE 190
CONRAIL
LEGEND
EX. CONTOUR
BENCHMARK
UTILITY POLE
MANHOLE
CATCH BASIN
FIRE HYDRANT
EXISTING FENCE
EXISTING WATERLINE
EXISTING ELECTRIC
EXISTING STORM
EXISTING SANITARY
EXISTING GAS
OVERHEAD WIRES
EXISTING TELEPHONE
0 30 60
SCALE 1" = 30'
PINTO CONSTRUCTION SERVICES INC.
Pinto Construction Services
1 Babcock Street, Buffalo, NY 14210
Phone: (716) 825-6666
Fax: 716-825-6773
PROJECT NUMBER
17-0024
NO. DATE REVISION
DRAWN BY: GJM
APPROVED BY: PKD
DATE: August 28, 2017
1360 NIAGARA STREET
BUFFALO, NEW YORK
FIGURE 13
AS-BUILT SURVEY
(SHEET 1 OF 1)
0 30 60 90
SCALE 1" = 30'

TABLES

TABLE 1: REMEDIAL INVESTIGATION SOIL SAMPLING PLAN
1360 NIAGARA STREET REMEDIAL INVESTIGATION
BUFFALO, NEW YORK

GRID	Fill Samples	Sample NOTES	Native Samples (+3 - 1 foot samples)	Samples NOTES	15' Samples	Sample NOTES	Perimeter Samples (SVOC and Metals Only)	Sample NOTES	Waste Characterization
A1									
A2	X		X		X				
A3			X	Hex Cr; DUP-B			X		
A4	X	Hex Cr	X	MS/MSD			X		X
B1			X	Hex Cr			X	DUP-E	
B2	X								
B3	X								
B4			X		X	Hex Cr	X		
C1			X	Hex Cr					X
C2									
C3									
C4	X		X	Hex Cr					X
D1			X		X	MS/MSD	X		
D2	X								
D3	X	Hex Cr							
D4			X				X		
E1	X	Hex Cr	X						X
E2			X				X		
E3			X	Hex Cr					X
E4	X	DUP-A	X		X		X		X
F1									
F2	X	MS/MSD	X				X		X
F3			X	Hex Cr	X	DUP-D	X		
F4	X		X						X
F5			X	DUP-B	X		X		
G1									
G2			X	Hex Cr					X
G3	X		X	MS/MSD					X
G4			X	Hex Cr					
G5	X		X				X		X
H1							X		
H2	X	Hex Cr	X		X				X
H3			X	Hex Cr					
H4	X		X						X
H5			X	DUP-C	X	Hex Cr	X		
I1									X
I2			X	Hex Cr; MS/MSD					
I3					X				
I4							X		
I5									
J1									
J2							X	MS/MSD	
J3									
J4									
J5									

TABLE 2: SOIL SAMPLE RESULTS - SUBSURFACE SAMPLING
1360 NIAGARA STREET REMEDIAL INVESTIGATION
BUFFALO, NEW YORK

						Urban Fill	Native			Urban Fill	Native	Native			Native		Native	Urban Fill	Native		
Location ID						**A3**	**A3**	**A3**	**A3**	**A4**	**A4**	**B1**	**B1**	**B1**	**B4**	**B4**	**C1**	**C4**	**C4**	**C4**	**C4**
Sample Depth						**1 - 1**	**2 - 2**	**3 - 3**	**4 - 4**	**0.5 - 1.5**	**2 - 2**	**1.5-1.5**	**2.5-2.5**	**3.5-3.5**	**5.5 - 5.5**	**11 - 11**	**1 - 1**	**0 - 1**	**1 - 1**	**2 - 2**	**3-3**
Date Sampled	**Unrestricted Use**	**Residential Use**	**Restricted Residential Use**	**Commercial Use**	**Industrial Use**	02/17/2017	02/17/2017	02/17/2017	02/17/2017	02/17/2017	02/17/2017	03/20/2017	03/20/2017	03/20/2017	02/17/2017	02/17/2017	02/17/2017	02/17/2017	02/17/2017	02/17/2017	02/17/2017
Sample Matrix						SO	SO	SO	SO	SO	SO	SO	SO	SO	SO	SO	SO	SO	SO	SO	SO
Units						mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
VOCs																					
Acetone	0.05	100	100	500	1000	ND	ND			**0.077**	ND	ND			**0.0471**	**0.0246**	ND	**0.0259**	ND		
Ethylbenzene	1	30	41	390	780	ND	ND			ND	ND	ND			ND	ND	ND	**0.0178**	ND		
Methylene Chloride	0.05	51	100	500	1000	ND	**0.00604 J**			**0.0192**	**0.00547 J**	ND			ND	**0.00806 J**	ND	**0.00713 J**	ND		
Tetrachloroethylene (PCE)	1.3	5.5	19	150	300	ND	ND			**0.00200 J**	ND	**0.00416**			**0.0120**	ND	**0.218**	ND	ND		
Toluene	0.7	100	100	500	1000	ND	ND			**0.00582**	ND	ND			ND	ND	ND	ND	ND		
Trichloroethylene (TCE)	0.47	10	21	200	400	ND	ND			ND	ND	ND			ND	ND	ND	ND	ND		
1,3,5-Trimethylbenzene (Mesitylene)	8.4	47	52	190	380	ND	ND			**0.00244 J**	ND	ND			ND	ND	ND	ND	ND		
trans-Chlordane		0.54				**0.00190 JP**	ND			**0.00405**	ND	ND			ND	ND	ND	**0.00541**	ND		
SVOCs																					
Acenaphthene	20	100	100	500	1000	**1.79**	ND			ND	ND	ND			ND	ND	ND	**0.327 J**	ND		
Acenaphthylene	100	100	100	500	1000	ND	ND			ND	ND	ND			ND	ND	ND	ND	ND		
Anthracene	100	100	100	500	1000	**3.15**	ND			ND	ND	ND			ND	ND	ND	**0.691**	ND		
Benzo(A)Anthracene	1	1	1	5.6	11	**6.8**	ND			ND	ND	ND			ND	ND	ND	**1.89**	ND		
Benzo(A)Pyrene	1	1	1	1	1.1	**6.37**	ND			ND	ND	ND			ND	ND	ND	**1.81**	ND		
Benzo(B)Fluoranthene	1	1	1	5.6	11	**6.74**	ND			**0.181 J**	ND	ND			ND	ND	ND	**2.31**	ND		
Benzo(G,H,I)Perylene	100	100	100	500	1000	**3.53**	ND			ND	ND	ND			ND	ND	ND	**1.29**	ND		
Benzo(K)Fluoranthene	0.8	1	3.9	56	110	**4.1**	ND			ND	ND	ND			ND	ND	ND	**1.41**	ND		
Chrysene	1	1	3.9	56	110	**6.74**	ND			**0.224 J**	ND	ND			ND	ND	ND	**2.06**	ND		
Dibenz(A,H)Anthracene	0.33	0.33	0.33	0.56	1.1	**1.18 J**	ND			ND	ND	ND			ND	ND	ND	**0.416**	ND		
Fluoranthene	100	100	100	500	1000	**19.3**	ND			**0.386**	ND	ND			ND	ND	ND	**4.89**	ND		
Fluorene	30	100	100	500	1000	**3.1**	ND			ND	ND	ND			ND	ND	ND	**0.221 J**	ND		
Indeno(1,2,3-C,D)Pyrene	0.5	0.5	0.5	5.6	11	**3.22**	ND			ND	ND	ND			ND	ND	ND	**1.12**	ND		
Naphthalene	12	100	100	500	1000	**0.358**	**0.00716 J**			**0.0215**	ND	ND			ND	ND	ND	**0.0322**	ND		
Phenanthrene	100	100	100	500	1000	**21.4**	ND			**0.39**	ND	ND			ND	ND	ND	**3.98**	ND		
Pyrene	100	100	100	500	1000	**14.4**	ND			**0.323**	ND	ND			ND	ND	ND	**3.51**	ND		
Pesticidies																					
P,P'-DDE	0.0033	1.8	8.9	62	120	ND	ND			**0.00677**	ND	ND			ND	ND	ND	**0.00216 J**	ND		
P,P'-DDT	0.0033	1.7	7.9	47	94	**0.00737**	ND			**0.0235**	ND	ND			ND	ND	ND	**0.00584 P**	ND		
P,P'-DDD	0.0033	2.6	13	92	180	**0.00625**	ND			**0.00149 JP**	ND	ND			ND	ND	ND	**0.00394**	ND		
Aldrin	0.005	0.019	0.097	0.68	1.4	ND	ND			ND	ND	ND			ND	ND	ND	ND	ND		
Beta-BHC (Beta Hexachlorocyclohexane)	0.036	0.072	0.36	3	14	ND	ND			**0.00274 JP**	ND	ND			ND	ND	ND	ND	ND		
cis-Chlordane	0.094	0.91	4.2	24	47	**0.0432**	ND			**0.00607 P**	ND	ND			ND	ND	ND	**0.00619 P**	**0.00221 J**		
Delta-BHC (Delta Hexachlorocyclohexane)	0.04	100	100	500	1000	ND	ND			ND	ND	ND			ND	ND	ND	ND	ND		
Dibenzofuran	7	14	59	350	1000	**2.11**	ND			ND	ND	ND			ND	ND	ND	**0.424**	ND		
Dieldrin	0.005	0.039	0.2	1.4	2.8	ND	ND			**0.00708**	ND	ND			ND	ND	ND	**0.00193 JP**	ND		
Alpha Endosulfan	2.4	4.8	24	200	920	**0.00338 J**	ND			**0.00146 JP**	ND	ND			ND	ND	ND	ND	ND		
Beta Endosulfan	2.4	4.8	24	200	920	ND	ND			**0.00201 JP**	ND	ND			ND	ND	ND	ND	ND		
Endosulfan Sulfate	2.4	4.8	24	200	920	**0.00477 P**	ND			**0.00418 P**	ND	ND			ND	ND	ND	**0.00858 P**	ND		
Endrin	0.014	2.2	11	89	410	**0.00324 JP**	ND			**0.00584 P**	ND	ND			ND	ND	ND	**0.00740 P**	ND		
PCBs																					
PCB-1260 (Aroclor 1260)	0.1	1	1	1	25	ND	ND			**0.0841**	ND	ND			ND	ND	ND	ND	ND		
Metals																					
Arsenic	13	16	16	16	16	**2.42**	**5.26**			**3.70**	**3.29 DM**	**3.53**			**3.37**	**2.72**	**4.57**	**3.96**	**4.95**		
Barium	350	350	400	400	10000	**58.7**	**152**			**5.86**	**149 M**	**199**			**52.4**	**42.7**	**135**	**124**	**163**		
Beryllium	7.2	14	72	590	2700	**0.577**	**0.883**			ND	**0.899 M**	**1.14**			**0.400**	**0.401**	**0.909**	**1.96**	**1.33**		
Cadmium	2.5	2.5	4.3	9.3	60	ND	ND			ND	ND	ND			**0.222 J**	**0.228 J**	ND	**0.284**	ND		
Chromium, Hexavalent	1	22	110	400	800	ND				**0.32 J**		ND				ND	ND		ND		
Chromium, Total	30	36	180	1500	6800	**13.1**	**24.8**			**4.40**	**24.1 M**	**32.8**	**27.8**		**13.1**	**13.7**	**24.1**	**16.7**	**32.4**	**22.9 M**	
Copper	50	270	270	270	10000	**8.11**	**23.2**			**3.30**	**19.3 M**	**25**			**13.2**	**14.9**	**21.9**	**22.9**	**25.9**		
Cyanide	27	27	27	27	10000	ND	ND			ND	ND	ND			ND	ND	ND	**2.38**	ND		
Lead	63	400	400	1000	3900	**15.6**	**13.6**			**7.51**	**11.0 M**	**12.4**			**9.71**	**10.5**	**11.1**	**108**	**18.6**		
Manganese	1600	2000	2000	10000	10000	**817**	**1370**			**88.1**	**403 DM**	**408**			**374**	**357**	**246**	**821**	**341**		
Mercury	0.18	0.81	0.81	2.8	5.7	**0.0529**	**0.0216**			**0.0392**	**0.0176 D**	**0.0253**			**0.0131**	**0.0132**	**0.0593**	ND	**0.0669**		
Nickel	30	140	310	310	10000	**9.31**	**36.2**	**36.3**	**25.6**	**3.78**	**26.1 M**	**32**	**30.7**	**29.7**	**11.7**	**12.4**	**26.9**	**10.6**	**34.5**	**30.2 M**	**10.0**
Selenium	3.9	36	180	1500	6800	ND	ND			**4.12**	ND	ND			ND	ND	ND	ND	ND		
Silver	2	36	180	1500	6800	ND	ND			ND	ND	ND			ND	ND	ND	ND	ND		
Zinc	109	2200	10000	10000	10000	**59.7**	**64.8**			**9.57**	**62.4 M**	**98.7**			**58.7**	**59.2**	**76.9**	**131**	**92.6**		

Analytical Data compared to Part 375 Standards and DER-10

ND indicates analyte was not detected.

Blank space indicates analyte was not analyzed for in that sample.

Only analytes detected in at least one sample are shown.

J - Data indicates the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than MDL. The concentration given is an approximate value.

D - The reported value is from a secondary analysis with a dilution factor. The original analysis exceeded the calibration range.

M - Matrix spike recoveries outside QC limits. Matrix bias indicated.

TABLE 2: SOIL SAMPLE RESULTS - SUBSURFACE SAMPLING
1360 NIAGARA STREET REMEDIAL INVESTIGATION
BUFFALO, NEW YORK

						Native					Native	Native		Native	Urban Fill	Native				Urban Fill	Native		Native		Urban Fill
Location ID	Unrestricted Use	Residential Use	Restricted Residential Use	Commercial Use	Industrial Use	**D1**	**D1**	**D1**	**D1**	**D1**	**D4**	**E2**	**E2**	**E3**	**E4**	**E4**	**E4**	**E4**	**E4**	**F2**	**F2**	**F2**	**F3**	**F3**	**F4**
Sample Depth						3 - 3	4 - 4	5 - 5	12 - 12	12 - 12	1 - 1	1 - 1	2 - 2	0.5 - 0.5	0 - 1.5	2 - 2	3 - 3	4 - 4	15 - 15	4 - 5	5 - 6	6 - 7	3 - 3	15 - 15	0 - 1
Date Sampled						02/17/2017	02/17/2017	02/17/2017	02/17/2017	04/27/2017	02/16/2017	02/16/2017	02/16/2017	02/16/2017	02/16/2017	02/16/2017	02/16/2017	02/16/2017	02/16/2017	02/16/2017	02/16/2017	02/16/2017	02/15/2017	02/15/2017	02/16/2017
Sample Matrix						SO	SO	SO	SO	SO	SO	SO	SO	SO	SO	SO	SO	SO	SO	SO	SO	SO	SO	SO	SO
Units						mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
VOCs																									
Acetone	0.05	100	100	500	1000	ND			0.0578	ND	0.0414	ND		ND	0.0237	ND			ND	0.0528	0.193	ND	ND	ND	0.0440
Ethylbenzene	1	30	41	390	780	ND			ND		ND	ND		ND	ND	ND			ND	ND	ND		ND	ND	ND
Methylene Chloride	0.05	51	100	500	1000	ND			ND		ND	ND		ND	ND	ND			ND	ND	ND		ND	ND	ND
Tetrachloroethylene (PCE)	1.3	5.5	19	150	300	ND			0.0337 M		ND	0.00488		ND	ND	ND			ND	0.0719 M	ND		ND	ND	0.00257 J
Toluene	0.7	100	100	500	1000	ND			ND		ND	ND		ND	ND	ND			ND	ND	ND		ND	ND	ND
Trichloroethylene (TCE)	0.47	10	21	200	400	ND			ND		ND	ND		ND	ND	ND			ND	ND	ND		ND	ND	ND
1,3,5-Trimethylbenzene (Mesitylene)	8.4	47	52	190	380	ND			ND		ND	ND		ND	ND	ND			ND	ND	ND		ND	ND	ND
trans-Chlordane		0.54				ND			ND		ND	ND		ND	ND	ND			ND	ND	ND		ND	ND	ND
SVOCs																									
Acenaphthene	20	100	100	500	1000	ND			ND		ND	ND		ND	ND	ND			ND	ND	ND		ND	ND	ND
Acenaphthylene	100	100	100	500	1000	ND			ND		ND	ND		ND	ND	ND			ND	ND	ND		ND	ND	ND
Anthracene	100	100	100	500	1000	ND			ND		ND	ND		ND	ND	ND			ND	ND	ND		ND	ND	ND
Benzo(A)Anthracene	1	1	1	5.6	11	ND			ND		ND	ND		ND	ND	ND			ND	ND	ND		0.214 J	ND	ND
Benzo(A)Pyrene	1	1	1	1	1.1	ND			ND		ND	ND		ND	0.166 J	ND			ND	ND	ND		0.179 J	ND	ND
Benzo(B)Fluoranthene	1	1	1	5.6	11	ND			ND		ND	ND		ND	0.212 J	ND			ND	ND	ND		ND	ND	ND
Benzo(G,H,I)Perylene	100	100	100	500	1000	ND			ND		ND	ND		ND	ND	ND			ND	ND	ND		ND	ND	ND
Benzo(K)Fluoranthene	0.8	1	3.9	56	110	ND			ND		ND	ND		ND	ND	ND			ND	ND	ND		ND	ND	ND
Chrysene	1	1	3.9	56	110	ND			ND		ND	ND		ND	0.189 J	ND			ND	ND	ND		0.219 J	ND	ND
Dibenz(A,H)Anthracene	0.33	0.33	0.33	0.56	1.1	ND			ND		ND	ND		ND	ND	ND			ND	ND	ND		ND	ND	ND
Fluoranthene	100	100	100	500	1000	ND			ND		ND	ND		ND	0.5	0.242 J			ND	ND	ND		0.531	ND	ND
Fluorene	30	100	100	500	1000	ND			ND		ND	ND		ND	ND	ND			ND	ND	ND		ND	ND	ND
Indeno(1,2,3-C,D)Pyrene	0.5	0.5	0.5	5.6	11	ND			ND		ND	ND		ND	ND	ND			ND	ND	ND		ND	ND	ND
Naphthalene	12	100	100	500	1000	ND			ND		ND	ND		ND	ND	ND			ND	ND	ND		ND	ND	ND
Phenanthrene	100	100	100	500	1000	ND			ND		ND	ND		ND	ND	0.206 J			ND	ND	ND		0.418	ND	ND
Pyrene	100	100	100	500	1000	ND			ND		ND	ND		ND	0.579	ND			ND	ND	ND		0.441	ND	ND
Pesticidies																									
P,P'-DDE	0.0033	1.8	8.9	62	120	ND			ND		ND	ND		ND	0.00221 JP	ND			ND	ND	ND		ND	ND	ND
P,P'-DDT	0.0033	1.7	7.9	47	94	ND			ND		ND	ND		ND	0.00348	ND			ND	ND	ND		ND	ND	ND
P,P'-DDD	0.0033	2.6	13	92	180	ND			ND		ND	ND		ND	0.00200 J	ND			ND	ND	ND		ND	ND	ND
Aldrin	0.005	0.019	0.097	0.68	1.4	ND			ND		ND	ND		ND	ND	ND			ND	ND	ND		ND	ND	0.00211 J
Beta-BHC (Beta Hexachlorocyclohexane)	0.036	0.072	0.36	3	14	ND			ND		ND	ND		ND	ND	ND			ND	ND	ND		ND	ND	ND
cis-Chlordane	0.094	0.91	4.2	24	47	ND			ND		ND	ND		ND	0.0888 P	ND			ND	0.00265 J	ND		0.00202 J	ND	ND
Delta-BHC (Delta Hexachlorocyclohexane)	0.04	100	100	500	1000	ND			ND		ND	ND		ND	ND	ND			ND	ND	ND		ND	ND	0.00222 JP
Dibenzofuran	7	14	59	350	1000	ND			ND		ND	ND		ND	ND	ND			ND	ND	ND		ND	ND	ND
Dieldrin	0.005	0.039	0.2	1.4	2.8	ND			ND		ND	ND		ND	0.00163 JP	ND			ND	ND	ND		ND	ND	0.00242 JP
Alpha Endosulfan	2.4	4.8	24	200	920	ND			ND		ND	ND		ND	ND	ND			ND	ND	ND		ND	ND	ND
Beta Endosulfan	2.4	4.8	24	200	920	ND			ND		ND	ND		ND	ND	ND			ND	ND	ND		ND	ND	ND
Endosulfan Sulfate	2.4	4.8	24	200	920	ND			ND		ND	ND		ND	0.00552 P	ND			ND	ND	ND		ND	ND	0.00526 P
Endrin	0.014	2.2	11	89	410	ND			ND		ND	ND		ND	0.00722 P	ND			ND	ND	ND		ND	ND	ND
PCBs																									
PCB-1260 (Aroclor 1260)	0.1	1	1	1	25	ND			ND		ND	ND		ND	ND	ND			ND	ND	ND		ND	ND	ND
Metals																									
Arsenic	13	16	16	16	16	3.80			1.91 D		3.73	4.08		4.80	1.72	14.1	3.86		3.47	5.49	2.90		3.56	2.83	18.7
Barium	350	350	400	400	10000	171			37.9 D		62.7	135		125	132	114			55.4	50.0 D	55.5		71.2	58.7	66.4
Beryllium	7.2	14	72	590	2700	1.27			0.304 DM		0.560	1.00		0.827	3.99	0.751			0.423	0.261 D	0.471		0.644	0.370	0.421
Cadmium	2.5	2.5	4.3	9.3	60	ND			0.129 JM		ND	ND		ND	ND	ND			ND	ND	ND		0.267 J	0.227 J	ND
Chromium, Hexavalent	1	22	110	400	800									ND									ND		
Chromium, Total	30	36	180	1500	6800	32	31.7	25.2	11.6 D		16.8	29.2		24.7	6.89	25.4			14.9	13.0 D	14.6		17.2	13.4	7.17
Copper	50	270	270	270	10000	19.2			13.5 D		7.87	22.9		21.4	2.66	51.1	26.1		15.1	10.6	14.3		16.7	12.5	31.8
Cyanide	27	27	27	27	10000	ND			ND			ND		ND	1.69	ND			ND	0.783 D	ND		ND	ND	ND
Lead	63	400	400	1000	3900	12.9			9.69 M		17.4	12.5		29.5	4.25	78.5	13.8		10.4	11.0 D	16.5		29.5	9.42	20.0
Manganese	1600	2000	2000	10000	10000	399			327 M		474	332		401	1620	379			344	421 DM	987		415	421	56.5
Mercury	0.18	0.81	0.81	2.8	5.7	0.0313			0.0123 D		0.0511	0.0229		0.0228	ND	0.0426			0.0112	0.0388	0.118		0.0146	0.0128	0.0331
Nickel	30	140	310	310	10000	34.2	28.6		10.1 DM		12.2	32	17.1	23.2	1.17 J	31.2	32.9	15.8	12.7	8.68	11.8		15.6	10.6	7.33
Selenium	3.9	36	180	1500	6800	ND			ND		ND	ND		ND	0.450 J	ND			ND	ND	ND		ND	ND	6.7
Silver	2	36	180	1500	6800	ND			ND		ND	ND		ND	ND	ND			ND	ND	ND		ND	ND	ND
Zinc	109	2200	10000	10000	10000	74.5			58.5 M		58.3	59.9		69.4	5.78	76.1			61.3	21.9 D	55.4		59.9	54.4	10.6

Analytical Data compared to Part 375 Standards and DER-10

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TABLE 2: SOIL SAMPLE RESULTS - SUBSURFACE SAMPLING
1360 NIAGARA STREET REMEDIAL INVESTIGATION
BUFFALO, NEW YORK

						Native	Native		Urban Fill		Native		Native	Native	Urban Fill	Native	Urban Fill	Native		Native			Urban Fill
Location ID	Unrestricted Use	Residential Use	Restricted Residential Use	Commercial Use	Industrial Use	F4	F5	F5	G2	G2	G2	G2	G3	G4	G5	G5	H2	H2	H2	H3	H3	H3	H4
Sample Depth						1 - 2	1.5 - 3	15 - 15	1 - 2	2 - 3	4 - 5	5 - 6	3 - 3	3 - 3	2 - 3	4 - 4	2 - 2	7 - 7	15 - 15	4 - 4	5 - 5	6 - 6	0 - 2
Date Sampled						02/16/2017	02/16/2017	02/16/2017	02/15/2017	02/16/2017	02/16/2017	02/16/2017	02/15/2017	02/15/2017	02/15/2017	02/15/2017	02/15/2017	02/15/2017	02/15/2017	02/15/2017	02/15/2017	02/15/2017	02/15/2017
Sample Matrix						SO	SO	SO	SO	SO	SO	SO	SO	SO	SO	SO	SO	SO	SO	SO	SO	SO	SO
Units						mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
VOCs																							
Acetone	0.05	100	100	500	1000	0.0395	0.0352	0.0214	ND	ND	0.0195 J		ND	ND	ND	ND	ND	ND	ND	ND			ND
Ethylbenzene	1	30	41	390	780	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND	ND			ND
Methylene Chloride	0.05	51	100	500	1000	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND	ND			ND
Tetrachloroethylene (PCE)	1.3	5.5	19	150	300	ND	ND	ND	0.00250 J	5.09	0.146		ND	ND	ND	ND	0.00454 J	ND	ND	ND			ND
Toluene	0.7	100	100	500	1000	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND	ND			ND
Trichloroethylene (TCE)	0.47	10	21	200	400	ND	ND	ND	ND	0.0493 J	0.00331 J		ND	ND	ND	ND	ND	ND	ND	ND			ND
1,3,5-Trimethylbenzene (Mesitylene)	8.4	47	52	190	380	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND	ND			ND
trans-Chlordane		0.54				ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND	ND			ND
SVOCs																							
Acenaphthene	20	100	100	500	1000	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND	ND			0.309 J
Acenaphthylene	100	100	100	500	1000	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	0.47 J	ND	ND	ND			0.198 J
Anthracene	100	100	100	500	1000	ND	ND	ND	ND	0.205 J	ND		ND	ND	ND	ND	1.29	ND	ND	ND			0.953
Benzo(A)Anthracene	1	1	1	5.6	11	ND	ND	ND	0.325 J	0.73	ND		ND	ND	0.279 J	ND	4.31	ND	ND	ND			2.02
Benzo(A)Pyrene	1	1	1	1	1.1	ND	ND	ND	0.308 J	0.674	ND		ND	ND	0.212 J	ND	4.76	ND	ND	ND			1.62
Benzo(B)Fluoranthene	1	1	1	5.6	11	ND	ND	ND	0.303 J	0.695	ND		ND	ND	0.268 J	ND	5.06	ND	ND	ND			1.61
Benzo(G,H,I)Perylene	100	100	100	500	1000	ND	ND	ND	0.205 J	0.428	ND		ND	ND	ND	ND	3.42	ND	ND	ND			0.881
Benzo(K)Fluoranthene	0.8	1	3.9	56	110	ND	ND	ND	0.262 J	0.537	ND		ND	ND	0.203 J	ND	3.18	ND	ND	ND			1.23
Chrysene	1	1	3.9	56	110	ND	ND	ND	0.35	0.69	ND		ND	ND	0.288 J	ND	4.18	ND	ND	ND			1.81
Dibenz(A,H)Anthracene	0.33	0.33	0.33	0.56	1.1	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	1.12	ND	ND	ND			0.343
Fluoranthene	100	100	100	500	1000	ND	ND	ND	0.724	1.41	ND		ND	ND	0.57	ND	8.34	ND	ND	ND			4.22
Fluorene	30	100	100	500	1000	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	0.408 J	ND	ND	ND			0.448
Indeno(1,2,3-C,D)Pyrene	0.5	0.5	0.5	5.6	11	ND	ND	ND	0.192 J	0.435	ND		ND	ND	ND	ND	2.95	ND	ND	ND			0.903
Naphthalene	12	100	100	500	1000	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND	ND			0.00550 J
Phenanthrene	100	100	100	500	1000	ND	ND	ND	0.456	0.953	ND		ND	ND	0.434	ND	4.64	ND	ND	ND			3.61
Pyrene	100	100	100	500	1000	ND	ND	ND	0.567	1.11	ND		ND	ND	0.372	ND	6.37	ND	ND	ND			3.23
Pesticidies																							
P,P'-DDE	0.0033	1.8	8.9	62	120	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND	ND			ND
P,P'-DDT	0.0033	1.7	7.9	47	94	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	0.00378	ND	ND	ND			ND
P,P'-DDD	0.0033	2.6	13	92	180	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND	ND			ND
Aldrin	0.005	0.019	0.097	0.68	1.4	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND	ND			ND
Beta-BHC (Beta Hexachlorocyclohexane)	0.036	0.072	0.36	3	14	ND	ND	ND	0.00230 JP	ND	ND		ND	ND	ND	ND	ND	ND	ND	ND			ND
cis-Chlordane	0.094	0.91	4.2	24	47	ND	ND	ND	0.00947	ND	ND		ND	ND	ND	ND	0.00207 JP	ND	ND	ND			ND
Delta-BHC (Delta Hexachlorocyclohexane)	0.04	100	100	500	1000	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND	ND			ND
Dibenzofuran	7	14	59	350	1000	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND	ND			0.265 J
Dieldrin	0.005	0.039	0.2	1.4	2.8	ND	ND	ND	0.00216 JP	ND	ND		ND	ND	ND	ND	ND	ND	ND	ND			ND
Alpha Endosulfan	2.4	4.8	24	200	920	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND	ND			ND
Beta Endosulfan	2.4	4.8	24	200	920	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND	ND			ND
Endosulfan Sulfate	2.4	4.8	24	200	920	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	0.00287 JP	ND	ND	ND			ND
Endrin	0.014	2.2	11	89	410	ND	ND	ND	0.00221 JP	ND	ND		ND	ND	ND	ND	ND	ND	ND	ND			ND
PCBs																							
PCB-1260 (Aroclor 1260)	0.1	1	1	1	25	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND	ND			ND
Metals																							
Arsenic	13	16	16	16	16	3.19	4.74	2.78	5.75	9.32	4.17		3.23 D	2.97	6.09	4.00	6.47	4.24	3.20	3.16			3.49
Barium	350	350	400	400	10000	66.0	115	46.2	86.1	159	164		118	87.3	154	153	101	97.5	56.4	144			68.9
Beryllium	7.2	14	72	590	2700	0.502	1.09	0.280	0.583	0.876	1.14		0.705	0.631	0.797	0.909	0.573	0.592	0.326	0.981			0.310
Cadmium	2.5	2.5	4.3	9.3	60	0.251 J	ND	ND	0.319	ND	ND		0.186 JM	0.234 J	0.711	0.473	0.762	0.352	0.265	0.501			0.158 J
Chromium, Hexavalent	1	22	110	400	800						ND			ND			ND			ND			
Chromium, Total	30	36	180	1500	6800	15.4	28.2	11.4	15.2	17.7	33.4	25.7	20.2 M	18.1	20.9	25.4	16.5	17.6	11.6	30	36.6	27.90	5.13
Copper	50	270	270	270	10000	16.8	19.1	10.4	27.7	500	27.3		16.1	14.3	70.5	21.3	54.1	16.1	12.9	20.8			26.4
Cyanide	27	27	27	27	10000	ND	ND	ND	ND	ND	ND		ND	ND	0.658	ND	ND	ND	ND	ND			ND
Lead	63	400	400	1000	3900	11.1	20.0	8.62	67.3	99	12.8		12.8 DM	17.7	292	13.4	184	15.7	8.55	10.8			64.3
Manganese	1600	2000	2000	10000	10000	406	1560	239	433	390	421		426 M	437	547	358	337	443	336	361			109
Mercury	0.18	0.81	0.81	2.8	5.7	0.0549	0.0741	0.0195	0.331	0.143	0.0865		0.0183	0.0836	0.156	0.0504	0.117	0.0216	0.00965	0.0129			0.0889
Nickel	30	140	310	310	10000	14.0	24.1	8.55	12.8	13.4	37.1	24.1	19.7 M	16.5	21.1	27.6	14.1	17.5	9.88	28.9			12.8
Selenium	3.9	36	180	1500	6800	ND	ND	ND	0.885	ND	ND		ND	ND	ND	ND	1.56	ND	ND	ND			ND
Silver	2	36	180	1500	6800	ND	ND	ND	ND	ND	ND		ND	ND	1.35	1.55	0.722	0.925	0.483 J	1.24			0.341 J
Zinc	109	2200	10000	10000	10000	67.3	79.1	62.8	82.1	68.6	69.5		63.1 M	54.1	142	69.7	160	55.8	53.2	66.7			22.8

Analytical Data compared to Part 375 Standards and DER-10

ND indicates analyte was not detected.

Blank space indicates analyte was not analyzed for in that sample.

Only analytes detected in at least one sample are shown.

J - Data indicates the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than MDL. The concentration given is an approximate value.

D - The reported value is from a secondary analysis with a dilution factor. The original analysis exceeded the calibration range.

M - Matrix spike recoveries outside QC limits. Matrix bias indicated.

TABLE 2: SOIL SAMPLE RESULTS - SUBSURFACE SAMPLING
1360 NIAGARA STREET REMEDIAL INVESTIGATION
BUFFALO, NEW YORK

	Unrestricted Use	Residential Use	Restricted Residential Use	Commercial Use	Industrial Use	Native				Native					Native	Native	
Location ID						H4	H4	H4	H4	H5	H5	H5	H5	H5	I2	I3	I3
Sample Depth						2.5 - 2.5	3.5 - 3.5	4.5 - 4.5	5.5 - 5.5	2.5 - 2.5	3 - 3	4 - 4	5 - 5	15 - 15	3 - 3	2.5 - 2.5	15 - 15
Date Sampled						02/15/2017	02/15/2017	02/15/2017	02/15/2017	02/15/2017	02/15/2017	02/15/2017	02/15/2017	02/15/2017	02/15/2017	02/15/2017	02/15/2017
Sample Matrix						SO	SO	SO	SO	SO	SO	SO	SO	SO	SO	SO	SO
Units						mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
VOCs																	
Acetone	0.05	100	100	500	1000	ND				ND				0.0112 J	ND	ND	ND
Ethylbenzene	1	30	41	390	780	ND				ND				ND	ND	ND	ND
Methylene Chloride	0.05	51	100	500	1000	ND				ND				ND	ND	ND	ND
Tetrachloroethylene (PCE)	1.3	5.5	19	150	300	ND				ND				ND	ND	ND	ND
Toluene	0.7	100	100	500	1000	ND				ND				ND	ND	ND	ND
Trichloroethylene (TCE)	0.47	10	21	200	400	ND				ND				ND	ND	ND	ND
1,3,5-Trimethylbenzene (Mesitylene)	8.4	47	52	190	380	ND				ND				ND	ND	ND	ND
trans-Chlordane		0.54				ND				ND				ND	ND	ND	ND
SVOCs																	
Acenaphthene	20	100	100	500	1000	ND				ND				ND	ND	ND	ND
Acenaphthylene	100	100	100	500	1000	ND				ND				ND	ND	ND	ND
Anthracene	100	100	100	500	1000	ND				ND				ND	ND	ND	ND
Benzo(A)Anthracene	1	1	1	5.6	11	ND				ND				ND	ND	ND	ND
Benzo(A)Pyrene	1	1	1	1	1.1	ND				ND				ND	ND	ND	ND
Benzo(B)Fluoranthene	1	1	1	5.6	11	ND				ND				ND	ND	ND	ND
Benzo(G,H,I)Perylene	100	100	100	500	1000	ND				ND				ND	ND	ND	ND
Benzo(K)Fluoranthene	0.8	1	3.9	56	110	ND				ND				ND	ND	ND	ND
Chrysene	1	1	3.9	56	110	ND				ND				ND	ND	ND	ND
Dibenz(A,H)Anthracene	0.33	0.33	0.33	0.56	1.1	ND				ND				ND	ND	ND	ND
Fluoranthene	100	100	100	500	1000	ND				ND				ND	ND	ND	ND
Fluorene	30	100	100	500	1000	ND				ND				ND	ND	ND	ND
Indeno(1,2,3-C,D)Pyrene	0.5	0.5	0.5	5.6	11	ND				ND				ND	ND	ND	ND
Naphthalene	12	100	100	500	1000	ND				ND				ND	ND	ND	ND
Phenanthrene	100	100	100	500	1000	ND				ND				ND	ND	ND	ND
Pyrene	100	100	100	500	1000	ND				ND				ND	ND	ND	ND
Pesticidies																	
P,P'-DDE	0.0033	1.8	8.9	62	120	ND				ND				ND	ND	ND	ND
P,P'-DDT	0.0033	1.7	7.9	47	94	ND				ND				ND	ND	ND	ND
P,P'-DDD	0.0033	2.6	13	92	180	ND				ND				ND	ND	ND	ND
Aldrin	0.005	0.019	0.097	0.68	1.4	ND				ND				ND	ND	ND	ND
Beta-BHC (Beta Hexachlorocyclohexane)	0.036	0.072	0.36	3	14	ND				ND				ND	ND	ND	ND
cis-Chlordane	0.094	0.91	4.2	24	47	ND				ND				ND	ND	ND	ND
Delta-BHC (Delta Hexachlorocyclohexane)	0.04	100	100	500	1000	ND				ND				ND	ND	ND	ND
Dibenzofuran	7	14	59	350	1000	ND				ND				ND	ND	ND	ND
Dieldrin	0.005	0.039	0.2	1.4	2.8	ND				ND				ND	ND	ND	ND
Alpha Endosulfan	2.4	4.8	24	200	920	ND				ND				ND	ND	ND	ND
Beta Endosulfan	2.4	4.8	24	200	920	ND				ND				ND	ND	ND	ND
Endosulfan Sulfate	2.4	4.8	24	200	920	ND				ND				ND	ND	ND	ND
Endrin	0.014	2.2	11	89	410	ND				ND				ND	ND	ND	ND
PCBs																	
PCB-1260 (Aroclor 1260)	0.1	1	1	1	25	ND				ND				ND	ND	ND	ND
Metals																	
Arsenic	13	16	16	16	16	4.68				4.86				2.80	4.05	4.77	4.85
Barium	350	350	400	400	10000	163				141				51.4	114	187	75.1
Beryllium	7.2	14	72	590	2700	1.48				1.27				0.243	0.849	0.857	0.407
Cadmium	2.5	2.5	4.3	9.3	60	0.397				0.279 J				0.184 J	0.494 D	0.351	0.363
Chromium, Hexavalent	1	22	110	400	800									ND	ND		
Chromium, Total	30	36	180	1500	6800	31.9	29.3			29.6				9.23	22.0 D	23.0	13.4
Copper	50	270	270	270	10000	25.4				22.9				8.65	16.7	20.3	14.4
Cyanide	27	27	27	27	10000	ND				ND				ND	ND	ND	
Lead	63	400	400	1000	3900	14.3				21.6				8.91	9.56 M	9.91	10.9
Manganese	1600	2000	2000	10000	10000	1120				587				263	362 M	367	437
Mercury	0.18	0.81	0.81	2.8	5.7	0.100				0.0174				0.0275	0.00666 JD	0.00649 J	0.00794 J
Nickel	30	140	310	310	10000	36	30.9	28.2		31.7				8.72	21.9 M	23.5	14.1
Selenium	3.9	36	180	1500	6800	ND				ND				ND	1.84 D	1.96	ND
Silver	2	36	180	1500	6800	2.2	3.19	2.63	ND	2.13	2.9	2.16	ND	ND	0.524 J	1.30	0.745
Zinc	109	2200	10000	10000	10000	72.0				71.6				41.9	49.3 D	52.6	70.2

Analytical Data compared to Part 375 Standards and DER-10

ND indicates analyte was not detected.

Blank space indicates analyte was not analyzed for in that sample.

Only analytes detected in at least one sample are shown.

J - Data indicates the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than MDL. The concentration given is an approximate value.

D - The reported value is from a secondary analysis with a dilution factor. The original analysis exceeded the calibration range.

M - Matrix spike recoveries outside QC limits. Matrix bias indicated.

TABLE 3: SOIL SAMPLE RESULTS - PERIMETER SAMPLING
1360 NIAGARA STREET REMEDIAL INVESTIGATION
BUFFALO, NEW YORK

Location ID	Unrestricted Use	Residential Use	Restricted Residential Use	Commercial Use	Industrial Use	P-A3	P-A4	P-B4	P-D1	P-D4	P-E1	P-E2
Sample Depth						2 - 2	2 - 2	1 - 1	1 - 1	1 - 1	3 - 4	4 - 4
Date Sampled						02/20/2017	02/20/2017	02/20/2017	02/20/2017	02/20/2017	02/17/2017	02/20/2017
Sample Matrix						SO	SO	SO	SO	SO	SO	SO
Units						mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
SVOCs												
Dibenzofuran	7	14	59	350	1000	0.203 J	ND	ND	ND	0.158 J	ND	ND
Acenaphthene	20	100	100	500	1000	0.255 J	ND	ND	ND	ND	ND	ND
Acenaphthylene	100	100	100	500	1000	ND	ND	ND	ND	ND	ND	ND
Anthracene	100	100	100	500	1000	0.41	ND	0.842 J	0.276 J	0.157 J	ND	ND
Benzo(A)Anthracene	1	1	1	5.6	11	1.46	0.554	2.03	0.987	0.284 J	ND	ND
Benzo(A)Pyrene	1	1	1	1	1.1	1.13	0.435	1.44 J	0.9	0.308 J	ND	ND
Benzo(B)Fluoranthene	1	1	1	5.6	11	1.33	0.558	1.56	0.795	0.396	ND	ND
Benzo(G,H,I)Perylene	100	100	100	500	1000	0.638	0.234 J	0.849 J	0.598	0.345	ND	ND
Benzo(K)Fluoranthene	0.8	1	3.9	56	110	0.78	0.355	1.12 J	0.788	0.298 J	ND	ND
Chrysene	1	1	3.9	56	110	1.51	0.558	1.99	1.07	0.381	ND	ND
Dibenz(A,H)Anthracene	0.33	0.33	0.33	0.56	1.1	0.291 J	ND	ND	ND	ND	ND	ND
Fluoranthene	100	100	100	500	1000	3.36	1.04	7.62	2.05	1.02	ND	ND
Fluorene	30	100	100	500	1000	0.346	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-C,D)Pyrene	0.5	0.5	0.5	5.6	11	0.607	0.228 J	0.778 J	0.713	0.259 J	ND	ND
Naphthalene	12	100	100	500	1000	ND	ND	ND	ND	ND	ND	ND
2-Methylphenol (O-Cresol)	0.33	100	100	500	1000	ND	ND	ND	ND	ND	ND	ND
Pentachlorophenol	0.8	2.4	6.7	6.7	55	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	100	100	100	500	1000	3.22	0.7	5.7	1.24	1.11	ND	ND
Phenol	0.33	100	100	500	1000	ND	ND	ND	ND	ND	ND	ND
Pyrene	100	100	100	500	1000	2.18	0.739	5.11	1.74	0.695	ND	ND
1,2-Dichlorobenzene	1.1	100	100	500	1000	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	2.4	17	49	280	560	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	1.8	9.8	13	130	250	ND	ND	ND	ND	ND	ND	ND
Hexachlorobenzene	0.33	0.41	1.2	6	12	ND	ND	ND	ND	ND	ND	ND
Metals												
Arsenic	13	16	16	16	16	3.69	13.2	1.35	18.1	0.290 J	5.34	3.78
Barium	350	350	400	400	10000	34.5	142	100	148	176	74.0	47.9
Beryllium	7.2	14	72	590	2700	0.231 J	0.551	2.66	0.681	5.21	0.648	0.324
Cadmium	2.5	2.5	4.3	9.3	60	ND	ND	ND	0.249 J	ND	ND	ND
Chromium, Total	30	36	180	1500	6800	6.62	9.29	5.04	29.5	10.5	17.3	11.1
Copper	50	270	270	270	10000	18.2	334	7.91	130	2.31	38.5	15.0
Lead	63	400	400	1000	3900	28.8	727	3.77	537	6.56	30.5	15.0
Manganese	1600	2000	2000	10000	10000	202	130	1240	456	2960	404	438
Mercury	0.18	0.81	0.81	2.8	5.7	0.0511	0.129	ND	0.389	ND	0.0843	0.0111
Nickel	30	140	310	310	10000	8.01	23.6	3.40	18.8	ND	19.7	10.0
Selenium	3.9	36	180	1500	6800	1.19	1.02 J	0.626 J	0.890 J	0.801 J	ND	ND
Silver	2	36	180	1500	6800	ND	ND	ND	ND	ND	ND	ND
Zinc	109	2200	10000	10000	10000	44.1	256	16.6	293	9.66	53.1	60.4

TABLE 3: SOIL SAMPLE RESULTS - PERIMETER SAMPLING
1360 NIAGARA STREET REMEDIAL INVESTIGATION
BUFFALO, NEW YORK

Location ID	Unrestricted Use	Residential Use	Restricted Residential Use	Commercial Use	Industrial Use	P-E4	P-F2	P-F3	P-F5	P-G5	P-H1	P-H5
Sample Depth						1.5 - 1.5	1 - 2	1.5 - 1.5	6 - 6	1 - 1	1 - 1	1 - 1
Date Sampled						02/20/2017	02/20/2017	02/20/2017	02/20/2017	02/20/2017	02/20/2017	02/20/2017
Sample Matrix						SO	SO	SO	SO	SO	SO	SO
Units						mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
SVOCs												
Dibenzofuran	7	14	59	350	1000	ND	ND	0.621 J	ND	ND	ND	0.617 J
Acenaphthene	20	100	100	500	1000	ND	ND	0.544 J	ND	ND	ND	0.999
Acenaphthylene	100	100	100	500	1000	ND	ND	1.09	ND	0.188 J	ND	ND
Anthracene	100	100	100	500	1000	ND	0.269 J	2.27	ND	0.704	ND	2.24
Benzo(A)Anthracene	1	1	1	5.6	11	ND	0.546	5.17	ND	2.01	ND	5.97
Benzo(A)Pyrene	1	1	1	1	1.1	ND	0.44	3.95	ND	1.6	ND	5.13
Benzo(B)Fluoranthene	1	1	1	5.6	11	ND	0.446	3.89	ND	1.57	ND	4.59
Benzo(G,H,I)Perylene	100	100	100	500	1000	ND	0.259 J	2.08	ND	0.887	ND	3.42
Benzo(K)Fluoranthene	0.8	1	3.9	56	110	ND	0.361	2.79	ND	0.985	ND	4.39
Chrysene	1	1	3.9	56	110	ND	0.531	4.69	ND	1.8	ND	5.78
Dibenz(A,H)Anthracene	0.33	0.33	0.33	0.56	1.1	ND	ND	0.613 J	ND	0.389	ND	1.04
Fluoranthene	100	100	100	500	1000	ND	1.22	12.1	ND	3.99	ND	12.4
Fluorene	30	100	100	500	1000	ND	ND	1.03	ND	0.23 J	ND	1.03
Indeno(1,2,3-C,D)Pyrene	0.5	0.5	0.5	5.6	11	ND	0.25 J	2.52	ND	0.853	ND	3.95
Naphthalene	12	100	100	500	1000	ND	ND	ND	ND	ND	ND	0.467 J
2-Methylphenol (O-Cresol)	0.33	100	100	500	1000	ND	ND	ND	ND	ND	ND	ND
Pentachlorophenol	0.8	2.4	6.7	6.7	55	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	100	100	100	500	1000	ND	1.03	10	ND	3.1	ND	9.39
Phenol	0.33	100	100	500	1000	ND	ND	ND	ND	ND	ND	ND
Pyrene	100	100	100	500	1000	ND	0.926		ND	2.96	ND	9.13
1,2-Dichlorobenzene	1.1	100	100	500	1000	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	2.4	17	49	280	560	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	1.8	9.8	13	130	250	ND	ND	ND	ND	ND	ND	ND
Hexachlorobenzene	0.33	0.41	1.2	6	12	ND	ND	ND	ND	ND	ND	ND
Metals												
Arsenic	13	16	16	16	16	4.61	9.56	14.1	3.09	5.32	2.59	5.44
Barium	350	350	400	400	10000	77.5	114	153	31.7	116	49.0	177
Beryllium	7.2	14	72	590	2700	0.619	0.628	0.773	0.285 J	0.904	0.259 J	1.06
Cadmium	2.5	2.5	4.3	9.3	60	ND	ND	ND	ND	ND	ND	ND
Chromium, Total	30	36	180	1500	6800	17.6	22.7	14.9	9.53	23.5	5.58	35.6
Copper	50	270	270	270	10000	22.8	51.6	88.8	10.7	33.5	33.1	57.2
Lead	63	400	400	1000	3900	61.6	906	561	10.8	97.5	28.6	108
Manganese	1600	2000	2000	10000	10000	417	638	392	286	760	110	1110
Mercury	0.18	0.81	0.81	2.8	5.7	0.278	0.184	0.229	0.627	0.309	0.0817	0.262
Nickel	30	140	310	310	10000	18.0	17.7	13.4	8.50	25.2	10.8	19.1
Selenium	3.9	36	180	1500	6800	ND	ND	1.02 J	ND	ND	ND	ND
Silver	2	36	180	1500	6800	ND	ND	ND	ND	ND	ND	ND
Zinc	109	2200	10000	10000	10000	60.1	126	169	77.9	94.2	21.9	194

TABLE 3: SOIL SAMPLE RESULTS - PERIMETER SAMPLING
1360 NIAGARA STREET REMEDIAL INVESTIGATION
BUFFALO, NEW YORK

Location ID Sample Depth Date Sampled Sample Matrix Units	Unrestricted Use	Residential Use	Restricted Residential Use	Commercial Use	Industrial Use	P-I4 1 - 2 02/20/2017 SO mg/kg	
SVOCs							
Dibenzofuran	7	14	59	350	1000	**0.272**	J
Acenaphthene	20	100	100	500	1000	**0.286**	J
Acenaphthylene	100	100	100	500	1000	ND	
Anthracene	100	100	100	500	1000	**0.784**	
Benzo(A)Anthracene	1	1	1	5.6	11	**1.81**	
Benzo(A)Pyrene	1	1	1	1	1.1	**1.6**	
Benzo(B)Fluoranthene	1	1	1	5.6	11	**1.48**	
Benzo(G,H,I)Perylene	100	100	100	500	1000	**1.05**	
Benzo(K)Fluoranthene	0.8	1	3.9	56	110	**1.3**	
Chrysene	1	1	3.9	56	110	**1.72**	
Dibenz(A,H)Anthracene	0.33	0.33	0.33	0.56	1.1	**0.345**	J
Fluoranthene	100	100	100	500	1000	**4.12**	
Fluorene	30	100	100	500	1000	**0.409**	
Indeno(1,2,3-C,D)Pyrene	0.5	0.5	0.5	5.6	11	**0.949**	
Naphthalene	12	100	100	500	1000	**0.202**	J
2-Methylphenol (O-Cresol)	0.33	100	100	500	1000	ND	
Pentachlorophenol	0.8	2.4	6.7	6.7	55	ND	
Phenanthrene	100	100	100	500	1000	**3.63**	
Phenol	0.33	100	100	500	1000	ND	
Pyrene	100	100	100	500	1000	**3.21**	
1,2-Dichlorobenzene	1.1	100	100	500	1000	ND	
1,3-Dichlorobenzene	2.4	17	49	280	560	ND	
1,4-Dichlorobenzene	1.8	9.8	13	130	250	ND	
Hexachlorobenzene	0.33	0.41	1.2	6	12	ND	
Metals							
Arsenic	13	16	16	16	16	**7.71**	
Barium	350	350	400	400	10000	**166**	
Beryllium	7.2	14	72	590	2700	**0.868**	
Cadmium	2.5	2.5	4.3	9.3	60	ND	
Chromium, Total	30	36	180	1500	6800	**27.5**	
Copper	50	270	270	270	10000	**68.2**	
Lead	63	400	400	1000	3900	**139**	
Manganese	1600	2000	2000	10000	10000	**1060**	
Mercury	0.18	0.81	0.81	2.8	5.7	**0.365**	
Nickel	30	140	310	310	10000	**21.6**	
Selenium	3.9	36	180	1500	6800	ND	
Silver	2	36	180	1500	6800	ND	
Zinc	109	2200	10000	10000	10000	**150**	

TABLE 4: SOIL SAMPLE RESULTS - SUB-SLAB SAMPLING
1360 NIAGARA STREET REMEDIAL INVESTIGATION
BUFFALO, NEW YORK

Location ID	Unrestricted Use	Residential Use	Restricted Residential Use	Commercial Use	Industrial Use	A2		B2		B3		D2		D3	
Sample Depth						Beneath Slab		Beneath Slab		Beneath Slab		Beneath Slab		Beneath Slab	
Date Sampled						02/21/2017		02/21/2017		02/21/2017		02/21/2017		02/21/2017	
Sample Matrix						SO		SO		SO		SO		SO	
Units						mg/kg		mg/kg		mg/kg		mg/kg		mg/kg	
VOCs															
Acetone	0.05	100	100	500	1000	ND		ND		**0.0144**	J	ND		ND	
Chloroform	0.37	10	49	350	700	ND		ND		**0.00912**		ND		**0.00281**	J
Tert-Butyl Methyl Ether	0.93	62	100	500	1000	ND		ND		ND		ND		**0.00469**	J
Tetrachloroethylene (PCE)	1.3	5.5	19	150	300	ND		ND		**0.0317**		**0.0224**		**0.0466**	
SVOCs															
Chrysene	1	1	3.9	56	110	ND		ND		**0.192**	J	**0.181**	J	ND	
Fluoranthene	100	100	100	500	1000	ND		ND		**0.2**	J	**0.243**	J	ND	
Pyrene	100	100	100	500	1000	ND		ND		**0.194**	J	**0.235**	J	ND	
Pesticides															
P,P'-DDD	0.0033	2.6	13	92	180	ND		ND		ND		**0.00198**	JP	ND	
cis-Chlordane	0.094	0.91	4.2	24	47	ND		ND		**0.00199**	JP	**0.00616**	P	**0.00190**	J
Endosulfan Sulfate	2.4	4.8	24	200	920	ND		ND		**0.00347**	JP	**0.00283**	JP	ND	
Endrin	0.014	2.2	11	89	410	ND		ND		ND		**0.00209**	JP	ND	
PCBs															
Not detected															
Metals															
Arsenic	13	16	16	16	16	**3.09**		**3.58**		**4.64**	D	**7.98**		**6.17**	
Barium	350	350	400	400	10000	**63.7**		**91.0**		**80.3**	D	**40.2**		**51.9**	
Beryllium	7.2	14	72	590	2700	**0.462**		**0.610**		**0.716**	D	**1.08**		**0.463**	
Cadmium	2.5	2.5	4.3	9.3	60	ND		ND		ND		ND		ND	
Chromium, Hexavalent	1	22	110	400	800									ND	
Chromium, Total	30	36	180	1500	6800	**13.7**		**18.0**		**4.96**		**6.93**		**11.8**	
Copper	50	270	270	270	10000	**13.6**		**16.1**		**12.4**	D	**13.7**		**14.7**	
Cyanide	27	27	27	27	10000	ND	UM	ND				ND		ND	
Lead	63	400	400	1000	3900	**12.6**		**14.9**		**9.20**	D	**10.0**		**18.1**	
Manganese	1600	2000	2000	10000	10000	**442**		**476**		**32.8**	M	**87.4**		**304**	
Mercury	0.18	0.81	0.81	2.8	5.7	**0.0164**	D	**0.0150**		**0.0457**		**0.0288**		**0.0215**	
Nickel	30	140	310	310	10000	**14.8**		**19.1**		**11.6**	D	**16.2**		**12.8**	
Selenium	3.9	36	180	1500	6800	ND		ND		ND		ND		ND	
Silver	2	36	180	1500	6800	**0.924**		**1.35**		ND		**0.603**		ND	
Zinc	109	2200	10000	10000	10000	**48.5**		**57.4**		**15.1**		**32.1**		**58.5**	

TABLE 5: GROUNDWATER SAMPLE RESULTS
1360 NIAGARA STREET REMEDIAL INVESTIGATION
BUFFALO, NEW YORK

	Location ID	MW-3		MW-3		MW-11		MW-11		MW-16		MW-16		MW-17		MW-17		MW-18		MW-18	
	Sample Matrix	WG		WG		WG		WG		WG		WG		WG		WG		WG		WG	
	Date Sampled	02/09/2017		03/10/2017		02/09/2017		03/10/2017		02/10/2017		03/09/2017		02/09/2017		03/09/2017		02/10/2017		03/09/2017	
	Units	ug/l		ug/l		ug/l		ug/l		ug/l		ug/l		ug/l		ug/l		ug/l		ug/l	
	Groundwater Guidance Value																				
Semi-volatile Organic Compounds																					
Acenaphthene	20.0 ug/l	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
Acenaphthylene		--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
Anthracene	50.0 ug/l	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
Benzo(A)Anthracene	0.002 ug/l	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
Benzo(A)Pyrene		--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
Benzo(B)Fluoranthene	0.002 ug/l	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
Benzo(G,H,I)Perylene		--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
Benzo(K)Fluoranthene	0.002 ug/l	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
Chrysene	0.002 ug/l	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
Dibenz(A,H)Anthracene		--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
Fluoranthene	50.0 ug/l	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
Fluorene	50.0 ug/l	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
Indeno(1,2,3-C,D)Pyrene	0.002 ug/l	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
Naphthalene	10.0 ug/l	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
2-Methylphenol (O-Cresol)		--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
Pentachlorophenol	1.0 ug/l	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
Phenanthrene	50.0 ug/l	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
Phenol	1.0 ug/l	5570		10700		--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
Pyrene	50.0 ug/l	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
Volatile Organic Compounds																					
1,1,1-Trichloroethane	5.0 ug/l	--	U	--	U	1.37	J	1.90	J	--	U	--	U	--	U	--	U	--	U	--	U
1,1-Dichloroethane	5.0 ug/l	--	UM	--	U	88.2		121		--	U	--	U	--	U	--	U	--	U	--	U
1,1-Dichloroethene	5.0 ug/l	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
1,2,4-Trimethylbenzene		--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
1,2-Dichlorobenzene	3.0 ug/l	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
1,2-Dichloroethane	0.6 ug/l	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
5-Trimethylbenzene (Mesityle	5.0 ug/l	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
1,3-Dichlorobenzene	3.0 ug/l	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
1,4-Dichlorobenzene	3.0 ug/l	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
1,4-Dioxane (P-Dioxane)		--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
Acetone	50.0 ug/l	11000		9560		11.1		--	U	--	U	--	U	--	U	--	U	--	U	--	U
Benzene	1.0 ug/l	--	UM	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
Carbon Tetrachloride	5.0 ug/l	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
Chlorobenzene	5.0 ug/l	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
Chloroform	7.0 ug/l	--	UM	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
Cis-1,2-Dichloroethylene	5.0 ug/l	128	J	139	J	14.8		19.5		286		437		3.66		3.88		--	U	--	U
Ethylbenzene	5.0 ug/l	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
Hexachlorobenzene	0.04 ug/l	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
Methylene Chloride	5.0 ug/l	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
N-Butylbenzene	5.0 ug/l	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
N-Propylbenzene	5.0 ug/l	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
Sec-Butylbenzene	5.0 ug/l	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
Methyl Ethyl Ketone (2-Butanone)	50.0 ug/l	4980		8700		--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
2-Hexanone		--	U	535		--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
Tert-Butyl Methyl Ether		--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
Tetrachloroethylene (PCE)	5.0 ug/l	--	U	--	U	--	U	--	U	10.9		--	U	--	U	--	U	--	U	--	U
Toluene	5.0 ug/l	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
Trans-1,2-Dichloroethene	5.0 ug/l	--	U	--	U	1.50	J	2.30		--	U	--	U	--	U	--	U	--	U	--	U
Trichloroethylene (TCE)	5.0 ug/l	--	U	--	U	--	U	--	U	2.18	J	--	U	--	U	--	U	--	U	--	U
Vinyl Chloride	2.0 ug/l	--	UM	--	U	68.7		96		273		298		7.3		4.58		--	U	1.07	J
Pesticides																					
Silvex (2,4,5-TP)		--	U			--	U			--	U			--	U			--	U		
P,P'-DDE	0.2 ug/l	0.132	PM	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
P,P'-DDT	0.2 ug/l	0.104	PM	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
P,P'-DDD	0.3 ug/l	0.963	PM	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
Aldrin		--	U	--	U	--	U	--	U	--	U	--	UM	--	U	--	U	--	U	--	U
Alpha Bhc (Alpha Hexachlorocyclohexane)	0.01 ug/l	0.133	PM	0.168		--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
Alpha Endosulfan		--	UM	0.0754	JP	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
Beta Bhc (Beta Hexachlorocyclohexane)	0.04 ug/l	--	UM	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
Beta Endosulfan		--	UM	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
cis-Chlordane		0.205	PM	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
trans-Chlordane		0.360	PM	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
Delta BHC (Delta Hexachlorocyclohexane)	0.04 ug/l	--	UM	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
Dibenzofuran		--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
Dieldrin		--	UM	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
Endosulfan Sulfate		--	UM	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
Endrin		0.433	PM	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
Gamma Bhc (Lindane)	0.05 ug/l	0.0744	JPM	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
Heptachlor	0.04 ug/l	0.0916	JM	--	U	--	U	--	U	--	U	--	UM	--	U	--	U	--	U	--	U
PCBs																					
PCB-1016 (Aroclor 1016)	0.09 ug/l	--	UM	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
PCB-1221 (Aroclor 1221)	0.09 ug/l	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
PCB-1232 (Aroclor 1232)	0.09 ug/l	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
PCB-1242 (Aroclor 1242)	0.09 ug/l	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
PCB-1248 (Aroclor 1248)	0.09 ug/l	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U

TABLE 5: GROUNDWATER SAMPLE RESULTS
1360 NIAGARA STREET REMEDIAL INVESTIGATION
BUFFALO, NEW YORK

	Location ID	MW-3		MW-3		MW-11		MW-11		MW-16		MW-16		MW-17		MW-17		MW-18		MW-18	
	Sample Matrix	WG		WG		WG		WG		WG		WG		WG		WG		WG		WG	
	Date Sampled	02/09/2017		03/10/2017		02/09/2017		03/10/2017		02/10/2017		03/09/2017		02/09/2017		03/09/2017		02/10/2017		03/09/2017	
	Units	ug/l		ug/l		ug/l		ug/l		ug/l		ug/l		ug/l		ug/l		ug/l		ug/l	
	Groundwater Guidance Value																				
PCB-1254 (Aroclor 1254)	0.09 ug/l	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
PCB-1260 (Aroclor 1260)	0.09 ug/l	--	UM	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
PCB-1262 (Aroclor 1262)	0.09 ug/l	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
PCB-1268 (Aroclor 1268)	0.09 ug/l	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
Metals																					
Arsenic	25.0 ug/l	--	U	--	U	--	U	--	U	7.65	J	--	U	--	U	--	U	--	U	--	U
Barium	1000.0 ug/l	5120		5120		75.5	J	73.1	J	76.8	J	98.8	J	104		86.7	J	96.4	J	157	
Beryllium	3.0 ug/l	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
Cadmium	5.0 ug/l	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
Chromium, Hexavalent	50.0 ug/l	--	UM	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
Chromium, Total	50.0 ug/l	--	U	5.39	J	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
Copper	200.0 ug/l	--	U	29.3		--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
Cyanide	200.0 ug/l	9.30	J			--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
Lead	25.0 ug/l	6.59	J	10.3		--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
Manganese	300.0 ug/l	1720		1940		71		113		263		254		23		36.3		67.9		66.7	
Mercury	0.7 ug/l	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
Nickel	100.0 ug/l	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
Selenium	10.0 ug/l	21.6	D	24.4		--	U	--	U	--	U	--	U	12		--	U	--	U	--	U
Silver	50.0 ug/l	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U
Zinc	2000.0 ug/l	33.8	J	131		--	U	--	U	--	U	--	U	--	U	--	U	--	U	--	U

TABLE 6: SOIL VAPOR ANALYTICAL RESULTS
1360 NIAGARA STREET REMEDIAL INVESTIGATION
BUFFALO, NEW YORK

Location ID	SS-1	SS-2	SS-3	15170-V-1 (Boiler Room)	15170-V-2 (Basement)
Sample Depth	Beneath Slab	Beneath Slab	Beneath Slab	Beneath Slab	Indoor Air
Date Sampled	07/10/2017	07/10/2017	07/10/2017	10/03/2015	10/03/2015
Sample Matrix	Air	Air	Air	Air	Air
Units	ug/m^3	ug/m^3	ug/m^3	ug/m^3	ug/m^3
VOCs					
1,1,1-Trichloroethane	**6.7**	**0.82**	**1.7**	--	--
1,1-Dichloroethene	ND	ND	ND	--	--
Cis-1,2-Dichloroethylene	ND	ND	ND	--	--
Carbon Tetrachloride	**1**	**0.69**	**0.69**	ND	**0.415**
Methylene Chloride	**4.2**	**3.2**	**3.2**	**13.2**	**18.4**
Tetrachloroethylene (PCE)	**6.2**	**4.8**	**5**	**7.12**	**5.99**
Trichloroethylene (TCE)	ND	**1**	**2**	ND	**0.129**
Vinyl Chloride	ND	ND	ND	**0.752**	ND

ND indicates analyte was not detected.

Blank space indicates analyte was not analyzed for in that sample.

Only analytes detected in at least one sample are shown.

J - Data indicates the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than MDL. The concentration given is an approximate value.

P - For dual column analysis, the percent difference between the quantitated concentrations on the two columns is greater than 40%. (Organics) - For dual column analysis, the lowest quantitated concentration is being reported due to coeluting interference. (Inorganics) - The sample/duplicate %RPD was above the control limit.

D - The reported value is from a secondary analysis with a dilution factor. The original analysis exceeded the calibration range.

M - Matrix spike recoveries outside QC limits. Matrix bias indicated.

TABLE 7: SOIL SAMPLE RESULTS - UNDERGROUND STORAGE TANK RESULTS
1360 NIAGARA STREET REMEDIAL INVESTIGATION
BUFFALO, NEW YORK

						5,000 Gallon UST		7,500 Gallon UST
Location ID						**N-Side Wall**	**Bottom-9.5ft**	**Bottom-062917**
Date Sampled	**Unrestricted Use**	**Residential Use**	**Restricted Residential Use**	**Commercial Use**	**Industrial Use**	**04/20/2017**	**04/20/2017**	**06/29/2017**
Sample Matrix						**SO**	**SO**	**SO**
Units						**mg/kg**	**mg/kg**	**mg/kg**
VOCs (CP-51)								
1,2,4-Trimethylbenzene	3.6	47	52	190	380	ND		ND
1,3,5-Trimethylbenzene (Mesitylene)	8.4	47	52	190	380	ND		ND
Benzene	0.06	2.9	4.8	44	89	ND		ND
Ethylbenzene	1	30	41	390	780	ND		ND
Isopropylbenzene						ND		ND
m,p-Xylene	0.26	100	100	500	1000	ND		ND
Methyl tert-butyl Ether	0.93	62	100	500	1000	ND		ND
n-Butylbenzene	12	100	100	500	1000	ND		ND
n-Propylbenzene	3.9	100	100	500	1000	ND		ND
o-Xylene	0.26	100	100	500	1000	ND		ND
p-Isoproyltoluene						ND		ND
sec-Butylbenzene	11	100	100	500	1000	ND		ND
tert-Butylbenzene	5.9	100	100	500	1000	ND		ND
Toluene	0.7	100	100	500	1000	ND		ND
SVOCs (CP-51)								
Acenaphthene	20	100	100	500	1000	ND		ND
Acenaphthylene	100	100	100	500	1000	ND		ND
Anthracene	100	100	100	500	1000	ND		ND
Benzo(A)Anthracene	1	1	1	5.6	11	ND		ND
Benzo(A)Pyrene	1	1	1	1	1.1	ND		ND
Benzo(B)Fluoranthene	1	1	1	5.6	11	ND		ND
Benzo(G,H,I)Perylene	100	100	100	500	1000	ND		ND
Benzo(K)Fluoranthene	0.8	1	3.9	56	110	ND		ND
Chrysene	1	1	3.9	56	110	ND		ND
Dibenz(A,H)Anthracene	0.33	0.33	0.33	0.56	1.1	ND		ND
Fluoranthene	100	100	100	500	1000	ND		ND
Fluorene	30	100	100	500	1000	ND		ND
Indeno(1,2,3-C,D)Pyrene	0.5	0.5	0.5	5.6	11	ND		ND
Naphthalene	12	100	100	500	1000	ND		ND
Phenanthrene	100	100	100	500	1000	ND		ND
Pyrene	100	100	100	500	1000	ND		ND
VOCs								
1,2,4-Trimethylbenzene	3.6	47	52	190	380		**0.425**	
Naphthalene	12	100	100	500	1000		**0.586**	
n-Butylbenzene	12	100	100	500	1000		**0.153**	
p-Isoproyltoluene							**0.0394**	
SVOCs								
2-Methylnapthalene							**1.35**	
Phenanthrene	100	100	100	500	1000		**0.332**	