CONESTOGA-ROVERS & ASSOCIATES

SUPPLEMENTAL SITE INVESTIGATION WORK PLAN – BEDROCK WELL INSTALLATION

FORMER BUFFALO CHINA SITE
SITE NO. C915209
51 HAYES PLACE
BUFFALO, NEW YORK

NOVEMBER 26, 2008
REF. NO. 037191 (5)

TABLE OF CONTENTS

		Page
1.0	INTRODUCTION	1
1.1	PURPOSE	1
1.2	REPORT ORGANIZATION	2
2.0	SITE DESCRIPTION AND HISTORY	3
2.1	SITE DESCRIPTION	3
2.2	PHYSICAL SETTING	3
2.3	PRIOR ENVIRONMENTAL INVESTIGATIONS	4
2.3.1	2006 SUPPLEMENTAL SITE INVESTIGATION CONCLUSIONS	4
2.4	BROWNFIELD CLEANUP AGREEMENT SITE INVESTIGATION	5
2.4.1	SOIL BORING INSTALLATION AND SUBSURFACE SOIL SAMPLING	5
2.4.2	SURFACE SOIL SAMPLING	6
2.4.3	GROUNDWATER MONITORING WELL INSTALLATION AND GROUNDWATER SAMPLING	7
3.0	OBJECTIVES, SCOPE, AND RATIONALE FOR ADDITIONAL WORK	8
3.1	PROPOSED SUPPLEMENTAL INVESTIGATION ACTIVITIES	8
3.1.1	BEDROCK GROUNDWATER MONITORING WELL INSTALLATION	8
3.1.2	HYDRAULIC CONDUCTIVITY TESTING	10
3.1.3	SITE SURVEY	11
4.0	SCHEDULE	12
5.0	REPORTING	13

LIST OF FIGURES
(Following Text)

FIGURE 1 SITE LOCATION MAP

FIGURE 2 SITE LAYOUT

FIGURE 3 2007 AND 2008 SAMPLE LOCATIONS

FIGURE 4 PROPOSED ADDITIONAL MONITORING WELL LOCATIONS

LIST OF TABLES
(Following Text)

TABLE 1 SUMMARY OF SOIL SAMPLE COLLECTION AND ANALYSIS DETAILS

TABLE 2 SUMMARY OF MONITORING WELL AND GROUNDWATER SAMPLE COLLECTION AND ANALYSIS DETAILS

TABLE 3 PROPOSED SAMPLING AND ANALYSIS SUMMARY

TABLE 4 PROPOSED SCHEDULE

1.0 INTRODUCTION

This Supplemental Site Investigation (SSI) Work Plan – Bedrock Well Installation (Work Plan) has been prepared by Conestoga-Rovers & Associates (CRA) on behalf of Buffalo China, Inc. (Buffalo China). The purpose of this Work Plan is to describe the procedures for the additional fieldwork to be conducted at the Former Buffalo China Site as part of the ongoing Brownfield Cleanup Agreement (BCA) Site Investigation. The additional investigation activities include additional monitoring well installation and sampling and hydraulic conductivity testing.

The Site is currently owned by Niagara Ceramics and is located at 51 Hayes Place, Buffalo, New York, as shown on Figure 1. In March 2004, Buffalo China sold the property to Niagara Ceramics but retained liability for environmental impairment of the Site and adjacent properties impacted by the Site prior to the sale. Buffalo China has entered into a BCA with the New York State Department of Environmental Conservation (NYSDEC) to investigate and remediate, as appropriate, potential areas of environmental concern associated with the Site.

During previous sampling events conducted under the BCA Site Investigation, four groundwater monitoring wells (MW-13, MW-14, MW-15, and MW-16) did not produce groundwater during the August 2007 and May 2008 groundwater sampling events. The lack of production by these wells resulted in a data gap for the groundwater chemistry for properties located to the southwest of the property. This report presents the Supplemental Work Plan for the Site investigation to delineate the nature and extent of chemical presence associated with former Buffalo China operations in environmental media at and in the vicinity of the Site as outlined in CRA's June 2007 Site Investigation Work Plan. This Work Plan has been prepared in accordance with the NYSDEC draft document DER-10, "Technical Guidance for Site Investigation and Remediation," dated December 2002 (DER-10) and the NYSDEC document "Draft Brownfield Cleanup Program Guide," dated May 2004.

1.1 PURPOSE

The primary objective of the BCA Site Investigation is to gather the data necessary to complete the characterization of chemical presence attributable to former Buffalo China operations in on-Site and off-Site groundwater in the northwestern area of the Site. The proposed investigation activities will help determine the bedrock groundwater conditions upgradient of the Site, at the source area, and at locations down and cross-gradient of the source area. In addition to the monitoring well installation, the

average Site hydraulic conductivity of the overburden and bedrock will be calculated. The hydraulic conductivity will be used to determine contaminate travel times. Once the groundwater characterization in this area is complete, a determination will be made as to the need for additional investigation activities to completely define the nature and extent of any additionally identified contamination.

1.2 REPORT ORGANIZATION

This Work Plan is organized as follows:

i) Section 1.0 – Introduction: The introduction presents an overview of the project to date;

ii) Section 2.0 – Site History and Description: Descriptions of the Site location, physical condition, current and historic use, and results of previous investigations are presented in Section 2.0;

iii) Section 3.0 – Objectives, Scope, and Rationale: Definitions of the objectives, scope, and rationale for the work to be conducted during the SI are presented in Section 3.0;

iv) Section 4.0 – Proposed Investigation Activities: The Work Plan for the proposed SI is presented in Section 4.0; and

v) Section 5.0 – Schedule: A preliminary project schedule is presented in Section 6.0.

The Field Sampling and Analysis Plan (FSP), Quality Assurance Project Plan (QAPP), and Health and Safety Plan (HASP) for the SI are contained in Appendices A through C, respectively of the original Site Investigation Work Plan dated June 19, 2007. The scope outlined in this Work Plan will be completed under these documents previously submitted and approved by the NYSDEC.

The BCP requires participants to conduct citizen participation activities to keep the public and concerned individuals informed during the investigation and cleanup activities. A Citizen Participation Plan (CPP) has been prepared and is contained in Appendix D of the original Site Investigation Work Plan dated June 19, 2007.

2.0 SITE DESCRIPTION AND HISTORY

2.1 SITE DESCRIPTION

The Former Buffalo China Site is located at 51 Hayes Place in Buffalo, New York. The Site location and Site plan are shown on Figures 1 and 2, respectively. The Site comprises approximately 10 acres and is bounded on the north by Conrail Railroad tracks, on the east by the adjoining Buffalo China Warehouse and other commercial/industrial facilities, and on the south and west by commercial, industrial, and residential properties. Interstate I-190 is located nearby to the south of the Site, while the City of Buffalo School 26 and adjacent playground is located a few hundred feet to the southwest. The nearest body of water is the Buffalo River, located approximately ¼ to ½ mile south and east of the Site. Figure 2 provides a layout of the Site.

The Site includes buildings, outdoor storage silos, a rail spur, roadways, and parking areas. The manufacturing building is a multi-story structure covering approximately 4 acres. The building is connected to the Buffalo China Warehouse to the east. Another smaller building referred to as the Harrison Street warehouse is located in the northwest end of the Site and covers an area of approximately ½ acre. The primary access to the Site is through the east side of the Site, near the Buffalo China Warehouse and via Hayes Place. The property has been used for the manufacture of china for the past 100 plus years. During that time period, the manufacturing facility expanded to adjacent industrial properties, which included the Standard Mirror Co. and Atlas Wrecking. The Harrison Street Warehouse was once a part of the Standard Mirror facility.

2.2 PHYSICAL SETTING

The Site lies within the City of Buffalo corporation limits in a relatively flat parcel of land. The Site is located in an industrial area of the City. The SSI determined that the Site is underlain by fill materials ranging in thickness from 0 to 4 feet below ground surface (bgs). Fill materials are underlain by clay deposits which range in depth from 4 feet bgs extending to a depth of at least 16.9 feet bgs (the maximum depth of one of the boreholes). Underlying the clay deposits is bedrock, which for the Buffalo area typically consists of dolomite.

2.3 PRIOR ENVIRONMENTAL INVESTIGATIONS

Previous investigations at the Site include a Phase I and II (ESA), prepared by Environmental Audits, Inc. (EA) in 2004 and a SSI completed by CRA in 2006.

These previous investigations identified the presence of metals, volatile organic compounds (VOCs), and semi-volatile organic compounds (SVOCs) at the Site at concentrations exceeding 6 NYCRR Part 375 Soil Cleanup Objectives (SCOs). In addition, VOCs were detected in groundwater samples in the vicinity of the Harrison Street Warehouse at concentrations above 6 NYCRR Part 703.5 Class GA Groundwater standards.

The information presented in the EA documents was used by CRA to develop the scope of work for the SSI, which was completed in May 2006. The investigative results for the Phase II investigation conducted by EA were summarized and presented as Appendix A in the 2006 SSI Report. The results of the SSI conducted by CRA are discussed below.

2.3.1 2006 SUPPLEMENTAL SITE INVESTIGATION CONCLUSIONS

Based on the results of the 2006 SSI and the Qualitative Human Health Exposure Assessment for the Former Buffalo China Site, the following conclusions were made:

1. The borehole investigation identified the presence of fill material to depths of up to 4 feet bgs, comprising soil, brick, and slag. The fill material is underlain by fine-grained soil; i.e., clay with silt. Borehole refusal occurred within the fine-grained soils, at depths of up to approximately 17 feet bgs.
2. Analytical data for soil samples identified the presence of lead, VOCs, and SVOCs. The chemical impacts are primarily found in shallow soil/fill material. The chemical concentrations are significantly reduced in the underlying sample intervals.
3. Groundwater was found within monitoring wells installed within the fill/clay material. The depth to groundwater varies from approximately 1 to 7.5 feet bgs. Water level data indicate that the groundwater hydraulic gradient is southwesterly. The fine-grained soil conditions present an impediment to groundwater flow.
4. Analytical data for groundwater samples identified the presence of VOCs at on-Site monitoring wells. The most frequently detected VOCs are trichloroethene (TCE) and cis-1,2-dichloroethene (DCE). The greatest VOC concentrations were detected at MW-5, located in the area between the Niagara Ceramics building and the Harrison Street Warehouse, and at MW-6, located to the south of MW-5 near the

property boundary. At MW-8, lead was detected in the unfiltered sample (total lead analysis), but was not detected in the filtered sample (dissolved lead analysis).

5. A qualitative exposure assessment was completed based on the 2006 SSI and 2004 EA Phase II investigation data. The assessment identified media and potential human exposure for on-Site soil (through dermal contact, incidental ingestion, and inhalation of particulate and volatile vapors), and on-Site groundwater (through dermal contact, incidental ingestion, and inhalation of volatile vapors). The potentially exposed receptors include Site workers (industrial workers and construction/utility workers) and persons that may trespass onto the Site. Potential human exposure can be addressed using remedial or other methods to eliminate exposure pathways and/or provide worker protection.
6. Chemicals of potential concern (COPC) were identified by comparison of maximum detected concentrations to conservative screening criteria for soil and groundwater. The identified COPCs for soil include TCE, benzo(a)pyrene, dibenz(a,h)anthracene, arsenic, and lead. Additional volatile compounds are flagged as COPCs for the soil-to-indoor air pathway. The identified COPCs for groundwater include cis-1,2-DCE, TCE, vinyl chloride, and lead.

2.4 BROWNFIELD CLEANUP AGREEMENT SITE INVESTIGATION

The primary objective of this BCA SI is to gather the data necessary to complete the characterization of chemical presence attributable to former Buffalo China operations in on-Site and off-Site soil, groundwater, and other potential receptors. The investigation has been focused on the areas identified in the 2006 SSI as having chemical concentrations exceeding applicable NYSDEC standards that may be a result of historic Site use.

Summaries of the field activities completed to date are presented in the following subsections.

2.4.1 SOIL BORING INSTALLATION AND SUBSURFACE SOIL SAMPLING

A total of 21 soil borings were advanced during this investigation to further characterize impacts identified during the 2006 SSI. The soil boring locations are as follows:

i) six boreholes were advanced within the footprint of the Harrison Street Warehouse (SB-11-07, SB-12-07, SB-13-07, SB-14-07, SB-15-07, and SB-16-07);

ii) five boreholes were advanced directly east of the Harrison Street Warehouse (SB-6-07, SB-7-07, SB-8-07, SB-9-07, and SB-10-07);

iii) one borehole was advanced along the access drive north of the ceramics building, south of the CSX Railroad Row (SB-1-07);

iv) one borehole was advanced further east from the Harrison Street Warehouse, between the Warehouse and the ceramics building (SB-5-07);

v) one borehole was advanced south of the Harrison Street Warehouse (SB-18-07);

vi) four boreholes were advanced on the soil mound (Soil Mound) north of the Harrison Street Warehouse. The boreholes were staggered so that there was one borehole advanced in the west, center, and east sections of the Soil Mound, and one advanced in the dog-leg section of the mound (SB-2-07, SB-3-07, SB-4-07, and SB-17-07);

vii) one soil boring was installed at 20 Hayes Place (SB-18-08);

viii) one soil boring was installed at 34 Hayes Place (MW-17) in conjunction with the installation of groundwater monitoring well MW-17; and

ix) one soil boring was installed at 103 Harrison Street (MW-14) in conjunction with the installation of groundwater monitoring well MW-14.

Soil samples were collected continuously from all borings, and field screening of the collected samples was completed utilizing a photoionization detector (PID). Visual observations and field screening results were recorded. Each soil boring was advanced until a bedrock layer was encountered. Samples were selected for analysis based on the results of the headspace screening and other field observations (i.e., color, odor, etc.) Soil boring locations are shown on Figure 3. A summary of subsurface soil samples is presented in Table 1.

2.4.2 SURFACE SOIL SAMPLING

Surface soil sampling was conducted in May and August 2008. Surface soils samples were collected in sets consisting of a 0- to 2-inch sample and a 2- to 4-inch sample. Surface soil samples were collected from 25 locations. The surface soil sample locations are as shown on Figure 3. A summary of surface soil samples is presented in Table 1.

2.4.3 GROUNDWATER MONITORING WELL INSTALLATION AND GROUNDWATER SAMPLING

As part of this BCA SI, eight new groundwater monitoring wells have been installed to date. Groundwater monitoring wells MW-12 and MW-13 were installed in July 2007. Groundwater monitoring wells MW-14, MW-15, MW-16, and MW-17 were installed in May 2008, and MW-10 and MW-11 were installed in August 2008. Groundwater monitoring well locations are shown on Figure 3.

One round of groundwater sampling was completed in August 2007 and one round was completed in May 2008. Monitoring well MW-13 did not produce water and was not sampled in either 2007 or 2008. Likewise, monitoring wells MW-14, MW-15, and MW-16 installed in May 2008 were dry and could not be sampled. Monitoring wells MW-10 and MW-11 were sampled in September 2008. A summary of groundwater sampling information including wells sampled, water levels, purging information, field parameter measurements, and analysis is presented in Table 2.

Based on the results of the activities completed to date, groundwater impacts have not been fully delineated within the overburden or bedrock. Additional monitoring wells and groundwater sampling will be necessary to identify and characterize potential impacts within the bedrock aquifer, as well as determine if VOCs found at MW-11, which was installed as an off-Site cross-gradient well, are a result of migration from the on-Site source area near MW-5.

3.0 OBJECTIVES, SCOPE, AND RATIONALE FOR ADDITIONAL WORK

The primary objective of these additional BCP SI activities is to gather the data necessary to fill data gaps in order to complete the characterization of chemical presence in Site soil and groundwater and determine the extent of off-Site migration and the potential impact, if any, on potential receptors. The proposed additional activities will be focused in specific areas where concentrations of chemicals that exceed applicable NYSDEC standards may be present because of historic Site use as well as in areas that data is deficient. The additional activities include monitoring well installation, groundwater sampling and analysis, and hydraulic conductivity testing.

3.1 PROPOSED SUPPLEMENTAL INVESTIGATION ACTIVITIES

3.1.1 BEDROCK GROUNDWATER MONITORING WELL INSTALLATION

Six bedrock groundwater monitoring wells are proposed to be installed at both on-Site and off-Site locations as shown on Figure 4. The locations of the bedrock monitoring are adjacent to existing wells MW-5, MW-7, MW-9, MW-13, MW-14, and MW-15. One overburden monitoring well (MW-18) will be installed between MW-5 and MW-11 within the footprint of the Harrison Street Warehouse. The bedrock groundwater monitoring wells will be named with the existing well designation followed by "A" (i.e., MW-5A) to designate that the well is being used for monitoring the upper bedrock groundwater zone. Locations MW-5A, MW-13A, MW-14A, and MW-15A are being installed at locations suggested by the NYSDEC where the overburden groundwater monitoring wells have been historically dry. MW-7A is being installed to provide groundwater data cross-gradient to the south of the source area. MW-9A is being installed to provide information on groundwater chemistry in the assumed upgradient direction of the source area. Well MW-18 is being installed to determine if VOC impacts present at MW-11, are from a separate source area, or are a result of migration from the on-Site source area near MW-5/MW-12/MW-4.

The overburden monitoring well will be installed as described in the original Work Plan dated June 19, 2007. The bedrock monitoring wells will be installed in such a way that any impacted overburden groundwater is isolated from the bedrock groundwater preventing any potential cross-contamination of the aquifers. The bedrock monitoring well installation procedure is described in the following text.

Prior to mobilization of the drilling subcontractor, CRA will mark out the proposed bedrock groundwater monitoring well locations with white pin flags. The drilling

subcontractor will have notified Dig Safely New York, Inc. and received drilling clearance from all participating utilities. Drilling locations will be subject to utility clearance by Niagara Ceramics personnel for any on-Site locations and the property owners for off-Site locations.

Bedrock groundwater monitoring wells will be completed as open coreholes. Borings for bedrock wells will be advanced to the top of the bedrock using 6¼-inch hollow stem augers. Because of the locations of the bedrock groundwater monitoring well being adjacent to existing overburden monitoring wells, the overburden will not be sampled. Additionally, since MW-18 is being installed under the Harrison Street Warehouse where subsurface soil data exists for six locations, the overburden soils will not be sampled. After competent bedrock is identified by auger refusal, a rollerbit will be used to drill approximately 2 feet into the bedrock, enabling the placement of a 4-inch diameter steel casing to be sealed into the top of the bedrock unit. The installation of the casing will effectively seal off the overburden, ensuring no transport between the overburden and bedrock units. These casings will be installed as follows:

i) the casing will be set in place with placement of grout into the annular space between the well pipe and borehole by positive displacement using a tremie tube. The grout shall consist of Portland cement, bentonite, and clean water. The grout mixture will consist of one 94-pound bag of Portland cement and 3 to 5 pounds of powdered bentonite added per sack of cement. Two pounds of calcium chloride may also be added (under certain conditions; i.e., very cold days) to accelerate the setting time of the grout, as well as to increase the dry strength of the grout. The grout will be thoroughly mixed with 6.5 gallons of potable water per sack of cement;

ii) a portion of the grout mixture will be poured into the inside of the casing to create a plug at the base of the casing, or a grout plug will be placed in the end of the casing prior to installation. The grout will be allowed to set for a minimum 24 hours;

iii) after a minimum 24 hours, a hydrostatic test will be performed on the casing to ensure that the grout has set properly and the shallow overburden is sealed off from the bedrock. The hydrostatic test will be conducted as follows:

   a) the casing will be filled to the top with clean potable water and the time noted;

   b) at 5-minute intervals for 30 minutes, the water level in the casing will be inspected to determine if it is falling;

   c) if the water level is falling, the level will be measured and recorded; and

d) after 30 minutes, if the total drop in water level is less than 0.25 foot, the casing can be considered sealed. If the water level drops more that 0.25 foot, the grout in the casing will be reamed out, and new grout will be poured inside. The hydrostatic test will then be repeated after a minimum 24 hours have passed.

After the well casing passes the hydrostatic test, bedrock coring may commence.

The bedrock will be cored in 5-foot runs. Upon completion of each 5 feet of coring, the water producing characteristics of the open interval will be determined by conducting "bail-down" and recovery tests. Coring will be terminated when the first interval producing sufficient water recharge for sampling is encountered.

Bedrock cores will be logged noting the rock description, the core run, depth of the run, percent recovery, and the rock quality designation (RQD). The cores will be retained and stored on Site.

Following installation, each monitoring well will be developed by bailing or pumping and surging in accordance with the protocols contained in the existing FSP. Groundwater from the newly installed bedrock wells and existing Site monitoring wells will be sampled 2 weeks after bedrock groundwater monitoring well development is complete. Sampling will be conducted accordance with the protocols contained in the existing FSP. Groundwater samples will be analyzed for Target Compound List (TCL) VOCs as outlined in the existing FSP and QAPP. Table 3 summarizes the proposed sampling and analyses.

3.1.2 HYDRAULIC CONDUCTIVITY TESTING

Single well response tests will be conducted at all of the Site's groundwater monitoring wells except MW-1, MW-2, and MW-3. These wells are being omitted because they are cross-gradient of the source area and have not shown any Site impacts. Two rising head and two falling head tests will be conducted at each location. The four results for each well will be averaged to give an average hydraulic conductivity for that well. The Site-wide average hydraulic conductivity for the overburden aquifer and the bedrock aquifer will be calculated from the individual monitoring well hydraulic conductivity measurements. The slug tests will be conducted as follows:

- measurement of the water level in the monitoring well to be tested;

- installation of a pressure transducer set at a 1-second recording interval into the monitoring well;
- the water level will be allowed to equilibrate from the addition of the pressure transducer;
- a slug of a known volume will be inserted into the water column of the well;
- manual water level measurements will be collected at a 30-second interval for the first 5 minutes and then at 1-minute intervals for the next 10 minutes. If after 15 minutes the water level has not recovered to within 10 percent of the original water level, manual water levels will be recorded at a 5-minute interval for 1 hour or until the water level has recovered to within 10 percent of the initial water level;
- after the well has recovered to within 10 percent of the initial water level or 1 hour and 15 minutes has elapsed, the slug will be removed from the water column;
- manual water levels will be recorded at the interval described above;
- after water level recovery to within 10 percent of the initial water level or 1 hour and 15 minutes has elapsed, the test will be completed; and
- the pressure transducer will be downloaded.

After the hydraulic conductivity fieldwork has been completed, the data will be analyzed using AQTESOLV™ software to calculate the hydraulic conductivity. The Site average overburden and bedrock hydraulic conductivity will be calculated from the AQTESOLV™ results.

3.1.3 SITE SURVEY

After the new bedrock wells are installed, the top of each well casing will be surveyed to the nearest 0.01 foot relative to the National Geodetic Vertical Datum (NGVD), and survey point will be marked on the well casing. The survey will include the ground elevation at each well to the nearest 0.10 foot relative to the NGVD. The well location will be surveyed to the nearest 1.0 foot.

4.0 SCHEDULE

The bedrock groundwater monitoring well installation will begin within 1 week of NYSDEC's approval of this Work Plan, pending driller availability. Bedrock drilling is anticipated to take 2 to 3 weeks to complete. Bedrock groundwater monitoring well development will be conducted a week after all well installations are complete to allow for the grout to fully set up. Groundwater sampling of all groundwater monitoring wells except MW-1, MW-2, and MW-3 will be conducted 2 weeks after completion of bedrock groundwater monitoring well development. Although MW-1, MW-2, and MW-3 will not be sampled, the water levels will be measured to be included in the hydraulic gradient. Hydraulic conductivity will be completed within 2 weeks of well development.

The table below provides the anticipated schedule.

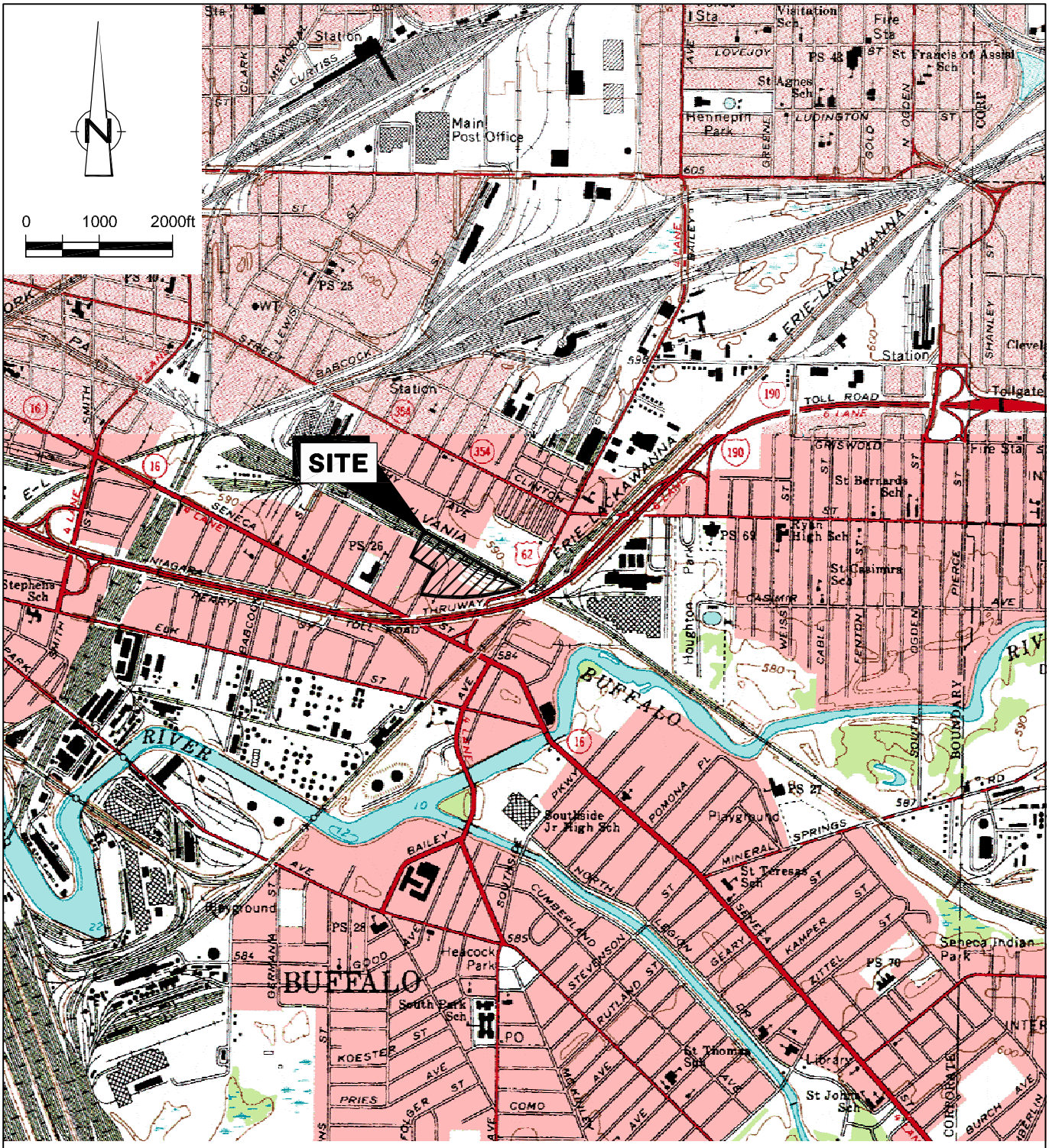
Activity	*Anticipated Date*	*Duration*
Work Plan Submittal	November 26, 2008	1 Day
NYSDEC Review and Approval	November 28, 2008 to December 3, 2008	1 Week
Well Installation	December 8, 2008 to December 19, 2008	2 Weeks
Well Development	December 22 to December 23, 2008	2 Days
Groundwater Sampling and Hydraulic Conductivity Testing	January 6, 2009 to January 9, 2009	1 Week
Analysis	January 9, 2009 to January 30, 2009	3 Weeks
Raw Data Submittal	February 3, 2009	1 Day
Conference Call/Meeting with NYSDEC and NYSDOH	February 6, 2009	1 Day

Table 4 graphically outlines the schedule.

5.0 REPORTING

Once the raw data is reviewed by the NYSDEC and New York State Department of Health (NYSDOH), a meeting will be held to discuss the findings and the need to conduct any further activities. The SI/Remedial Action Report will be prepared once the NYSDEC and Buffalo China are in agreement that impacts have been fully characterized.

FIGURES



REFERENCE:

UNITED STATES GEOLOGIC SURVEY BUFFALO NE, BUFFALO SE QUADRANGLE, NY
TOPOGRAPHIC, 7.5 MINUTES SERIES 1965
SCALE: 1:24,000

figure 1

SITE LOCATION MAP
BROWNFIELD CLEANUP AGREEMENT SITE INVESTIGATION
FORMER BUFFALO CHINA SITE (NO. C915209)
Buffalo, New York

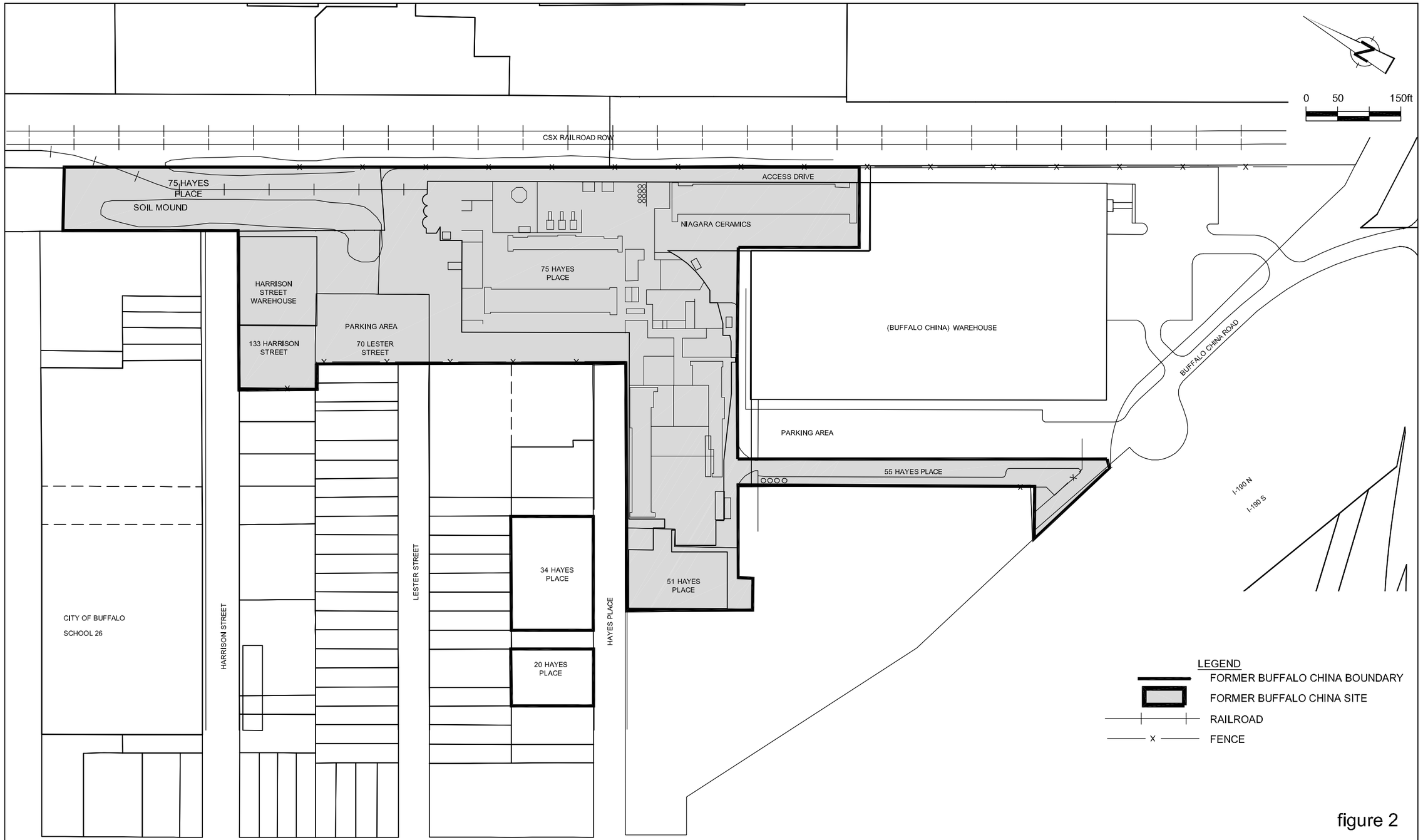


figure 2

SITE LAYOUT
BROWNFIELD CLEANUP AGREEMENT SITE INVESTIGATION
FORMER BUFFALO CHINA SITE (NO. C915209)
Buffalo, New York

DRAWING SOURCE: ENVIRONMENTAL AUDITS, INC., PROJECT 0333 DRAWING NO. 1, MARCH 2004, CITY OF BUFFALO - GIS INFORMATION SYSTEM.

37191-00(005)GN-BU002 NOV 25/2008

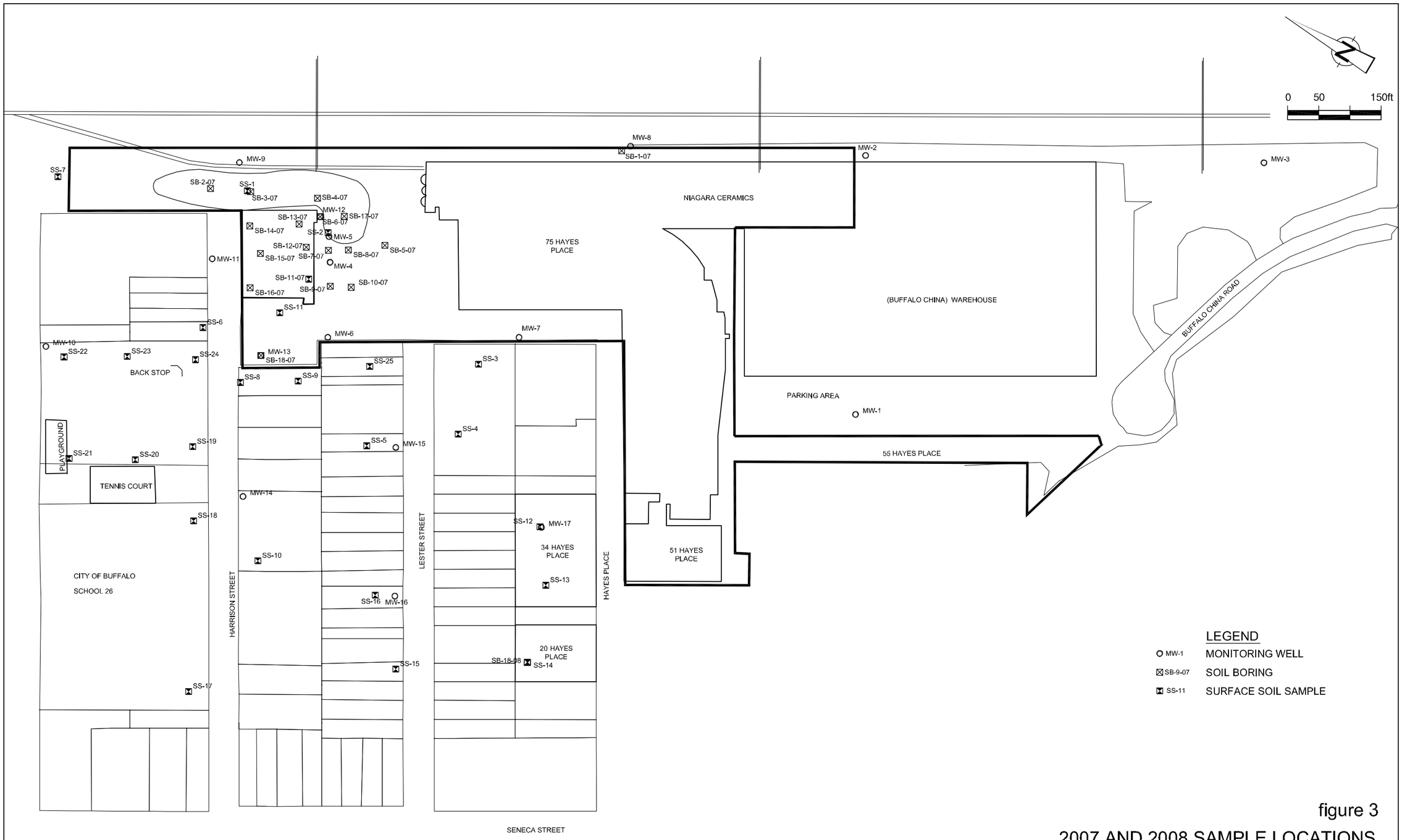


figure 3

2007 AND 2008 SAMPLE LOCATIONS
BROWNFIELD CLEANUP AGREEMENT SITE INVESTIGATION
FORMER BUFFALO CHINA SITE (NO. C915209)
Buffalo, New York

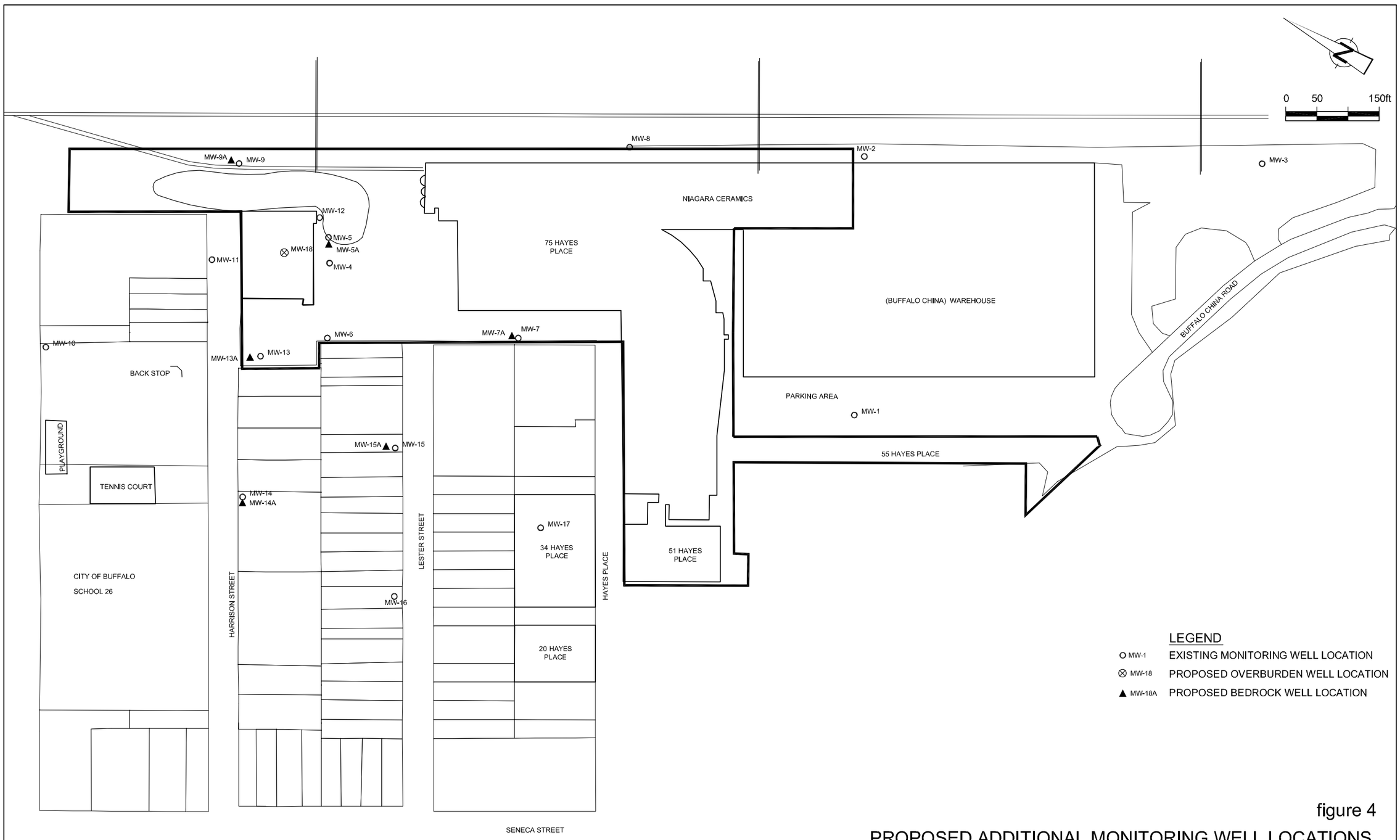


figure 4

PROPOSED ADDITIONAL MONITORING WELL LOCATIONS
BROWNFIELD CLEANUP AGREEMENT SITE INVESTIGATION
FORMER BUFFALO CHINA SITE (NO. C915209)
Buffalo, New York

37191-00(005)GN-BU004 NOV 25/2008

TABLES

TABLE 1

SUMMARY OF SOIL SAMPLE COLLECTION AND ANALYSIS DETAILS
BROWNFIELD CLEANUP SITE INVESTIGATION
FORMER BUFFALO CHINA SITE (NO. C915209)
BUFFALO, NEW YORK

					Analysis/Parameters								
	Sample ID	*Location*	*Sample Date*	*Sample Depth*	*TCL VOCs*	*TCL SVOCs*	*Lead*	*TAL Metals + CN*	*Pesticides*	*Herbicides*	*PCBs*	*% Solids*	*Purpose*
Subsurface Soils	SO-37191-072507-RN-SB-1	SB-1-07	07/25/07	2.0'-4.0'	X	X		X	X	X	X	X	Further characterize soil on north side of building
	SO-37191-072707-RN-SB-2	SB-2-07	07/27/07	6.5'-8.0'	X	X	X						Characterize soil mound
	SO-37191-072707-RN-SB-3	SB-3-07	07/27/07	10.0'-13.0'	X	X		X	X	X	X	X	Characterize soil mound
	SO-37191-072707-RN-SB-4	SB-4-07	07/27/07	2.0'-4.0'	X	X	X						Characterize soil mound
	SO-37191-072507-RN-SB-5	SB-5-07	07/25/07	4.0'-8.0'	X	X		X	X	X	X	X	Further characterize soil in Parking Area
	SO-37191-073007-CB-SB-6	SB-6-07	07/30/07	6.0'-10.4'	X	X	X						Characterize soil east of Harrison St. Warehouse
	SO-37191-072507-RN-SB-7	SB-7-07	07/25/07	3.0'-6.0'	X	X	X						Characterize soil east of Harrison St. Warehouse
	SO-37191-072507-RN-SB-8	SB-8-07	07/25/07	3.5'-8.0'	X	X		X	X	X	X	X	Characterize soil east of Harrison St. Warehouse
	SO-37191-072507-RN-SB-9	SB-9-07	07/25/07	3.0'-6.0'	X	X	X						Characterize soil east of Harrison St. Warehouse
	SO-37191-072507-RN-SB-10	SB-10-07	07/25/07	3.0'-8.0'	X	X	X						Characterize soil east of Harrison St. Warehouse
	SO-37191-072607-RN-SB-11	SB-11-07	07/26/07	2.0-'6.0'	X	X	X						Characterize soil under Harrison St. Warehouse
	SO-37191-072607-RN-SB-12	SB-12-07	07/26/07	3.5'-6.0'	X	X		X	X	X	X	X	Characterize soil under Harrison St. Warehouse
	SO-37191-072607-RN-SB-13	SB-13-07	07/26/07	6.0'-8.0'	X	X	X						Characterize soil under Harrison St. Warehouse
	SO-37191-072607-RN-SB-14	SB-14-07	07/26/07	4.0'-8.0'	X	X	X						Characterize soil under Harrison St. Warehouse
	SO-37191-072607-RN-SB-15	SB-15-07	07/26/07	4.0'-8.0'	X	X	X						Characterize soil under Harrison St. Warehouse
	SO-37191-072607-RN-SB-16	SB-16-07	07/26/07	4.0'-8.0'	X	X	X						Characterize soil under Harrison St. Warehouse
	SO-37191-072707-RN-SB-17	SB-17-07	07/27/07	6.0'-10.0'	X	X	X						Characterize soil mound
	SO-37191-073007-CB-SB-18	SB-18-07	07/30/07	4.0'-7.2'	X	X		X	X	X	X	X	Characterize soil near southern Site boundary
	SB-37191-050908-JP-001	SB-18-08	05/09/08	0'-2.0'	X	X		X	X	X	X	X	To identify off-Site Impacts
	SB-37191-050808-JP-011	MW-14	05/08/08	0'-2.0'	X	X		X	X	X	X	X	To identify off-Site Impacts
	SB-37191-050908-JP-002	MW-17	05/09/08	0'-2.0'	X	X		X	X	X	X	X	To identify off-Site Impacts
Surface Soil	SS-37191-050708-CMB-001	148 Milton Street	05/07/08	0-2"			X						To identify off-Site Impacts
	SS-37191-050708-CMB-002	148 Milton Street	05/07/08	2-4"			X						To identify off-Site Impacts
	SS-37191-050708-CMB-003	138 Harrison Street	05/07/08	0-2"			X						To identify off-Site Impacts
	SS-37191-050708-CMB-004	138 Harrison Street	05/07/08	2-4"			X						To identify off-Site Impacts
	SS-37191-050708-CMB-005	103 Harrison Street	05/07/08	0-2"				X					To identify off-Site Impacts
	SS-37191-050708-CMB-006	103 Harrison Street	05/07/08	2-4"				X					To identify off-Site Impacts
	SS-37191-050708-CMB-007	36 Lester Street	05/07/08	0-2"			X						To identify off-Site Impacts
	SS-37191-050708-CMB-009	36 Lester Street	05/07/08	2-4"			X						To identify off-Site Impacts
	SS-37191-050708-CMB-010	22 Lester Street	05/07/08	0-2"			X						To identify off-Site Impacts
	SS-37191-050708-CMB-011	22 Lester Street	05/07/08	2-4"			X						To identify off-Site Impacts
	SS-37191-050708-CMB-012	20 Hayes Place	05/07/08	0-2"			X						To identify off-Site Impacts
	SS-37191-050708-CMB-013	20 Hayes Place	05/07/08	2-4"			X						To identify off-Site Impacts
	SS-37191-050708-CMB-014	34 Hayes Place South	05/07/08	0-2"			X						To identify off-Site Impacts
	SS-37191-050708-CMB-015	34 Hayes Place South	05/07/08	2-4"			X						To identify off-Site Impacts
	SS-37191-050708-CMB-016	34 Hayes Place North	05/07/08	0-2"			X						To identify off-Site Impacts
	SS-37191-050708-CMB-017	34 Hayes Place North	05/07/08	2-4"			X						To identify off-Site Impacts
	SS-37191-050708-CMB-018	Soil Mound	05/07/08	0-2"			X						Comparison of off-Site Results
	SS-37191-050708-CMB-019	Soil Mound	05/07/08	2-4"			X						Comparison of off-Site Results

TABLE 1

SUMMARY OF SOIL SAMPLE COLLECTION AND ANALYSIS DETAILS
BROWNFIELD CLEANUP SITE INVESTIGATION
FORMER BUFFALO CHINA SITE (NO. C915209)
BUFFALO, NEW YORK

				Analysis/Parameters								
Sample ID	*Location*	*Sample Date*	*Sample Depth*	*TCL VOCs*	*TCL SVOCs*	*Lead*	*TAL Metals + CN*	*Pesticides*	*Herbicides*	*PCBs*	*% Solids*	*Purpose*
SS-37191-050708-CMB-020	NE Corner Harrison St. Warehouse	05/07/08	0-2"			X						Comparison of off-Site Results
SS-37191-050708-CMB-021	NE Corner Harrison St. Warehouse	05/07/08	2-4"			X						Comparison of off-Site Results
SS-37191-050708-CMB-022	West End Harrison St. Warehouse	05/07/08	0-2"			X						Comparison of off-Site Results
SS-37191-050708-CMB-023	West End Harrison St. Warehouse	05/07/08	2-4"			X						Comparison of off-Site Results
SS-37191-050808-CMB-001	55 Lester Street North	05/08/08	0-2"			X						To identify off-Site Impacts
SS-37191-050808-CMB-002	55 Lester Street North	05/08/08	2-4"			X						To identify off-Site Impacts
SS-37191-050808-CMB-003	55 Lester Street South	05/08/08	0-2"			X						To identify off-Site Impacts
SS-37191-050808-CMB-004	55 Lester Street South	05/08/08	2-4"			X						To identify off-Site Impacts
SS-37191-050808-CMB-005	58 Lester Street	05/08/08	0-2"			X						To identify off-Site Impacts
SS-37191-050808-CMB-006	58 Lester Street	05/08/08	2-4"			X						To identify off-Site Impacts
SS-37191-050808-CMB-007	127 Harrison Street Backyard	05/08/08	0-2"			X						To identify off-Site Impacts
SS-37191-050808-CMB-008	127 Harrison Street Backyard	05/08/08	2-4"			X						To identify off-Site Impacts
SS-37191-050808-CMB-009	127 Harrison Street Front Yard	05/08/08	0-2"			X						To identify off-Site Impacts
SS-37191-050808-CMB-010	127 Harrison Street Front Yard	05/08/08	2-4"			X						To identify off-Site Impacts
SS-37191-081308-CMB-001	82 Harrison (SS-17)	08/13/08	0-2"				X					To identify off-Site Impacts
SS-37191-081308-CMB-002	82 Harrison (SS-17)	08/13/08	2-4"				X					To identify off-Site Impacts
SS-37191-081308-CMB-003	82 Harrison (SS-18)	08/13/08	0-2"				X					To identify off-Site Impacts
SS-37191-081308-CMB-004	82 Harrison (SS-18)	08/13/08	2-4"				X					To identify off-Site Impacts
SS-37191-081308-CMB-005	118 Harrison (SS-19)	08/13/08	0-2"			X						To identify off-Site Impacts
SS-37191-081308-CMB-006	118 Harrison (SS-19)	08/13/08	2-4"			X						To identify off-Site Impacts
SS-37191-081308-CMB-007	118 Harrison (SS-20)	08/13/08	0-2"				X					To identify off-Site Impacts
SS-37191-081308-CMB-008	118 Harrison (SS-20)	08/13/08	2-4"				X					To identify off-Site Impacts
SS-37191-081308-CMB-009	118 Harrison (SS-21)	08/13/08	0-2"			X						To identify off-Site Impacts
SS-37191-081308-CMB-010	118 Harrison (SS-21)	08/13/08	2-4"			X						To identify off-Site Impacts
SS-37191-081308-CMB-011	118 Harrison (SS-22)	08/13/08	0-2"			X						To identify off-Site Impacts
SS-37191-081308-CMB-012	118 Harrison (SS-22)	08/13/08	2-4"			X						To identify off-Site Impacts
SS-37191-081308-CMB-013	118 Harrison (SS-23)	08/13/08	0-2"			X						To identify off-Site Impacts
SS-37191-081308-CMB-014	118 Harrison (SS-23)	08/13/08	2-4"			X						To identify off-Site Impacts
SS-37191-081308-CMB-015	118 Harrison (SS-24)	08/13/08	0-2"				X					To identify off-Site Impacts
SS-37191-081308-CMB-016	118 Harrison (SS-24)	08/13/08	2-4"				X					To identify off-Site Impacts
SS-37191-081308-CMB-017	118 Harrison (SS-25)	08/13/08	0-2"				X					To identify off-Site Impacts
SS-37191-081308-CMB-018	118 Harrison (SS-25)	08/13/08	2-4"				X					To identify off-Site Impacts

Notes:

'	Feet.
"	Inches.
CN	Cyanide.
SVOCs	Semi-volatile Organic Compounds.
TCL	Target Compound List.
VOCs	Volatile Organic Compounds.

TABLE 2

SUMMARY OF MONITORING WELL AND GROUNDWATER SAMPLE COLLECTION AND ANALYSIS DETAILS
BROWNFIELD CLEANUP SITE INVESTIGATION
FORMER BUFFALO CHINA SITE (NO. C915209)
BUFFALO, NEW YORK

															Analysis/Parameters								
Well ID	*Date of Installation*	*Sample / Measurement Date* [2]	***Top of Riser Elevation (ft above AMSL)***	***Bottom of Well Elevation (ft above AMSL)***	***Depth to Water (ft below top of riser)***	***Water Elevation (ft above AMSL)***	***Sampling Method***	***Approximate Volume Purged (gal)***	***pH***	***Turbidity (ntu)***	***Temperature (C)***	***Conductivity (mS/cm)***	***ORP (millivolts)***	***DO (mg/L)***	*TCL VOCs*	*TCL SVOCs*	*Total TAL Metals +CN*	*Dissolved TAL Metals*	*Total Lead*	*Dissolved Lead*	*Pesticides*	*Herbicides*	*PCBs*
MW-4	May-06	08/20/07	596.13	587.4	6.94	589.19	Bailer	2.30	7.07	7.36	14.80	4.23	-	-	X	X	X	X			X	X	X
		05/28/08			5.00	591.13	Low Flow	0.60	6.48	218.00	-	54.40	8.00	4.32	X	X	X	X			X	X	X
MW-5	May-06	08/20/07	596.58	587.71	7.56	589.02	Bailer	1.00	7.14	>1000	14.70	2.53	-	-	X				X	X			
		05/28/08			4.42	592.16	Low Flow	0.54	6.57	61.30	14.00	1.70	195.00	2.70	X				X	X			
MW-6	May-06	08/20/07	594.15	585.64	9.00	585.15	Bailer	0.60	6.43	1.40	-	31.20	22.00	4.50	X				X	X			
		05/28/08			6.87	587.28	Low Flow	0.14	6.31	157.00	-	0.03	-	-	*No Recovery - No Sample Collected*								
MW-7	May-06	07/26/07	592.03	584.78	3.00	589.03	NA	NA	NA	NA													
MW-8	May-06	08/21/07	594.00	586.93	4.51	589.49	Bailer	2.10	7.05	>1000	17.30	3.17	-	-	X				X	X			
		05/28/08			2.52	591.48	Low Flow	1.27	6.96	0.00	14.00	0.89	45.00	0.54	X				X	X			
MW-9	May-06	08/21/07	594.81	588.79	5.06	589.75	Bailer	0.70	7.30	>1000	15.70	1.69	-	-	X	X	X	X			X	X	X
		05/28/08			1.71	593.10	Low Flow	1.43	6.34	8.20	13.20	1.47	56.00	0.17	X	X	X	X			X	X	X
MW-10	Aug-08	09/19/08	596.46	587.25	7.61	588.85	Low Flow	0.47	7.16	3.30	15.47	0.85	31.90	1.97	X				X	X			
MW-11	Aug-08	09/19/08	595.05	586.01	5.22	589.83	Low Flow	1.72	7.36	31.00	16.78	1.40	30.40	1.41	X				X	X			
MW-12 [1]	Jul-07	08/21/07	599.83	587.14	10.71	589.12	Bailer	0.60	7.26	102.00	14.10	2.17	-	-	X				X	X			
		05/28/08			9.15	590.68	Low Flow	1.09	6.43	221.00	-	>99.9	94.00	3.24	X				X	X			
MW-13	Jul-07	08/20/07	594.83	587.67	DRY	DRY	NS	NA	NA	NA	NA	NA	NA	NA									
		05/28/08			DRY	DRY	NS	NA	NA	NA	NA	NA	NA	NA									
MW-14	May-08	05/28/08	593.15	584.56	DRY	DRY	NS	NA	NA	NA	NA	NA	NA	NA									
MW-15	May-08	05/28/08	592.49	585.31	DRY	DRY	NS	NA	NA	NA	NA	NA	NA	NA									
MW-16	May-08	05/28/08	591.74	581.25	DRY	DRY	NS	NA	NA	NA	NA	NA	NA	NA									
MW-17	May-08	05/28/08	592.58	581.35	7.61	584.97	Low Flow	0.55	6.70	1.80	13.00	1.84	229.00	3.22	X				X	X			

Notes:

[1] MW-12 is a stick up well.

[2] Wells were purged dry on 8/20/07. Analytical samples were collected on 8/21/07.

TABLE 3
PROPOSED SAMPLING AND ANALYSIS SUMMARY
BROWNFIELD CLEANUP SITE INVESTIGATION
FORMER BUFFALO CHINA SITE (NO. C915209)
BUFFALO, NEW YORK

	Analytical Parameters		*Estimated Number of Samples*				
			Originals	*FD*	*MS*	*MSD*	*TB*
Groundwater Monitoring Well							
MW-4	TCL VOCs		1				
MW-5	TCL VOCs		1				
MW-5A*	TCL VOCs		1				
MW-6	TCL VOCs		1				
MW-7	TCL VOCs		1				
MW-7A	TCL VOCs		1				
MW-8	TCL VOCs		1				
MW-9	TCL VOCs		1				
MW-9A	TCL VOCs		1				
MW-10	TCL VOCs		1				
MW-11	TCL VOCs		1				
MW-12	TCL VOCs		1				
MW-13	TCL VOCs		1				
MW-13A	TCL VOCs		1				
MW-14	TCL VOCs		1				
MW-14A	TCL VOCs		1				
MW-15	TCL VOCs		1				
MW-15A	TCL VOCs		1				
MW-16	TCL VOCs		1				
MW-17	TCL VOCs		1				
MW-18	TCL VOCs		1				
QA/QC Samples				2	2	2	5
		Total	21	2	2	2	5

Notes:

* The letter A indicates the well is a bedrock well.

TCL VOCs Target Compound List Volatile Organic Compounds
FD Field Duplicate.
MS Matrix Spike.
MSD Matrix Spike Duplicate.
TB Trip Blank

TABLE 4

PROPOSED SCHEDULE
BROWNFIELD CLEANUP SITE INVESTIGATION
FORMER BUFFALO CHINA SITE (NO. C915209)
BUFFALO, NEW YORK