MARKET BASKET SITE

ONTARIO COUNTY

GENEVA, NEW YORK

SITE MANAGEMENT PLAN

NYSDEC Site Number: B00018

Prepared for:

City of Geneva

47 Castle Street

Geneva, New York 14456

Prepared by:

Plumley Engineering, P.C.

8232 Loop Road

Baldwinsville, New York 13027

(315) 638-8587

Revisions to Final Approved Site Management Plan:

Revision No.	Date Submitted	Summary of Revision	NYSDEC Approval Date
1		Initial Submission	

DECEMBER 2016

CERTIFICATION STATEMENT

I, DAVID K. MEIXELL, certify that I am currently a NYS registered professional engineer and that this Site Management Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

P.E.

January 17, 2017 DATE

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GENEVA, NEW YORK

SITE MANAGEMENT PLAN

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List of Acronyms

AS	Air Sparging
ASP	Analytical Services Protocol
BCA	Brownfield Cleanup Agreement
BCP	Brownfield Cleanup Program
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CAMP	Community Air Monitoring Plan
C/D	Construction and Demolition
CFR	Code of Federal Regulation
CLP	Contract Laboratory Program
COC	Certificate of Completion
CO2	Carbon Dioxide
CP	Commissioner Policy
DER	Division of Environmental Remediation
ECL	Environmental Conservation Law
ELAP	Environmental Laboratory Approval Program
ERP	Environmental Restoration Program
GHG	Green House Gas
GWE&T	Groundwater Extraction and Treatment
HASP	Health and Safety Plan
IC	Institutional Control
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYCRR	New York Codes, Rules and Regulations
OSHA	Occupational Safety and Health Administration
OU	Operable Unit
PID	Photoionization Detector
PRP	Potentially Responsible Party
PRR	Periodic Review Report
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
RAO	Remedial Action Objective
RAWP	Remedial Action Work Plan
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RP	Remedial Party
SAC	State Assistance Contract
SCG	Standards, Criteria and Guidelines
SCO	Soil Cleanup Objective
SMP	Soil Management Plan
SOP	Standard Operating Procedures
SOW	Statement of Work
SPDES	State Pollutant Discharge Elimination System
SSD	Sub-slab Depressurization

SVE	Soil Vapor Extraction
SVI	Soil Vapor Intrusion
TAL	Target Analyte List
TCL	Target Compound List
TCLP	Toxicity Characteristic Leachate Procedure
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
VCA	Voluntary Cleanup Agreement
VCP	Voluntary Cleanup Program

ES EXECUTIVE SUMMARY

The following provides a brief summary of the controls implemented for the Site, as well as the inspections, monitoring and reporting activities required by this Site Management Plan:

Site Identification: B00018 - Market Basket Site – Gates Avenue, Geneva, New York

Institutional Controls:	1. The property may be used for commercial or industrial use.
	2. The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the Ontario County Department of Health to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from the Department.
	3. Data and information pertinent to site management must be reported at the frequency and in a manner as defined in this SMP.
	4. All future activities that will disturb remaining contaminated material must be conducted in accordance with this SMP.
	5. Access to the site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by the Deed Restrictions.
	6. The potential for vapor intrusion must be evaluated for any buildings developed in the area within the IC boundaries noted on Figure 2A, and appropriate actions to address exposures must be implemented.
	7. Vegetable gardens and farming on the site are prohibited.

Inspections:	Frequency
Site-Wide Inspection	Annually
Evaluations	
Climate Change Vulnerability Assessment	As Needed
Soil Vapor Intrusion evaluation	Upon change in use/as needed

Site Identification: B00018 - Market Basket Site – Gates Avenue, Geneva, New York

Reporting:	
Inspections	Annually
Certification/PRR	Annually
Final Construction report	Upon completion of Soil management/Excavation activities

Further descriptions of the above requirements are provided in detail in the subsequent sections of this Site Management Plan.

1.0 INTRODUCTION

1.1 General

This Site Management Plan (SMP) is a required element of the remedial program for the Market Basket Site located in Geneva, Ontario County, New York (hereinafter referred to as the "Site"). See Figure 1. The Site is currently in the New York State (NYS) Environmental Restoration Program (ERP), Site No. B00018, which is administered by New York State Department of Environmental Conservation (NYSDEC).

The City of Geneva entered into a State Assistance Contract (SAC) on October 3, 2008 with the NYSDEC to remediate the site. A figure showing the site location and boundaries of this site is provided in Figure 2A. The boundaries of the site are more fully described in the metes and bounds site description that is part of the Deed Restriction provided in Appendix C.

After completion of the remedial work, some contamination remains at this site, which is hereafter referred to as "remaining contamination". Institutional (ICs) have been incorporated into the site remedy to control exposure to remaining contamination to ensure protection of public health and the environment. Deed Restriction for each of the two parcels, recorded with the Ontario County Clerk, requires compliance with this SMP and all ICs placed on the site.

This SMP was prepared to manage remaining contamination at the site until the Deed Restriction is extinguished in accordance with ECL Article 71, Title 36. This plan has been approved by the NYSDEC, and compliance with this plan is required by the grantor of the Deed Restriction and the grantor's successors and assigns. This SMP may only be revised with the approval of the NYSDEC.

It is important to note that:

- This SMP details the site-specific implementation procedures that are required by the Deed Restriction. Failure to properly implement the SMP is a violation of the Deed

Restriction, which is grounds for revocation of the Certificate of Completion (COC), release or closure letter;

- Failure to comply with this SMP is also a violation of Environmental Conservation Law, 6NYCRR Part 375 and the SAC (C303913, Site #B-00018-8) for the site, and thereby subject to applicable penalties.

All reports associated with the site can be viewed by contacting the NYSDEC or its successor agency managing environmental issues in New York State. A list of contacts for persons involved with the site is provided in Appendix A of this SMP.

This SMP was prepared by Plumley Engineering, P.C., on behalf of the City of Geneva, in accordance with the requirements of the NYSDEC's DER-10 ("Technical Guidance for Site Investigation and Remediation"), dated May 2010, and the guidelines provided by the NYSDEC. This SMP addresses the means for implementing the ICs that are required by the Deed Restriction for the site.

1.2 Revisions

Revisions to this plan will be proposed in writing to the NYSDEC's project manager. Revisions will be necessary upon, but not limited to, the following occurring: a post-remedial removal of contaminated sediment or soil, or other significant change to the site conditions. In accordance with the Deed Restriction for the site, the NYSDEC will provide a notice of any approved changes to the SMP, and append these notices to the SMP that is retained in its files.

1.3 Notifications

Notifications will be submitted by the property owner to the NYSDEC, as needed, in accordance with NYSDEC's DER – 10 for the following reasons:

- Written 60-day advance notice of any proposed changes in site use that are required under the terms of the State Assistance Contract (SAC), 6NYCRR Part 375 and/or Environmental Conservation Law.

- 7-day advance notice of any field activity associated with the remedial program.
- Written 15-day advance notice of any proposed ground-intrusive activity pursuant to the Excavation Work Plan (EWP).

Any change in the ownership of the site or the responsibility for implementing this SMP will include the following notifications:

- At least 60 days prior to the change, the NYSDEC will be notified in writing of the proposed change. This will include a certification that the prospective purchaser/Remedial Party has been provided with a copy of the SAC, and all approved work plans and reports, including this SMP.
- Within 15 days after the transfer of all or part of the site, the new owner's name, contact representative, and contact information will be confirmed in writing to the NYSDEC.

Table 1 on the following page includes contact information for the above notification. The information on this table will be updated as necessary to provide accurate contact information. A full listing of site-related contact information is provided in Appendix A.

Table 1: Notifications*

Name	**Contact Information**
Charlotte Theobald, NYSDEC Project Manager	(585) 226-5354, charlotte.theobald@dec.ny.gov
Bernette Schilling, NYSDEC Region 8 HW Engineer	(585) 226-5353 bernette.schilling@dec.ny.gov
Kelly Lewandowski, NYSDEC Site Control Section, Division of Environmental Remediation	(518) 402-9764 kelly.lewandowski@dec.ny.gov

*Note: Notifications are subject to change and will be updated as necessary.

2.0 SUMMARY OF PREVIOUS REMEDIAL INVESTIGATIONS AND REMEDIAL ACTIONS

2.1 Site Location and Description

The site is located in the City of Geneva, Ontario County, New York. Parcel A is identified as Section 90.15, Block 4 Lot 67 (Tax ID. 90.15-4-67); and Parcel B is identified as Section 90.20, Block 1, Lot 11 (Tax ID. 90.20-1-11) on the Ontario County Tax Map (See Figure 2A – Site Survey). The combined site is 2.475-acres and is bounded by Avenue F to the north, a warehouse to the south, the Univar (formerly H.B. Fuller) company and vacant property to the east, and Lehigh Street to the west (see Figure 2A – Site Survey Map). The boundaries of the site are more fully described in Appendix C –Deed Restriction. The owner of the site (Parcels A & B) at the time of issuance of this SMP is the City of Geneva.

2.2 Physical Setting

2.2.1 Land Use

The Site consists of two parcels totaling 2.475 acres. The Site is zoned for industrial use and is currently vacant.

The properties adjoining the Site and in the neighborhood surrounding the Site primarily include residential and industrial properties. The properties immediately south of the Site includes an industrial property; the properties immediately north of the Site includes a vacant property; the properties immediately east of the Site includes an industrial property; and the properties to the west of the Site includes residential properties.

2.2.2 Geology

Site specific boring logs are provided in Appendix D and note varying depths of fill material across the site. Fill materials include sand, gravel, masonry materials and cinders. Soils on the site are identified to consist primarily of fine-grained sands with varying amounts of silt and clay. Soil borings at the site were advanced to 15 feet below grade. Bedrock (Onondaga Limestone according to Geologic Map of New York) has not been encountered.

2.2.3 Hydrogeology

Groundwater was generally encountered within five to ten feet below the ground surface and generally flows in an easterly south eastern direction beneath the site. A groundwater contour map is shown on Figure 3. Site groundwater elevation data is provided in Table 6. The Site's groundwater monitoring well construction logs are provided in Appendix D of this SMP. The groundwater monitoring wells are still intact at the Site. The area is serviced with a public water supply; therefore, groundwater is not being utilized for drinking water purposes.

2.3 Investigation and Remedial History

The following narrative provides a remedial history timeline and a brief summary of the available project records to document key investigative and remedial milestones for the Site. Full titles for each of the reports referenced below are provided in Section 6.0 - References.

A Remedial Investigation (RI) was performed to characterize the nature and extent of contamination at the Site. The results of the RI are described in detail in the following reports:

- Site Investigation Report and Remedial Alternatives Report, Passero Associates & Larsen Engineers, dated October 2000
- Pre-Design Investigation, Remedial Action Work Plan – Section 2.0, O'Brien & Gere, dated June 2007.

Soil borings were installed in 1999 and 2004 via direct-push methods. The soil borings were advanced to approximate depths of 16 feet without refusal and were screened with a photoionization detector (PID) and visually inspected. See Appendix D for soil boring logs. Based on field observations, at least one soil sample was selected from each boring for laboratory analysis at a New York State approved environmental laboratory. The analytical parameters included volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) via USEPA

Methods 8020/8021 and 8270, respectively as well as metals (beryllium, chromium, copper, iron, mercury, nickel and zinc). The soil sample analytical results indicated exceedances of the soil cleanup objectives for VOCs (1,2-, 1,3-, and 1,4-dichlorobenzene, and chlorobenzene), SVOCs (chrysene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, and benzo(a)pyrene), and metals (nickel, mercury, chromium, copper, and zinc).

Ground water monitoring wells were installed at the Site in 10 of the soil borings to assess groundwater contamination at the Site. See Figure 2B. The groundwater monitoring wells were installed to a maximum depth of approximately 16 ft. See Appendix D for monitoring well construction logs. The groundwater monitoring wells were developed according to standard practices and low-flow sampling method was conducted for the groundwater monitoring sampling events. The groundwater samples were analyzed for VOCs, SVOCs, and metals. The groundwater analytical results indicated exceedances of the standards and guidance values for VOCs (1,2-, 1,3-, and 1,4-dichlorobenzene, chlorobenzene, trichloroethene, benzene, tetrachloroethene, bromobenzene, 2-and 4-chlorotoluene, mixed xylenes, 1,2-dichloroethene, and vinyl chloride).

Based on the findings of the remedial investigation a remedy was selected for the Site. The Proposed Remedial Action Plan (PRAP) was public noticed February 2002 and the Record of Decision was signed on March 28, 2002.

The implementation of the selected remedy commenced on August 11, 2008. The NYSDEC provided oversight of the remedy implementation. The 2008 remedy implementation consisted of the excavation of 3 areas of concern and a round of groundwater sampling. The area SB-2, the former 8,000 gallon underground storage tank area, and the trench area were completed in 2008.

Area SB-2:

Area SB-2 excavation was approximately 28 feet by 30 feet by 20 feet deep (622 cubic yards of soil/fill material removed). As part of the SB-2 excavation activities MW-10 was removed and 2 new ground water monitoring wells, MW-12 and MW-13, were installed at down gradient locations. Confirmatory soil samples were collected and analyzed. The analytical results for SB-2 excavation area are presented Table 2 which did not exceed the Site's SCOs.

Table 2

Soil Confirmation Results from Excavation at Boring SB-2

Constituent	Bot-1	South	East	North	West	Bot-2	Res. Com.SCO	Unrest SCO
Volatile Organic Compounds (mg/Kg)								
Carbon Disulfide	0.0011 J	<0.0006	<0.0006	<0.00056	<0.00057	0.059 J	NL	NL
Methylene Chloride[1]	0.0039J	0.00099 J	0.00099J	0.0011 J	0.0010 J	0.0013 J	500	0.05
Trichloroethene	<0.0012	<0.0012	0.0014 J	<0.0011	<0.0011	<0.0012	200	0.47
Chlorobenzene	<0.0012	0.0062	0.090	0.0019 J	<0.0011	<0.0012	500	1.1
1,3-Dichlorobenzene	<0.0006	0.020	0.760	0.190	0.0044	<0.00059	280	2.4
1,4-Dichlorobenzene	<0.0006	0.017	0.510	0.067	0.004.1	<0.00059	130	1.8
1,2-Dichlorobenzene	<0.0006	0.016	0.530	0.190	0.0046	<0.00059	500	1.1
1,2,4-Trichlorobenzene	<0.0006	<0.0006	<0.0006	0.031	<0.00057	<0.00059	NL	NL

Former 8,000-gal Underground Storage Tank:

The former 8,000 gallon underground storage tank area (UST area) excavation was approximately 23 feet by 20 feet by 10 feet deep (170 cubic yards of soil/fill material was removed). The UST area had reportedly been back-filled with contaminated fill material at the time of tank removal. Plastic sheeting and several section of pipe were encountered during the excavation activities and subsequently removed. Confirmatory soil samples were collected and analyzed. The analytical results for former UST excavation area are presented Table 3 which did not exceed the Site's SCOs.

Table 3

Confirmation Results from Excavation at Former 8,000-Gallon UST

Constituent	Bot-1	North	Bot-2	East	West	South	Rest. Com SCO	Unrest SCO
Volatile Organic Compounds (mg/Kg)								
Carbon Disulfide	0.0036 J	<0.00057	<0.00056	0.0013 J	<0.00066	<0.00068	NL	NL
Methylene Chloride	0.0049 J	0.00092 J	0.00085 J	0.0010 J	0.0012 J	0.0017 J	500	0.05
Metals (mg/Kg)								
Lead	7.3	4.7	6.5	3.0	3.1	3.2	1,000	63

Trench Area at the South Building:

The area outside the eastern end of the former south building was examined, and an exploratory trench installed at the estimated location. Several parallel, buried pipes were encountered at approximately 1 foot below grade and these lines were traced approximately 20 feet east from the eastern end of the building. The largest line at approximately 4 inches in diameter terminated at an elbow that apparently had formerly connected to a structure at the ground surface (e.g., aboveground tank). This area is located outside the former boiler room for the facility. The piping was removed. The trench area excavation was approximately 20 feet by 5 feet by 1 to 2 feet deep (5.6 cubic yards soil/fill material was removed). Confirmatory soil samples were collected and analyzed. The surface soil samples exceeded SCOs for several metals and SVOCs; therefore an additional excavation was completed on August 10, 2009. The excavation was extended to within one foot of the neighboring building to the south, the remaining foundation located to the west, the fence to the north, and the driveway located to the east. Four surface soil confirmation samples were collected: two that were adjacent to the building to the south, and two adjacent to the fence near the northern property line. Table 4 presented the analytical results. The Site's SCOs were exceeded. Since the soils had been excavated to approximately one foot of the southern adjoining building and the fence line, the volume of remaining soil that exceeds SCOs is minimal.

Table 4

Remaining Soil Sample Exceedances

Constituent	SS-5	SS-6	SS-7	SS-8	Restricted Commercial SCO	Unrestricted SCOs
Semi-volatile Organic Compounds (ppm)						
Benzo[a]anthracene	1.8	0.820 J	2.5	3.2	5.6	1
Benzo[a]pyrene	**2.3**	<0.160	**2.5**	**3.4**	1	1
Benzo[b]fluoranthene	4.7	<0.160	5.1	**6.5**	5.6	1
Metals (ppm)						
Chromium	120	1,000	330	100	1,500	30
Copper	**390**	**690**	**2,000**	**410**	270	50

Bold – exceeds Commercial SCOs
Underlined – exceeds Unrestricted Use SCOs

Hydraulic Cylinder Removal:

A hydraulic cylinder was encountered on the southern block of Parcel B. The soil was removed from the north and south sides of the cylinder and each bucket was field screened visually and with a PID. The cylinder was intact and was removed and staged on 12-mil polyethylene sheeting. The east and west sides as well as the bottom of the excavation was investigated for potential releases. No obvious impacts observed. Confirmation samples were collected from the bottom and each of the four sides of the excavation for laboratory analysis. The confirmation samples were analyzed for TCL VOCs, TCL SVOCs, and PCBs and there were no exceedances of the Site's SCOs.

Following the completion of all of the excavations, the excavated soil/fill material was covered with polyethylene sheeting and the edges were secured against potential wind and precipitation erosion. All equipment used in the excavation activities was decontaminated on the decon pad area. Characterization samples were collected and the results were submitted to the Ontario County Landfill. Following approval from the landfill, the soil/fill material was transported to the Ontario County landfill for disposal.

Site-Wide Ground Water Samples

One round of ground water samples were collected from the on-site wells on December 12, 2008. Table 5 and Figure 4 notes exceedances of Class GA standards. Table 6 includes groundwater elevation measurements on December 11, 2008.

Table 5

Remaining Groundwater Exceedances

Constituent	MW-2	MW-3R	MW-4	MW-5	MW-6	MW-7	Standards & Guidance Values
Volatile Organic Compounds (ppb)							
1,1-Dichloroethene	ND (<0.16)	ND (<0.16)	ND (<0.16)	ND (<0.16)	ND (<0.16)	ND (<0.16)	5
1,1-Dichloroethane	ND (<0.10)	ND (<0.10)	ND (<0.10)	ND (<0.10)	ND (<0.10)	ND (<0.10)	5
cis-1,2-Dichloroethene	ND (<0.10)	0.46 J	ND (<0.10)	**11.0**	4.72	0.41 J	5
1,1,1-Trichloroethane	ND (<0.10)	ND (<0.10)	ND (<0.10)	ND (<0.10)	ND (<0.10)	ND (<0.10)	5
Trichloroethene	ND (<0.10)	**9.97**	ND (<0.10)	**12.4**	0.66	0.64	5
Chlorobenzene	0.15 J	ND (<0.10)	ND (<0.10)	ND (<0.10)	ND (<0.10)	ND (<0.10)	5
1,3-Dichlorobenzene	0.40 J	ND (<0.10)	ND (<0.10)	ND (<0.10)	ND (<0.10)	ND (<0.10)	3
1,4-Dichlorobenzene	0.27 J	ND (<0.16)	ND (<0.16)	ND (<0.16)	ND (<0.16)	ND (<0.16)	3
1,2-Dichlorobenzene	0.30 J	ND (<0.10)	ND (<0.10)	ND (<0.10)	ND (<0.10)	ND (<0.10)	3
Semi-volatile Organic Compounds (ppb)							
2,4-Dichlorophenol	ND (<0.084)	ND (<0.084)	ND (<0.084)	ND (<0.082)	ND (<0.082)	ND (<0.0840	1

Constituent	MW-8	MW-9	MW-11R	MW-12	MW-13	Standards & Guidance Values
Volatile Organic Compounds						
1,1-Dichloroethene	ND (<0.16)	**8.59**	ND (<0.16)	ND (<0.16)	ND (<0.16)	5
1,1-Dichloroethane	ND (<0.10)	**5.02**	ND (<0.10)	ND (<0.10)	ND (<0.10)	5
cis-1,2-Dichloroethene	ND (<0.10)	**7.45**	ND (<0.10)	0.19 J	ND (<0.10)	5
1,1,1-Trichloroethane	ND (<0.10)	**27.9**	ND (<0.10)	ND (<0.10)	ND (<0.10)	5
Trichloroethene	ND (<0.10)	**28.7**	ND (<0.10)	0.82	ND (<0.10)	5
Chlorobenzene	ND (<0.10)	ND (<0.10)	ND (<0.10)	**63.6**	ND (<0.10)	5
1,3-Dichlorobenzene	ND (<0.10)	ND (<0.10)	ND (<0.10)	**214**	0.18 J	3
1,4-Dichlorobenzene	ND (<0.16)	ND (<0.16)	ND (<0.16)	**155**	ND (<0.16)	3
1,2-Dichlorobenzene	ND (<0.10)	ND (<0.10)	ND (<0.10)	**155**	0.11 J	3
Semi-volatile Organic Compounds						
2,4-Dichlorophenol	ND (<0.084)	ND (<0.082)	ND (<0.082)	2.3 J	ND (<0.082)	1

BOLD type indicates exceedances of standards and guidance values.

Table 6

Groundwater Elevation Measurements

Well ID	Casing Elev.	Depth to Water	GW Elev.
MW-2	142.58	5.90	136.68
MW-3R	142.26	5.73	136.53
MW-4	141.99	8.08	133.91
MW-5	141.74	6.05	135.69
MW-6	141.45	6.98	134.47
MW-7	143.04	11.44	131.60
MW-8	143.53	6.90	136.63
MW-9	140.71	4.10	136.61
MW-11	144.32	9.47	134.85

2.4 Remedial Action Objectives

The Remedial Action Objectives (RAOs) for the Site as listed in the Record of Decision dated March 2002 are as follows:

Goals for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375-1.10. The overall remedial goal is to meet all standards, criteria, and guidance (SCGs) and be protective of human health and the environment. At a minimum, the remedy selected must eliminate or mitigate all significant threats to the public health and to the environment presented by the hazardous substances disposed at the site through the proper application of scientific and engineering principles.

The proposed future use for the Market Basket site would be commercial/industrial. The site soil cleanup objective is restricted commercial as presented in 6 NYCRR Part 375 Table 375-6.8(b) Restricted Use Soil Cleanup Objectives. The remedial goals selected for this site are:

- Reduce, control, or eliminate to the extent practicable the contamination present within the soils/waste on site.

- Eliminate to the extent practicable the potential for direct human contact with the contaminated soils or groundwater on site.

- Provide for attainment of SCGs for groundwater quality at the site, to the extent practicable.

2.5 Remaining Contamination

2.5.1 Soil

After the completion of the remedial activities, confirmatory soil sampling indicates that there is remaining soil contamination at the Site. Polyaromatic hydrocarbons such as benzo(a)pyrene and benzo(b)fluoranthene along with copper have been detected exceeding the Site's SCOs for Restricted Commercial use. Table 4 summarizes the results of soil samples remaining at the Site that exceed the Restricted Commercial SCOs and Figure 5 presents the locations of known remaining soil contamination at the Site.

Constituents that exceeded their respective SCOs are limited to samples from the east end of the south block and included SVOCs, chromium and copper. Table 4 and Figure 5 summarize the results of all soil samples collected that exceed the Restricted Commercial Use SCOs at the site after completion of the remedial action.

2.5.2 Groundwater

Based on analytical results from groundwater samples collected December 12, 2008, groundwater contamination remains on Parcel A and B of the Site after the completion of the remedial actions. VOCs, in particular chlorinated VOCs, exceed NYS standards and guidance values. Table 5 and Figure 4 summarize the results of all samples of groundwater that exceed the standards and guidance values after completion of the remedial action.

3.0 INSTITUTIONAL CONTROL PLAN

3.1 General

Since remaining contamination exists at the site, Institutional Controls (ICs) are required to protect human health and the environment. This IC Plan describes the procedures for the implementation and management of all ICs at the site. The IC Plan is one component of the SMP and is subject to revision by the NYSDEC.

This plan provides:

- A description of all ICs on the site;
- The basic implementation and intended role of each IC;
- A description of the key components of the ICs set forth in the Deed Restriction;
- A description of the controls to be evaluated during each required inspection and periodic review;
- A description of plans and procedures to be followed for implementation of ICs, such as the implementation of the Excavation Work Plan (EWP) (as provided in Appendix B) for the proper handling of remaining contamination that may be disturbed during maintenance or redevelopment work on the site; and
- Any other provisions necessary to identify or establish methods for implementing the ICs required by the site remedy, as determined by the NYSDEC.

3.2 Institutional Controls

A series of ICs is required by the ROD to: (1) prevent future exposure to remaining contamination; and, (2) limit the use and development of the site to restricted commercial or industrial uses only. Adherence to these ICs on the Site is required by the Deed Restriction prepared for Parcel A and B and will be implemented under this SMP. ICs identified in the Deed Restriction may not be discontinued without an amendment to or extinguishment of the Deed Restriction. The IC boundaries are shown on Figure 2A. These ICs are:

- The property may be used for restricted commercial or industrial use;

- The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the Ontario County Department of Health to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from the Department.

- Data and information pertinent to site management must be reported at the frequency and in a manner as defined in this SMP;

- All future activities that will disturb remaining contaminated material must be conducted in accordance with this SMP;

- Access to the site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by the Deed Restriction.

- The potential for vapor intrusion must be evaluated for any buildings developed in the area within the IC boundaries noted on Figure 2A, and appropriate actions to address exposures must be implemented; and

- Vegetable gardens and farming on the site are prohibited.

3.3 Site – wide Inspection

Site-wide inspections will be performed at a minimum of once per year. Modification to the frequency or duration of the inspections will require approval from the NYSDEC. Site-wide inspections will also be performed after all severe weather conditions that may affect the remaining contamination at the site. A comprehensive site-wide inspection will be conducted and documented according to the SMP schedule, regardless of the frequency of the Periodic Review Report.

During an inspection, an inspection form will be completed as provided in Appendix G – Site Management Forms. The inspections will determine and document the following:

- Compliance with all ICs, including site usage;
- General site conditions at the time of the inspection;

- The site management activities being conducted including, where appropriate, confirmation sampling and a health and safety inspection; and

- If these controls continue to be protective of human health and the environment;

- Compliance with requirements of this SMP and the Deed Restriction;
- If site records are complete and up to date.

Reporting requirements are outlined in Section 5.0 of this plan.

Inspections will also be performed in the event of an emergency. An inspection of the site will be conducted within 5 days of the event to verify the effectiveness of the ICs implemented at the site by a qualified environmental professional, as determined by the NYSDEC. Written confirmation must be provided to the NYSDEC within 7 days of the event that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public.

3.4 Groundwater Monitoring

Groundwater monitoring will be performed semi-annually to assess the performance of the remedy. The groundwater monitoring will be performed for a minimum of 5 years as per the selected remedy as presented in ROD. The groundwater monitoring program will be evaluated at the end of 5 years to determine whether additional monitoring is required or additional remedial actions must be taken. Any modification to the frequency or sampling requirements will require approval from the NYSDEC.

The network of monitoring wells has been installed to monitor upgradient, on-site and downgradient groundwater conditions at the site. The network of on-site wells is shown on Figure 3 of this SMP, and construction details are included in Appendices D and J.

Table 7 summarizes the wells identification number, as well as the purpose, location, depths, diameter and screened intervals of the wells. Historical groundwater elevation data are included in Table 6, and groundwater contours are noted on Figure 3. As part of the groundwater monitoring, upgradient and downgradient monitoring wells will be sampled to evaluate the effectiveness of the remedial action. . Based on historical groundwater monitoring data, the semi-annual monitoring will include sampling the following wells: MW-3R, MW-5, MW-6, MW-9, and MW-12. Groundwater samples from each well will be analyzed for volatile organic compounds (VOCs) via

EPA Method 8260. Analytical parameters, detection limits, and minimum reporting limits are noted in the QAPP included in Appendix E.

Appendix J presents the Site's Field Sampling and Analysis Plan. The semi-annual groundwater sampling events will be conducted in accordance with Appendices E and J.

Table 7
Monitoring Well Construction Details

Monitoring Well ID	Well Location	Coordinates (longitude/latitude)	Well Diameter (inches)	Elevation (above mean sea level)			
				Casing	Surface	Screen Top	Screen Bottom
MW-2	Downgradient	42.8818° N, 76.9821° W	2	142.58	141.56	136.56	126.56
MW-3R	Upgradient	42.8811° N, 76.9824° W	2	142.26	141.35	136.35	126.35
MW-4	Downgradient	42.8816° N, 76.9817° W	2	141.99	141.04	136.04	126.04
MW-5	Downgradient	42.8810° N, 76.9817° W	2	141.74	140.98	135.98	125.98
MW-6	Downgradient	42.8809° N, 76.9816° W	2	141.45	142.33	137.33	127.33
MW-7	Downgradient	42.8807° N, 76.9815° W	2	143.04	143.87	138.87	128.87
MW-8	Upgradient	42.8804° N, 76.9821° W	2	143.53	NA	138	128
MW-9	Downgradient	42.8809° N, 76.9820° W	2	140.71	141.59	138.59	128.59
MW-11	Upgradient	42.8820° N, 76.9826° W	2	144.32	145.18	140.18	130.18
MW-12	Downgradient	42.8818° N, 76.9823° W	2	NS	NS	8 bgs	18 bgs
MW-13	Downgradient	42.8819° N, 76.9824° W	2	NS	NS	8 bgs	18 bgs
NS: Not surveyed bgs: below ground surface							

Monitoring well construction logs are included in Appendix D of this document.

If biofouling or silt accumulation occurs in the on-site and/or off-site monitoring wells, the wells will be physically agitated/surged and redeveloped. Additionally, monitoring wells will be properly decommissioned and replaced, if an event renders the wells unusable.

Repairs and/or replacement of wells in the monitoring well network will be performed based on assessments of structural integrity and overall performance.

The NYSDEC will be notified prior to any repair or decommissioning of any monitoring well for the purpose of replacement, and the repair or decommissioning and replacement process will be documented in the subsequent Periodic Review Report. Well decommissioning without replacement will be done only with the prior approval of the NYSDEC. Well abandonment will be performed in accordance with NYSDEC's guidance entitled "CP-43: Groundwater Monitoring Well Decommissioning Procedures." Monitoring wells that are decommissioned because the monitoring well has been rendered unusable will be replaced in kind in the nearest available location, unless otherwise approved by the NYSDEC.

The sampling frequency may only be modified with the approval of the NYSDEC. This SMP will be modified to reflect changes in sampling plans approved by the NYSDEC.

Deliverables for the groundwater monitoring program are specified in Section 5.0 – Reporting Requirements.

4.0 PERIODIC ASSESSMENTS/EVALUATIONS

4.1 Climate Change Vulnerability Assessment

Increases in both the severity and frequency of storms/weather events, an increase in sea level elevations along with accompanying flooding impacts, shifting precipitation patterns and wide temperature fluctuation, resulting from global climactic change and instability, have the potential to significantly impact the performance, effectiveness and protectiveness of a given site and associated remedial systems. Vulnerability assessments provide information so that the site is prepared for the impacts of the increasing frequency and intensity of severe storms/weather events and associated flooding.

This section provides a summary of vulnerability assessments that will be conducted for the site during periodic assessments, and briefly summarizes the vulnerability of the site and/or engineering controls to severe storms/weather events and associated flooding.

This assessment includes, but is not be limited to, a discussion of potential vulnerabilities to be assessed during periodic reviews such as the following:

- Flood Plain: The Site is located approximately 0.2 miles west of the nearest 100 year flood plan.
- Site Drainage and Storm Water Management: The Site has no impervious surfaces and is covered with vegetation. The area surrounding the Site is served by a storm water sewer system. The storm water sewer system and the Site's vegetative cover will negate any drainage issues and allow precipitation to percolate into the subsurface.
- Erosion: The Site has an established vegetative cover which is routinely maintained (mowed) during the normal growing season for western New York which will minimize or negate any potential erosion issues at the Site.

4.2 Soil Vapor Intrusion Evaluation

A soil vapor intrusion evaluation must be performed upon a change in use of the property that will result in occupancy of a previously unoccupied building or initial occupancy of a new building. The breadth of this evaluation will be determined based upon discussion with the NYSDEC Project

manager and NYSDOH. Based upon these discussion and agency requirements, a work plan may need to be developed that requires that sampling be performed.

- A figure showing the soil vapor intrusion sample locations;
- Discuss the depths of the soil vapor samples;
- Include a table of sample locations and analytical parameters to be analyzed along with the minimum reporting limits to be achieved by the NYS ELAP-certified laboratory;

Upon completion of the evaluation, if an action is required, any actions taken or to be taken must be reflected in an updated SMP.

5.0. REPORTING REQUIREMENTS

5.1 Site Management Reports

All site management inspection events will be recorded on the appropriate site management forms provided in Appendix G. These forms are subject to NYSDEC revision.

All applicable inspection forms and other records, including media sampling data generated for the site during the reporting period will be provided in electronic format to the NYSDEC in accordance with the requirements of Table 1 and summarized in the Periodic Review Report.

Table 8

Schedule of Inspection Reports

Task/Report	Reporting Frequency*
Inspection Report	Annually
Groundwater Monitoring Report	Annually
Periodic Review Report	Annually. Initial report within 16 months of issuance of Certificate of Completion.

*The frequency of events will be conducted as specified until otherwise modified by the NYSDEC.

All inspections reports will include, at a minimum:

- Date of event or reporting period;
- Name, company, and position of person(s) conducting monitoring/inspection activities;
- Description of the activities performed;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents noted (included either on the checklist/form or on an attached sheet);

- Any observations, conclusions, or recommendations; and
- A determination as to whether contaminant conditions have changed since the last reporting event.

Non-routine event reporting forms will include, at a minimum:

- Date of event;
- Name, company, and position of person(s) conducting non-routine maintenance/repair activities;
- Description of non-routine activities performed; and
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents (included either on the form or on an attached sheet).

5.2 Periodic Review Report

The Periodic Review Report will consist only of the certification as specified in Section 5.2.1 except in the event where there have been changes to the site or data gathered during the certifying period. Given such an event, the submittal of a comprehensive PR report will be necessary, as specified below.

A Periodic Review Report (PRR) will be submitted to the Department beginning 30 days after the initial 16 month certifying period. This initial certifying period commences upon issuance of the Certificate of Completion. After submittal of the initial Periodic Review Report, the next PRR shall be submitted annually to the Department or at another frequency as may be subsequently required by the Department. In the event that the site is subdivided into separate parcels with different ownership, a single Periodic Review Report will be prepared that addresses the site described in Appendix C -Deed Restriction. The report will be prepared in accordance with NYSDEC's DER-10 and submitted within 30 days of the end of each certification period. Media sampling results will also be incorporated into the Periodic Review Report. The report will include:

- Identification, assessment and certification of all ICs required by the remedy for the site.
- Results of the required annual site inspections and severe condition inspections, if applicable.
- All applicable site management forms and other records generated for the site during the reporting period in the NYSDEC-approved electronic format, if not previously submitted.
- A summary of any data and/or information generated during the reporting period, with comments and conclusions, if any
- A site evaluation, which includes the following:
  - The compliance of the remedy with the requirements of the site-specific ROD;
  - Any new conclusions or observations regarding site contamination based on inspections or data generated;
  - Recommendations regarding any necessary changes to the remedy; and
  - The overall performance and effectiveness of the remedy.

5.2.1 Certification of Institutional Controls

Within 30 days after the end of each certifying period, as determined by the NYSDEC, the following certification will be provided to the Department:

"For each institutional control identified for the site, I certify that all of the following statements are true:

- *The institutional control employed at this site is unchanged from the date the control was put in place, or last approved by the Department;*
- *Nothing has occurred that would impair the ability of the control to protect the public health and environment;*
- *Nothing has occurred that would constitute a violation or failure to comply with any site management plan for this control;*

- *Access to the site will continue to be provided to the Department to evaluate the remedy, including access to evaluate the continued maintenance of this control;*
- *If a financial assurance mechanism is required under the oversight document for the site, the mechanism remains valid and sufficient for the intended purpose under the document;*
- *Use of the site is compliant with the deed restriction.*
- *The information presented in this report is accurate and complete.*

I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law. I, Mathew D. Horn, of 47 Castle Street, Geneva, New York, am certifying as the City of Geneva's Designated Site Representative for the site."

The signed certification will be included in the Periodic Review Report, if such report is required for the period. Otherwise, the Certification will be submitted as a stand-alone document.

The Periodic Review Report/Certification will be submitted, in electronic format, to the NYSDEC Central Office, the NYSDEC Region 8 Office, and the NYSDOH Bureau of Environmental Exposure Investigation. The Periodic Review Report/Certification may need to be submitted in hard-copy format, as requested by the NYSDEC project manager.

5.3 Corrective Measures Work Plan

If any component of the remedy is found to have failed, or if the periodic certification cannot be provided due to the failure of an institutional control, a Corrective Measures Work Plan will be submitted to the NYSDEC for approval. This plan will explain the failure and provide the details and schedule for performing work necessary to correct the failure. Unless an emergency condition exists, no work will be performed pursuant to the Corrective Measures Work Plan until it has been approved by the NYSDEC. Upon completion of the Corrective Measure, a signed certification form must be submitted to the Department.

6.0 REFERENCES

6 NYCRR Part 375, Environmental Remediation Programs. December 14, 2006.

NYSDEC DER-10 – "Technical Guidance for Site Investigation and Remediation". May 2010.

Passero Associates, P.C. Site Investigation Report and Remedial Alternatives Report for Brownfields Investigation, Market Basket Property, Geneva, New York. October 2000.

NYSDEC, 1998. Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1. June 1998 (April 2000 addendum).

Record of Decision, NYSDEC Environmental Restoration Program. March 2002.

O'Brien & Gere, Remedial Action Work Plan. June 2007

Final Engineering Report. Plumley Engineering. TBD.

FIGURES

REF.: USGS - GENEVA NORTH (NY) QUAD., 2013, 7.5 MIN. SCALE: 1"=2000'

PLUMLEY ENGINEERING
Civil and Environmental Engineering
PLUMLEY ENGINEERING, P.C.
8232 LOOP ROAD
BALDWINSVILLE, NY 13027
TELEPHONE: (315) 638-8587
FAX: (315) 638-9740
WWW.PLUMLEYENG.COM

PROJECT: MARKET BASKET PROPERTY
ENVIRONMENTAL RESTORATION PROGRAM

DWG. TITLE: SITE LOCATION MAP

CLIENT: CITY OF GENEVA

LOCATION: CITY OF GENEVA, ONTARIO COUNTY, NEW YORK

PROJECT No.:	2016018
FILE NAME.:	FIGURE 1
SCALE:	AS NOTED
DATE:	AUG. 2016
ENG'D BY:	DKM
DRAWN BY:	JMD
CHECKED BY:	DKM

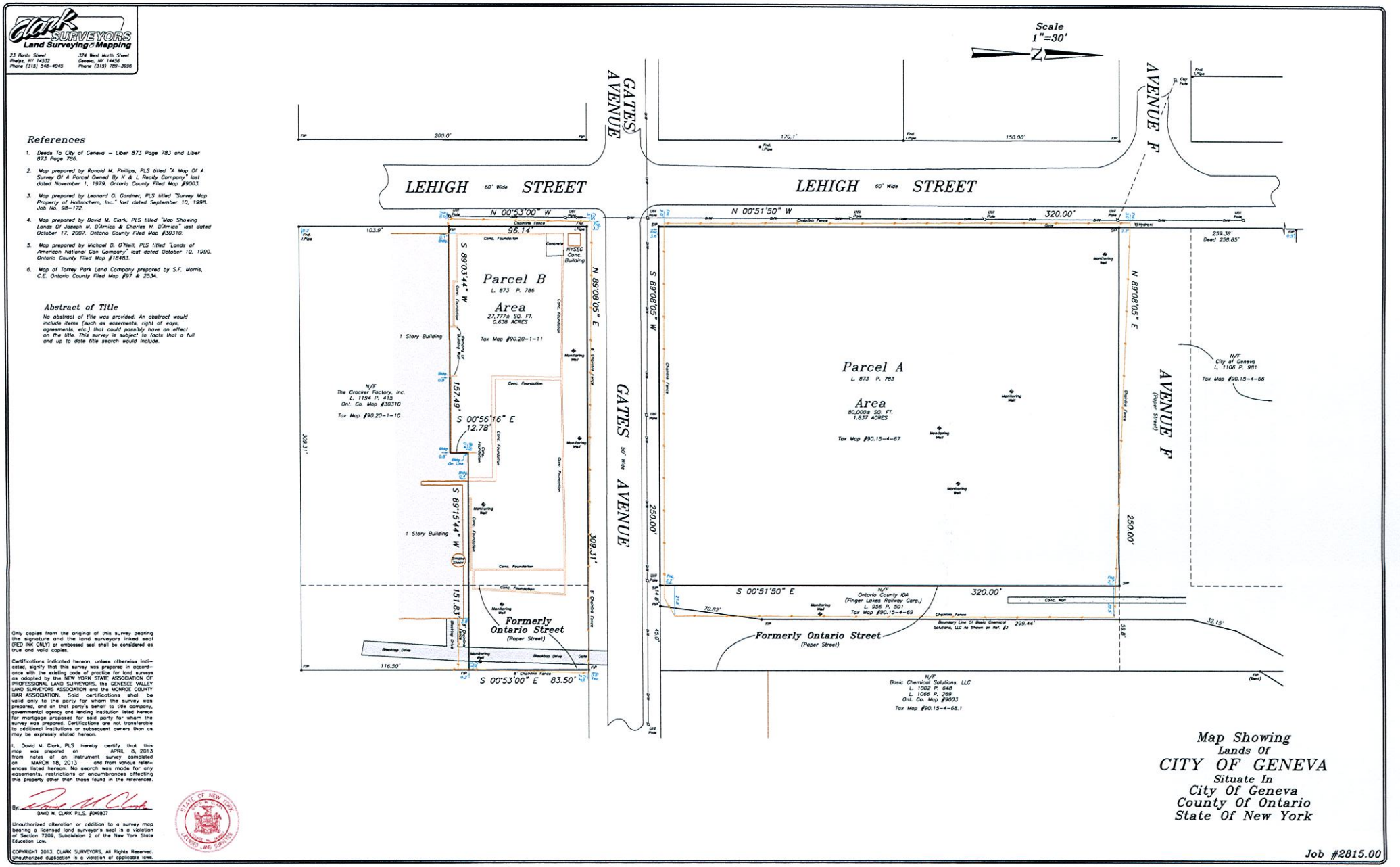
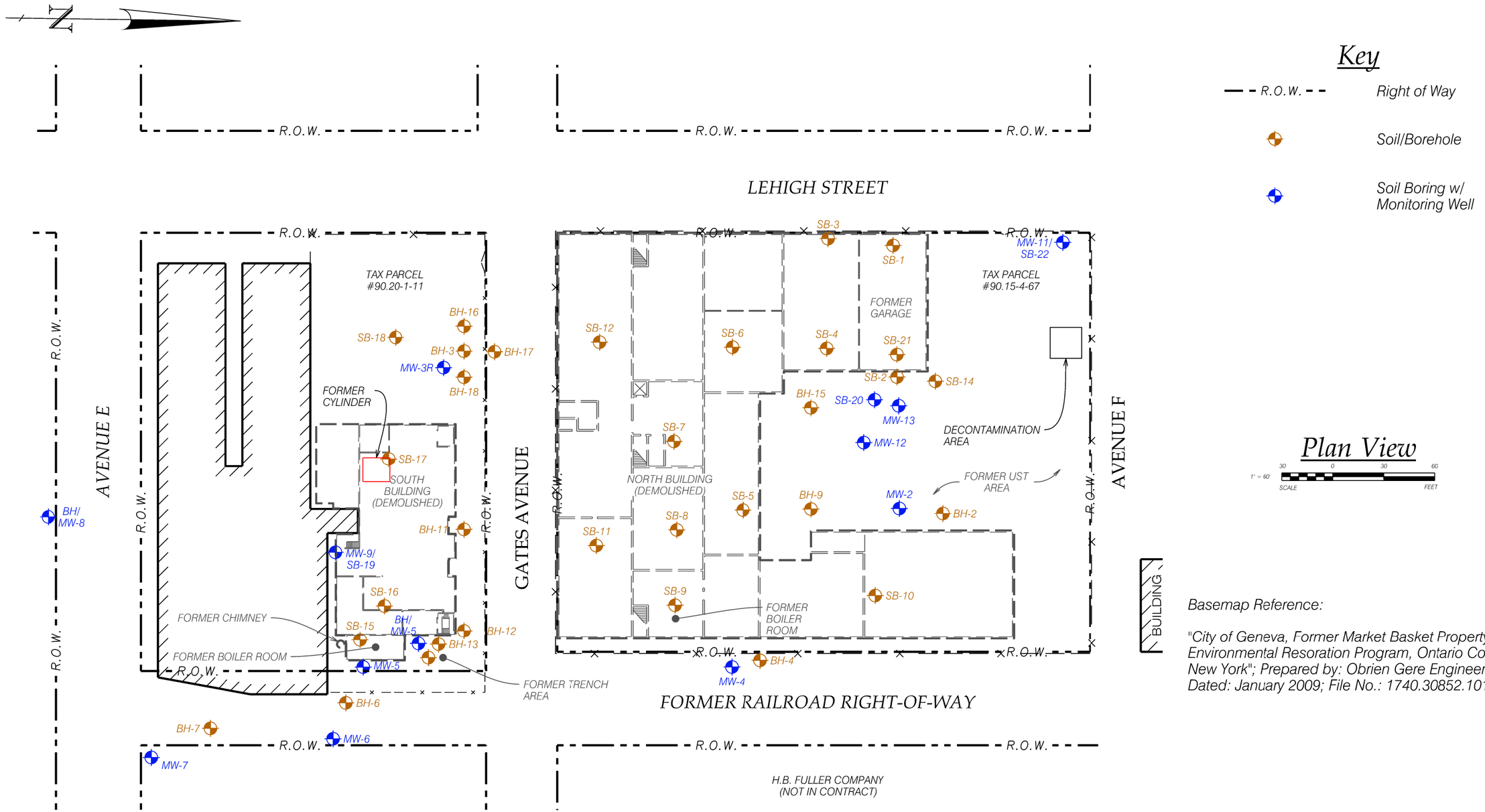


FIGURE 2A
SITE SURVEY MAP



Key

- R.O.W. — Right of Way
- Soil/Borehole
- Soil Boring w/ Monitoring Well

Plan View

1" = 60' SCALE: 30 0 30 60 FEET

Basemap Reference:

"City of Geneva, Former Market Basket Property, Environmental Resoration Program, Ontario County, New York"; Prepared by: Obrien Gere Engineers, Inc.; Dated: January 2009; File No.: 1740.30852.101.

PLUMLEY ENGINEERING
Civil and Environmental Engineering

PLUMLEY ENGINEERING, P.C.
8232 LOOP ROAD
BALDWINSVILLE, NY 13027

TELEPHONE: (315) 638-8587
FAX: (315) 638-9740
WWW.PLUMLEYENG.COM

REVISIONS: DATE: BY:

PROJECT: *MARKET BASKET PROPERTY*
ENVIRONMENTAL RESTORATION PROGRAM

DWG. TITLE: SITE LAYOUT MAP

CLIENT: CITY GENEVA

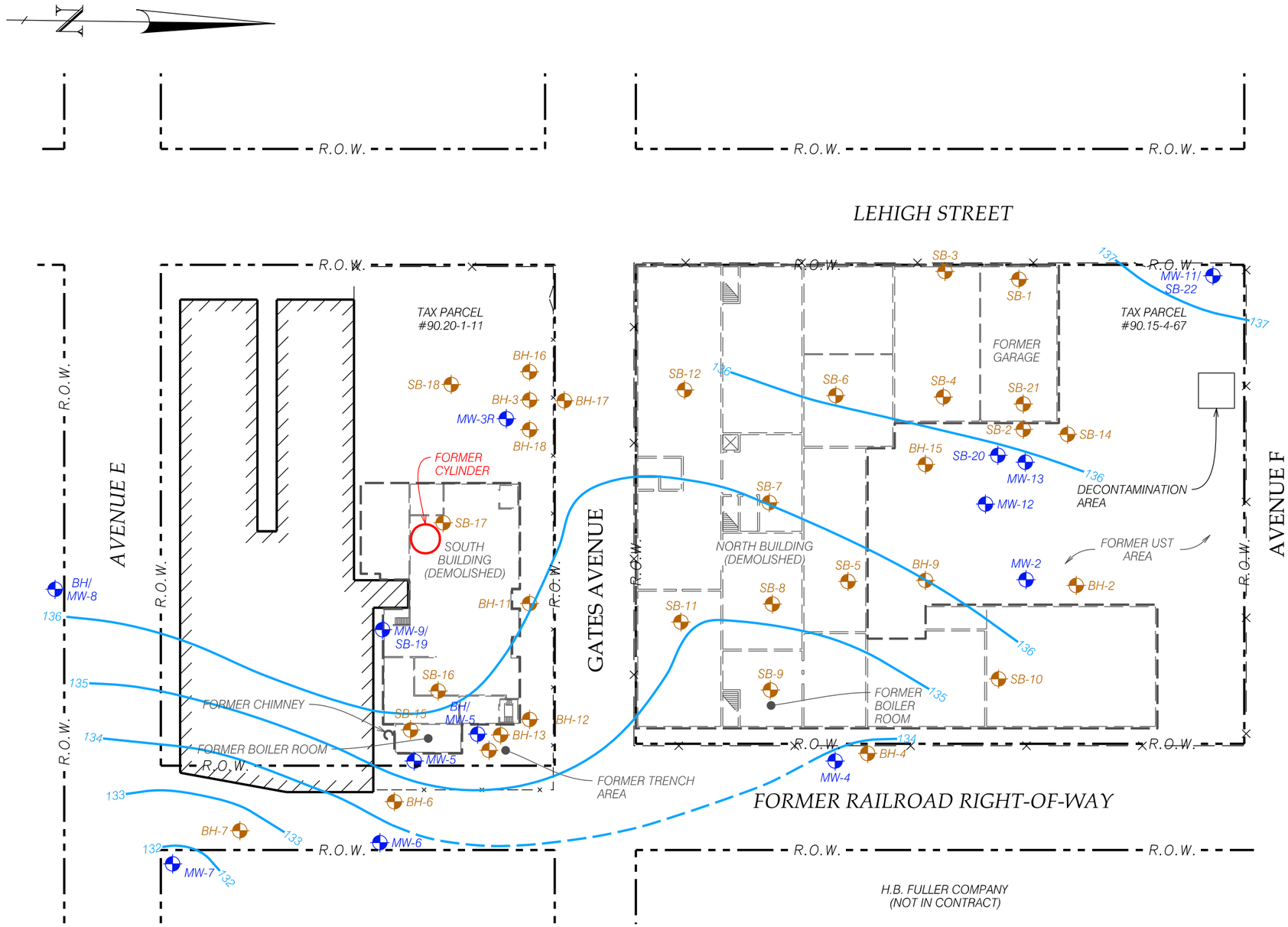
LOCATION: CITY OF GENEVA, ONTARIO COUNTY, NEW YORK

Note: No alteration permitted hereon except as provided under Section 7209 Subdivision 2 of the New York State Education Law.

PROJECT No.:	2016018
FILE NAME.:	Figure2B
SCALE:	AS NOTED
DATE:	AUG. 2016
ENG'D BY:	DKM
DRAWN BY:	JMD
CHECKED BY:	DKM

SHEET NO.:

FIGURE 2B



Key

- R.O.W. — Right of Way
- Soil Boring
- Soil Boring w/ Monitoring Well
- 137 — Groundwater Contour (December 2008)

Plan View

1" = 60' SCALE 30 0 30 60 FEET

Basemap Reference:

"City of Geneva, Former Market Basket Property, Environmental Resoration Program, Ontario County, New York"; Prepared by: Obrien Gere Engineers, Inc.; Dated: January 2009; File No.: 1740.30852.101.

PLUMLEY ENGINEERING
Civil and Environmental Engineering
PLUMLEY ENGINEERING, P.C.
8232 LOOP ROAD
BALDWINSVILLE, NY 13027
TELEPHONE: (315) 638-8587
FAX: (315) 638-9740
WWW.PLUMLEYENG.COM

REVISIONS: DATE: BY:

PROJECT: *MARKET BASKET PROPERTY ENVIRONMENTAL RESTORATION PROGRAM*

DWG. TITLE: GROUNDWATER CONTOUR MAP - DECEMBER 2008

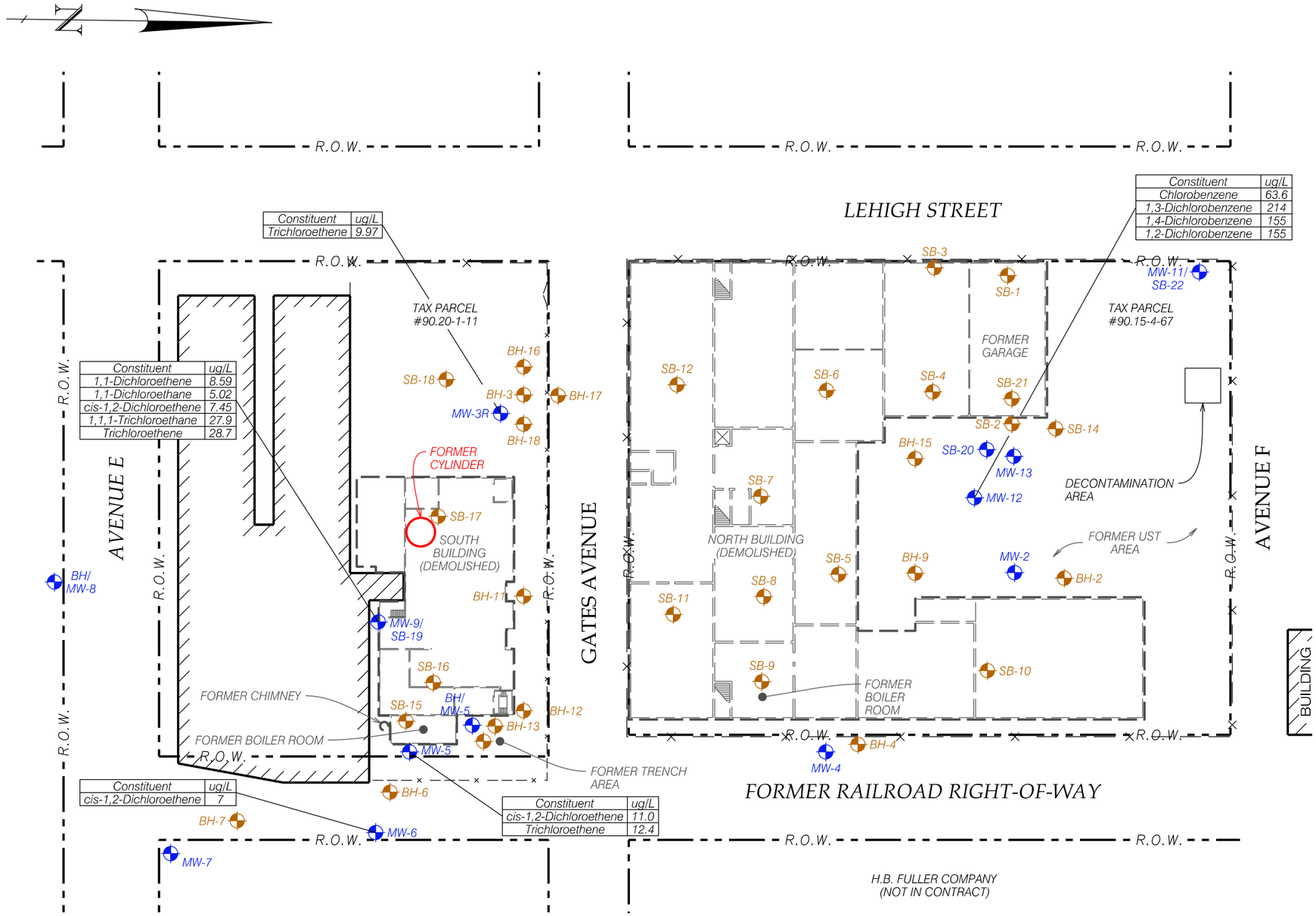
CLIENT: CITY GENEVA

LOCATION: CITY OF GENEVA, ONTARIO COUNTY, NEW YORK

PROJECT No.: 2016018
FILE NAME.: Figure3
SCALE: AS NOTED
DATE: AUG. 2016
ENG'D BY: DKM
DRAWN BY: JMD
CHECKED BY: DKM

SHEET NO.:

FIGURE 3



Key

- R.O.W. — Right of Way
- Soil Boring
- Soil Boring w/ Monitoring Well

Plan View

1" = 60' SCALE 30 0 30 60 FEET

Basemap Reference:

"City of Geneva, Former Market Basket Property, Environmental Resoration Program, Ontario County, New York"; Prepared by: Obrien Gere Engineers, Inc.; Dated: January 2009; File No.: 1740.30852.101.

PLUMLEY ENGINEERING
PLUMLEY ENGINEERING, P.C.
8232 LOOP ROAD
BALDWINSVILLE, NY 13027
TELEPHONE: (315) 638-8587
FAX: (315) 638-9740
WWW.PLUMLEYENG.COM
Civil and Environmental Engineering

REVISIONS: DATE: BY:

PROJECT: *MARKET BASKET PROPERTY ENVIRONMENTAL RESTORATION PROGRAM*

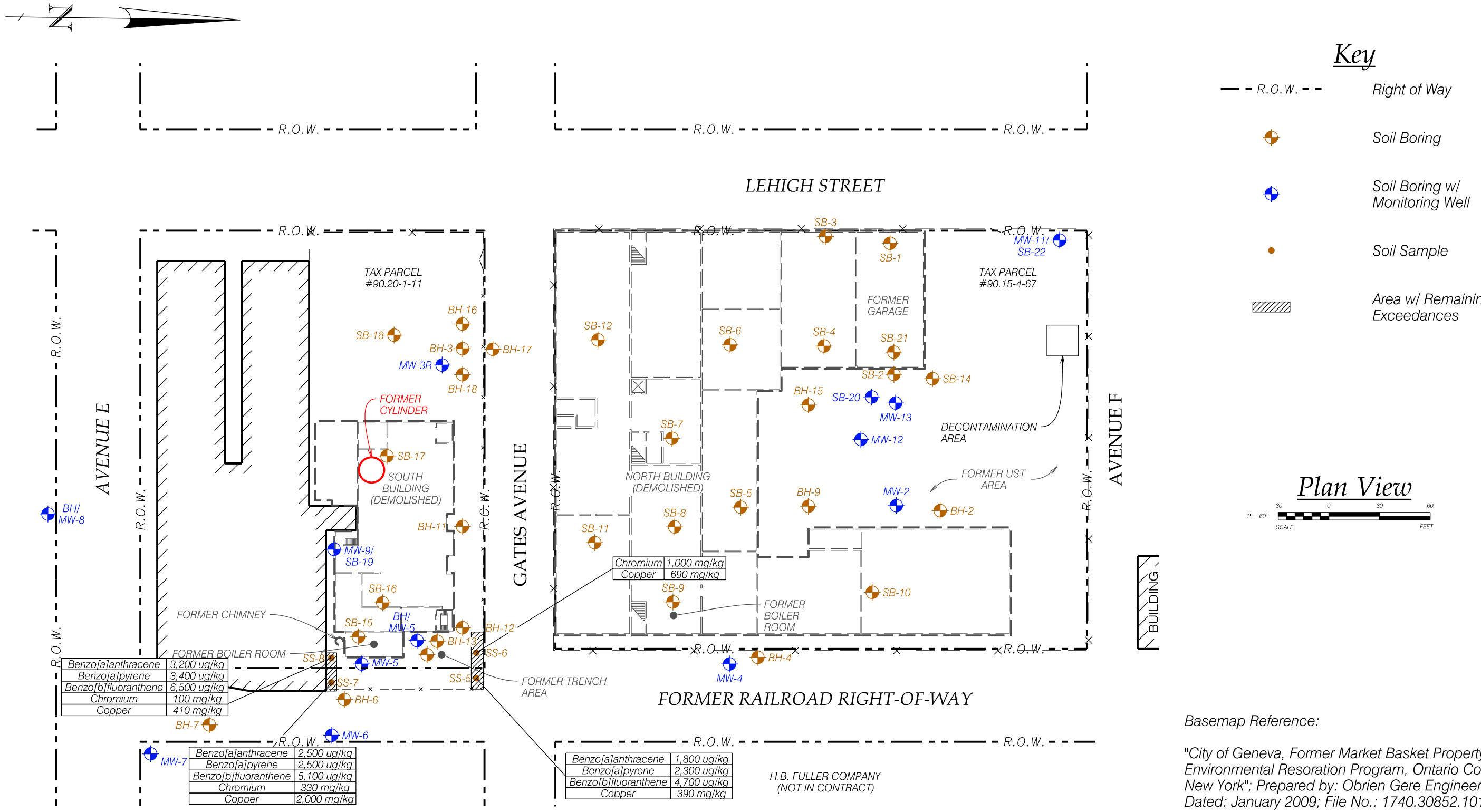
DWG. TITLE: REMAINING GROUNDWATER SAMPLE EXCEEDANCES

CLIENT: CITY GENEVA

LOCATION: CITY OF GENEVA, ONTARIO COUNTY, NEW YORK

PROJECT No.:	2016018
FILE NAME.:	Figure4
SCALE:	AS NOTED
DATE:	AUG. 2016
ENG'D BY:	DKM
DRAWN BY:	JMD
CHECKED BY:	DKM

SHEET NO.: FIGURE 4



Benzo[a]anthracene	3,200 ug/kg
Benzo[a]pyrene	3,400 ug/kg
Benzo[b]fluoranthene	6,500 ug/kg
Chromium	100 mg/kg
Copper	410 mg/kg

Benzo[a]anthracene	2,500 ug/kg
Benzo[a]pyrene	2,500 ug/kg
Benzo[b]fluoranthene	5,100 ug/kg
Chromium	330 mg/kg
Copper	2,000 mg/kg

Benzo[a]anthracene	1,800 ug/kg
Benzo[a]pyrene	2,300 ug/kg
Benzo[b]fluoranthene	4,700 ug/kg
Copper	390 mg/kg

Chromium	1,000 mg/kg
Copper	690 mg/kg

Key

- R.O.W. — Right of Way
- Soil Boring
- Soil Boring w/ Monitoring Well
- Soil Sample
- Area w/ Remaining Exceedances

Plan View

1" = 60' SCALE: 30 0 30 60 FEET

Basemap Reference:

"City of Geneva, Former Market Basket Property, Environmental Resoration Program, Ontario County, New York"; Prepared by: Obrien Gere Engineers, Inc.; Dated: January 2009; File No.: 1740.30852.101.

PLUMLEY ENGINEERING

PLUMLEY ENGINEERING, P.C.
8232 LOOP ROAD
BALDWINSVILLE, NY 13027

TELEPHONE: (315) 638-8587
FAX: (315) 638-9740
WWW.PLUMLEYENG.COM

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REVISIONS: DATE: BY:

PROJECT: *MARKET BASKET PROPERTY*
ENVIRONMENTAL RESTORATION PROGRAM

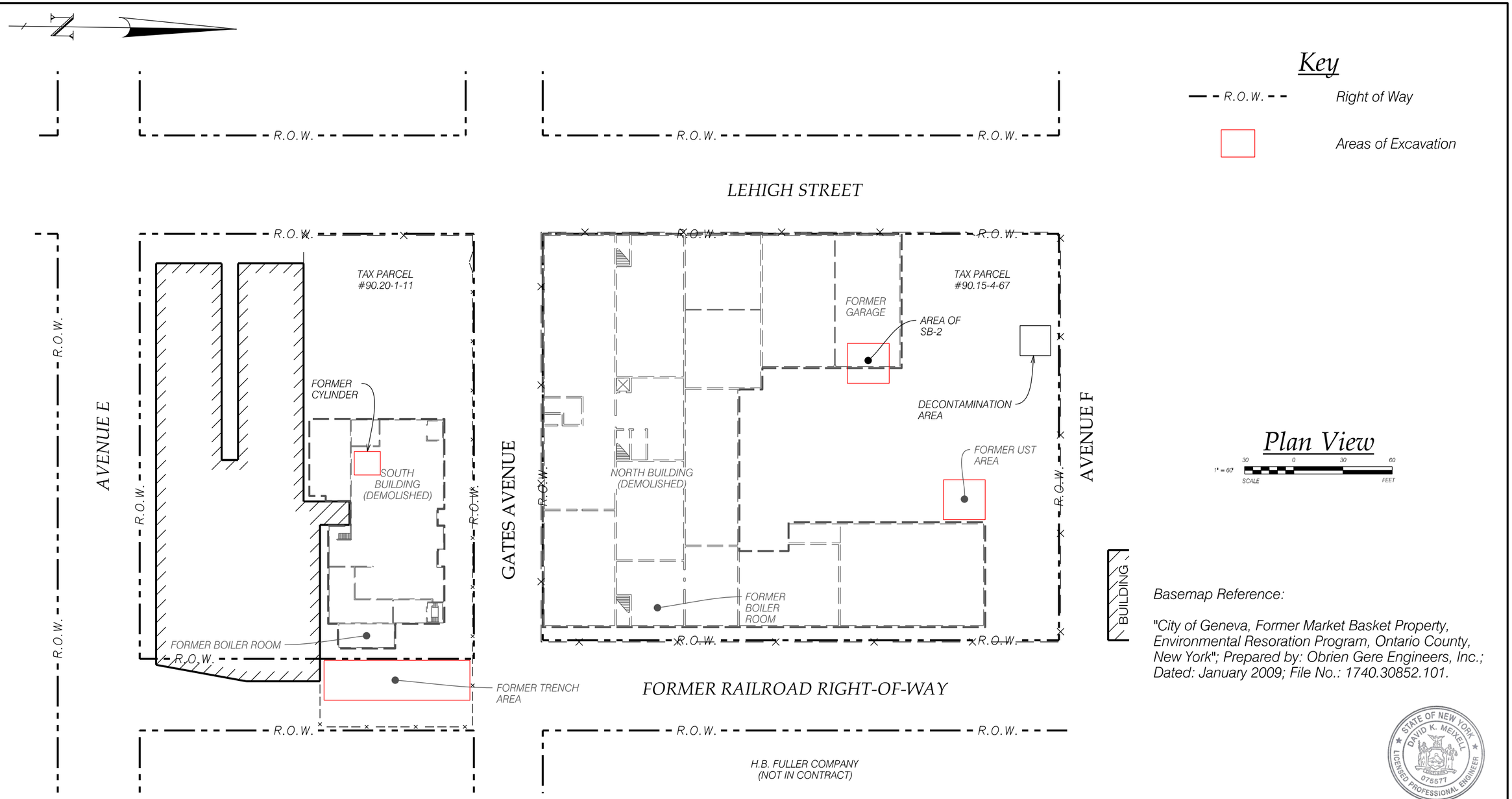
DWG. TITLE: REMAINING SOIL SAMPLE EXCEEDANCES

CLIENT: CITY GENEVA

LOCATION: CITY OF GENEVA, ONTARIO COUNTY, NEW YORK

PROJECT No.:	2016018
FILE NAME.:	Figure5
SCALE:	AS NOTED
DATE:	AUG. 2016
ENG'D BY:	DKM
DRAWN BY:	JMD
CHECKED BY:	DKM

SHEET NO.: FIGURE 5



Basemap Reference:

"City of Geneva, Former Market Basket Property, Environmental Resoration Program, Ontario County, New York"; Prepared by: Obrien Gere Engineers, Inc.; Dated: January 2009; File No.: 1740.30852.101.

STATE OF NEW YORK
DAVID K. MEIXELL
075571
LICENSED PROFESSIONAL ENGINEER

12-12-16

PLUMLEY ENGINEERING

PLUMLEY ENGINEERING, P.C.
8232 LOOP ROAD
BALDWINSVILLE, NY 13027

TELEPHONE: (315) 638-8587
FAX: (315) 638-9740
WWW.PLUMLEYENG.COM

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REVISIONS: | DATE: | BY:

PROJECT: *MARKET BASKET PROPERTY*
ENVIRONMENTAL RESTORATION PROGRAM

DWG. TITLE: EXCAVATION AS-BUILT

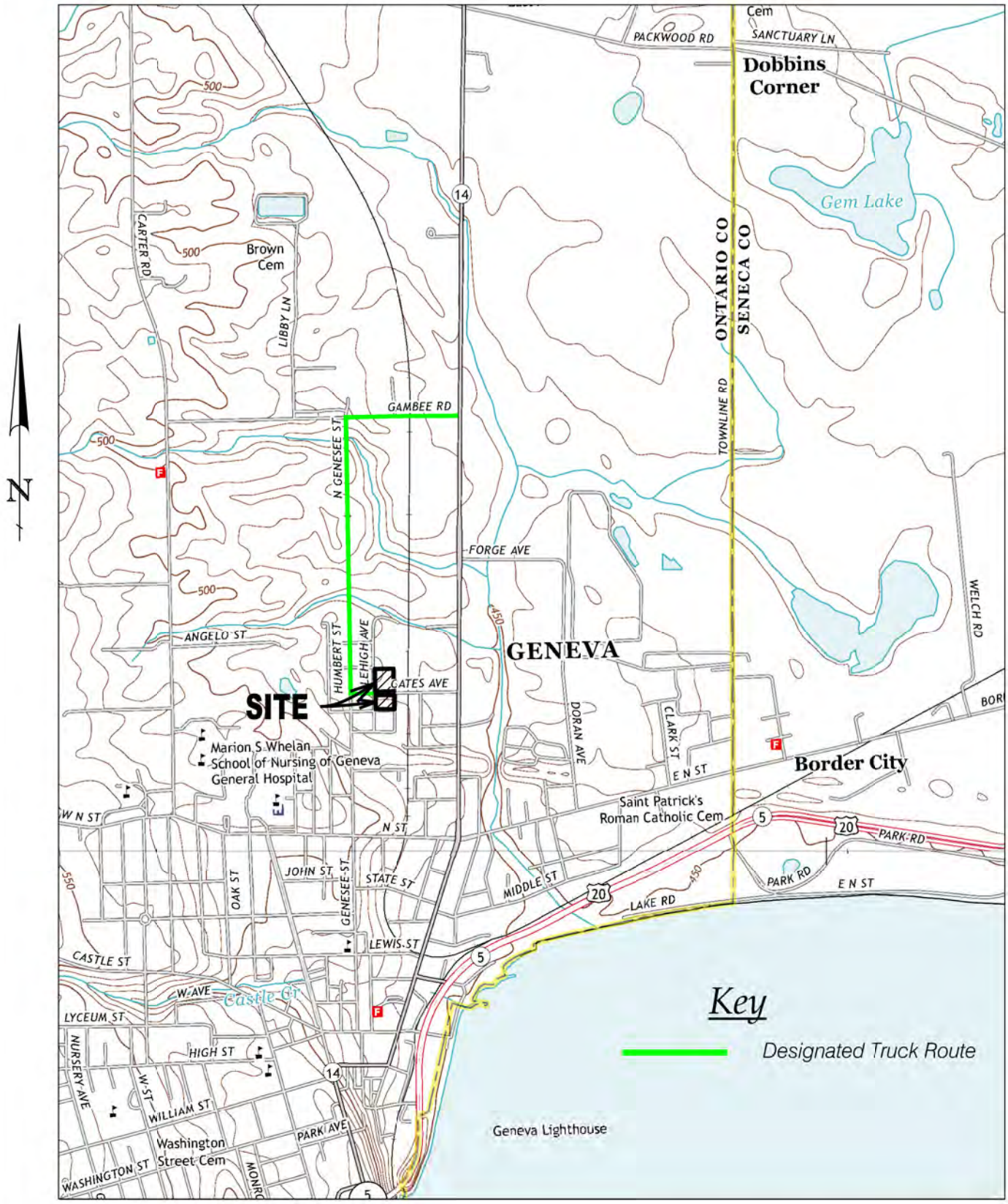
CLIENT: CITY GENEVA

LOCATION: CITY OF GENEVA, ONTARIO COUNTY, NEW YORK

PROJECT No.:	2016018
FILE NAME.:	EV01P
SCALE:	AS NOTED
DATE:	DEC. 2016
ENG'D BY:	DKM
DRAWN BY:	JMD
CHECKED BY:	DKM

SHEET NO.:

FIGURE 6



REF.: USGS - GENEVA NORTH (NY) QUAD., 2013, 7.5 MIN. SCALE: 1"=2000'

PLUMLEY ENGINEERING
Civil and Environmental Engineering
PLUMLEY ENGINEERING, P.C.
8232 LOOP ROAD
BALDWINSVILLE, NY 13027
TELEPHONE: (315) 638-8587
FAX: (315) 638-9740
WWW.PLUMLEYENG.COM

PROJECT: MARKET BASKET PROPERTY ENVIRONMENTAL RESTORATION PROGRAM

DWG. TITLE: TRUCK ROUTE MAP

CLIENT: CITY OF GENEVA

LOCATION: CITY OF GENEVA, ONTARIO COUNTY, NEW YORK

PROJECT No.:	2016018
FILE NAME:	Figure7
SCALE:	AS NOTED
DATE:	DEC 2016
ENGD BY:	DKM
DRAWN BY:	JMD
CHECKED BY:	DKM

APPENDICES

APPENDIX A

LIST OF SITE CONTACTS

APPENDIX A – LIST OF SITE CONTACTS

Site contacts associated with the implantation of this SMP include the following:

Name	**Phone/Email Address**
Site Owner and Remedial Party– City of Geneva Mathew D. Horn, City Manager	(315) 789-6104 NLB@Geneva.ny.us
Qualified Environmental Professional Gordon Eddington	(315) 277-0162 gedding1@yahoo.com
NYSDEC Regional HWR Engineer Bernette Schilling	(585) 226-5315 Bernette.schilling@dec.ny.gov
NYSDEC DER Project Manager Charlotte Theobald	(585) 226-5354 charlotte.theobald@dec.ny.gov
NYSDEC Site Control Section Division of Environmental Remediation	(518) 402-9764 derweb@dec.ny.gov

APPENDIX B

EXCAVATION WORK PLAN

APPENDIX B – EXCAVATION WORK PLAN (EWP)

B-1 NOTIFICATION

At least 15 days prior to the start of any activity that is anticipated to encounter remaining contamination, the site owner or their representative will notify the NYSDEC. Table B-1 includes contact information for the above notification. The information on this table will be updated as necessary to provide accurate contact information. A full listing of site-related contact information is provided in Appendix A.

Table B-1: Notifications*

NYSDEC Project Manager	(585) 226-5354
Charlotte Theobald	charlotte.theobald@dec.ny.gov

* Note: Notifications are subject to change and will be updated as necessary.

This notification will include:

- A detailed description of the work to be performed, including the location and areal extent of excavation, plans/drawings for site re-grading, intrusive elements or utilities to be installed, estimated volumes of contaminated soil to be excavated and any work that may impact an engineering control;
- A summary of environmental conditions anticipated to be encountered in the work areas, including the nature and concentration levels of contaminants of concern, potential presence of grossly contaminated media, and plans for any pre-construction sampling;
- A schedule for the work, detailing the start and completion of all intrusive work;
- A summary of the applicable components of this EWP;
- A statement that the work will be performed in compliance with this EWP and 29 CFR 1910.120;
- A copy of the contractor's health and safety plan (HASP), in electronic format, if it differs from the HASP provided in Appendix F of this SMP;
- Identification of disposal facilities for potential waste streams; and

- Identification of sources of any anticipated backfill, along with all required chemical testing results.

B-2 SOIL SCREENING METHODS

Visual, olfactory and instrument-based (e.g. photoionization detector) soil screening will be performed by a qualified environmental professional during all excavations into known or potentially contaminated material (remaining contamination). Soil screening will be performed when invasive work is done and will include all excavation and invasive work performed during development, such as excavations for foundations and utility work, after issuance of the COC. A screening level of 10 parts per million will be used.

Soils will be segregated based on previous environmental data and the screening results into material that requires off-site disposal and material that requires testing to determine if the material can be reused on-site. Further discussion of off-site disposal of materials and on-site reuse is provided in Section B-7 of this Appendix.

B-3 SOIL STAGING METHODS

Soil stockpiles will be continuously encircled with a berm and/or silt fence. Hay bales will be used as needed near catch basins, surface waters and other discharge points.

Stockpiles will be staged on a minimum of 12-mil poly sheeting and kept covered at all times with appropriately anchored tarps (a minimum of 12-mil poly sheeting). Stockpiles will be routinely inspected and damaged tarp covers/poly sheeting will be promptly replaced.

Stockpiles will be inspected at a minimum once each week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the site and available for inspection by the NYSDEC.

B-4 MATERIALS EXCAVATION AND LOAD-OUT

A qualified environmental professional or person under their supervision will oversee all invasive work and the excavation and load-out of all excavated material.

The owner of the property and remedial party (if applicable) and its contractors are responsible for safe execution of all invasive and other work performed under this Plan.

The presence of utilities and easements on the site will be investigated by the qualified environmental professional. It will be determined whether a risk or impediment to the planned work under this SMP is posed by utilities or easements on the site.

Loaded vehicles leaving the site will be appropriately lined, tarped, securely covered, manifested, and placarded in accordance with appropriate Federal, State, local, and NYSDOT requirements (and all other applicable transportation requirements).

A truck wash will be operated on-site, as appropriate. The qualified environmental professional will be responsible for ensuring that all outbound trucks will be washed at the truck wash before leaving the site. Truck wash waters will be collected and disposed of off-site in an appropriate manner.

Locations where vehicles enter or exit the site shall be inspected daily for evidence of off-site soil tracking.

The qualified environmental professional will be responsible for ensuring that all egress points for truck and equipment transport from the site are clean of dirt and other materials derived from the site during intrusive excavation activities. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to site-derived materials.

B-5 MATERIALS TRANSPORT OFF-SITE

All transport of materials will be performed by licensed haulers in accordance with appropriate local, State, and Federal regulations, including 6 NYCRR Part 364. Haulers will be appropriately licensed and trucks properly placarded.

Material transported by trucks exiting the site will be secured with tight-fitting covers. Loose-fitting canvas-type truck covers will be prohibited. If loads contain wet material capable of producing free liquid, truck liners will be used.

Truck transport routes are as follows (See Figure 7 of this Plan):

- Due to a railroad bridge with low height clearance, trucks leaving the site will proceed west on Gates Avenue one block to North Genesee Street.
- Trucks will turn right on North Genesee Street and proceed to the intersection with Gambee Road.
- Trucks will turn right on Gambee Road and proceed to NYS Route 14.

All trucks loaded with site materials will exit the vicinity of the site using only these approved truck routes. This is the most appropriate route and takes into account: (a) limiting transport through residential areas and past sensitive sites; (b) use of city mapped truck routes; (c) prohibiting off-site queuing of trucks entering the facility; (d) limiting total distance to major highways; (e) promoting safety in access to highways; and (f) overall safety in transport; and (g) community input where necessary.

Trucks will be prohibited from stopping and idling in the neighborhood outside the project site.

Egress points for truck and equipment transport from the site will be kept clean of dirt and other materials during site remediation and development.

Queuing of trucks will be performed on-site in order to minimize off-site disturbance. Off-site queuing will be prohibited.

B-6 MATERIALS DISPOSAL OFF-SITE

All material excavated and removed from the site will be treated as contaminated and regulated material and will be transported and disposed in accordance with all local, State (including 6NYCRR Part 360) and Federal regulations. If disposal of material from this site is proposed for unregulated off-site disposal (i.e. clean soil removed for development purposes), a formal request with an associated plan will be made to the NYSDEC. Unregulated off-site management of materials from this site will not occur without formal NYSDEC approval.

Off-site disposal locations for excavated soils will be identified in the pre-excavation notification. This will include estimated quantities and a breakdown by class of disposal facility if appropriate, i.e. hazardous waste disposal facility, solid waste landfill, petroleum treatment facility, C/D recycling facility, etc. Actual disposal quantities and associated documentation will be reported to the NYSDEC in the Periodic Review Report. This documentation will include: waste profiles, test results, facility acceptance letters, manifests, bills of lading and facility receipts.

Non-hazardous historic fill and contaminated soils taken off-site will be handled, at minimum, as a Municipal Solid Waste per 6NYCRR Part 360-1.2. Material that does not meet Unrestricted SCOs is prohibited from being taken to a New York State recycling facility (6NYCRR Part 360-16 Registration Facility).

B-7 MATERIALS REUSE ON-SITE

The qualified environmental professional will ensure that procedures defined for materials reuse in this SMP are followed and that unacceptable material does not remain on-site. Contaminated on-site material, including historic fill and contaminated soil will not be reused on-site, within landscaping berms, or as backfill for subsurface utility lines.

Any demolition material proposed for reuse on-site will be sampled for asbestos and the results will be reported to the NYSDEC for acceptance. Concrete crushing or processing on-site will not be performed without prior NYSDEC approval. Organic matter (wood, roots, stumps, etc.) or other solid waste derived from clearing and grubbing of the site will not be reused on-site.

B-8 FLUIDS MANAGEMENT

All liquids to be removed from the site, including but not limited to, excavation dewatering, decontamination waters and groundwater monitoring well purge and development waters, will be handled, transported and disposed in accordance with applicable local, State, and Federal regulations. Dewatering, purge and development fluids will not be recharged back to the land surface or subsurface of the site, and will be managed off-site, unless prior approval is obtained from NYSDEC.

Discharge of water generated during large-scale construction activities to surface waters (i.e. a local pond, stream or river) will be performed under a SPDES permit.

B-9 RESERVED

B-10 BACKFILL FROM OFF-SITE SOURCES

All materials proposed for import onto the site will be approved by the qualified environmental professional and will be in compliance with provisions in this SMP prior to receipt at the site. A Request to Import/Reuse Fill or Soil form, which can be found at http://www.dec.ny.gov/regulations/67386.html, will be prepared and submitted to the NYSDEC project manager allowing a minimum of 5 business days for review.

Material from industrial sites, spill sites, or other environmental remediation sites or potentially contaminated sites will not be imported to the site.

All imported soils will meet the backfill and cover soil quality standards established in 6NYCRR 375-6.7(d). Based on an evaluation of the land use, protection of groundwater and protection of ecological resources criteria, the resulting soil quality standards are listed in Appendix H – DER-10 Appendix 5 Allowable Constituent Levels for Imported Fill or Soil Subdivision 5.4(e).of DER-10. Any imported fill or soil must meet the SCOs for all of the constituents listed in Appendix 5 under Commercial or Industrial Use column. Soils that meet ‘exempt’ fill requirements under 6

NYCRR Part 360, but do not meet backfill or cover soil objectives for this site, will not be imported onto the site without prior approval by NYSDEC. Solid waste will not be imported onto the site.

The sampling frequency from DER-10 Table 5.4(e)10 for import fill or soil material is as follows:

Table 5.4(e)10 Recommended Number of Soil Samples for Soil Imported To or Exported From a Site			
Contaminant	VOCs	SVOCs, Inorganics & PCBs/Pesticides	
Soil Quantity (cubic yards)	Discrete Samples	Composite	Discrete Samples/Composite
0-50	1	1	3-5 discrete samples from different locations in the fill being provided will comprise a composite sample for analysis
50-100	2	1	
100-200	3	1	
200-300	4	1	
300-400	4	2	
400-500	5	2	
500-800	6	2	
800-1000	7	2	
➢ 1000	Add an additional 2 VOC and 1 composite for each additional 1000 cubic yards or consult with DEC project manager		

The analytical parameters for imported fill or soil material will be TCL VOCs plus TICs, TCL SVOCs plus TICs, TAL Metals, Cyanide, Pesticides, and PCBs.

For material other than soil to be imported to the Site without chemical analysis it must contain less than 10% by weight of material that passes through an 80 sieve analysis and consists of gravel, rock, or stone consisting of virgin material from a permitted mine or quarry or recycled concrete or brick from a DEC registered construction and demolition debris processing facility. See DER-10 Section 5.4(e)5.

Trucks entering the site with imported soils will be securely covered with tight fitting covers. Imported soils will be stockpiled separately from excavated materials and covered to prevent dust releases.

B-11 STORMWATER POLLUTION PREVENTION

A Stormwater Pollution Prevention Plan that conforms to the requirements of the NYSDEC Division of Water guidelines and NYS regulations will be developed and submitted for approval needed for construction projects and the final Stormwater Pollution Prevention Plan will be appended to the SMP as a modification.

Barriers and hay bale checks will be installed and inspected once a week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the site and available for inspection by the NYSDEC. All necessary repairs shall be made immediately.

Accumulated sediments will be removed as required to keep the barrier and hay bale check functional.

All undercutting or erosion of the silt fence toe anchor shall be repaired immediately with appropriate backfill materials.

Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.

Erosion and sediment control measures identified in the SMP shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters.

Silt fencing or hay bales will be installed around the entire perimeter of the construction area.

B-12 EXCAVATION CONTINGENCY PLAN

If underground tanks or other previously unidentified contaminant sources are found during post-remedial subsurface excavations or development related construction, excavation activities will be suspended until sufficient equipment is mobilized to address the condition.

Sampling will be performed on product, sediment and surrounding soils, etc. as necessary to determine the nature of the material and proper disposal method. Chemical analysis will be performed for a full list of analytes (TAL metals; TCL volatiles and semi-volatiles, TCL pesticides and PCBs), unless the site history and previous sampling results provide a sufficient justification to limit the list of analytes. In this case, a reduced list of analytes will be proposed to the NYSDEC for approval prior to sampling.

Identification of unknown or unexpected contaminated media identified by screening during invasive site work will be promptly communicated by phone to NYSDEC's Project Manager. Reportable quantities of petroleum product will also be reported to the NYSDEC spills hotline. These findings will be also included in the Periodic Review Report.

B-13 COMMUNITY AIR MONITORING PLAN

Prevailing winds are from the west/northwest. See Figure 2B of the SMP for the typical locations of the monitoring stations. These locations will be adjusted on a daily or more frequent basis based on actual wind directions to provide an upwind and at least two downwind monitoring stations. If a sensitive receptor, such as a school, day care or residential area is adjacent to the site, a fixed monitoring station will be located at that Site perimeter, regardless of wind direction.

Exceedances of action levels listed in the CAMP will be reported to NYSDEC and NYSDOH Project Managers on the day of exceedance. All data is to be reported in the final report for the excavation activity.

B-14 ODOR CONTROL PLAN

This odor control plan is capable of controlling emissions of nuisance odors off-site and on-site, if there are residents or tenants on the property. Specific odor control methods to be used on a routine

basis will include, but not limited to, continuously monitoring excavation work and ceasing work if odors become apparent, use of foam suppressant, etc. If nuisance odors are identified at the site boundary, or if odor complaints are received, work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. NYSDEC and NYSDOH will be notified of all odor events within one day of the odor event and notified of any other complaints about the project. Implementation of all odor controls, including the halt of work, is the responsibility of the remedial party's Remediation Engineer, and any measures that are implemented will be discussed in the Excavation Activities Report.

All necessary means will be employed to prevent on- and off-site nuisances. At a minimum, these measures will include: (a) limiting the area of open excavations and size of soil stockpiles; (b) shrouding open excavations with tarps and other covers; and (c) using foams to cover exposed odorous soils. If odors develop and cannot be otherwise controlled, additional means to eliminate odor nuisances will include: (d) direct load-out of soils to trucks for off-site disposal; (e) use of chemical odorants in spray or misting systems; and, (f) use of staff to monitor odors in surrounding neighborhoods.

If nuisance odors develop during intrusive work that cannot be corrected, or where the control of nuisance odors cannot otherwise be achieved due to on-site conditions or close proximity to sensitive receptors, odor control will be achieved by sheltering the excavation and handling areas in a temporary containment structure equipped with appropriate air venting/filtering systems.

B-15 DUST CONTROL PLAN

A dust suppression plan that addresses dust management during invasive on-site work will include, at a minimum, the items listed below:

- Dust suppression will be achieved through the use of a dedicated on-site water truck for road wetting. The truck will be equipped with a water cannon capable of spraying water directly onto off-road areas including excavations and stockpiles.
- Clearing and grubbing of larger sites will be done in stages to limit the area of exposed, unvegetated soils vulnerable to dust production.

- Gravel will be used on roadways to provide a clean and dust-free road surface.
- On-site roads will be limited in total area to minimize the area required for water truck sprinkling.

B-16 OTHER NUISANCES

A plan for rodent control will be developed and utilized by the contractor prior to and during site clearing and site grubbing, and during all remedial work.

A plan will be developed and utilized by the contractor for all remedial work to ensure compliance with local noise control ordinances.

B-17 REPORTING

A report is to be submitted to the NYSDEC within 90 days of completion of the activities performed under this EWP. This report shall contain a summary of the activities performed; a summary of all data gathered and results; information about any media that was removed from the site: volume, contamination levels, area from which removed; and any other information that may be indicate a change to the “remaining contamination” that is at the site. Such changes may require revision of the SMP.

APPENDIX C

DEED RESTRICTIONS

Ontario County Clerk Recording Page

Return To

FRONTIER ABSTRACT
30 W BROAD ST
ROCHESTER, NY 14614

Matthew J. Hoose, County Clerk
Ontario County Clerk
20 Ontario Street
Canandaigua, New York 14424
(585) 396-4200

Document Type: **DECLARATION**

Receipt Number: 120036

Grantor (Party 1)
GENEVA CITY

Grantee (Party 2)

Fees	
Recording Fee	$20.00
Pages Fee	$45.00
State Surcharge	$20.00
Total Fees Paid:	$85.00

Control #: 201306110068

State of New York
County of Ontario

Recorded on June 11th, 2013 at 10:17:39 AM
in Liber **01298** of **Deeds**
beginning at page **0193**, ending at page **0201**,
with a total page count of **9**.

Matthew J. Hoose

Ontario County Clerk

This sheet constitutes the Clerk's endorsement required by section 319 of the Real Property Law of the State of New York

SL

Do Not Detach

DECLARATION of COVENANTS and RESTRICTIONS

THIS COVENANT is made the 8th day of May 2013, by City of Geneva, New York, a municipal corporation and having an office for the transaction of business at 47 Castle Street, Geneva, New York 14456.

WHEREAS, Market Basket Site is the subject of a State Assistance Contract executed by the City of Geneva as part of the New York State Department of Environmental Conservation's (the "Department's) Environmental Restoration Program, namely that parcel of real property located at the address of 63 Gates Avenue – North & South Side and Lehigh Street in the City of Geneva, County of Ontario, State of New York, being part of lands conveyed by William E. Yalden to City of Geneva by deed dated April 26, 1988 and recorded in Liber 873 at Page 783 [North Side] known and designated on the tax map of the County Clerk of Ontario as tax map parcel numbers: Block 16 Lot(s) 286 & 312A and deed dated April 26, 1988 and recorded in Liber 873 at page 786 [South Side] in the Ontario County Clerk's Office, and being more particularly described in Appendix "A," attached to this declaration and made a part hereof, and hereinafter referred to as "the Property"; and

WHEREAS, the Department approved a remedy to eliminate or mitigate all significant threats to the environment presented by the contamination disposed at the Property and such remedy requires that the Property be subject to restrictive covenants.

NOW, THEREFORE, City of Geneva, New York, for itself and its successors and/or assigns, covenants that:

First, the Property subject to this Declaration of Covenants and Restrictions is as shown on a map attached to this declaration as Appendix "B" and made a part hereof.

Second, unless prior written approval by the Department or, if the Department shall no longer exist, any New York State agency or agencies subsequently created to protect the environment of the State and the health of the State's citizens, hereinafter referred to as "the Relevant Agency," is first obtained, where contamination remains at the Property subject to the provisions of the Site Management Plan ("SMP"), there shall be no construction, use or occupancy of the Property that results in the disturbance or excavation of the Property which threatens the integrity of the engineering controls or which results in unacceptable human exposure to contaminated soils. The SMP may be obtained from the New York State Department of Environmental Conservation, Division of Environmental Remediation, Site Control Section, 625 Broadway, Albany, NY 12233.

Third, the owner of the Property shall not disturb, remove, or otherwise interfere with the installation, use, operation, and maintenance of engineering controls required for the Remedy, which are described in the SMP, unless in each instance the owner first obtains a written waiver of such prohibition from the Department or Relevant Agency.

Fourth, the owner of the Property shall prohibit the Property from ever being used for purposes other than for Commercial or Industrial use as defined in 6 NYCRR Part 375 1.8 (g) (2) (iii) & (iv) without the express written waiver of such prohibition by the Department or Relevant Agency.

Fifth, the owner of the Property shall prohibit the use of the groundwater underlying the Property without treatment rendering it safe for drinking water or industrial purposes, as appropriate, unless the user first obtains permission to do so from the Department or Relevant Agency

Sixth, the owner of the Property shall provide a periodic certification, prepared and submitted by a professional engineer or environmental professional acceptable to the Department or Relevant Agency, which will certify that the institutional and engineering controls put in place are unchanged from the previous certification, comply with the SMP, and have not been impaired.

Seventh, the owner of the Property shall continue in full force and effect any institutional and engineering controls required for the Remedy and maintain such controls, unless the owner first obtains permission to discontinue such controls from the Department or Relevant Agency, in compliance with the approved SMP, which is incorporated and made enforceable hereto, subject to modifications as approved by the Department or Relevant Agency.

Eighth, this Declaration is and shall be deemed a covenant that shall run with the land and shall be binding upon all future owners of the Property, and shall provide that the owner and its successors and assigns consent to enforcement by the Department or Relevant Agency of the prohibitions and restrictions that the State Assistance Contract requires to be recorded, and hereby covenant not to contest the authority of the Department or Relevant Agency to seek enforcement.

Ninth, any deed of conveyance of the Property, or any portion thereof, shall recite, unless the Department or Relevant Agency has consented to the termination of such covenants and restrictions, that said conveyance is subject to this Declaration of Covenants and Restrictions.

IN WITNESS WHEREOF, the undersigned has executed this instrument the day written below.

By: _____

Print Name: Mathew D. Horn

Title: City Manager Date: 4/5/2013

Grantor's Acknowledgment

STATE OF NEW YORK)

) s.s.:

COUNTY OF) in the Ontario County Clerk's Office

On the 5th day of April, in the year 2013 before me, the undersigned, personally appeared Mathew D. Horn, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

JILL E. BUYCK
Notary Public, State of New York
Wayne County No. 4377378
Commission Expires Jan. 29, 2015

Notary Public State of New York

EXHIBIT "A"

SCHEDULE "A"

Description

CITY OF GENEVA - PARCEL A

All that tract or parcel of land situate in the City of Geneva, County of Ontario, State of New York. All of which is shown on a map prepared by David M. Clark, PLS #049807, entitled ***"Map Showing Lands Of City Of Geneva"*** Job #2815.00. Last dated April 8, 2013. Being more particularly described as follows.

Beginning at a point, marked by an iron pin, at the intersection of the apparent easterly line of Lehigh Street and the apparent northerly line of Gates Avenue. Thence the following four (4) courses and distances.

1. Thence, N 00° 51' 50" W along the apparent easterly line of Lehigh Street a distance of 320.00 feet to a point, marked by an iron pin;

2. Thence, N 89° 08' 05" E along the southerly line of lands of the City of Geneva (L. 1106 P. 981) (Avenue E – Paper Street) a distance of 250.00 feet to a point, marked by an iron pin;

3. Thence, S 00° 51' 50" E along the westerly line of lands of the Ontario County IDA – Finger Lakes Railway (L. 956 P.501) (Ontario Street – Paper Street) a distance of 320.00 feet to a point, marked by an iron pin, in the apparent northerly line of Gates Avenue;

4. Thence, S 89° 08' 05" W along the apparent northerly line of Gates Avenue a distance of 250.00 feet back to the point of beginning.

Containing 80,000± Sq. Ft. or 1.837 Acres of land.

Subject to easements, rights of way or encumbrances of record, if any.

Intending to describe the lands conveyed to the City of Geneva by deed dated April 26, 1988 and recorded in the Ontario County Clerk's Office in liber 873 of deeds, page 783.

file:2815Add.doc

SCHEDULE "A"

Description

CITY OF GENEVA - PARCEL B

All that tract or parcel of land situate in the City of Geneva, County of Ontario, State of New York. All of which is shown on a map prepared by David M. Clark, PLS #049807, entitled ***"Map Showing Lands Of City Of Geneva"*** Job #2815.00. Last dated April 8, 2013. Being more particularly described as follows.

Beginning at a point, marked by an iron pipe, at the intersection of the apparent easterly line of Lehigh Street and the apparent southerly line of Gates Avenue. Thence the following six (6) courses and distances.

1. Thence, N 89° 08' 05" E along the apparent southerly line of Gates Avenue a distance of 309.31 feet to a point, marked by an iron pin;
2. Thence, S 00° 53' 00" E along the lands of the City of Geneva IDA (L. 1014 P. 805) (Ontario Street – Paper Street) a distance of 83.50 feet to a point;
3. Thence, S 89° 15' 44" W along the northerly line of lands of The Cracker Factory, Inc. (L. 1194 P. 415) a distance of 151.83 feet to a point;
4. Thence, S 00° 56' 16" E along the lands of The Cracker Factory, Inc. (L. 1194 P. 415) a distance of 12.78 feet to a point;
5. Thence, S 89° 03' 44" W along the northerly line lands of The Cracker Factory, Inc. (L. 1194 P. 415) a distance of 157.49 feet to a point, marked by an iron pin, in the apparent easterly line of Lehigh Street;
6. Thence, N 00° 53' 00" W along the apparent easterly line of Lehigh Street a distance of 96.14 back to the point of beginning.

Containing 27,777± Sq. Ft. or 0.638 Acres of land.

Subject to easements, rights of way or encumbrances of record, if any.

Intending to describe the lands conveyed to the City of Geneva by deed dated April 26, 1988 and recorded in the Ontario County Clerk's Office in liber 873 of deeds, page 786.

EXHIBIT "B"

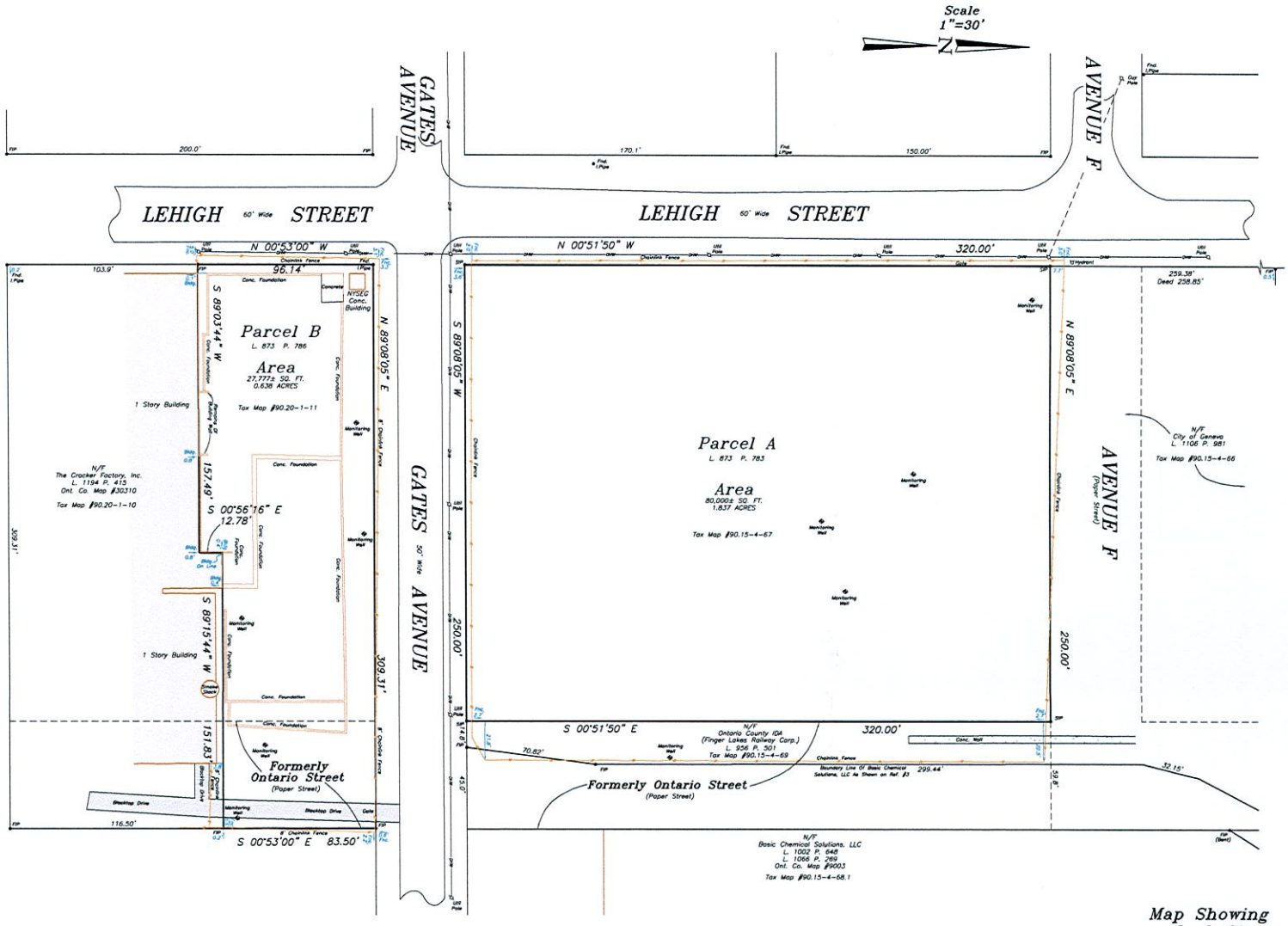
Clark SURVEYORS
Land Surveying & Mapping
23 Banta Street
Phelps, NY 14532
Phone (315) 548-4045
324 West North Street
Geneva, NY 14456
Phone (315) 789-3996

References

1. Deeds To City of Geneva – Liber 873 Page 783 and Liber 873 Page 786.
2. Map prepared by Ronald M. Phillips, PLS titled "A Map Of A Survey Of A Parcel Owned By K & L Realty Company" last dated November 1, 1979. Ontario County Filed Map #9003.
3. Map prepared by Leonard G. Gardner, PLS titled "Survey Map Property of Haltrachem, Inc." last dated September 10, 1998. Job No. 98-172.
4. Map prepared by David M. Clark, PLS titled "Map Showing Lands Of Joseph M. D'Amico & Charles W. D'Amico" last dated October 17, 2007. Ontario County Filed Map #30310.
5. Map prepared by Michael D. O'Neill, PLS titled "Lands of American National Can Company" last dated October 10, 1990. Ontario County Filed Map #18483.
6. Map of Torrey Park Land Company prepared by S.F. Morris, C.E. Ontario County Filed Map #97 & 253A.

Abstract of Title

No abstract of title was provided. An abstract would include items (such as easements, right of ways, agreements, etc.) that could possibly have an effect on the title. This survey is subject to facts that a full and up to date title search would include.



Only copies from the original of this survey bearing the signature and the land surveyors inked seal (RED INK ONLY) or embossed seal shall be considered as true and valid copies.

Certifications indicated hereon, unless otherwise indicated, signify that this survey was prepared in accordance with the existing code of practice for land surveys as adopted by the NEW YORK STATE ASSOCIATION OF PROFESSIONAL LAND SURVEYORS, the GENESEE VALLEY LAND SURVEYORS ASSOCIATION and the MONROE COUNTY BAR ASSOCIATION. Said certifications shall be valid only to the party for whom the survey was prepared, and on that party's behalf to title company, governmental agency and lending institution listed hereon for mortgage proposed for said party for whom the survey was prepared. Certifications are not transferable to additional institutions or subsequent owners than as may be expressly stated hereon.

I, David M. Clark, PLS hereby certify that this map was prepared on APRIL 8, 2013 from notes of an instrument survey completed on MARCH 18, 2013 and from various references listed hereon. No search was made for any easements, restrictions or encumbrances affecting this property other than those found in the references.

By: David M. Clark
DAVID M. CLARK P.L.S. #049807

STATE OF NEW YORK
DAVID M. CLARK
049807
LICENSED LAND SURVEYOR

Unauthorized alteration or addition to a survey map bearing a licensed land surveyor's seal is a violation of Section 7209, Subdivision 2 of the New York State Education Law.

Map Showing
Lands Of
CITY OF GENEVA
Situate In
City Of Geneva
County Of Ontario
State Of New York

Job #2815.00

APPENDIX D

MONITORING WELL BORING AND CONSTRUCTION LOGS

PASSERO ASSOCIATES, P.C.
ARCHITECTS-ENGINEERS-SURVEYORS
100 LIBERTY POLE WAY ROCHESTER,N.Y.
716-325-1000 14604

TEST BORING REPORT

PROJECT	Market Basket								HOLE NO: BH-1
CLIENT	Genesee								FILE NO:
CONTRACTOR	American Auger + Ditching								SHEET NO: 1
GROUNDWATER		DEPTH TO				CASING	SAMPLER	CORE BARREL	LOCATION:
DATE	TIME	WATER	CASING	HOLE	TYPE		HSA	SS	ELEVATION:
					SIZE ID		4 3/8 ID	2"	DATE START: 2-15-99
					HAMMER WT.				DRILLER: Baye
					HAMMER FALL				INSPECTOR: Morton

SEASONAL AND CLIMATIC CHANGES MAY ALTER OBSERVED WATER LEVELS.

Depth 0 - C	BLOWS ON SAMPLER 0"/6"	6"/12"	12"/18"	18"/24"	SAMPLE N	REC.	NO.	DEPTH	SOIL AND ROCK INFORMATION REMARKS
0'-2'	25	8	7	8		8"		Headspace PID=0	gravel fill overlying f tight sand y clay + silt
2'-4'	12	14	21	25		12"		PID=0	dry gravelly fill, f clean uniform SAND
4'-6'	8	21	30	40		18"		PID=0	wet-sat f SAND tan ← Sample BH1 -4'-6'
6'-8'	10	24	12	13		18"		PID=0	sat clean tan M SAND
8'-10'	12	15	15	13		16"		PID=0	saturated clean tan m-f SAND
10'-12'	5	12	10	16		20"		PID=0	saturated f tan SAND
12'-14'	5	5	5	6		12"		PID=0	Sat f tan SAND

N = NO. OF BLOWS TO DRIVE _____ SPOON _____ WITH _____ LB. WT. _____ EA. BLOW
C = NO. OF BLOWS TO DRIVE _____ CASING _____ WITH _____ LB. WT. _____ EA. BLOW

FILE NAME: BORETBL PLOTTED WITH: ME-MISC

PASSERO ASSOCIATES, P.C.
ARCHITECTS-ENGINEERS-SURVEYORS
100 LIBERTY POLE WAY ROCHESTER, N.Y.
716-325-1000 14604

TEST BORING REPORT

PROJECT Geneva Market Basket	HOLE NO: BH2
CLIENT Geneva	FILE NO:
CONTRACTOR American Auger + Ditching	SHEET NO:

GROUNDWATER		DEPTH TO				CASING	SAMPLER	CORE BARREL	
DATE	TIME	WATER	CASING	HOLE	TYPE				LOCATION:
2-16-99					SIZE ID				ELEVATION:
					HAMMER WT.				DATE START: 2-16-99
					HAMMER FALL				DRILLER: Baye
									INSPECTOR: Morton

SEASONAL AND CLIMATIC CHANGES MAY ALTER OBSERVED WATER LEVELS.

Depth		BLOWS ON SAMPLER				SAMPLE				SOIL AND ROCK INFORMATION REMARKS
0	C	0" / 6"	6" / 12"	12" / 18"	18" / 24"	N	REC.	NO.	DEPTH	
0'-	2'	5	6	14	7		23"		PID 3.5 ppm	wet f SAND w/ some silt
2'-	4'	7	8	10	15		24"		PID 0	wet - sat f SAND w/ some silt
4'-	6'	6	6	9	10		20"		PID 1 ppm	4'-5' sat blk f SAND, 5'-6' sat f tan SAND
6'-	8'	3	7	7	10		24"		PID 0	sat f tan SAND, grey color at bottom (no odor on PID)
8'-	10'	2	2	2	2		20"		0	sat f SAND w/ tr silt, clay
10'-	12'	8	8	12	7		22"		0	Sat SILT w/ tr clay, Sat SILT
12'-	14'	3	7	6	11		20"		0	Sat grey SILT

N = NO. OF BLOWS TO DRIVE _____ SPOON _____ WITH _____ LB. WT. _____ EA. BLOW
C = NO. OF BLOWS TO DRIVE _____ CASING _____ WITH _____ LB. WT. _____ EA. BLOW

FILE NAME: BORETBL | GROUP DIR: JAE-MISC.

PASSERO ASSOCIATES, P.C.
ARCHITECTS-ENGINEERS-SURVEYORS
100 LIBERTY POLE WAY ROCHESTER,N.Y.
716-325-1000 14604

TEST BORING REPORT

PROJECT Geneva Market Basket — HOLE NO: BH3
CLIENT Geneva — FILE NO: 97119
CONTRACTOR American Auger — SHEET NO:

GROUNDWATER		DEPTH TO				CASING	SAMPLER	CORE BARREL	
DATE	TIME	WATER	CASING	HOLE	TYPE				LOCATION:
2-17-99					SIZE ID				ELEVATION:
					HAMMER WT.				DATE START:
					HAMMER FALL				DRILLER:
									INSPECTOR:

SEASONAL AND CLIMATIC CHANGES MAY ALTER OBSERVED WATER LEVELS.

Depth		BLOWS ON SAMPLER				SAMPLE				SOIL AND ROCK INFORMATION REMARKS
0	C	0"/6"	6"/12"	12"/18"	18"/24"	N	REC.	NO.	DEPTH	
0'	2'	6	3	8	6		12"		PID 0	≈ 6" surficial gravelly fill; tan wet SILT
2'	4'	13	7	9	10		16"		PID 0	wet - sat tan SILT w/tr clay
4'	6'	1	2	3	4		16"		0	sat tan SILT w/ tr clay
6'	8'	7	7	11	14		20"		0	SILT to 7', layer of clean F SAND from 7'-8'
8'	10'	2	2	2	1		22"		0	sat tan SILT changing to greyish color at 9'
10'	12'	2	2	3	5		20"		0	sat tan/grey SILT
12'	14'	5	3	7	6		24"		0	• Sat grey SILT

N = NO. OF BLOWS TO DRIVE _____ SPOON _____ WITH _____ LB. WT. _____ EA. BLOW
C = NO. OF BLOWS TO DRIVE _____ CASING _____ WITH _____ LB. WT. _____ EA. BLOW

BORETRI ... LIF-MISC

PASSERO ASSOCIATES, P.C.
ARCHITECTS-ENGINEERS-SURVEYORS
100 LIBERTY POLE WAY ROCHESTER,N.Y.
716-325-1000 14604

TEST BORING REPORT

PROJECT Market Basket | HOLE NO: BH4
CLIENT City of Geneva | FILE NO:
CONTRACTOR American Auger | SHEET NO:

GROUNDWATER		DEPTH TO				CASING	SAMPLER	CORE BARREL	LOCATION:
DATE	TIME	WATER	CASING	HOLE	TYPE				ELEVATION:
					SIZE ID				DATE START: 2-17-99
					HAMMER WT.				DRILLER: Bays
					HAMMER FALL				INSPECTOR: Morton

SEASONAL AND CLIMATIC CHANGES MAY ALTER OBSERVED WATER LEVELS.

Depth		BLOWS ON SAMPLER				SAMPLE				SOIL AND ROCK INFORMATION REMARKS
	C	0"/6"	6"/12"	12"/18"	18"/24"	N	REC.	NO.	DEPTH	
0'	2'	6	3	6	7		14"		PID 0.2	organic topsoil wet gravel fill
2'	4'	15	24	11	8		12"		0.4	wet clean tan SILT
4'	6'	3	9	9	12		23"		0	wet-sat f tan ~~SAND~~ SILT w/ tr clay
6'	8'	10	15	12	9		24"		0	sat f SANDY SILT, SILT
8'	10'	3	5	5	6		20"		0	sat f tan silt 18-11 sat tan SILT 11-12 sat grey SILT w/ tr clay
10'	12'	2	2	2	2					
12'	14'	2	4	3	4					• sat grey SILT

N = NO. OF BLOWS TO DRIVE _____ SPOON _____ WITH _____ LB. WT. _____ EA. BLOW
C = NO. OF BLOWS TO DRIVE _____ CASING _____ WITH _____ LB. WT. _____ EA. BLOW

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TEST BORING REPORT

PROJECT Geneva Market Basket | HOLE NO: BH 5
CLIENT City of Geneva | FILE NO: 97119.
CONTRACTOR American Auger | SHEET NO:

GROUNDWATER		DEPTH TO				CASING	SAMPLER	CORE BARREL	LOCATION:
DATE	TIME	WATER	CASING	HOLE	TYPE				ELEVATION:
					SIZE ID				DATE START: 2-17-99
					HAMMER WT.				DRILLER: Baye
					HAMMER FALL				INSPECTOR: Morton

SEASONAL AND CLIMATIC CHANGES MAY ALTER OBSERVED WATER LEVELS.

Depth 0	Depth C	BLOWS ON SAMPLER 0"/6"	6"/12"	12"/18"	18"/24"	SAMPLE N	REC.	NO.	DEPTH	SOIL AND ROCK INFORMATION REMARKS
0'	2'	3	3	5	4		6"		PID 0	wet gravel / c Sand fill
2'	4'	1	1	2	3		3"			same
4'	6'	3	4	5	7		24"			wet - saturated SILT w/ +r clay
6'	8'	10	15	12	10		20"			Same as above
8'	10'	5	7	12	10		22"			Same as above
10'	12'	2	2	2	2		16"			Same to 11, @ 4 grey plastic CLAY/SILT
12'	14'	3	2	1	2					SILTY/CLAY

N = NO. OF BLOWS TO DRIVE _____ SPOON _____ WITH _____ LB. WT. _____ EA. BLOW
C = NO. OF BLOWS TO DRIVE _____ CASING _____ WITH _____ LB. WT. _____ EA. BLOW

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TEST BORING REPORT

PROJECT Geneva Market Basket — HOLE NO: BH6
CLIENT City of Geneva — FILE NO: 97119
CONTRACTOR American Auger — SHEET NO:

GROUNDWATER		DEPTH TO				CASING	SAMPLER	CORE BARREL	
DATE	TIME	WATER	CASING	HOLE	TYPE				ELEVATION:
					SIZE ID				DATE START: 2-18-99
					HAMMER WT.				DRILLER: Baye
					HAMMER FALL				INSPECTOR: Morton

SEASONAL AND CLIMATIC CHANGES MAY ALTER OBSERVED WATER LEVELS.

Depth 0	Depth C	BLOWS ON SAMPLER 0"/6"	6"/12"	12"/18"	18"/24"	SAMPLE N	REC.	NO.	DEPTH	SOIL AND ROCK INFORMATION REMARKS
0'	2'	9	5	5	8		8"			c sandy GRAVEL fill soil
2'	4'	5	5	3	3		16"		PID 1.4	wet - sat grey SILT w/ tr clay, f sand
4'	6'	2	2	3	3		24"		PID 0	sat SILT / CLAY
6'	8'	3	5	10	12		24"		0	tan - grey SILT w/ varying amounts of clay
8'	10'	12	15	18	11		20"		0	sat tan SILT/CLAY to 9', tan f SAND w/ some silt @ 9'
10'	12'	10	10	11	12		24"		0	tan f SAND w/some silt to 11', grey SILT w/ tr clay @ 11'
12'	14'	9	10	10	11		24"			* grey SILT w/ tr clay

N = NO. OF BLOWS TO DRIVE _____ SPOON _____ WITH _____ LB. WT. _____ EA. BLOW
C = NO. OF BLOWS TO DRIVE _____ CASING _____ WITH _____ LB. WT. _____ EA. BLOW

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TEST BORING REPORT

PROJECT Geneva Market Basket	HOLE NO: BH 7
CLIENT City of Geneva	FILE NO:
CONTRACTOR American Auger	SHEET NO:

GROUNDWATER		DEPTH TO				CASING	SAMPLER	CORE BARREL	
DATE	TIME	WATER	CASING	HOLE	TYPE				ELEVATION:
					SIZE ID				DATE START: 2-18-99
					HAMMER WT.				DRILLER: Baye
					HAMMER FALL				INSPECTOR: Morton

SEASONAL AND CLIMATIC CHANGES MAY ALTER OBSERVED WATER LEVELS.

Depth		BLOWS ON SAMPLER				SAMPLE				SOIL AND ROCK INFORMATION REMARKS
0	C	0" / 6"	6" / 12"	12" / 18"	18" / 24"	N	REC.	NO.	DEPTH	
3'	5'	1	1	1	1		14"		PID 0	wet fm SAND w/ fr gravel fill
8'	10'	3	6	5	7				0	wet- sat tan SILT
13'	15'	7	6	7	11				0	Sat tan SILT w/ clay, sat tan SILT

N = NO. OF BLOWS TO DRIVE _____ SPOON _____ WITH _____ LB. WT. _____ EA. BLOW

C = NO. OF BLOWS TO DRIVE _____ CASING _____ WITH _____ LB. WT. _____ EA. BLOW

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TEST BORING REPORT

PROJECT Geneva Market Basket	HOLE NO: BH8
CLIENT City of Geneva	FILE NO: 97119
CONTRACTOR American Auger	SHEET NO:

GROUNDWATER		DEPTH TO				CASING	SAMPLER	CORE BARREL	
DATE	TIME	WATER	CASING	HOLE	TYPE				LOCATION:
					SIZE ID				ELEVATION:
					HAMMER WT.				DATE START:
					HAMMER FALL				DRILLER:
									INSPECTOR:

SEASONAL AND CLIMATIC CHANGES MAY ALTER OBSERVED WATER LEVELS.

Depth		BLOWS ON SAMPLER				SAMPLE				SOIL AND ROCK INFORMATION REMARKS
O	C	0" / 6"	6" / 12"	12" / 18"	18" / 24"	N	REC.	NO.	DEPTH	
3'	5'	3	6	9	8		18"		PID 1.5	wet-sat tan SILT
8'	10'	2	2	3	4				1.8	sat tan SILT w/ tr f sand, sat tan SILT w/ tr clay
13'	15'	5	6	6	4				0	sat tan SILT w/ tr F SAND

N = NO. OF BLOWS TO DRIVE _____ SPOON _____ WITH _____ LB. WT. _____ EA. BLOW

C = NO. OF BLOWS TO DRIVE _____ CASING _____ WITH _____ LB. WT. _____ EA. BLOW

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TEST BORING REPORT

PROJECT	Market Basket								HOLE NO: BH9
CLIENT	City of Geneva								FILE NO: 97119
CONTRACTOR	American Auger								SHEET NO:
GROUNDWATER		DEPTH TO				CASING	SAMPLER	CORE BARREL	LOCATION:
DATE	TIME	WATER	CASING	HOLE	TYPE				ELEVATION:
					SIZE ID				DATE START: 2-22-99
					HAMMER WT.				DRILLER: Baye
					HAMMER FALL				INSPECTOR: Morton

SEASONAL AND CLIMATIC CHANGES MAY ALTER OBSERVED WATER LEVELS.

O	C	BLOWS ON SAMPLER 0"/6"	6"/12"	12"/18"	18"/24"	SAMPLE N	REC.	NO.	DEPTH	SOIL AND ROCK INFORMATION REMARKS
0'	3'						18"		PID 0	wet - sat tan SILT
3'	6'								0	wet - sat tan SILT w/ tr clay

N = NO. OF BLOWS TO DRIVE _____ SPOON _____ WITH _____ LB. WT. _____ EA. BLOW
C = NO. OF BLOWS TO DRIVE _____ CASING _____ WITH _____ LB. WT. _____ EA. BLOW

BORETRI MF-MISC

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TEST BORING REPORT

PROJECT Market Basket | HOLE NO: BH #1
CLIENT City of Geneva | FILE NO: 97119
CONTRACTOR American Auger | SHEET NO:

GROUNDWATER		DEPTH TO				CASING	SAMPLER	CORE BARREL	LOCATION:
DATE	TIME	WATER	CASING	HOLE	TYPE				ELEVATION:
					SIZE ID				DATE START: 2-22-99
					HAMMER WT.				DRILLER: Bauge
					HAMMER FALL				INSPECTOR: Morton

SEASONAL AND CLIMATIC CHANGES MAY ALTER OBSERVED WATER LEVELS.

Depth		BLOWS ON SAMPLER				SAMPLE				SOIL AND ROCK INFORMATION REMARKS
0	C	0" / 6"	6" / 12"	12" / 18"	18" / 24"	N	REC.	NO.	DEPTH	
0'	3'								PID 0	wet - sat c sandy fill soil w/ tr gravel
3'	6'								0	

N = NO. OF BLOWS TO DRIVE _____ SPOON _____ WITH _____ LB. WT. _____ EA. BLOW
C = NO. OF BLOWS TO DRIVE _____ CASING _____ WITH _____ LB. WT. _____ EA. BLOW

FILE NAME: BORETBL | BACKUP DISK: JJE-MISC.

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TEST BORING REPORT

PROJECT Market Basket — HOLE NO: BH12-0'-6'
CLIENT City of Geneva — FILE NO: 97119
CONTRACTOR American Auger — SHEET NO:

GROUNDWATER		DEPTH TO				CASING	SAMPLER	CORE BARREL	LOCATION:
DATE	TIME	WATER	CASING	HOLE	TYPE				ELEVATION:
					SIZE ID				DATE START: 2-22-99
					HAMMER WT.				DRILLER: Bays
					HAMMER FALL				INSPECTOR: Mo. Fox

SEASONAL AND CLIMATIC CHANGES MAY ALTER OBSERVED WATER LEVELS.

O	C	BLOWS ON SAMPLER 0"/6"	6"/12"	12"/18"	18"/24"	SAMPLE N	REC.	NO.	DEPTH	SOIL AND ROCK INFORMATION REMARKS
0'	3'						6"		PID 0	gravel fill soil w/ rock frags
3'	6'								0	tan SILT
6'	9'								1.8	≈ 7.5' depth, black staining

N = NO. OF BLOWS TO DRIVE _____ SPOON _____ WITH _____ LB. WT. _____ EA. BLOW
C = NO. OF BLOWS TO DRIVE _____ CASING _____ WITH _____ LB. WT. _____ EA. BLOW

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TEST BORING REPORT

PROJECT Market Basket									HOLE NO: B413
CLIENT City of Geneva									FILE NO:
CONTRACTOR American Auger									SHEET NO:
GROUNDWATER		DEPTH TO				CASING	SAMPLER	CORE BARREL	LOCATION:
DATE	TIME	WATER	CASING	HOLE	TYPE				ELEVATION:
					SIZE ID				DATE START: 2-22-99
					HAMMER WT.				DRILLER:
					HAMMER FALL				INSPECTOR:

SEASONAL AND CLIMATIC CHANGES MAY ALTER OBSERVED WATER LEVELS.

O	C	BLOWS ON SAMPLER 0"/6"	6"/12"	12"/18"	18"/24"	SAMPLE N	REC.	NO.	DEPTH	SOIL AND ROCK INFORMATION REMARKS
0'	3'						8"		PID 0	gravelly sand fill, topsoil
3'	6'								0	wet - sat SILT w/ tr clay black staining ≈ 5'
6'	9'								0	sat SILT w/ tr clay

N = NO. OF BLOWS TO DRIVE _____ SPOON _____ WITH _____ LB. WT. _____ EA. BLOW
C = NO. OF BLOWS TO DRIVE _____ CASING _____ WITH _____ LB. WT. _____ EA. BLOW

FILE NAME: BORETBL PACKAGE DIR: JAE-MISC.

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TEST BORING REPORT

PROJECT Market Basket	HOLE NO: BH14
CLIENT ~~American Angle~~ City of Geneva	FILE NO: 97119
CONTRACTOR American Angle	SHEET NO:

GROUNDWATER		DEPTH TO				CASING	SAMPLER	CORE BARREL	
DATE	TIME	WATER	CASING	HOLE	TYPE				LOCATION:
					SIZE ID				ELEVATION:
					HAMMER WT.				DATE START: 2-22-99
					HAMMER FALL				DRILLER: Bayne
									INSPECTOR: Morton

SEASONAL AND CLIMATIC CHANGES MAY ALTER OBSERVED WATER LEVELS.

O	C	BLOWS ON SAMPLER 0"/6"	6"/12"	12"/18"	18"/24"	SAMPLE N	REC.	NO.	DEPTH	SOIL AND ROCK INFORMATION REMARKS
0'	3'						12"			dry gravel fill w/ tr frags
3'	6'						3"			gravel / tr frags
6'	9'									sat gry SILT w/ tr clay

N = NO. OF BLOWS TO DRIVE _____ SPOON _____ WITH _____ LB. WT. _____ EA. BLOW
C = NO. OF BLOWS TO DRIVE _____ CASING _____ WITH _____ LB. WT. _____ EA. BLOW

BOREHOLE LOG-MISC

Market Basket - 2-26-99

BH15 1" thick concrete pad.
0'-3' 18" recwg 6" gravel fill, moist tan SILT
3'-5' moist-sat tan SILT PID=0

BH16
0-2 gravel fill, dry-moist tan SILT
2-4 sat tan SILT, sat tan SILT w/ tr clay
4-6 sat tan SILT
6-8

BH17
0-2 dry-moist tan SILT
2-4 wet-sat tan SILT
4-6 sat tan SILT w/ tr clay
6-8 same

BH18
0-2 wet-sat tan SILT
2-4 moist-sat tan SILT, SILT w/ tr clay
4-6 sat tan SILT
6-8 sat tan SILT, SILT w/ tr clay

O'BRIEN & GERE ENGINEERS, INC.	TEST BORING LOG	REPORT OF BORING SB-1
Client: City of Geneva, NY	Sampler: Drill Rig	Page 1 of 1
Proj. Loc: Pre-design remedial investigation Market Basket Property, Geneva, NY	Hammer: Automatic	Location:
File No.:	Fall: 30"	Start Date: 7/19/04 End Date: 7/19/04
Boring Company: Nothgale Inc. Foreman: Neil Short OBG Geologist: Yuri Veliz		Screen = Riser ; \ Grout, Sand Pack, Bentonite

Depth Below Grade	No.	Depth (feet)	Blows /6"	Penetr/ Recovery	"N" Value	Sample Description	Stratum Change General Descript	Equip. Installed	Field Testing PID (ppm)	Field Testing UV
0	1	4		4/4		Dusky gray (5YR 3/2) damp, loose, MEDIUM and COARSE SAND, some gravel, ash cinder. At ~ 2' bg is mod. yellowish brown (10YR 5/4), damp, soft, FINE SAND and SILT. At 2.5' bg is SILT, little clay.	sand gravel	0' 2'	0.0	
							fn sand silt	2.5'		
							silt	4.25'		
4	2	8		4/4		Same as above up to 4.25', then is pale brown (5YR 5/2), wet, firm, FINE SAND and SILT. Saturated at 6'bg.			0.0	
							fn sand silt ▽	6'		
8	3	12		4/4		Moderate yellowish brown (10YR 5/4) saturated, stiff to hard, FINE SAND and SILT. Some layers of clayey silt			0.0	
							fn sand silt			
12	4	16		4/4		Same as above		16'	0.0	
						EOB - 16' bg.				

Soil sample - 1'-3' bg

O'BRIEN & GERE ENGINEERS, INC.	TEST BORING LOG	REPORT OF BORING SB-2
Client: City of Geneva, NY	Sampler: Drill Rig	Page 1 of 1
Proj. Loc: Pre-design remedial investigation Market Basket Property, Geneva, NY	Hammer: Automatic	Location:
File No.:	Fall: 30"	Start Date: 7/19/04 End Date: 7/19/04
Boring Company: Nothgale Inc. Foreman: Neil Short OBG Geologist: Yuri Veliz		Screen / Riser; Grout / Sand Pack / Bentonite

Depth Below Grade	No.	Depth (feet)	Blows /6"	Penetr/ Recovery	"N" Value	Sample Description	Stratum Change General Descript	Equip. Installed	Field Testing PID (ppm)	UV
0	1	4		4/4		Duaky gray (5YR 3/4), dry, med. Dense COARSE SANDA and GRAVEL. Some ashcinders, bricks. At ~ 3' bg is mod. yellowish brown (10YR 5/4), saturated, firm, FINE SAND and SILT oil odor	sand gravel fill	0'	100.0	
								3'		
							fn sand silt			
4	2	8		4/4		Moderate yellowish brown (10YR 5/4) saturated, dense, FINE SAND and SILT	▽	4'	400.0	
							fn sand silt			
8	3	11		3/3		Same as above			20.0	
11	4	14		3/3		Same as above				
14	5	16		2/2		Same as above			40.0	
								16'		
						EOB - 16'bg				

Soil sample - 3'-4'; 15'-16' bg

O'BRIEN & GERE ENGINEERS, INC.

TEST BORING LOG

REPORT OF BORING
SB-3

Client: City of Geneva, NY

Proj. Loc: Pre-design remedial investigation
Market Basket Property, Geneva, NY
File No.:

Sampler: Drill Rig

Hammer: Automatic

Fall: 30"

Page 1 of 1
Location:

Start Date: 7/19/04
End Date: 7/19/04

Boring Company: Nothgale Inc.
Foreman: Neil Short
OBG Geologist: Yuri Veliz

Screen **Riser** **Grout** **Sand Pack** **Bentonite**

Depth Below Grade	No.	Depth (feet)	Blows /6"	Penetr/ Recovery	"N" Value	Sample Description	Stratum Change General Descript	Equip. Installed	Field Testing PID (ppm)	Field Testing UV
0	1	4		4/4		Moderate brown (5YR 4/4), damp, dense, FINE SAND and SILT. At ~ 3'bg is grayish brown (5YR 3/2), dry, loose COARSE SAND and GRAVEL, some bricks. At 3.5' bg is FINE SAND and SILT	fn sand silt		0.0	
								3'		
							cs sand gravel	3.5'		
							fn sand		0.0	
4	2	8		4/4		Modrate Yellowish Brown (10YR 5/4) damp, hard, FINE SAND and SILT Saturated at 7'		7'		
							▽ silt			
8	3	12		4/4		Same as above up to 8.5', then is dark gray (N3), wet, hard, silty clay		8.5'	0.0	
							silty clay		0.0	
12	4	16		4/4		Same as above up to 13' bg, then is moderate brown (5YR 4/4), moist to wet, hard clayey silt		13'		
							clayey silty			
						EOB - 16' bg		16'		

Soil sample - 1'-3' bg

O'BRIEN & GERE ENGINEERS, INC.	TEST BORING LOG	REPORT OF BORING SB-4
Client: City of Geneva, NY	Sampler: Drill Rig	Page 1 of 1
Proj. Loc: Pre-design remedial investigation Market Basket Property, Geneva, NY	Hammer: Automatic	Location:
File No.:	Fall: 30"	Start Date: 7/19/04 End Date: 7/19/04
Boring Company: Nothgale Inc. Foreman: Neil Short OBG Geologist: Yuri Veliz		Screen = Riser ; Grout, Sand Pack, Bentonite

Depth Below Grade	No.	Depth (feet)	Blows /6"	Penetr/ Recovery	"N" Value	Sample Description	Stratum Change General Descript	Equip. Installed	Field Testing PID (ppm)	Field Testing UV
0	1	4		4/4		Moderate brown (5YR 4/4), damp, stiff, FIND SAND and SILT. At 3' is moderate brown (5YR 3/4), damp, COARSE SAND and GRAVEL , some brocks and cinders	fn sand silt		0.0	
								3'		
							Cs. Sand gravel fill			
4	2	8		4/4		Same as above up to 5'. Then is mod. yellowish brown (10YR 5/4), damp, very hard, FINE SAND and SILT some clay		5'	0.0	
							fn sand silt			
8	3	12		4/4		Grayish brown (5YR 3/2), saturated hard, SILTY CLAY, At 11' moderate yellowish brown (10YR 5/4), saturated dense, FINE SAND and SILT	▽	8'	0.0	
							silty clay			
								11'		
12	4	16		4/4		Same as above			0.0	
							fn sand silt	16'		

Soil sample - 5'-7' bg

O'BRIEN & GERE ENGINEERS, INC.	TEST BORING LOG	REPORT OF BORING SB-5
Client: City of Geneva, NY	Sampler: Drill Rig	Page 1 of 1
Proj. Loc: Pre-design remedial investigation Market Basket Property, Geneva, NY	Hammer: Automatic	Location:
File No.:	Fall: 30"	Start Date: 7/19/04 End Date: 7/19/04
Boring Company: Nothgale Inc. Foreman: Neil Short OBG Geologist: Yuri Veliz		Screen / Riser; Grout / Sand Pack / Bentonite

Depth Below Grade	No.	Depth (feet)	Blows /6"	Penetr/ Recovery	"N" Value	Sample Description	Stratum Change General Descript	Equip. Installed	Field Testing PID (ppm)	Field Testing UV
0	1	4		4/4		Moderate brown (5YR 4/4), dry, stiff FINE SAND and SILT. Some fill material At 2' is FINE SAND.	fn sand silt fill	2'	0.0	
4	2	8		4/3		Moderate brown (5YR 4/4), saturated, stiff, FINE SAND, At 5' is silty clay	fn sand	4'	0.5	
8	3	11		3/3		Same as above. At 10' bg is moderate brown (5YR 4/4), FINE SAND.	fn sand	5'	1.0	
11	4	14		3/3		Moderate brown (5YR 4/4), saturated, stiff, FINE SAND.	silty clay	10'	0.0	
14	5	16		2/2		Same as above	fn sand	16'	0.0	
						EOB - 16' bg				

Soil sample - 7'-9' bg

O'BRIEN & GERE ENGINEERS, INC.	TEST BORING LOG	REPORT OF BORING SB-6
Client: City of Geneva, NY	Sampler: Drill Rig	Page 1 of 1
Proj. Loc: Pre-design remedial investigation Market Basket Property, Geneva, NY	Hammer: Automatic	Location:
File No.:	Fall: 30"	Start Date: 7/19/04 End Date: 7/19/04
Boring Company: Nothgale Inc. Foreman: Neil Short OBG Geologist: Yuri Veliz		Screen / Riser / Grout / Sand Pack / Bentonite

Depth Below Grade	No.	Depth (feet)	Blows /6"	Penetr/ Recovery	"N" Value	Sample Description	Stratum Change General Descript	Equip. Installed	Field Testing PID (ppm)	Field Testing UV
0	1	4		4/1		Poor recovery. Grayish brown (5YR 3/2), medium dense, damp, FINE to MEDIUM SAND some coarse sand, little gravel	fn-med sand	4'	0.0	
4	2	8		4/4		Dark gray (N3), hard, wet, FINE SAND and SILT. Saturated 7' bg. Sewer odor	fn sand silt	7'	0.0	
8	3	11		3/3		Same as above up to 9' bg.. Then is moderate yellowish brown (10YR 5/4) dense, saturated, FINE SAND, some silt	fn sand silt	9'	0.0	
11	4	14		3/3		Moderate yellowish brown (10YR 5/4) dense, saturated, FINE SAND, some silt	fn sand		0.0	
14	5	16		3/3		Grayish brown (5YR 3/2), dense, saturated, FINE SAND, some silt	fn sand	16'	0.0	
						EOB - 16' bg.				

Soil sample - 7'-9' bg

O'BRIEN & GERE ENGINEERS, INC. | **TEST BORING LOG** | **REPORT OF BORING**

Client: City of Geneva, NY
Proj. Loc: Pre-design remedial investigation Market Basket Property, Geneva, NY
File No.:

Sampler: Drill Rig
Hammer: Automatic
Fall: 30"

Page 1 of 1
Location:
Start Date: 7/20/04
End Date: 7/20/04

Boring Company: Nothgale Inc.
Foreman: Neil Short
OBG Geologist: Yuri Veliz

Screen / Riser | Grout / Sand Pack / Bentonite

Depth Below Grade	No.	Depth (feet)	Blows /6"	Penetr/ Recovery	"N" Value	Sample Description	Stratum Change General Descript	Equip. Installed	Field Testing PID (ppm)	Field Testing UV
0	1	4		4/3		Moderate brown (5YR 4/4), loose, damp, MEDIUM to COARSE SAND, some medium coarse gravel. Brick fragments. Little silty clay layer	med-cs sand	4'	0.0	
4	2	8		4/2		Grayish brown (5YR 3/2), wet, firm FINE SAND and SILT.	fn sand silt		0.0	
8	3	12		4/3.5		Grayish brown (5YR 3/2), wet, firm FINE SAND and SILT, some clay	fn sand silt		0.0	
12	4	16		4/4		Same as above up to 12.5'. Then is pale brown (5YR 5/2), saturated, med. dense FINE SAND some silt. Becomes more gravelly at bottom	▽ fn sand	12.5' 16'	0.0	

Soil sample - 3'-5' bg

O'BRIEN & GERE ENGINEERS, INC.	TEST BORING LOG	REPORT OF BORING SB-8
Client: City of Geneva, NY	Sampler: Drill Rig	Page 1 of 1
Proj. Loc: Pre-design remedial investigation Market Basket Property, Geneva, NY	Hammer: Automatic	Location:
File No.:	Fall: 30"	Start Date: 7/20/04 End Date: 7/20/04
Boring Company: Nothgale Inc. Foreman: Neil Short OBG Geologist: Yuri Veliz		Screen = Riser ☐ \ Grout ⋰ Sand Pack ▪ Bentonite

Depth Below Grade	No.	Depth (feet)	Blows /6"	Penetr/ Recovery	"N" Value	Sample Description	Stratum Change General Descript	Equip. Installed	Field Testing PID (ppm)	Field Testing UV
0	1	4		4/3		Moderate brown (5YR 4/4), moist, medium dense, FINE SAND and SILT Brick fragments, fill. At 3' bg is mod. yellowish brown (10YR 5/4), damp, loose FINE SAND some silt. Auder refusal. Auger down from 4'-5'	fill		0.0	
								3'		
							fn sand silt		3.0	
								4'		
							auger down			
5	2	9		4/4		Moderate brown (5YR 5/4), moist, stiff, FINE SAND.		5'	1.0	
							fn sand ▽			
9	3	13		4/4		Same as above		12'	25.0	
								14'		
13	4	16		4/4		Grayish brown (5YR 3/2), saturated soft, SILTY CLAY	silty clay		0.0	
								16'		
						EOB - 16'				

Soil sample - 3'-4'; 9'-11' bg

O'BRIEN & GERE ENGINEERS, INC.	TEST BORING LOG	REPORT OF BORING SB-9
Client: City of Geneva, NY	Sampler: Drill Rig	Page 1 of 1
Proj. Loc: Pre-design remedial investigation Market Basket Property, Geneva, NY	Hammer: Automatic	Location:
File No.:	Fall: 30"	Start Date: 7/20/04 End Date: 7/20/04
Boring Company: Nothgale Inc. Foreman: Neil Short OBG Geologist: Yuri Veliz		Screen / Riser; Grout / Sand Pack / Bentonite

Depth Below Grade	No.	Depth (feet)	Blows /6"	Penetr/ Recovery	"N" Value	Sample Description	Stratum Change General Descript	Equip. Installed	Field Testing PID (ppm)	Field Testing UV
0	1	4		4/3		Moderate brown (5YR 5/4), dry, fill materials. At 2' is moderate brown (5YR 5/4), damp, loose, FINE SAND and SILT	fill	2'	0.0	
							fn sand silt			
4	2	8		4/4		Same as above Saturated at 7' bg.			0.0	
							▽	7'		
8	3	12		4/4		Moderate yellowish brown (10YR 5/4) saturated, stiff, FINE SAND	fn sand		0.0	
12	4	16		4/4		Same as above up to 15' bg. Then is grayish brown (5YR 3/2), saturated silty clay	fn sand		0.0	
								15'		
							silty clay			
								16'		
						EOB - 16' bg.				

Soil sample - 1'-3' bg

O'BRIEN & GERE ENGINEERS, INC.

TEST BORING LOG

REPORT OF BORING SB-10

Client: City of Geneva, NY

Proj. Loc: Pre-design remedial investigation
Market Basket Property, Geneva, NY
File No.:

Sampler: Drill Rig

Hammer: Automatic

Fall: 30"

Page 1 of 1
Location:

Start Date: 7/20/04
End Date: 7/20/04

Boring Company: Nothgale Inc.
Foreman: Neil Short
OBG Geologist: Yuri Veliz

Screen / Riser — Grout / Sand Pack / Bentonite

Depth Below Grade	No.	Depth (feet)	Blows /6"	Penetr/ Recovery	"N" Value	Sample Description	Stratum Change General Descript	Equip. Installed	Field Testing PID (ppm)	Field Testing UV
0	1	4		4/3		Fil material up to 0.2'	fill			
						Moderate brown (5YR 5/4), moist		0.2'	0.0	
						dense, FINE SAND, little silt. At 2' bg.				
						is wet, hard, silty clay	fn sand	2'		
4	2	8		4/4		Moderate yellowish brown (10YR 5/4)	silty clay		0.0	
						wet, dense, FINE SAND, saturated at		4'		
						5' bg. Some silt	fn ▽ sand	5'		
8	3	12		4/4		Same as above.			0.0	
						Some silty clay layers	fn sand	13'		
							silty clay	14'		
12	4	16		4/4		Same as above.			0.0	
						Silt and clay layer from 13'-14' bg	fn sand	16'		
						EOB - 16' bg				

Soil sample - 1' -3' bg

O'BRIEN & GERE ENGINEERS, INC.	TEST BORING LOG	REPORT OF BORING SB-11
Client: City of Geneva, NY	Sampler: Drill Rig	Page 1 of 1
Proj. Loc: Pre-design remedial investigation Market Basket Property, Geneva, NY	Hammer: Automatic	Location:
File No.:	Fall: 30"	Start Date: 7/19/04 End Date: 7/19/04
Boring Company: Nothgale Inc. Foreman: Neil Short OBG Geologist: Yuri Veliz		Screen = Riser ; \ Grout ; Sand Pack ; Bentonite

Depth Below Grade	No.	Depth (feet)	Blows /6"	Penetr/ Recovery	"N" Value	Sample Description	Stratum Change General Descript	Equip. Installed	Field Testing PID (ppm)	Field Testing UV
0	1	4		4/4		Fill material up to 3' bg				
						Grayish brown (5YR 3/2), damp,	fill	3'	0.0	
						firm, SILTY CLAY.	silty clay	4'		
4	2	8		4/4		Moderate brown (5YR 4/4), wet,			0.0	
						dense, COARSE and GRAVEL.	cs sand gravel			
						Saturated at 7' bg. Olive gray (5Y 4/1)				
						SILTY CLAY	▽	7'		
8	3	12		4/4		Olive gray (5Y 4/1), saturated, stiff	silty clay		0.0	
						SILTY CLAY				
12	4	16		4/4		Same as above up to 13' bg. Then is			0.0	
						moderate yellowish brown (10YR 5/4)		13'		
						damp, very hard SILTY CLAY	silty clay			
								16'		
						EOB - 16'bg				

O'BRIEN & GERE ENGINEERS, INC.	TEST BORING LOG	REPORT OF BORING SB-12
Client: City of Geneva, NY	Sampler: Drill Rig	Page 1 of 1
Proj. Loc: Pre-design remedial investigation Market Basket Property, Geneva, NY	Hammer: Automatic	Location:
File No.:	Fall: 30"	Start Date: 7/20/04 End Date: 7/20/04
Boring Company: Nothgale Inc. Foreman: Neil Short OBG Geologist: Yuri Veliz		Screen = Riser ☐ \ Grout ⁙ Sand Pack ■ Bentonite

Depth Below Grade	No.	Depth (feet)	Blows /6"	Penetr/ Recovery	"N" Value	Sample Description	Stratum Change General Descript	Equip. Installed	Field Testing PID (ppm)	Field Testing UV
0	1	4		4/4		Fill material up to 3.5'. Then is mod. brown (5YR 4/4) and dark gray (N3), damp, firm, FINE SAND	fill	3.5'	0.0	
4	2	8		4/4		Moderate yellowish brown (10YR 5/4) damp, firm, FINE SAND. At 6' is fine sandy silt	fn sand	6'	0.0	
8	3	12		4/4		Olive gray (5Y 4/1), damp, firm, SANDY SILT. Saturated at 10' bg. ▽	fn sandy silt	10'	0.0	
12	4	16		4/4		Same as above	fn sandy silt	16'	0.0	
						EOB- 16' bg				

Soil sample - 6'-8' bg

O'BRIEN & GERE ENGINEERS, INC.

TEST BORING LOG

REPORT OF BORING SB-13

Client: City of Geneva, NY

Proj. Loc: Pre-design remedial investigation
Market Basket Property, Geneva, NY
File No.:

Sampler: Drill Rig

Hammer: Automatic

Fall: 30"

Page 1 of 1
Location:

Start Date: 7/20/04
End Date: 7/20/04

Boring Company: Nothgale Inc.
Foreman: Neil Short
OBG Geologist: Yuri Veliz

Screen =
Riser

Grout
Sand Pack
Bentonite

Depth Below Grade	No.	Depth (feet)	Blows /6"	Penetr/ Recovery	"N" Value	Sample Description	Stratum Change General Descript	Equip. Installed	Field Testing PID (ppm)	Field Testing UV
0	1	4		4/4		Fill material up to 0.2' bg.	fill	0.2'	5.0	
						Moderate yellowish brown (10YR 5/4) moist, dense, FINE SAND. Some saturated zones. Oil odor.	fn sand	4'	20.0	
4	2	8		4/4		Moderate yellowish brown (10YR 5/4) dense, fine, FINE SAND, some silt	fn sand silt	8'	10.0	
8	3	12		4/4		Same as above	fn sand		1.0	
12	4	16		4/4		Same as above	fn sand	16'	3.5	
						EOB - 16' bg			4.0	
									1.0	

Soil sample - 2'-4'; 14'-16' bg

O'BRIEN & GERE ENGINEERS, INC.	TEST BORING LOG	REPORT OF BORING SB-14
Client: City of Geneva, NY	Sampler: Drill Rig	Page 1 of 1
Proj. Loc: Pre-design remedial investigation Market Basket Property, Geneva, NY	Hammer: Automatic	Location:
File No.:	Fall: 30"	Start Date: 7/20/04 End Date: 7/20/04
Boring Company: Nothgale Inc. Foreman: Neil Short OBG Geologist: Yuri Veliz		Screen = Riser ; \ Grout, Sand Pack, Bentonite

Depth Below Grade	No.	Depth (feet)	Blows /6"	Penetr/ Recovery	"N" Value	Sample Description	Stratum Change General Descript	Equip. Installed	Field Testing PID (ppm)	Field Testing UV
0	1	4		4/4		Fill material up to 0.2' bg.	fill	0.2'		
									0.0	
						Moderate yellowish brown (10YR 5/4) damp,medium dense, FINE SAND. little silt	fn sand			
									0.0	
4	2	8		4/4		Same as above to 6' bg.				
								6'	0.0	
						Moderate brown (5YR 4/4) hard, damp FINE SILTY SAND	fn sandy silt			
								8'		
8	3	10		4/2		Moderate yellowish brown (10YR 5/4) saturated, dense, FINE SAND, some silt	▽		0.0	
10	4	13		3/3		Same as above some sand and silt layers	fn sand		0.0	
13	5	16		3/3		Same as above to 15.5' Moderate brown (5YR 4/4) FINE SAND and SILT			0.0	
								16'		

Soil Sample= 4' - 6' ; 1415

O'BRIEN & GERE ENGINEERS, INC.	TEST BORING LOG	REPORT OF BORING SB-15
Client: City of Geneva, NY	Sampler: Drill Rig	Page 1 of 1
Proj. Loc: Pre-design remedial investigation Market Basket Property, Geneva, NY	Hammer: Automatic	Location:
File No.:	Fall: 30"	Start Date: 7/21/04 End Date: 7/21/04
Boring Company: Nothgale Inc. Foreman: Neil Short OBG Geologist: Yuri Veliz		Screen / Riser; Grout / Sand Pack / Bentonite

Depth Below Grade	No.	Depth (feet)	Blows /6"	Penetr/ Recovery	"N" Value	Sample Description	Stratum Change General Descript	Equip. Installed	Field Testing PID (ppm)	Field Testing UV
0	1	4		4/4		Gravel to 0.5' bg	Gravel	0.5'		
						Moderate brown (5YR 4/4), moist,	Silty Clay		0.0	
						dense, FINE SILTY CLAY				
4	2	8		4/4		Same as above to 5' bg				
						Moderate yellowish brown (10YR 5/4)	▽	5'	0.0	
						saturated, dense, FINE SAND	Fine Sand			
8	3	12		4/4		Same as above to 10' bg				
						Olive gray (5Y 4/1), saturated, SILTY		10'	0.0	
						CLAY	Silty Clay			
12	4	16		4/4		Same as above to 15' bg	Stained			
						Moderate yellowish brown (10YR 5/4)	Silty Clay		0.0	
						saturated, dense, FINE SAND	Fine Sand	15'		
								16'		

Soil Sample= 2' - 4' ; 0830

O'BRIEN & GERE ENGINEERS, INC.

TEST BORING LOG

REPORT OF BORING
SB-16

Client: City of Geneva, NY

Proj. Loc: Pre-design remedial investigation
Market Basket Property, Geneva, NY
File No.:

Sampler: Drill Rig

Hammer: Automatic

Fall: 30"

Page 1 of 1
Location:

Start Date: 7/21/04
End Date: 7/21/04

Boring Company: Nothgale Inc.
Foreman: Neil Short
OBG Geologist: Yuri Veliz

Screen = \ Grout
Riser ▒ Sand Pack
■ Bentonite

Depth Below Grade	No.	Depth (feet)	Blows /6"	Penetr/ Recovery	"N" Value	Sample Description	Stratum Change General Descript	Equip. Installed	Field Testing PID (ppm)	Field Testing UV
0	1	4		4/4		Dark gray (N3), dry, loose, COARSE SAND, gravel, ash cinders, fill material at 1' bg Moderate yellowish brown (5 YR 5/4) damp, medium dense, FINE SAND, some silt	Fill	1'	0.0	
							Fine Sand		0.0	
4	2	8		4/4		Moderate yellowish brown (10 YR 5/4) wet, medium dense, FINE SAND, some silt. Saturated at 6', silty clay layer at 5' - 6'		5'		
							Silty Clay	6'	0.0	
							Fine Sand			
8	3	12		4/4		Same as above			0.0	
							Stained			
12	4	16		4/4		Same as above	Fine Sand		0.0	
								16'		

Soil sample= 2' - 4' ; 0900

O'BRIEN & GERE ENGINEERS, INC.

TEST BORING LOG

REPORT OF BORING
SB-17

Client: City of Geneva, NY

Proj. Loc: Pre-design remedial investigation
Market Basket Property, Geneva, NY
File No.:

Sampler: Drill Rig

Hammer: Automatic

Fall: 30"

Page 1 of 1
Location:

Start Date: 7/21/04
End Date: 7/21/04

Boring Company: Nothgale Inc.
Foreman: Neil Short
OBG Geologist: Yuri Veliz

Screen =
Riser
Grout
Sand Pack
Bentonite

Depth Below Grade	No.	Depth (feet)	Blows /6"	Penetr/ Recovery	"N" Value	Sample Description	Stratum Change General Descript	Equip. Installed	Field Testing PID (ppm)	Field Testing UV
0	1	4		4/4		Dark gray (N3), dry, loose, COARSE SAND, cinders, fill material to 0.2'. loose, damp, fine sand. At 3.5' bg is Moderate brown (5 YR 4/4) moist, dense, silty clay	Fill	0.2'	0.0	
							Fine Sand	3.5'		
							Silty Clay	4.0'		
4	2	8		4/4		Moderate brown (5YR 4/4), moist, dense FINE SAND. At 7' Moderate yellowish brown (10YR 5/4) saturated, dense, silty clay	Fine Sand ▽	7'	0.0	
							Silty Clay	8'	0.0	
8	3	12		4/4		Moderate brown (5YR 4/4), saturated dense, FINE SAND, At 10' bg silty clay	Fine Sand	10'	0.0	
							Silty Clay	12'		
12	4	16		4/4		Moderate yellowish brown (10YR 5/4) saturated, dense, SILTY CLAY. At 14' bg Olive gray (5Y 4/1) saturated, silty clay	Fine Sand	14'	0.0	
							Silty Clay	16'		

Soil sample= 6' - 8' ; 0940

O'BRIEN & GERE ENGINEERS, INC.	TEST BORING LOG	REPORT OF BORING SB-18
Client: City of Geneva, NY	Sampler: Drill Rig	Page 1 of 1
Proj. Loc: Pre-design remedial investigation Market Basket Property, Geneva, NY	Hammer: Automatic	Location:
File No.:	Fall: 30"	Start Date: 7/21/04 End Date: 7/21/04
Boring Company: Nothgale Inc. Foreman: Neil Short OBG Geologist: Yuri Veliz		Screen = Riser ☐ \ Grout ⁙ Sand Pack ■ Bentonite

Depth Below Grade	No.	Depth (feet)	Blows /6"	Penetr/ Recovery	"N" Value	Sample Description	Stratum Change General Descript	Equip. Installed	Field Testing PID (ppm)	Field Testing UV
0	1	4		4/4		Moderate brown (5YR 4/4), moist, medium dense, FINE SAND.	Fine Sand		0.0	
4	2	8		4/4		Same as above to 5' bg. Saturated, dense, FINE SAND. At 6' bg Moderate brown (5YR 4/4), saturated, dense, sandy sily	▽	5'	0.0	
							Sandy Silt	6'		
								8'		
8	3	12		4/4		Moderate brown (5YR 4/4), saturated, dense, FINE SAND	Fine Sand		0.0	
12	4	16		4/4		Same as above			0.0	
								16'		

Soil sample= 1' - 3' ; 1015

O'BRIEN & GERE ENGINEERS, INC.	TEST BORING LOG	REPORT OF BORING SB-19/MW-9
Client: City of Geneva, NY Proj. Loc: Pre-design remedial investigation Market Basket Property, Geneva, NY File No.:	Sampler: Drill Rig Hammer: Automatic Fall: 30"	Page 1 of 1 Location: Start Date: 7/19/04 End Date: 7/19/04
Boring Company: Nothgale Inc. Foreman: Neil Short OBG Geologist: Yuri Veliz		Screen = \ Grout Riser ▯ ⁘ Sand Pack ▪ Bentonite

Depth Below Grade	No.	Depth (feet)	Blows /6"	Penetr/ Recovery	"N" Value	Sample Description	Stratum Change General Descript	Equip. Installed	Field Testing PID (ppm)	Field Testing UV
0	1	4		4/4		Dark gray (N3), dry, loose, COARSE SAND, gravel, fill material. Moderate yellowish brown (10 YR 5/4) moist medium dense, FINE SAND, some silt, saturated at 3' bg	Fill Fine Sand ▽ Fine Sand 3'			
4	2	8		4/4		Moderate yellowish brown (10YR 5/4) saturated, medium dense, FINE SAND, some silt				
8	3	12		4/4		Same as above, at 11.5' Pale brown (5YR 5/2) stiff, silty clay	11.5' Silty Clay			
12	4	16		4/4		Pale brown (5YR 5/2), saturated, medium dense, FINE SAND, some silt at 15.5' silty clay	Fine Sand 12' 15.5' Silty Clay 16'			
						MW-9 Screened from 13' to 3' bg Sand pack from 13' to 2.5' bg Bentonite seal 2.5' to 1.5' bg Grout 1.5' to 0' bg				

Soil sample= 1' - 3' ; 1150

O'BRIEN & GERE ENGINEERS, INC.

TEST BORING LOG

REPORT OF BORING
SB-20/MW-10

Client: City of Geneva, NY

Proj. Loc: Pre-design remedial investigation
Market Basket Property, Geneva, NY
File No.:

Sampler: Drill Rig

Hammer: Automatic

Fall: 30"

Page 1 of 1
Location:

Start Date:7/22/04
End Date: 7/20/04

Boring Company: Nothgale Inc.
Foreman: Neil Short
OBG Geologist: Yuri Veliz

Screen = **Riser** | **Grout** | **Sand Pack** | **Bentonite**

Depth Below Grade	No.	Depth (feet)	Blows /6"	Penetr/ Recovery	"N" Value	Sample Description	Stratum Change General Descript	Equip. Installed	Field Testing PID (ppm)	UV
0	1	4		4/4		Moderate brown (5YR4/4), dry, loose,	Fill	1'	0.0	
						COARSE SAND, gravel, fill material. At	Fine Sand		5.0	
						1' bg Moderate brown (5YR 4/4), moist			20.0	
						loose, fine sand, some silt. Saturated	▽	3'	45.0	
						at 3' bg	Fine Sand		6.0	
4	2	8		4/4		Same as above, saturated, petroleum			50.0	
						odor present.			100.0	
									15.0	
8	3	12		4/4		Same as above, at 10.5' bg Moderate			30.0	
						brown (5YR 4/4) wet, firm, SILTY		10.5'	15.0	
						CLAY, little sand. At 11.5 fine sand	Silty Clay		1.0	
						saturated		11.5	1.0	
							Fine Sand			
12	4	16		4/4		Moderate brown (5YR 4/4) saturated			3.5	
						medium dense, FINE SAND. At 13' to			1.0	
						13.5' dark gray to black fine sand	Black sand		0.0	
						no odor	Fine Sand		0.0	
								16'		
						MW-10 Screened from 13' to 3' bg				
						Sand pack from 13' to 2.5' bg				
						Bentonite seal 2.5' to 1.5' bg				
						Grout 1.5' to 0' bg				

Soil samples= 6' - 8' and 13' - 15' (0810)

O'BRIEN & GERE ENGINEERS, INC.	TEST BORING LOG	REPORT OF BORING SB-21
Client: City of Geneva, NY	Sampler: Drill Rig	Page 1 of 1
Proj. Loc: Pre-design remedial investigation Market Basket Property, Geneva, NY	Hammer: Automatic	Location:
File No.:	Fall: 30"	Start Date: 7/22/04 End Date: 7/22/04
Boring Company: Nothgale Inc.		Screen = Riser ; \ Grout ; Sand Pack ; Bentonite
Foreman: Neil Short		
OBG Geologist: Yuri Veliz		

Depth Below Grade	No.	Depth (feet)	Blows /6"	Penetr/ Recovery	"N" Value	Sample Description	Stratum Change General Descript	Equip. Installed	Field Testing PID (ppm)	Field Testing UV
0	1	4		4/3		Light gray (7N7) dry, COARSE SAND and Gravel, fill material. At 0.2' reddish brown, fine sand, saturated at 2' bg	Fill	0.2'	0.0	
							Fine Sand			
							▽	2'		
4	2	8		4/4		Same as above. From 8.5'-9.0' Dark gray COARSE SAND and Gravel, cobbles. Then fine sand, moderate brown, saturated	Fine Sand		0.0	
8	3	12		4/4		Same as above. SILTY CLAY from 10.5 to 11.5' bg		8.5'		
							Sand Gravel	9.0'	0.0	
							Fine Sand	10.5'		
							Silty Clay	11.5'		
12	4	16		4/4		Moderate brown (5YR 4/4) saturated medium dense, FINE SAND. Silty Clay layer from 15.5' to 16'	Fine Sand	15.5'	0.0	
							Silty Clay			
								16'		

Soil sample= 1' - 3' ; 0930

O'BRIEN & GERE ENGINEERS, INC.	TEST BORING LOG	REPORT OF BORING SB-22-MW-11R
Client: City of Geneva, NY	Sampler: Drill Rig	Page 1 of 1
Proj. Loc: Pre-design remedial investigation Market Basket Property, Geneva, NY	Hammer: Automatic	Location:
File No.:	Fall: 30"	Start Date: 7/22/04 End Date: 7/22/04
Boring Company: Nothgale Inc.		Screen = \ Grout
Foreman: Neil Short		Riser Sand Pack
OBG Geologist: Yuri Veliz		Bentonite

Depth Below Grade	No.	Depth (feet)	Blows /6"	Penetr/ Recovery	"N" Value	Sample Description	Stratum Change General Descript	Equip. Installed	Field Testing PID (ppm)	UV
0	1	4		4/4		Light gray (7N7), dry, loose GRAVEL and MEDIUM/COARSE SAND. At 2'	C Sand/Gravel	2'	0.0	
						Moderate brown(5YR 4/4) moist, hard	Silty Clay			
						silty clay at 3.5' is silty sand		3.5'	0.0	
							Silty Sand			
4	2	8		4/4		Same as above till 5'. Moderate	▽		0.0	
						yellowish brown (10YR 5/4) saturated				
						medium dense, FINE SAND, some silt	Fine Sand	5'		
						At 6.5' silt and clay layer till 7' fine sand	Silty Clay	6.5'	0.0	
								7'		
8	3	10		2/2		Moderate yellowish brown (10YR 5/4)	Fine Sand		0.0	
						saturated, medium dense, FINE SAND				
10	4	13		3/3		Same as above	Fine Sand		0.0	
13	5	16		3/3		Same as above			0.0	
						15.5' Moderate brown (5YR 4/4)		15.5'		
						saturated, stiff, silty clay, little sand	Silty Clay		0.0	
								16'		
									0.0	
						MW-1R Screened from 15' to 5' bg				
						Sand pack 15' to 3' bg				
						Bentonite seal 3' to 2' bg				
						Grout from 2' to 0'				

Soil samples= 2' - 4' ; 1100

O'BRIEN & GERE ENGINEERS, INC.

TEST BORING LOG

REPORT OF BORING
MW-12

Client: City of Geneva, NY
Proj. Loc:Market Basket, Geneva, NY
File No.:

Sampler: Drill Rig
Hammer: Automatic
Fall: 30"

Page 1 of 1
Location:
Start Date: 10/10/08
End Date: 10/10/08

Boring Company: Parrat-Wolff Inc.
Foreman:
OBG Geologist: Yuri Veliz

Screen =
Riser
Grout
Sand Pack
Bentonite

Depth Below Grade	No.	Depth (feet)	Blows /6"	Penetr/ Recovery	"N" Value	Sample Description	Stratum Change General Descript	Equip. Installed	Field Testing PID (ppm)	Field Testing UV
0	1	2	woh-7-18-13	2/1	25	Moderate brown (5YR 4/4) dry, soft, silt, some fine sand and clay	silt		0	905
2	2	4	50-27-20-13	2/0	47	No recovery			-	910
4	3	6	4-8-10-10	2/2	18	Moderate brown (5YR 4/4), damp. Stiff, silt, some fine sand, trace clay. At 5.5' is wet fine sand, little silt	—		0.0	920
6	4	8	12-13-12-16	2/1.5	25	Moderate brown (5YR 4/4), wet, stiff, fine sand, some layers of silt	fine sand		0.0	924
8	5	10	2-2-6-8	2/1.5	8	Moderate brown (5YR 4/4), wet, stiff, fine sand and silt			0.0	933
10	6	12	3-8-17-17	2/1.5	25	Same as above	12'		0.0	940
12	7	14	7-7-9-9	2/2	16	Moderate brown (5YR 4/4), wet, stiff, silt, fine sand layers. At 13.5-14 is saturated, fine sand	fine sand		0.0	945
14	8	16	1-1-1-3	2/1	2	Grayish brown (5YR 3/2) saturated, soft, fine sand and silt			0.0	948
16	9	18	6-7-7-6	2/1.5	14	Grayish brown (5YR 3/2), saturated, soft, fine sand, little silt			0.0	953
18	10	20	wh-wh-wh-1	2/1	-	Same as above	20'			

Well installation: Screen - 18-8; Sand - 18-6; Seal - 6-4; Grout - 4-0

O'BRIEN & GERE ENGINEERS, INC.	TEST BORING LOG	REPORT OF BORING MW-13
Client: City of Geneva, NY	Sampler: Drill Rig	Page 1 of 1
Proj. Loc:Market Basket, Geneva, NY	Hammer: Automatic	Location:
File No.:	Fall: 30"	Start Date: 10/10/08 End Date: 10/10/08
Boring Company: Parrat-Wolff Inc. Foreman: OBG Geologist: Yuri Veliz		Screen / Riser; Grout / Sand Pack / Bentonite

Depth Below Grade	No.	Depth (feet)	Blows /6"	Penetr/ Recovery	"N" Value	Sample Description	Stratum Change General Descript	Equip. Installed	Field Testing PID (ppm)	Field Testing UV
0	1	2	7-9-6-5	2/1	15	Moderate brown (5YR 4/4) damp, soft, fine sand little silt	silt		0	1110
2	2	4	6-9-20-22	2/1.5	29	Moderate brown (5YR 4/4) damp, stiff, silt, little fine sand trace clay			0.0	1114
4	3	6	3-7-17-13	2/1.5	22	Moderate brown (5YR 4/4), wet, Stiff, fine sand, some silt	4'		0.0	1132
6	4	8	1-1-1-4	2/1.5	2	Same as above. Silt and fine sand layers	▽ 6'		0.0	1134
8	5	10	1-1-1-1	2/1	2	Moderate brown (5YR 4/4), damp to wet, silt, little fine sand			0.0	1140
10	6	12	1-1-1-1	2/1	2	Moderate brown (5YR 4/4), damp, silt, little fine sand, At 13' is grayish brown, soft, silt, some clay, layers of fine sand	silt/clay		0.0	1148
12	7	14	woh-9-12-14	2/2	21	Grayish brown (5YR 3/2), wet, soft, silt, some clay, layers of fine sand			0.0	1150
14	8	16		2/1.5		Grayish brown (5YR 3/2) saturated, soft, fine sand some silt, little clay	silt/clay		0.0	1200
16	9	18		2/1.5		same as above			0.0	1203
							18'			
							EOB			

Well installation: Screen - 18-8; Sand - 18-6; Seal - 6-4; Grout - 4-0

To: Dave Meixell *cc:*
From: C. Yuri Veliz
Re: Market Basket Field Activity
File: 1740\30852
Date: January 21, 2005

Field Activities Conducted at Market Basket Property
Geneva, NY

Field Investigation
Field activities were conducted at Market Basket Property from July 19, 2004 to August 3, 2004. On July 19, 2004 Mr. Bob Long (DEC), Dave Meixell and Yuri Veliz (O'Brien & Gere Inc.), and Neil Short (Nothnagle, Inc.) were on site discussing field activities to be taken place at the Property. During the field activities, DEC representatives Bob Long and Gordon Eddington were present on site for the oversight of the work effort.

The following describes the field activities conducted:

1) Soil Boring

Installation of soil boring
Twenty-two (22) soil borings were installed from July 19 to 22, 2004 at both parcel south and parcel north of Gates Avenue. Seventeen (17) soil borings (SB-1 through SB-14, SB-20, SB-21, SB-22) were installed at parcel north of Gates Avenue and Five (5) soil borings (SB-15, SB-16, SB-17, SB-18, and SB-19) were installed at parcel south of Gates Avenue. Soil borings were completed within unconsolidated materials to the water table. Soil borings were completed to a depth of 16-ft using conventional hollow stem drilling methods.

Additional soil borings
Five (5) soil borings were added during the soil boring activities. Specifically, SB-14, SB-15, SB-20, SB-21, and SB-22 were installed at parcel north of Gates Avenue. These soil borings were added to further assess the extent of soil contamination at the parcel north of Gates Avenue.

Soil sample collection
Soil samples were collected continuously at each boring from the ground surface to the end depth. Each soil sample was screened in the field using a PID to assess if VOCs are present in the soil and a boring log was prepared. One unsaturated soil sample was collected from each soil boring for chemical analysis. The sample was selected based on visual inspection and field monitoring results. Table 1.1 Summarizes the soil boring and sampling effort.

Analysis
The chemical analyses of the soil samples collected were conducted by O'Brien & Gere Laboratories Inc. This laboratory is certified by NYSDOH for conducting environmental analyses. The following analyses and associated USEPA methods were used:

Volatile organic compounds (VOCs) :USEPA Method 8020/8021
Semivolatile organic compounds (SVOCs) :USEPA Method 8270
Beryllium, Chromium, Copper, Iron, Mercury, Nickel and Zinc

PID Readings/Field Observations
No VOCs were detected in the majority of the soil samples screened in the field using a PID with the exception of four (4) soil samples. Specifically, VOCs were detected in soil samples from soil borings SB-2, SB-8, SB-13, and SB-20. VOCs readings ranging from 40 to 400 ppm and from 0 to 100 ppm were detected at soil borings SB-2 and SB-20. Lower VOCs readings (up to 25 ppm) were detected at both soil boring SB-8 and SB-13.

Due to the high VOCs reading reported from SB-2, additional soil borings were installed around SB-2 in order to evaluate the horizontal and vertical extent of soil contamination. Soil borings SB-13, SB-14, SB-20, and SB-21 were installed at about 10-ft to 20-ft from SB-2. No VOCs readings were recorded beyond SB-2 and SB-20, and therefore soil contamination around SB-2 area is locally.

2) Monitoring Well Installation

Drilling and well installation
Soil borings SB-19, SB-20, and SB-22 were completed as monitoring wells MW-9, MW-10, and MW-11, respectively at the Market Basket Property. Monitoring wells MW-10 and MW-11 were installed in the parcel north of Gates Avenue on July 22, 2004 and monitoring well MW-9 was installed in the parcel south of Gates Avenue on July 17, 2004. MW-11 replaced existing monitoring well MW-1, which could not be found during the field activities. It may have been destroyed during the building collapsed in 1999.

One additional monitoring well (MW-3R) was installed in the parcel south of Gates Avenue. This well replaced existing monitoring well MW-3, which was destroyed as a result of the partial building collapse during 1999.

The monitoring wells were completed within unconsolidated materials to a maximum depth ranging from 13-ft to 16-ft. Table 2.1 summarizes the well installation details. The borings for the installation of the monitoring were completed using conventional hollow stem auger drilling methods using a minimum 4.25-inch inside diameter auger. A geologist was onsite to complete drilling and well installation logs documenting encountered subsurface material and other pertinent observations including soil composition, color, consistency, moisture content, recovery, odor and staining. In addition, each soil sample was screened for the presence of VOCs using a photoionization detector (PID). Upon completion of each boring, a 2-inch diameter PVC well was installed through the auger string. Well construction consisted of 10-ft of 0.010-inch slot, PVC screen attached to an appropriate length of riser casing. A sandpack suitable for use with the screen slot size was installed within the annular space between the borehole and the well. A bentonite seal was installed in the annular space above the sandpack to minimize migration of water vertically along the borehole. The remaining annular space was filled with a Portland cement/bentonite grout. The top of the well screen was positioned no less than 3 ft below grade to allow for the placement of an adequate annular seal. The monitoring wells were completed with above-grade protective casings.

Well development
Each newly installed monitoring well was developed on July 22, 2004. Well development was conducted to clear fine-grained sediments that may have settled in or around the well screen and to increase the hydraulic connection between the well and the aquifer. The wells were developed using dedicated bailer. Measurements of water quality parameters included pH, conductivity, temperature and turbidity, which were monitored and recorded subsequent to the removal of each well volume. Development was deemed complete when the water quality parameters for three consecutive measurements stabilized to within 10% of each other. A total of 5 well volumes were removed from each well. Water generated during the well development were contained in 55-gallons drums on site pending characterization and disposal.

Ground water sample collection

Once the wells were installed and developed ground water samples were collected from the four (MW-3R, MW-9, MW-10, MW-11) newly installed monitoring wells. In addition, six existing monitoring wells MW-2, MW-4, MW-5, MW-6, MW-7, and MW-8 were included in the ground water sampling effort. In order to minimize turbidity, ground water samples were collected using low-flow sampling methods as outlined in the *methods* section of the RI Study Work Plan.

Prior to sampling, ground water elevations were recorded from the selected monitoring wells. An electronic water level probe was used to measure the depth to water in each well. Prior to commencing daily sampling activities, the ground water quality monitoring probes/meters including pH, conductivity, ORP, dissolved oxygen, and turbidity were calibrated in accordance with the manufacturers' instructions. During the purging and sampling process the flow rate did not exceed 0.5 liters/min as noted on the ground water sampling logs provided.

Measurements of pH, conductivity, temperature, ORP, dissolved oxygen, turbidity, depth to water, and flow rate were recorded at approximately 5-minute time intervals. This allowed at least one full volume of the flow-through cell to be evacuated between each measurement event.

Ground water samples were collected after equilibration of water quality parameters. Equilibration was defined as follows:

Temperature	± 3% of measurement
pH	± 0.1 pH units
Specific conductance	± 3% of measurement
Redox	±10 mV
DO	±10% of measurement
Turbidity	± 10% of measurement

Analysis
The chemical analyses of the ground water samples collected were conducted by O'Brien & Gere Laboratories Inc. The following analyses and associated USEPA methods were used:

Volatile organic compounds (VOCs) :USEPA Method 8020/8021

3) Equipment decontamination/disposition of investigation derived wastes (IDW)

Decontamination
The drilling equipment was decontaminated following completion of each boring or well using high-pressure hot water or steam. Decontamination procedures took place on a temporary decontamination pad constructed of plastic sheeting on-site. Decontamination pad was located in the vicinity of the parcel north of Gates Avenue. Water generated during the decontamination procedures was contained in 55-gallon drums for off-site disposal.

Investigation derived waste (IDW)
Drill cuttings were managed in accordance with NYSDEC's TAGM 4032 – Disposal of Drill Cuttings. IDW water was collected in 55-gallons drums and was left on the site in the location that they were generated.

Table 1.1

Soil Boring ID	Location	Depth (ft)	Soil Sample Interval (ft)
SB-1	Parcel North	16	1-3
SB-2	Parcel North	16	3-4,15-16
SB-3	Parcel North	16	1-3
SB-4	Parcel North	16	5-7
SB-5	Parcel North	16	7-9
SB-6	Parcel North	16	7-9
SB-7	Parcel North	16	3-5
SB-8	Parcel North	16	3-4,9-11
SB-9	Parcel North	16	1-3
SB-10	Parcel North	16	1-3
SB-11	Parcel North	16	
SB-12	Parcel North	16	6-8
SB-13	Parcel North	16	2-4,14-16
SB-14	Parcel North	16	4-6
SB-15	Parcel South	16	2-4
SB-16	Parcel South	16	2-4
SB-17	Parcel South	16	6-8
SB-18	Parcel South	16	1-3
SB-19	Parcel South	16	1-3
SB-20	Parcel North	16	6-8
SB-21	Parcel North	16	1-3
SB-22	Parcel North	16	2-4

Table 2.1

Well ID	Location	Well Depth (ft)	Screen Interval	Well cover Type
MW-3R	Parcel South	13	13-3	Stick up
MW-9	Parcel South	13	13-3	Stick up
MW-10	Parcel North	13	13-3	Stick up
MW-11	Parcel North	15	15-5	Stick up

O'BRIEN & GERE ENGINEERS, INC.	TEST BORING LOG	REPORT OF BORING MW-12
Client: City of Geneva, NY	Sampler: Drill Rig	Page 1 of 1
Proj. Loc:Market Basket, Geneva, NY	Hammer: Automatic	Location:
File No.:	Fall: 30"	Start Date: 10/10/08 End Date: 10/10/08
Boring Company: Parrat-Wolff Inc. Foreman: OBG Geologist: Yuri Veliz		Screen = \ Grout Riser Sand Pack Bentonite

Depth Below Grade	No.	Depth (feet)	Blows /6"	Penetr/ Recovery	"N" Value	Sample Description	Stratum Change General Descript	Equip. Installed	Field Testing PID (ppm)	Field Testing UV
0	1	2	woh-7-18-13	2/1	25	Moderate brown (5YR 4/4) dry, soft, silt, some fine sand and clay	silt		0	905
2	2	4	50-27-20-13	2/0	47	No recovery			-	910
4	3	6	4-8-10-10	2/2	18	Moderate brown (5YR 4/4), damp. Stiff, silt, some fine sand, trace clay. At 5.5' is wet fine sand, little silt	—		0.0	920
6	4	8	12-13-12-16	2/1.5	25	Moderate brown (5YR 4/4), wet, stiff, fine sand, some layers of silt	fine sand		0.0	924
8	5	10	2-2-6-8	2/1.5	8	Moderate brown (5YR 4/4), wet, stiff, fine sand and silt			0.0	933
10	6	12	3-8-17-17	2/1.5	25	Same as above	12'		0.0	940
12	7	14	7-7-9-9	2/2	16	Moderate brown (5YR 4/4), wet, stiff, silt, fine sand layers. At 13.5-14 is saturated, fine sand	fine sand		0.0	945
14	8	16	1-1-1-3	2/1	2	Grayish brown (5YR 3/2) saturated, soft, fine sand and silt			0.0	948
16	9	18	6-7-7-6	2/1.5	14	Grayish brown (5YR 3/2), saturated, soft, fine sand, little silt			0.0	953
18	10	20	wh-wh-wh-1	2/1	-	Same as above	20'			

Well installation: Screen - 18-8; Sand - 18-6; Seal - 6-4; Grout - 4-0

O'BRIEN & GERE ENGINEERS, INC.	TEST BORING LOG	REPORT OF BORING MW-13
Client: City of Geneva, NY	Sampler: Drill Rig	Page 1 of 1
Proj. Loc:Market Basket, Geneva, NY	Hammer: Automatic	Location:
File No.:	Fall: 30"	Start Date: 10/10/08 End Date: 10/10/08
Boring Company: Parrat-Wolff Inc. Foreman: OBG Geologist: Yuri Veliz		Screen = Riser Grout Sand Pack Bentonite

Depth Below Grade	No.	Depth (feet)	Blows /6"	Penetr/ Recovery	"N" Value	Sample Description	Stratum Change General Descript	Equip. Installed	Field Testing PID (ppm)	Field Testing UV
0	1	2	7-9-6-5	2/1	15	Moderate brown (5YR 4/4) damp, soft, fine sand little silt	silt		0	1110
2	2	4	6-9-20-22	2/1.5	29	Moderate brown (5YR 4/4) damp, stiff, silt, little fine sand trace clay			0.0	1114
4	3	6	3-7-17-13	2/1.5	22	Moderate brown (5YR 4/4), wet, Stiff, fine sand, some silt	4'		0.0	1132
6	4	8	1-1-1-4	2/1.5	2	Same as above. Silt and fine sand layers	▽ 6'		0.0	1134
8	5	10	1-1-1-1	2/1	2	Moderate brown (5YR 4/4), damp to wet, silt, little fine sand			0.0	1140
10	6	12	1-1-1-1	2/1	2	Moderate brown (5YR 4/4), damp, silt, little fine sand, At 13' is grayish brown, soft, silt, some clay, layers of fine sand	silt/clay		0.0	1148
12	7	14	woh-9-12-14	2/2	21	Grayish brown (5YR 3/2), wet, soft, silt, some clay, layers of fine sand			0.0	1150
14	8	16		2/1.5		Grayish brown (5YR 3/2) saturated, soft, fine sand some silt, little clay	silt/clay		0.0	1200
16	9	18		2/1.5		same as above			0.0	1203
							18'			
							EOB			

Well installation: Screen - 18-8; Sand - 18-6; Seal - 6-4; Grout - 4-0

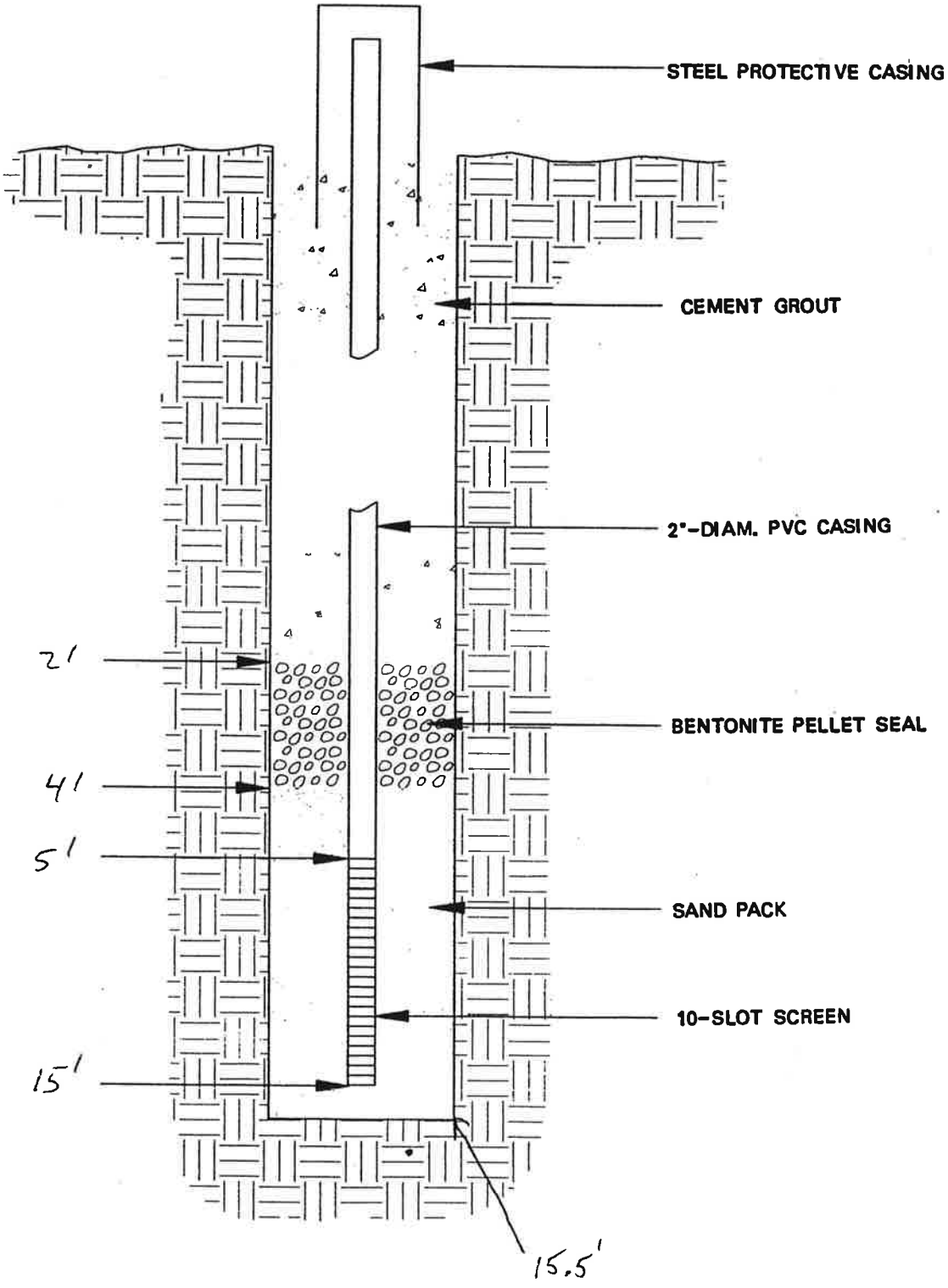
PASSERO ASSOCIATES, P.C.
ARCHITECTS–ENGINEERS–SURVEYORS
100 LIBERTY POLE WAY ROCHESTER,N.Y.
716–325–1000 14604

PROJECT NAME Geneva Market Basket

PROJECT # 97119

SCHEMATIC DIAGRAM MONITORING WELL # MW-1 to -8

2-16-99



APPENDIX E

QUALITY ASSURANCE PROJECT PLAN

QUALITY ASSURANCE PROJECT PLAN

for the

FORMER MARKET BASKET SITE
Gates Avenue and Lehigh Street
City of Geneva, Ontario County, New York

Prepared for:

CITY OF GENEVA
47 Castle Street
Geneva, New York 14456

Prepared by:

PLUMLEY ENGINEERING

8232 Loop Road
Baldwinsville, New York 13027
(315) 638-8587
Project No. 2016018

December 2016

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ATTACHMENTS

1.0 INTRODUCTION

Plumley Engineering, P.C. has developed this Quality Assurance Project Plan (QAPP) for the Site Management Plan (SMP) for the former Market Basket Site in Geneva, New York (Site) on behalf of the City of Geneva. This QAPP is to be used in conjunction with the SMP.

The QAPP provides quality assurance/quality control (QA/QC) criteria for work efforts associated with sampling and analysis of environmental media at the Site. This QAPP has been prepared using United States Environmental Protection Agency (EPA) 2006a *EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations* as guidance.[1]

The QAPP will assist in generating data of a known and acceptable level of precision and accuracy. It provides information regarding the project description and personnel responsibilities and sets forth specific procedures to be used during sampling of environmental media, other field activities and laboratory analyses. Personnel participating in the field investigation and laboratory analyses will follow the procedures in this QAPP. The following QA topics are addressed or referenced in this document:

- Project organization and responsibilities.
- Project background.
- Project description.
- Data quality objectives (DQOs) and criteria.
- Special training requirements.
- Documentation.
- Sampling design.

[1]EPA QA/R-5. Washington, D.C.

- Sampling method requirements.
- Sample handling and custody.
- Analytical method requirements.
- QC requirements.
- Instrumentation/equipment testing and maintenance.
- Calibration and frequency.
- Inspection requirements for supplies.
- Data acquisition requirements.
- Data management.
- Assessment and response actions.
- QA reports to management.
- Data review and management.
- Reconciliation with user requirements.

2.0 PROJECT ORGANIZATION AND RESPONSIBILITIES

2.1 Project Participants

While each person involved in the generation of data is implicitly part of the QA program for the project, certain individuals have specific, designated responsibilities. Within Plumley Engineering, these are the Project Officer, Project Manager, QA Officer, Field Leader, Data Management Personnel and Sampling Personnel.

SGS Laboratories, Inc. (SGS) will provide analytical services for the SMP. Laboratory personnel with QA/QC responsibilities include the Laboratory Project Manager and Laboratory Sample Custodian.

Samples will not be sent to a laboratory that is not listed in this QAPP without the permission of the Plumley Engineering Project Manager.

The following sections describe the relationship among the project participants.

2.2 DEC Project Manager

New York State Department of Environmental Conservation (DEC) has assigned Charlotte Theobald as the Project Manager for the Site. As such, she will be responsible for reviewing submissions and overseeing project activities on behalf of DEC.

2.3 City of Geneva Project Manager

Gordon Eddington is the City of Geneva Project Manager for the Site. As such, he will be responsible for reviewing submissions and overseeing project activities on behalf of the City of Geneva.

2.4 Plumley Engineering Personnel

2.4.1 Project Officer

will serve as the Project Officer. As such, he will be responsible for the overall corporate management of the SMP and for the completion of tasks specified in the Plan and QAPP. It will be his responsibility to provide for the allocation of staff and other resources required to complete the project within the specified schedule and budget.

2.4.2 Project Manager

David Meixell will serve as the Project Manager and client contact. As such, he will have responsibility for the implementation and completion of each of the tasks identified in the SMP and QAPP. He will manage the day-to-day project operations and administrative aspects of the project and will function as the client and regulatory contact for the project. In addition, he will have responsibility for coordinating the technical aspects, strategy, and oversight of the RI and field sampling activities.

2.4.3 QA Officer

Derk Hudson will serve as the QA Officer. As such, he will be responsible for overall project QA. He will review project plans and revisions to such plans to maintain proper QA throughout the SMP. In addition, he, or his designee, will be responsible for performance and system audits, data quality review, corrective actions, and coordinating QA/QC efforts between Plumley Engineering and the laboratory.

2.4.4 Field Leader

David Meixell will also serve as the Field Leader. As such, he will oversee field and related activities as described in the Work Plan and this QAPP. The sampling personnel will report to the Field Leader who will be responsible for leading, coordinating, and supervising the day-to-day field activities. The Field Leader's responsibilities include:

- Communicate and coordinate with laboratory prior to sample collection and during shipment of sample coolers to the laboratory.
- Develop and implement field-related sampling plans and schedule.
- Coordinate and manage field staff.
- Supervise or act as the field sample custodian.

- Implement QC for technical data, including field measurements.
- Adhere to work schedules.
- Coordinate and oversee technical efforts of subcontractors assisting the field team.
- Identify problems at the field team level and resolve difficulties.
- Implement and document corrective action procedures.

2.4.5 Data Management Personnel

Data management staff from Plumley Engineering will provide data management services.

2.4.6 Sampling Personnel

Experienced engineers, geologists, hydrogeologists and/or environmental technicians will conduct sampling tasks required by the SMP. Their responsibilities will include the documentation of proper sample collection protocols, sample collection, equipment decontamination, and chain-of-custody documentation. The sampling personnel will report to the Field Leader.

2.5 Laboratory Personnel

2.5.1 Project Manager

Robert Soll of SGS will serve as the Laboratory Project Manager. As such, he will be responsible for the laboratory's QA/QC activities associated with the project. The specific duties of the Laboratory Project Manager include determining whether analyses are conducted within the method requirements and that laboratory custody procedures are followed. Moreover, the Laboratory Project Manager monitors daily precision and accuracy records, maintains detailed copies of all procedures, reschedules analyses based on unacceptable data accuracy or precision, and identifies and implements corrective actions necessary to maintain QA standards.

The Laboratory Project Manager or his designee will conduct initial data assessments of analytical data results, based on the requirements of the QAPP, and report the findings in the data packages. Major QA/QC issues will be reported to the QA Officer.

2.5.2 Laboratory Sample Custodian

Mike Mapother of SGS will serve as the Laboratory Sample Custodian. As such, his responsibilities will include verifying proper sample entry and sample handling procedures by laboratory personnel. The Laboratory Sample Custodian will report to the Laboratory Project Manager.

3.0 PROJECT BACKGROUND AND DEFINITION

3.1 Project Background

The City of Geneva acquired the former Market Basket property for back taxes and prepared a Phase II environmental site assessment of the property. The results of this investigation indicated residual soil and ground water contamination in several areas. Based on the results of the Phase II investigation, the property was accepted into the DEC-administered Environmental Restoration Program and assigned Site Number B00018.

The property is approximately 2.5 acres in size and is bounded by Avenue F to the north, a warehouse and Avenue E to the south, the H.B. Fuller company and vacant property to the east, and Lehigh Street to the west.

3.2 Project Definition

As detailed in the SMP, the property has been remediated. As part of the future management of the property, existing groundwater monitoring wells will be sampled periodically for analysis of volatile organic compounds (VOCs).

4.0 PROJECT DESCRIPTION AND SCHEDULE

4.1 Project Description

4.1.1 Overview

Groundwater will be monitored on an annual basis as part of the SMP. Analytical methods to be utilized are listed in Attachment 1.

4.1.2 Sample Analysis

SGS will provide analytical services for the SMP monitoring.

Analyses will meet the requirements of the methods listed in Attachment 1, the QC requirements and corrective actions listed in Attachments 2 and 3, and additional requirements listed in this QAPP. Laboratory control limits will be the most recent laboratory control limits for accuracy and precision.

The laboratory will report non-detect sample results to the quantitation limits (QLs). Organic results that are less than the QLs but greater that the method detection limits (MDLs) will be reported by the laboratory using the "J" flag. The most recent MDLs and QLs will be reported by the laboratory. The attachments also present the applicable screening criteria that will be used to evaluate analytical data.

Samples may be diluted only if analytes of concern generate responses in excess of the linear range of the instrument.

Samples will undergo clean-up procedures where matrix interference prevents accurate quantification and identification of target analytes. In such a case, samples will be cleaned up during the processes from appropriate methods. Interferences will be identified and documented. The clean-up, extraction, and sample preparation methods will be listed in the

data package case narrative. If the laboratory has taken appropriate actions and matrix interferences prevent the laboratory from achieving the specified QLs, the Plumley Engineering QA Officer will be contacted as soon as the situation is identified. The Laboratory Project Manager will document, in the data package case narrative, how the laboratory demonstrated good analytical practices in order to attempt to achieve the specified QLs.

The lowest initial calibration standard will establish the QLs for each analysis reported by the laboratory.

4.1.3 Data Packages

The data results will be reported to the Plumley Engineering Project Manager using Contract Laboratory Program (CLP)-like deliverables format. The complete data packages will also be provided in electronic PDF format.

Documentation of communications between the laboratory and the Plumley Engineering Project Manager or QA Officer will be provided in the data packages.

The laboratories will provide two hard copies and one electronic copy of the data packages within four weeks of receipt of the last sample in a sampling event at the laboratory. Field logs, data packages, and records will be included in the project file which will be archived by Plumley Engineering for a period of 10 years.

4.1.4 Audits

A field or laboratory audit may be performed at the discretion of the Plumley Engineering Project Manager. Additional audits may be required if issues that would severely limit the use of the sample data are identified. Corrective action procedures will be implemented based on unacceptable audit results, as defined herein.

5.0 DATA QUALITY OBJECTIVES AND CRITERIA

5.1 Objectives

Data quality objectives (DQOs) are quantitative and qualitative statements specifying the quality of the environmental data required to support the decision making process. DQOs define the total acceptable uncertainty in the data for each specific activity conducted during the SMP. The uncertainty includes both sampling error and analytical error. Ideally, zero uncertainty is the intent. However, the variables associated with the process (field and laboratory) inherently contribute to the uncertainty of the data. It is the overall objective to keep the total uncertainty within an acceptable range that will not hinder the intended use of the data.

QA/QC represents a set of procedures designed to produce analytical data of known and acceptable quality. The distinction between QA and QC programs is as follows: the QA program ensures that all information, data and decisions resulting from the SMP are technically sound and properly documented, while the QC program assures that the QA program achieve its goals. QA/QC requirements have been established for this SMP so that there will be a high degree of confidence in the measurements.

The DQOs that will be addressed by the SMP are based on the following factors that define the scope of the SMP:

- History of Site operations and areas of suspected impacts
- Results of the RI
- Remediation of impacted soil
- Assessment of data from the excavated areas
- Disposal of excavated soils

The following DQO statements were developed during the development of the Work Plan:

- Were the VOC, SVOC and total metal ground water results in exceedence of NYS Class GA standards?

- Were the VOC, SVOC and total metal soil results in exceedence of the SCOs listed in 6 NYCRR Part 375?

Analytical levels as defined by EPA are as follows:

- *Screening Data* are generated by rapid, less precise methods of analysis with less rigorous sample preparation. Sample preparation steps may be restricted to simple procedures such as dilution with a solvent, instead of elaborate extraction/digestion and cleanup. Screening data provide analyte identification and quantitation, although the quantitation may be relatively imprecise. At least 10% of the screening data should be confirmed using analytical methods and QA/QC procedures and criteria associated with definitive data. Screening data without associated confirmation data are not considered to be data of known quality. Field screening for VOCs by photoionization detector (PID) were conducted during the RI.

- *Definitive Data* are generated using rigorous analytical methods, such as EPA reference methods. Data are analyte-specific, with confirmation of analyte identity and concentration. Methods produce tangible raw data in the form of paper printouts or computer-generated electronic files. Data may be generated at the Site or at an off-site location, as long as the QA/QC requirements are satisfied. For the data to be definitive, either analytical or total measurement error must be identified. The level of QC that will be performed for the definitive data involves the QC efforts described in Section 12, calibration procedures described in Section 14, analytical methods listed in Attachment 1 and QC requirements and corrective actions listed in Attachments 2 and 3. Laboratory control limits listed in the most recent laboratory control limits for accuracy and precision, will be used to evaluate the sample data.

In order to assess adherence to DQOs, Plumley Engineering has developed the QA/QC program described in this QAPP. The remainder of this QAPP describes the specific approaches that will be taken to achieve the required DQOs.

Precision describes the reproducibility of measurements under a given set of conditions. Specifically, it is a quantitative measure of the variability of a group of measurements that have been made in an identical manner, compared to their average value. Precision can be expressed in a variety of manners, including absolute methods such as deviation from the mean or median values, standard deviation and variance, or relative methods such as relative deviation from the mean or median. The overall precision will be determined through the analysis of field duplicates, laboratory duplicates, and matrix spike/matrix spike duplicate (MS/MSD) samples.

Accuracy is defined as the degree of difference between measured or calculated values and the true value. The closer the numerical value of the measurement comes to the true value, or actual concentration, the more accurate the measurement is. Accuracy is expressed in terms of absolute or relative error. Accuracy will be determined through analysis of spiked samples and the analysis of standards with known concentrations.

Representativeness refers to the degree to which a sample taken from a site accurately reflects the matrix at the site. It is a qualitative parameter that is most concerned with the design of the sampling program. Factors that should be considered in the determination of representativeness include appropriateness of sampling and analytical methodologies, representativeness of the selected media, and representativeness of the selected analytical procedures. Representativeness will be achieved by the use of procedures for the collection and preservation of samples as described in the SMP and the methods in this QAPP.

Comparability refers to the use of consistent procedures, second source reference standards, reporting units, and standardized data format with document control. Adherence to standard procedures and the analysis of external source standard materials maximizes the probability that data generated from a particular method at a given laboratory can be validly compared to the data of another. This QAPP has been written to provide data that will be comparable to other data collected, as standard methods will be utilized for this SMP.

Completeness refers to the process of obtaining the required data as outlined in the SMP. Completeness is also defined as the percentage of measurements judged to be useable. Samples for which the critical data points fail completeness objectives will require reanalysis of samples (within the specified holding times) until the DQOs are met. The completeness goal has been specified at 95% for this RI.

Sensitivity refers to a measurable concentration of an analyte that has an acceptable level of confidence. MDLs are the lowest concentration of an analyte that can be measured with 99% confidence that the analyte concentration is greater than zero. QLs are levels above the MDLs at which the laboratory has demonstrated the quantitation of analytes.

5.2 Field Sampling

The objective of the field sampling program is to obtain samples that represent the environmental matrix being investigated. This will be accomplished through the use of proper sampling techniques and equipment.

Field screening activities may not require sample collection, but nonetheless involve measurements for which QA concerns are appropriate. The primary QA objective of field screening is to obtain reproducible measurements to a degree of accuracy consistent with the intended use of the measurements and to document measurement procedures.

5.3 Laboratory Analysis

SGS maintains laboratory Standard Operating Procedures (SOPs) and a Quality Assurance Manual (QAM). To obtain data of a quality sufficient to meet the project DQOs, VOC analysis by gas chromatography/mass spectrometry (GC/MS) will be used.

The laboratory will adhere to the specific analyses and QA/QC requirements in the analytical methods listed in Attachment 1 and this QAPP.

6.0 SPECIAL TRAINING REQUIREMENTS

Field personnel must comply with the training requirements for hazardous waste operations in accordance with 29 CFR 1910.120(e). Each individual must have successfully completed a 40-hour course for intrusive work and, minimally, a 24-hour course for non-intrusive work. In addition, each individual must have completed an 8-hour refresher course within the last 12 months if the initial training was more than 12 months ago.

7.0 DOCUMENTATION

This QAPP will be amended at the discretion of the Plumley Engineering Project Manager by the QA Officer, as necessary, when guidelines and regulatory documents are revised or if Site requirements necessitate such changes. Whenever the QAPP is amended, the project personnel will receive the amended copy of the QAPP and outdated copies will be removed from circulation. Field sampling operations and procedures will be documented by on-site personnel. Documentation of sampling operations and procedures will include the following:

- Procedures for preparation of reagents or supplies which become an integral part of the sample.
- Procedures for recording location and specific considerations associated with sample collection.
- Specific sample preservation method.
- Calibration of field instruments.
- Submission of field-based blanks, where appropriate.
- Potential interferences present at the Site.

- Field sampling equipment and containers including specific identification numbers of equipment.
- Sampling order.
- Decontamination procedures.
- Field personnel.

The analytical data results will be reported to the Plumley Engineering Project Manager using CLP-like deliverables format. The data packages will also be provided in PDF electronic format.

A comprehensive case narrative, which describes the following, will be included in the data package:

- Cross reference list which includes field sample identification name, laboratory identification number, and sample dates for each sample in the sample delivery group (SDG) included in the data package.
- Documentation of methodologies utilized to prepare and analyze samples and references.
- Detailed documentation of QC, sample shipment, and analytical problems encountered in processing samples for the data package.
- Documentation of re-analyses, internal QC processes used, corrective actions taken, and resolution of corrective actions taken.
- Documentation of communications made with the Plumley Engineering Project Manager and QA Officer during the data generation process.

The laboratories will provide an electronic copy of the data packages within four weeks of receipt of the last sample in a sampling event at the laboratory. Field logs, data packages, and records will be included in the project file which will be archived by Plumley Engineering for a period of 10 years.

8.0 SAMPLING DESIGN

8.1 Objectives

The objective of the sampling program is to obtain samples of environmental media of sufficient quality to support both qualitative and quantitative information to identify the nature and extent of constituents in the investigation areas.

8.2 Sampling Network

The types of parameters, methods, matrices, and numbers of samples to be collected for this SMP are presented in Attachment 1.

8.3 Sample Locations

Sample locations are described in the SMP.

A sample designation system will be used to identify samples for laboratory analysis. A list of identifiers used for each sample will be maintained in the project notes by the Plumley Engineering Field Team.

Each sample that is collected will be designated by a unique sample identification number. The first part of the identifier will correspond to the type of media being collected:

- DUP – field duplicate
- TB – trip blank
- FB – field blank
- MS/MSD – matrix spike/matrix spike duplicate

The sample type code will be followed by an alpha-numerical code indicating the sample location number.

Field duplicates will be identified with a unique sample identification number, such that the laboratory will not be aware that the sample is a duplicate. Field sampling personnel will note the duplicate sample in the project notes so that this information will be available when the laboratory data is reviewed. An example designation for a field duplicate from a soil sampling location on the chain-of-custody form will be DUP-1, representing a site location that is not identified on the chain-of-custody record.

9.0 SAMPLING METHOD REQUIREMENTS

9.1 Sampling Procedures

The objective of the field sampling program is to obtain samples that represent the environmental matrix being investigated. This will be accomplished through the use of proper sampling techniques and equipment.

Field duplicate samples will be collected from the same location as the parent sample and will be analyzed for the same parameters as the parent sample.

The field duplicate QC samples will be labeled with fictitious identification locations and times, and submitted to the laboratory as regular samples. The actual identification of the duplicate QC samples will be recorded in the field notes. One field duplicate QC sample will be collected for every 20 samples collected per matrix and sent to the laboratory for analysis.

MS/MSD samples will be collected from the same location as the parent sample and will be analyzed for the same parameters as the parent sample. Each sample will be labeled with the same number as the original sample, designated as MS or MSD, and submitted to the laboratory for the appropriate analyses. One MS and MSD sample will be collected for every 20 samples collected per matrix and sent to the laboratory for analysis.

A field blank will be prepared for sampling when a particular piece of sampling equipment is employed for sample collection and subsequently decontaminated in the field for use in additional sampling. The blank water used to generate the field blank will be provided by the laboratory, using the same source of water as that used to prepare method blanks. The field blank will be composed in the field by collecting, in the appropriate container for the water, a blank water rinse from the equipment after execution of the last step of the proper field decontamination protocol. The identical bottle to bottle transfer technique will be used to generate the field blank. Preservatives or additives will be added to the field blank, where appropriate, for the sampling parameters. One field blank will be collected per 10 samples or once per day, whichever is more conservative. The field blank will be analyzed for the same parameters as the samples collected the same day that the field blank was generated.

A trip blank will be included in the cooler used to ship aqueous and soil samples for VOC analysis. The trip blank is designed to address possible sample contamination from transportation between the Site and the laboratory. A trip blank will be prepared by the laboratory, using the same preservation technique as that used to prepare the sample containers, from the same source as the method blank water, and sent to the Site in the cooler with the other sample containers. Non-aqueous samples collected utilizing methanol preservation will require trip blanks prepared using the same technique as that used to prepare the samples containers. Trip blanks are not opened in the field but travel with the sample containers. One trip blank will be sent to the laboratory for analysis in each cooler that contains samples that have been collected for VOCs.

9.2 Decontamination of Sampling Equipment

The sampling methods have been developed to minimize the possibility of cross-contamination. The following procedures will be used to decontaminate any non-disposable/non-dedicated sampling equipment in accordance with the following procedures, where applicable:

- Wash and scrub the equipment with non-phosphate laboratory grade detergent and potable water.
- Generous tap water rinse.

- Rinse with distilled or deionized water.
- Rinse with distilled and/or deionized water.
- Air dry.
- Rinse with distilled and/or deionized water for samples submitted for organic analysis.
- Wrap with aluminum foil or plastic sleeve for transport.

Equipment will be wrapped in aluminum foil and/or stored in disposable plastic sheeting to maintain contaminant-free conditions. Deviations from these procedures will be documented in the field notes.

10.0 SAMPLE HANDLING AND CUSTODY

10.1 Sample Preparation and Preservation

The analytical laboratory will supply appropriate sample containers in sealed cartons or coolers, as well as preservatives (as appropriate). QA measures for this project will begin with the sample containers – pre-cleaned containers will be purchased from a EPA-certified manufacturer (I-Chem 200 or equivalent).

Immediately after collection, samples will be transferred to properly labeled sample containers, and properly preserved. Attachment 1 lists the proper sample container, sample volumes, and preservation. Samples requiring refrigeration for preservation will be promptly transferred to coolers packed with wet ice and/or ice packs. If field storage is required, the samples will be stored in a secured storage facility and an approximate cooler temperature of 4 °C will be maintained. Samples will be shipped or transported within 24 hours of being collected and will arrive at the laboratory no later than 48 hours after sample collection. Proper chain-of-custody documentation will be maintained as discussed in Section 10 of this QAPP. Samples will be analyzed within the holding times specified in Attachment 1.

10.2 Sample Custody and Procedures

These procedures include field custody, laboratory custody and evidence files. Samples are physical evidence and will be handled according to strict chain-of-custody protocols. Documentation must be produced, when needed, that traces the samples from the field to the laboratory and through analyses. EPA has defined custody of evidence as follows:

- In actual possession.
- In view after being in physical possession.
- In a locked laboratory.
- In a secure, restricted area.

10.2.1 Field Custody Procedures

The field sampler is personally responsible for the care and custody of the sample until transferred.

Field notes will be used to note information regarding collection of samples and any notable observations. All entries will be signed and dated. Corrections will be made by drawing a single line through the incorrect data and initialing and dating the correction that was made to the side of the error. An initialed diagonal line will be used to indicate the end of an entry or the end of the day's activities.

The following information will be recorded in the field notes by the field sampling team:

- Name and title of author, date, and time of Site entry, and physical/environmental conditions during the field activity.
- Meteorological data.

- Project number, client name and Site name.
- Name and title of field crew members.
- Sample media.
- Sample collection method, including equipment utilized.
- Number and volume of samples collected.
- Description of sample locations.
- Date and time of sample collection.
- Sample and QA/QC identification numbers.
- Field observations.
- Field measurements made and equipment used.
- Calculations, results, and calibration data for field sampling and measurements.
- References for maps and photographs of the sample location.
- Dates and method of sample shipments.

A completed sample identification label will be attached to each investigative or QC sample and the sample placed in a shipping container. The identification on the label/tag must be sufficient to enable cross-reference with the logbook. The sample label/tag will be recorded using waterproof, non-erasable ink and will be attached to the sample container using adhesive.

The sample labels will contain the following information:

- Sample number identification.
- Project number.

- Date and time of sample collection.
- Designation of the sample as a grab or composite.
- Type of sample matrix.
- Sample location.
- Sampler initials.
- Whether the sample is preserved or unpreserved.

Chain-of-custody records will be kept starting at the time that sample containers are placed in the coolers for transportation to the laboratory. One completed chain-of-custody record must be kept with each sample cooler at all times.

When transferring the possession of samples, individuals relinquishing and receiving will sign, date, and note the time on the chain-of-custody. Custody of samples must be continuous between parties and time gaps must not be present. Each shipment of samples to the laboratory must have its own chain-of-custody record with the contents of the shipment, method of shipment, name of courier, and other pertinent information written on the record. The original record accompanies the shipment and the copies are kept with the field logbook and distributed to the Plumley Engineering Project Manager. Freight bills, postal service receipts, and bills of lading will be retained as permanent documentation.

If the samples are shipped, the courier's air bill will be attached to the chain-of-custody and the air bill number will be written on the chain-of-custody form.

The chain-of-custody documentation will be recorded using waterproof, non-erasable ink. One sample will be entered on each line of the chain-of-custody record and not be split among multiple lines.

The chain-of-custody form will contain the following information:

- Project identification and number.
- Sample description/location.
- Required analysis.
- Date and time of sample collection.
- Type and matrix of sample.
- Number of sample containers.
- Analysis requested/comments.
- Sampler signature/date/time.
- Date and signature of the field representative.
- Date and signature of the laboratory representative.
- Carrier used to ship coolers
- Air bill number (if shipped by a commercial carrier).

In the case that high concentrations are suspected to be present in the samples, a note to that effect will be included on the chain-of-custody form.

Environmental samples will be packed prior to shipment using the following procedures:

- Select a sturdy cooler in good repair and clean. Secure and tape the drain plug with fiber or duct tape.
- Be sure the lids on all bottles are tight (will not leak) and placed in to tightly sealed plastic bags.
- Put ice that has been placed in properly sealed heavy-duty polyethylene bags on top of, and/or between the samples. Pack samples securely to eliminate breakage during shipment with ice packs to maintain the inside temperature at approximately 4°C.

- Place chain-of-custody record into a Ziploc plastic bag, tape the bag to the inner side of the cooler lid, and close the cooler and securely tape (preferably with fiber tape) the top of the cooler shut. The field sampler will initial and date the seal. The seals must be broken to open the cooler and will indicate tampering if the seal is broken before receipt at the laboratory. Two custody seals will be affixed to the latch and lid of the cooler. The custody seals will consist of adhesive-backed tape that easily rips if it is disturbed.

- A label containing the name and address of the shipper will be placed on the outside of the cooler.

The field sampling team will transport or ship the cooler via an overnight delivery service or hand deliver to the laboratory. Prior to shipment of sample coolers, the field sampling team will contact the laboratory to notify the laboratory of the shipment.

Samples will remain in the custody of the sampler until transfer of custody is completed. Transfer consists of:

- Delivery of samples to the Laboratory Sample Custodian, and/or

- Signature of the Laboratory Sample Custodian on the chain-of-custody form as receiving the samples and signature of sampler as relinquishing the samples.

10.2.2 Laboratory Custody Procedures

When the samples arrive at the laboratory, the Laboratory Sample Custodian will sign the courier's air bill or bill of lading (unless hand-delivered) and will note the cooler temperature on the chain-of-custody form. If the cooler temperature is greater than 6 °C, the Plumley Engineering Project Manager will be notified. If the cooler arrives at the laboratory after hours, an external chain-of-custody will be properly filled out and will accompany the cooler until the laboratory receives the cooler.

The Laboratory Sample Custodian's duties and responsibilities upon sample receipt will be to:

- Document receipt of samples by signing the record with the date and time of sample receipt.
- Note the cooler temperature on the chain-of-custody form.
- Inspect sample shipping containers for the presence or absence of custody seals (only if shipped via overnight courier) and for container integrity.
- Sign the appropriate forms or documents, verify, and record the agreement or disagreement of information on sample documents and, if there are discrepancies, record the problem and notify the Plumley Engineering Project Manager.
- Assign a laboratory number for each sample upon receipt. That sample number will be placed on the sample label which will remain attached to the sample container.
- Log sample information into the laboratory sample tracking system.
- Label sample with a unique, sequential laboratory sample number.
- Place samples in the walk-in cooler or sample storage area that is a secure, limited-access storage.

The laboratory will immediately contact the Plumley Engineering Project Manager if issues pertaining to sample condition or documentation are detected (broken security seal; broken, open, or otherwise compromised sample bottles; chain-of-custody information in disagreement with sample labels, etc.).

At the laboratory, the analysts will be required to log samples and extracts in and out of storage as the analysis proceeds. Samples and extracts will be returned to secure storage at the close of business. Written records will be kept of each time the sample or extract

changes hands. Care must be exercised to properly complete, date, and sign items needed to generate data.

Procedures to be followed by the laboratory include:

- Samples will be handled by the minimum number of people possible.
- The laboratory will set aside a secured sample storage area consisting of a clean, dry, refrigerated, isolated room.
- A specific person will be designated sample custodian. Incoming samples will be received by the custodian who will indicate receipt by signing the chain-of-custody form.
- The custodian will ensure that samples which are heat-sensitive, light-sensitive, radioactive, or which require special handling in other ways, are properly stored and maintained prior to analysis.
- The analytical area will be restricted to authorized personnel only.
- After sample analyses are complete, the analytical data will be kept secured and released to authorized personnel only.

If QC samples have not been properly identified during sample collection, the Laboratory Project Manager will contact the Plumley Engineering Project Manager to assign QC samples prior to the start of sample analysis.

10.2.3 Final Evidence File Chain-of-Custody Procedures

The final evidence file will be the central repository for documents that constitute evidence relevant to sampling and analysis activities as described in this QAPP. Plumley Engineering is the custodian of the evidence file and maintains the contents of evidence files for the Site including relevant records, reports, logs, field notebooks, pictures, subcontractor reports, and data reviews.

The final file will be stored at Plumley Engineering and will consist of the following:

- Laboratory data packages including summary and raw data from the analysis of environmental and QC samples, chromatograms, mass spectra, calibration data, work sheets, and sample preparation log.
- Chain-of-custody records.
- Field logbooks and data.
- Pictures and drawings.
- Correspondence.

The evidence file will be maintained in a secured, limited access area until submittals for the project have been reviewed and approved, and for a minimum of 10 years past the submittal date of the final report.

11.0 ANALYTICAL METHOD REQUIREMENTS

11.1 Analytical Methods

The laboratory will utilize the analytical methods and additional requirements listed in this QAPP. The most recent laboratory control limits for accuracy and precision, will be used to evaluate the sample data. In addition, the QC requirements and corrective actions listed in Attachments 2 abd 3, which augment the method requirements, will be followed by the laboratory during the RI. In the event of an analytical system failure, the Laboratory Project Manager will identify the situation and provide corrective action guidance. The Plumley Engineering QA Officer will be notified and the situation will be documented in the data package case narrative.

MDLs and QLs may only be achieved in an undiluted sample free of matrix interferences or of high concentrations of target analytes. If matrix interferences are encountered or if high concentrations of target compounds are present, established MDLs and QLs may not be achievable without impacting the instrument quality. The laboratory and Plumley Engineering QA Officer will discuss these situations before the laboratory proceeds with sample analysis.

Samples may be diluted only if analytes of concern generate responses in excess of the linear range of the instrument.

Samples will undergo clean-up procedures for the following situations:

- For solid samples analyzed for SVOCs, with QLs that are elevated above the action limits due to matrix interferences
- Where matrix interference prevents accurate quantification and identification of target analytes.

When the previously described situations occur, samples will be cleaned up during the processes from appropriate methods. Interferences will be identified and documented. The cleanup, extraction, and sample preparation methods will be listed in the data package case narrative.

If the laboratory has taken appropriate actions and matrix interferences prevent the laboratory from achieving the specified QLs, the Plumley Engineering QA Officer will be contacted as soon as the situation is identified. The Laboratory Project Manager will document, in the data package case narrative, how the laboratory demonstrated good analytical practices in order to attempt to achieve the specified QLs.

Blanks will not be subtracted from target analyte results.

11.2 Detection Limits

The MDL is defined as the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined

from analysis of a sample in a given matrix containing the analyte. The QL is the lowest concentration that can be reliably quantified within specified limits of precision and accuracy during routine laboratory operations.

The lowest initial calibration standard will establish the QLs for each analysis reported by the laboratory. The laboratory will report non-detect sample results to the QLs. Results that are less than the QLs but greater that the MDLs will be reported by the laboratory using the "J" flag. The most recent MDLs and QLs, will be reported by the laboratory.

Detection limits may only be achieved in an undiluted sample free of matrix interferences or of high concentrations of target analytes. If matrix interferences are encountered or if high concentrations of target compounds are present, established MDLs and QLs may not be achievable without impacting the instrument quality. The laboratory and Plumley Engineering QA Officer will discuss these situations before the laboratory proceeds with sample analysis.

12.0 QC REQUIREMENTS

The overall effectiveness of a QC program depends on operating in the field and laboratory according to a program that systematically ensures the precision and accuracy of analyses by detecting errors and preventing their recurrence or measuring the degree of error inherent in the methods applied. The following sections describe the QA/QC checks that will be utilized in the laboratory and the field during the RI.

12.1 Laboratory QA/QC Checks

Attachments 2 and 3 summarize the laboratory QC checks, frequency of analysis, control limits, and laboratory corrective actions for the analytical methods used in this RI. A brief description of laboratory QA/QC analyses is contained in the following subsections.

12.1.1 GC/MS Tuning

Tuning and performance criteria are established to verify mass resolution, identification, and to some degree, instrument sensitivity. These criteria are not sample specific; conformance is determined using standard materials. Therefore, these criteria should be met in all circumstances.

12.1.2 Calibration

Compliance requirements for satisfactory instrument calibration are established to verify that the instrument is capable of producing acceptable quantitative data. Initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of analysis, and continuing calibration and performance checks document satisfactory maintenance and adjustment of the instrument on a day-to-day basis. Section 14 of this QAPP describes the laboratory equipment calibration process.

12.1.3 Blanks

Several types of blanks will be analyzed by the laboratory. Corrective action procedures will be implemented for blank analyses if target compounds are detected at concentrations greater than the QL, where applicable. The criteria for evaluation of blanks apply to any blank associated with a group of samples. If problems with a blank exist, data associated with the project must be carefully evaluated to determine whether or not there is an inherent variability in the data for the project, or if the problem is an isolated occurrence not affecting other data.

A method blank is an analyte-free blank that undergoes the preparation procedures applied to a sample. These samples are analyzed to examine whether sample preparation and analysis techniques result in sample contamination. The laboratory will prepare and analyze a method blank with each group of a maximum of 20 samples that are extracted, digested, or analyzed at the same time.

Field blanks are analyzed to assess contamination introduced during field sampling procedures and sample shipment, respectively. Field blanks will consist of samples of analyte-free water that are passed through and/or over decontaminated sampling equipment. One field blank will be collected per set of sampling equipment per sampling event. Field blanks will not be required if dedicated sampling equipment is utilized. The water that is used for the field blank will be provided by the laboratory from the same source as that used for the laboratory method blank. If the water is stored prior to use, an aliquot from the source of water and the storage container will be analyzed prior to use. The field blank samples will be subject to the same analyses as the environmental samples. One field blank will be collected per 10 samples or once per day, whichever is more conservative.

A trip blank will be prepared by the laboratory, using the same preservation technique as that used to prepare the sample containers, from the same source as the method blank water, and sent to the Site in the cooler with the other sample containers. Non-aqueous samples collected utilizing methanol preservation will require trip blanks prepared using the same technique as that used to prepare the samples containers. The trip blank will undergo shipment from the sampling site to the laboratory in coolers with the environmental samples to be analyzed for VOCs. Trip blanks will be analyzed for VOCs to determine if contamination has taken place during sample handling and/or shipment. Trip blanks will be utilized for samples at a frequency of one each per shipment of samples sent to the laboratory for VOCs.

12.1.4 Internal Standards Performance

Internal standards, which are compounds not found in environmental samples, will be spiked into samples, blanks, MS/MSDs, and laboratory control samples (LCSs) at the time of sample preparation. Internal standards must meet retention time and performance criteria specified in the analytical method or the sample will be reanalyzed.

12.1.5 Surrogate Recovery

Accuracy and matrix biases for individual samples are monitored for organic analyses using surrogate additions. Surrogates are compounds similar in nature to the target analytes; the surrogates are spiked into environmental samples, blanks, and QC samples prior to sample preparation for organic analyses. The evaluation of the results of these surrogate spikes is not necessarily straightforward. The sample itself may produce effects due to such factors as interferences and high concentrations of analytes. Since the effects of the sample matrix are frequently outside the control of the laboratory and may present relatively unique problems, the review of data based on specific sample results is frequently subjective.

12.1.6 LCS

LCSs are standard solutions that consist of known concentrations of the complete list of target analytes spiked into laboratory analyte-free water or sand. They are prepared or purchased from a certified manufacturer from a source independent from the calibration standards to provide an independent verification of the calibration procedure. These QC samples are then prepared and analyzed following the same procedures employed for environmental sample analysis to assess method accuracy independently of sample matrix effects. The laboratory will prepare and analyze a LCS with each group of a minimum of 20 samples of similar matrix that are extracted, digested, or analyzed at the same time. For VOC analysis, one LCS will be analyzed with each analytical sequence in a 12-hour period for each matrix. Percent recoveries will be evaluated to assess the efficiency of the preparation and analysis method independent of sample matrix effects.

12.1.7 MS/MSD and Laboratory Duplicate Samples

MS/MSD and laboratory duplicate analyses will be performed on environmental samples at a frequency of one per sample matrix and every 20 samples of similar matrix. Whenever possible, MS/MSD and laboratory duplicate samples will be prepared and analyzed within

the same batch as the environmental samples. MS/MSD samples will be spiked at the laboratory with the complete list of target analytes. MS/MSD and laboratory duplicate data are generated to determine long-term precision and accuracy of the analytical method with respect to sample matrices. Generally, the MS/MSD data alone are not used to evaluate the precision and accuracy for associated organic samples since data may reflect specific matrix effects only present within one sample.

12.1.8 Compound Identification and Quantitation

The objective of the qualitative criteria is to minimize the number of erroneous identifications of compounds. An erroneous identification can either be a false positive (reporting a compound present when it is not) or a false negative (not reporting a compound that is present). The identification criteria can be applied much more easily in detecting false positives than false negatives. Negatives, or non-detect compounds on the other hand, represent an absence of data and are therefore much more difficult to assess. The objective for quantitative requirements is to maximize the accuracy of data and sensitivity of the instrument. Unless sample screening indicates the presence of high concentration target analytes, samples will be analyzed undiluted to maximize sensitivity. Samples must be reanalyzed at the appropriate dilution when concentrations exceed the linear calibration range to maximize accuracy. Matrix interferences will be identified and documented. Samples may be diluted only if analytes of concern generate responses in excess of the linear range of the instrument.

12.2 Field QA/QC Checks

In order to evaluate data quality, QA/QC samples will be collected during the RI. Attachment 1 lists the environmental and corresponding QC samples to be collected by analysis and matrix type.

12.2.1 Field Duplicate Samples

Collection of field duplicate samples provides for the evaluation of the laboratory's precision performance by comparing analytical results of two samples from the same

location. They are also collected to evaluate field sample collection precision procedures. Samples are collected from one location and sent to the laboratory blind (with two different sample identifications). Duplicates of aqueous samples are obtained by alternately filling samples containers from the same sampling device for each parameter. Duplicates of aqueous samples submitted for VOC analysis from monitoring wells are filled from the same bailer full of water whenever possible and are the first set of containers filled. Duplicates of solid samples submitted for VOC analysis are obtained from discrete locations without mixing. Duplicates for the remaining analyses require homogenization by filling a decontaminated stainless steel tray or bowl with the sample and mixing it with a decontaminated stainless steel instrument. The mixed sample is divided in half and scooped alternatively from each half to fill the sample container. One field duplicate sample will be collected for every 20 environmental samples (minimum frequency of 5%) or one per matrix for less than 20 samples. If less than 20 samples are collected, one field duplicate sample will be collected.

12.2.2 MS/MSD and Duplicate Samples

MS/MSD samples are duplicate samples that have spiking solutions added at the laboratory during sample preparation. MS/MSD samples are considered identical to the original sample. The percent recovery of the spiked amount indicates the accuracy of the extraction as well as interferences caused by the matrix. Relative percent differences (RPD) between spike sample recoveries will indicate the precision of the data. Duplicates of aqueous samples are obtained by alternately filling samples containers from the same sampling device for each parameter. One MS/MSD sample set will be collected for every 20 environmental samples submitted to the laboratory (minimum frequency of 5%) or one MS/MSD for less than 20 samples.

For inorganic analyses, duplicate analyses will be performed on environmental samples at a frequency of one per sample matrix and every 20 samples of similar matrix. Duplicate samples will be prepared and analyzed within the same batch as the environmental samples. Duplicate data are generated to determine precision of the analytical method with respect to sample matrices.

12.2.3 Field Blanks

Field blanks will consist of samples of analyte-free water that are passed through and/or over decontaminated sampling equipment. One field blank will be collected per set of sampling equipment per sampling event. Field blanks will not be required if dedicated sampling equipment is utilized. The field blank samples will be subject to the same analyses as the environmental samples. One field blank will be collected per 10 samples or once per day, whichever is more conservative

12.2.4 Trip Blanks

Trip blanks will be prepared as the other preservation containers and will contain analyte-free solvent. The trip blank will undergo shipment from the sampling site to the laboratory in coolers with the environmental samples to be analyzed for VOCs. Trip blanks will be analyzed for VOCs to determine if contamination has taken place during sample handling and/or shipment. Trip blanks will be utilized for samples at a frequency of one each per shipment sent to the laboratory for VOCs

12.2.5 Temperature Blanks

Temperature blanks will consist of vials of water that have undergone shipment from the sampling site to the laboratory in coolers with the environmental samples to be analyzed for the sampling program. The temperature of these blanks will be measured at the laboratory upon receipt of the sample cooler to verify compliance with the cooler temperature requirement

12.3 Corrective Action

Generally, the following corrective actions will be taken by the laboratory. When parameters within control of the laboratory, including calibration, instrument performance, and blank criteria are not met, the cause of the problem will be located and corrected. The analytical system will then

be recalibrated. Sample analysis will not begin until calibration, instrument performance, and blank criteria are met. The QA Officer will be notified of situations of repeated calibration, instrument performance, or blank criteria failure at the time of sample analysis. When matrix spike, reference standard, or duplicate analyses are out of control, samples analysis will cease. The problem will be investigated. Depending on the results of the overall QC program for the sample set, the data may be accepted, accepted with qualification, or determined to be unusable. If, through the application of the corrective actions listed in Attachments 2 and 3, the data is determined to be unusable, the QC analysis will be re-prepared and reanalyzed. If QC criteria are met upon reanalysis, only the new results are reported. If QC criteria are still not met upon reanalysis, both sets of sample results will be reported and the QA Officer will be notified of the situation at the time of sample analysis.

If matrix interferences are suspected, the QA Officer will be contacted. Unless sample screening indicates the presence of high concentration target analytes, samples may be diluted in the analysis only if analytes of concern generate responses in excess of the linear range of the instrument.

In the case of matrix interference, the laboratory will perform sample clean-up as provided by the methods. Interferences will be identified and documented. When matrix interferences are present, samples will be cleaned up during the extraction processes from appropriate methods. The clean-up, extraction, and sample preparation methods will be listed in the data package case narrative. If the laboratory has taken appropriate actions and matrix interferences prevent the laboratory from achieving the specified QLs, the QA Officer will be contacted as soon as the situation is identified. The Laboratory Project Manager will document, in the data package case narrative, how the laboratory demonstrated good analytical practices in order to attempt to achieve the specified QLs.

The QC requirements and corrective actions listed in Attachments 2 and 3, which augment the method requirements, are to be followed by the laboratory during the RI and will be referenced by the laboratory in identifying QA/QC issues.

The laboratory will make every reasonable effort to correct QC excursions.

If problems arise with procedures or guidelines set forth herein, the Plumley Engineering QA Officer and Project Manager, in conjunction with the appropriate agencies, will formulate an appropriate corrective action.

12.4 Control Limits

Control limits are either listed in the appropriate methods or are established separately for respective matrix types for surrogate, LCS, MS/MSD, and duplicate analyses. Control limits can be considered action limits. The laboratory-established limits are defined as ±3 standard deviations of the mean and correspond to 99.7% confidence limits of a normal distribution curve. Unless previously established, the laboratory will establish control limits for each analyte of concern using a minimum of 20 data points. The control limits are updated by the laboratory on an annual basis. Therefore, the most recent control limits will be used to evaluate data for this RI.

12.5 Field Sampling QA/QC

Field sampling crews will always be under direct supervision of the Field Leader. Bound logbooks and appropriate data sheets will be used to document the collection of samples and data so that an individual sample or data set can be traced back to its point of origin, sampler, and type of sampling equipment.

Sampling will be performed according to the methods provided in the Work Plan and this QAPP. Field QA/QC samples include blind field duplicate, MS/MSDs, field blanks, and trip blanks and will be collected by the sampling team. These samples will be sent to the laboratory for analysis in conjunction with the environmental samples.

Field sampling precision will be evaluated through the RPD of the matrix spike and blind field duplicate sample analysis results. Control limits for the blind field duplicate precision have been established at ±50% for aqueous samples and ±100% for solid samples. For sample results that are less than or equal to five times the QL, the criterion of ±2 times the QL will be applied to evaluate field precision.

Decontamination of sampling equipment will be verified through the analysis of field blanks.

The presence of matrix interferences will be evaluated by the analysis of spiked MS/MSD samples. The integrity of environmental media submitted for VOC analysis will be evaluated by the analysis of trip blanks that accompany each shipment of environmental samples to the laboratory. The trip blank results will be used to determine if contamination of the samples occurred during shipment and/or storage.

Proper chain-of-custody protocols, as presented in Section 10 of this QAPP, will be followed.

12.6 Data Assessment Procedures

The procedures employed by the laboratory to assess the quality of data generated in the laboratory include, but are not limited to, the following:

- Determination of analytical precision per method.
- Determination of analytical accuracy per method.
- Determination of analytical completeness.
- Determination of MDLs and QLs.

Data quality reviews by analysts, supervisors, managers, laboratory directors, and QA personnel contribute to the total process.

Precision and accuracy may be assessed utilizing control charts. Control charts will consist of line graphs that provide a continuous graphic representation of the state of each analytical procedure. The standard deviation of the mean of the QC measurement is calculated and the upper and lower warning limits are set at ±2 standard deviation units. The upper and lower control limits are set at plus or minus three standard deviation units. Acceptable data are realized when results fall between the lower and upper warning limits. If the QC value falls between the control limit and the warning limit, the analysis should be scrutinized as possibly out of control.

In general, the accuracy of the methods will be determined by spiking the sample matrix with the analyte and by analyzing reference materials with known concentrations. The spiking levels will be selected to reflect the concentration range of interest. Percent recoveries of the spikes and reference materials will be calculated and compared to the established limits.

The precision of the methods will be determined by the analysis of matrix spike, laboratory duplicate, and field duplicate samples. The precision will be evaluated by calculating the RPD for the duplicates. RPD calculations will be compared to the established limits.

The definitions and equations used for the assessment of data quality are discussed below.

- *Accuracy* – Accuracy is a measure of the nearness of an analytical result, or a set of results, to the true value. It is usually expressed in terms of error, bias, or percent recovery (%R).

  Normally, the term accuracy is used synonymously with percent recovery. It describes either the recovery of a synthetic standard of known value, or the recovery of a known amount of analyte (spike) added to a sample of known value. The %R or accuracy can be calculated by using:

  %R = (observed value/true value) x 100 *(for standards)*

  %R = ((conc. spike + sample conc.) - sample conc. x 100)/conc. spike *(for spikes)*

- *Precision* – Precision refers to the agreement or reproducibility of a set of duplicate results among themselves without the assumption of any prior information as to the true result. It is usually expressed in terms of the percent difference (%D) or RPD. The %D is calculated by using:

  %D = (larger SR - smaller SR x 100)/smaller SR

  where SR = sample result

The RPD is calculated by using:

RPD = (|OSR - DSR| x 100)/((OSR + DSR)/2)

where OSR = original sample result

DSR = duplicate sample result

- *Average* – The average or arithmetic mean (X) of a set of n values (Xi) is calculated by summing the individual values and dividing by n:

$X = (\Sigma Xi_{I=1 \text{ to } n})/n$

- *Range* – The range (R_i) is the difference between the highest and lowest value in a group. For n sets of duplicate values (X_2, X_1), the range (R_i) of the duplicates and the average range (R) of the n sets are calculated by the following:

$R_i = X_2 - X_1$

$R = \Sigma Ri_{i=1 \text{ to } n}/n$

- Standard Deviation and Variation – The standard deviation (S) of a sample of n results is the most widely used measure to describe the variability of a data set. It is calculated by using the following equation:

$$S = \sqrt{\frac{\Sigma (Xi - \overline{X})^2}{n-1}} \; n_{\text{ to } i-1}$$

where X = average of the n results

Xi = value of result

Normally, X ± S will include 68% and X ± 2S will include approximately 95% of normally distributed data.

The variance is equal to S2. The percent relative standard deviation (%RSD) or coefficient of variation (CV) is the standard deviation divided by the mean and multiplied by 100 as follows:

$CV = 100S/X$

The Laboratory Project Manager, with individual laboratory group leaders, will identify any data that should be rated as "unacceptable," based on the assessment of the QA/QC criteria and will notify the Plumley Engineering Project Manager.

13.0 INSTRUMENT/EQUIPMENT TESTING AND MAINTENANCE

Preventative maintenance procedures will be carried out on field equipment by Plumley Engineering personnel in accordance with the procedures outlined in the manufacturers' specifications and/or equipment manuals.

Maintenance activities involving field equipment will be recorded in the field notes. Field equipment will be check by qualified field representatives prior to being used in the field. Problems encountered while operating the instrument will be documented in the field notes. If problem equipment is detected or should require service, the equipment will be returned and a qualified technician will perform the maintenance required. Use of the instrument will not be resumed until the problem is resolved.

Each major piece of analytical laboratory instrumentation that will be used on this project has been documented and is on file with the laboratory. An equipment form will be prepared for each new purchase and old forms will be removed from the instrument area and filed when an instrument is replaced.

The laboratory will be required to maintain an equipment form detailing both preventative maintenance activities and the required QA testing and monitoring. In the event the instrument does not perform within the limits specified on the monitoring form, the Laboratory Project

Manager will be notified and a decision will be made as to what corrective action is necessary. The corrective action procedure will be documented in the instrument log. If repair is necessary, the instrument will not be used for analyses until repairs are completed and the instrument tested. Repairs made to the instrument will be documented in the instrument logbook. Required QA/QC testing and monitoring will be completed prior to the resumption of sample analysis.

Routine maintenance is performed to keep laboratory instruments running under optimum conditions and to reduce instrument malfunction. Specific preventative maintenance programs outlining required maintenance procedures and their application frequencies are incorporated in laboratory SOPs for each methodology.

Minimally, field and laboratory instruments will undergo maintenance on an annual basis and when calibration, blank, or QC analyses indicate that maintenance is necessary to correct or improve system performance. Maintenance, whether performed by laboratory personnel or manufacturer, is documented as an entry in the appropriate log. Log entries include the reason for maintenance, maintenance performed, date, and initials of person in charge during maintenance.

The operating temperatures for refrigerators, coolers, ovens, and water baths will be monitored by the laboratory daily. The analyst will record the following information in a bound logbook: equipment identification, temperature reading, date and time of reading, and analyst initials.

14.0 CALIBRATION AND FREQUENCY

14.1 Field Equipment Calibration

Field equipment used when implementing the SMP will be calibrated in such a manner that accuracy and reproducibility of results are consistent with the manufacturer's specifications. Equipment to be used for the field sampling will be examined to confirm that it is in good operating condition. This includes checking the manufacturer's operating manual and the instructions for each instrument to confirm that the maintenance requirements are being observed.

In general, instruments will be calibrated daily prior to use and will be recalibrated as required. All calibration procedures performed will be documented in the field logbook. Calibration will be performed at the intervals specified by the manufacturer. In the event that an internally calibrated field instrument fails to meet calibration procedures, it will be returned to the manufacturer for service

14.2 Laboratory Equipment Calibration

Proper calibration of laboratory analytical instrumentation is essential for the generation of reliable data that meets the project DQOs. Analytical instrument calibration is monitored through the use of control limits that are established for individual analytical methods. Calibration procedures to be followed are specified, in detail, in the analytical methods. These procedures specify the type of calibration, calibration materials to be used, range of calibration, and frequency of calibration. The calibration requirements listed in the QC requirements and corrective actions in Attachments 2 and 3, which augment the method requirements, are to be followed by the laboratory during the RI.

The laboratory will be responsible for proper calibration and maintenance of laboratory analytical equipment. The following subsections present general calibration procedures outlined in the analytical methods. For additional calibration information, refer to Attachments 2 and 3.

14.2.1 GC/MS

Before the GC/MS is calibrated for organics analysis, the mass calibration and resolutions of the instruments are verified by 4-bromofluorobenzene (BFB) for VOCs and by decafluorotriphenylphosphine (DFTPP) for SVOCs. The performance check analysis must meet the criteria referenced in the analytical method and the QAPP. The system must be verified every 12 hours of analysis and when the instrument performance check solution fails to meet criteria. Samples are not analyzed until performance check analysis criteria are met.

For organics analysis, an initial five-point calibration is performed for the target compounds prior to start-up and whenever system specifications change or if the continuing calibration acceptance criteria have not been met. The lowest calibration standard establishes the QL concentration. The method criteria, including relative response factors (RRFs) and %RSD of specific compounds, must meet established criteria as specified in the method and the QAPP. If these parameters fail to meet criteria, corrective actions must be implemented and the initial calibration must be repeated.

14.2.2 Inorganics

Instrument calibration for metal analyses is performed daily. A two-point calibration for ICP analyses is performed. Five point calibrations are performed for cold vapor atomic absorption instruments. For non-ICP analyses, the lowest calibration standard establishes the QL concentration. The calibration curves must have correlation coefficients greater than or equal to 0.995. Calibration verification is monitored by analyzing a calibration verification standard and a calibration blank following calibration, every 10 samples, and at the end of the analytical sequence. The calibration verification standard recovery must be within appropriate method and QAPP criteria or the instrument must be recalibrated. The calibration blank must not contain target compounds at concentrations greater than the QL or corrective actions are implemented.

To verify inter-element and background corrective factors for ICP analysis, interference check samples (ICSA and ICSAB) must be analyzed at the beginning and end of the analysis sequence or a minimum of twice per 8 hours. The percent recoveries for ICS solutions must be within 80% to 120% or corrective actions must be implemented. In addition, for ICP analyses, a serial dilution analysis must be performed per sample matrix. If the analyte concentration is greater than 10 times the IDL in the original sample, a serial dilution (5-fold dilution) must agree within 10% of the original determination. Detection limits, inter-element corrective factors, and linear ranges must be established at the frequency specified in the method

14.2.3 Thermometers

On an annual basis, thermometers are calibrated using a certified thermometer with a traceable calibration certificate. General purpose thermometers are calibrated at three temperatures encompassing the entire operating range of the thermometer and labeled with correction factors. Thermometers are calibrated at room temperature, at ice point, at the boiling point, or above the boiling point. The maximum allowable deviation from the certified thermometer is 2 °C. Any thermometer exceeding this tolerance is to be discarded.

14.3 Standards and Solutions

The use of standard materials of a known purity and quality is necessary for the generation of reproducible data. The laboratory will monitor the use of laboratory materials including solutions, standards, and reagents. Reagent solutions used for quantitation purposes must be American Chemical Society (ACS)-grade or better. Standards prepared or purchased must be traceable to National Standards of Measurement. Standards should be traceable by lot number to a certificate of analysis, which is on file at the laboratory. Standards and standard solutions are verified prior to use. This verification may be in the form of a certification of analysis from the supplier or by comparison to a standard curve or another standard from a separate source. Standards are routinely checked for signs of deterioration, including unusual volume changes, discoloration, formation of precipitates, or changes in analyte response.

Solvent materials are also verified prior to use. Each new lot of solvent is analyzed to verify the absence of interfering constituents. Reagent and method blanks are routinely analyzed to evaluate possible laboratory-based contamination of samples.

14.4 Records

A records book will be kept for standards and will include the following information:

- Material name.
- Control or lot number.

- Purity and/or concentration.
- Supplier/manufacturer.
- Receipt/preparation date.
- Recipient/preparer name.
- Expiration date.

These records will be checked periodically as part of the laboratory's internal laboratory controls review.

14.5 Calibration Records

Calibration data will be kept for each instrument that requires calibration. The data will contain a record of activities associated with QA monitoring and instrument repairs. These records will be checked during periodic equipment review and internal and external QA/QC audits.

15.0 INSPECTION REQUIREMENTS FOR SUPPLIES

The use of standard materials of a known purity and quality is necessary for the generation of reproducible data. The laboratory will monitor the use of laboratory consumable materials including solutions, standards, and reagents as described in Section 14.

Solvent materials are also verified prior to use. Each new lot of solvent is analyzed to verify the absence of interfering constituents. Reagent and method blanks are routinely analyzed to evaluate possible laboratory-based contamination of samples.

The sample containers used for this project will be supplied by the laboratory. The containers will be pre-cleaned sample containers that will be purchased from a EPA-certified manufacturer (I-Chem 200 or equivalent container) or are cleaned using EPA protocols.

16.0 DATA ACQUISITION REQUIREMENTS

Non-direct measurement data, in the form of historical data from previous Site investigations, will be utilized for the SMP.

17.0 DATA MANAGEMENT

Definitive data will be generated in the laboratory and screening data will be generated in the field as described in Section 5. The laboratory-generated data will be entered into the laboratory database management system and presented in data packages. The laboratory will perform the data review process described in Section 20.

Data will be managed in a relational database management system (DBMS). Laboratory analytical data will be provided in electronic disk deliverable format for direct upload into the DBMS. Associated field data will be entered into the DBMS by hand. The DBMS will then be used to provide custom queries and reports to support data analysis and report preparation. Final tables containing the validated sample data will be presented in the RI Report.

Records will be incorporated into the final project files. Field logs, data packages, and records will be included in the Plumley Engineering project file which will be archived for a period of 10 years.

18.0 ASSESSMENT AND RESPONSE ACTIONS

18.1 Performance and System Audits

18.1.1 Performance Audits

At the discretion of the Plumley Engineering Project Manager, field and laboratory performance audits consisting of on-site performance evaluations will be performed once

during the field program and during the laboratory analysis program. The audits will be performed by the QA Officer or her designee. These audits will evaluate the adherence of the field and laboratory programs to the QA program outlined in this QAPP. The protocols used to conduct the audits may be found in the following sections. Acceptance criteria used in determining the need for corrective action will be those criteria defined in this QAPP. Where acceptance criteria are not defined for laboratory procedures and analytical methods, the laboratory's SOPs and QAM will be consulted. The results of the field and laboratory audits will be documented and submitted to the Project Manager. These reports and any corrective actions that are implemented as a result of the audits will be included in the project report.

18.1.2 Laboratory Audit Protocol

The laboratory audit will note factors that may affect the quality of the analytical results. Minimum QA/QC criteria specified in this QAPP and the analytical methods must be adhered to. An on-site evaluation will be performed by the QA Officer or her designee. The areas of concern of the laboratory audit will include:

- Implementation of a scientifically sound QA/QC program addressing precision, accuracy, reproducibility, comparability, completeness, and blank contamination
- Sufficient documentation and record keeping for technical personnel external to the laboratory to recreate each analytical event
- Compliance with the project requirements for laboratory analysis.

The specific parameters to be evaluated include:

- Data comparability.
- Calibration and quantitation.
- QC execution.

- Out-of-control events.
- SOPs.
- Sample management.
- Recordkeeping.
- Instrument calibration records.
- Other analytical records.
- QC records.
- Corrective action reports.
- Maintenance logs.
- Data review.
- MDLs and QLs.
- QC limits.
- Analytical methods.

18.1.3 Field Audit Protocol

The purpose of a field audit is to identify whether the systems and procedures described in the QAPP are operational in the field and contributing to the production of accurate and defensible analytical results. An on-site evaluation will be performed by the QA Officer or her designee. The areas of concern in a field audit include:

- Sampling procedures.
- Decontamination of sampling equipment, if applicable.
- Chain-of-custody procedures.

- SOPs.
- Proper documentation of field methods.

18.2 System Audits

Routine laboratory and field performance will be monitored through the analysis of field/equipment and laboratory blanks, spiked samples, laboratory control samples, laboratory and field duplicates, and performance evaluation samples. The Laboratory Project Manager, in conjunction with the Plumley Engineering QA Officer and Project Manager, will formulate corrective actions in the event that QC limits specified in this document are exceeded. The results of the system audits will be documented in the project report.

18.3 Corrective Actions

Corrective action procedures will be implemented based on unacceptable audit results or on detection of unacceptable data during data review performed by the laboratory and the Plumley Engineering Project Manager.

Two types of audits will be performed during the SMPI. The data generation process will be audited by assessing adherence to control limits and by performing an on-site laboratory audit, if requested by the Plumley Engineering Project Manager. The field program will be audited by assessing adherence to the procedures outlined in this document by the analysis of field QC samples and by performing an on-site field audit, if requested by the Project Manager. If required, corrective action procedures will be developed on a case-by-case basis. The enacted corrective actions will be documented in the appropriate notebook, log, or case file. File and laboratory personnel are encouraged to discuss specific issues and proposed corrective actions with the QA Officer.

The Field Leader will be responsible for field QA. Field sampling excursions discovered during field sampling will be documented in the field logbook and immediate corrective action will be taken. For problems or situations that cannot be solved through immediate corrective action, the

Field Leader will immediately notify the Project Manager who will investigate the situation and determine who will be responsible for implementing the corrective action. Corrective action will be implemented upon approval by the Project Manager. The Project Manager will verify that the corrective action has been taken, appears effective, and at a later date, verify that the problem has been resolved. The successfully implemented corrective action will be documented in the field logbook by the Field Leader. Deviations from the QA protocol in this QAPP must be justified, approved by the Project Manager, and properly documented.

The corrective actions that will be taken by the laboratory were described previously in Section 12.3 of this QAPP.

19.0 QA REPORTS TO MANAGEMENT

Following completion of the annual sampling, Plumley Engineering will prepare a letter report documenting the field activities and the analytical results. Conclusions and recommendations will be based on evaluation and interpretation of data. The annual report will present a discussion of whether any additional engineering and/or institutional controls are appropriate and necessary.

20.0 DATA REVIEW AND MANAGEMENT

20.1 Deliverables

For data to be scientifically valid, legally defensible, and comparable, valid procedures must be used to prepare this data. The data results will be reported to Plumley Engineering in CLP-like deliverables format. The laboratory will be responsible for providing the correct type of data package to Plumley Engineering. The laboratory will also provide the complete data packages in electronic format.

20.2 Data Production, Handling and Reporting

20.2.1 Underlying Documents

Specific laboratory procedures and instrumentation can be found in the SOPs and QAM for the laboratory. The data production and reporting procedures described below will be employed at the laboratory.

20.2.2 Data Reduction

Data reduction consists of manual and computer data reduction procedures and calculations. Computer data reduction procedures and calculations will be checked manually by the laboratory to verify that compound identification and quantitation adhere to method requirements. The laboratory will be responsible for maintaining a listing of computer-based data reduction programs and SOPs for data reduction. Sample preparation or extraction logs will be used to document sample preparation information (preparation weights, volumes, reagents). Instrument injection logs or bench sheets will also be maintained for each instrument.

Qualitative identification and quantitation of organic and inorganic analytes will be performed by experienced analysts in accordance with analytical method requirements.

20.2.3 Laboratory Data Review

Analytical results are generally entered into the laboratory computer system by the analyst, independently reviewed by another analyst or supervisor experienced in the method, and approved by the Laboratory Project Manager. The following are requirements that are generally examined as part of this review:

- Initial calibration criteria were met. Standards in the calibration curve covered the expected concentration ranges of the samples, including the QL.

- Initial and continuing calibrations met the acceptance criteria defined in the method standard procedure.
- Sample results fell within the range of the standard curve.
- For GC/MS methods requiring internal standards, retention times and area responses were evaluated against limits established by the daily calibration.
- Method blanks were processed with each analytical batch and no detectable levels of contamination were identified.
- MS/MSDs were performed at the required frequency and recoveries were within acceptable control limits.
- Duplicate analyses were performed at the required frequency and results were within the control limits.
- LCS analyses were performed with each analytical batch and the results obtained were within control limits.
- For organic compound analyses, surrogate spike recoveries were within control limits.
- Compounds identified by GC/MS were manually rechecked by comparison with the data system library for both target compounds and tentatively identified compounds. Retention times and ratios of fragmentation were verified.
- Calculations have been accurately performed.
- Reporting units are correct.
- Data for the analysis provide a complete audit trail.
- QLs comply with data quality requirements.

The analyst's supervisor will check a minimum of 10% of the data back to raw data in the secondary review. When required analyses on the samples in a project are complete,

entered, and reviewed, a data package will be generated. The data package will be forwarded to the assigned Laboratory Project Supervisor or designee for review. The data package will then be reviewed for the following items (at a minimum):

- QC data will be reviewed to identify whether or not internal specification and contract requirements have been met.
- Non-conformance reports, if any, will be reviewed for completion of corrective actions and their impact of results. QC requirements and corrective actions listed in Attachments 2 and 3 of this QAPP will be referenced in the laboratory review process. Non-compliance and corrective action procedures will be documented in the case narrative.

The data package requires the signature of the Laboratory Project Supervisor or designee. Electronic data are copied onto computer tape, inventoried, and stored off-site in a secure facility, or within locked cabinets on-site. This data archive system is maintained for a minimum of five years.

Following final review, two copies of the data package will be transmitted to Plumley Engineering.

The full deliverable data packages will document sample preparation, extraction, and analysis and include raw data and logs associated with the analyses.

All data deliverables from each laboratory must be paginated in ascending order. The data packages will be provided within four weeks of receipt of the last sample at the laboratory for each sampling event.

20.2.4 Data Management

Data will be managed in a relational DBMS. Laboratory analytical data will be provided in electronic data deliverable format for direct upload into the DBMS. Associated field data

will be entered into the DBMS by hand. The DBMS will then be used to provide custom queries and reports to support data analysis and report preparation.

21.0 RECONCILIATION WITH USER REQUIREMENTS

Sample results from this monitoring will be reviewed by the Plumley Engineering Project Manager. Data will be compared to the project screening criteria. Data usability with respect to the DQOs and data uses will be compared to the project requirements. The parameters that will be used to assess the precision, accuracy, representativeness, comparability, and completeness are presented in Section 5 of this QAPP. In the event that the completeness objective of 95% is not achieved due to major QC deviations in the sample analysis process, samples will be recollected at the discretion of the Project Manager.

ATTACHMENT 1

FIELD SAMPLING
SUMMARY OF ANALYSES

ATTACHMENT 1

FIELD SAMPLING SUMMARY OF ANALYSES

Parameter	Matrix	Sample Containers and Volumes	Preservation	Holding Time	Number of Investigative Samples	QC Sample Frequency			
						Field Duplicate	Trip Blank	MS/MSDS and Spike Duplicate**	Field Blank***
VOCs (USEPA Methods 5030B/8000C/8260B)[1]	Aqueous	3 40-milliliter glass vials with Teflon® lined septum caps	4°C HCL to pH≤2 FC	Analysis within 14 days from collection for analysis for preserved samples	TBD	One per 20 samples or one per matrix (for less than 20 samples)	1 each in cooler with VOC samples	One per 20 samples or one per matrix (for less than 20 samples)	One per 10 samples or one per day as required
SVOCs (USEPA Method 3510C/3520C/8000C/8270C)[1]	Aqueous	1-one liter amber glass container with Teflon® lined screw caps	4°C	7 days from collection to extraction; 40 days from extraction to analysis	TBD	One per 20 samples or one per matrix (for less than 20 samples)	NA	One per 20 samples or one per matrix (for less than 20 samples)	One per 10 samples or one per day as required

NOTES:

* Indicates that USEPA Method 5030A, involving utilizing bulk sample vials for preparation, will not be performed for solid samples submitted for VOC analysis.

** MS/MSD indicates matrix spike/matrix spike duplicate sample for organic analyses. Spike duplicate is performed for inorganic analyses.

*** Field blank is required at a frequency of one per 10 samples or one per day if less than 10 samples are collected for each matrix type. Field blank is not required if disposable equipment is used.

FC indicates that if free chlorine is present in samples, it must be removed by the appropriate addition of $Na_2S_2O_3$ or ascorbic acid.

VOCs indicates volatile organic compounds.

SVOCs indicates semi-volatile organic compounds.

United States Environmental Protection Agency (USEPA). 2004. *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, SW-846,* 3rd Edition, Update IIIB. Washington D.C.

TBD indicates that the number of environmental samples to be determined at a later date.

ATTACHMENT 2

VOLATILE ORGANIC COMPOUNDS USING EPA METHOD 8260 QUALITY CONTROL REQUIREMENTS AND CORRECTIVE ACTIONS

ATTACHMENT 2

VOLATILE ORGANIC COMPOUNDS USING EPA METHOD 8260
QUALITY CONTROL REQUIREMENTS AND CORRECTIVE ACTIONS

Audit	Frequency	Control Limits	Corrective Action
Holding times	Samples must be analyzed within holding time.	Analyze within 14 days from collection for preserved aqueous and solids. Analyze within 7 days from collection for unpreserved aqueous.	1. If holding times are exceeded for initial or any re-analyses required due to QC excursions. 2. Notify QA Officer since re-sampling may be required. 3. Document corrective action in the case narrative.
Solid sample collection	Samples must be prepared using USEPA Method 5035	NA	NA
GC/MS Instrument Performance Check	Once every 12 hours prior to initial calibration and calibration verifications. Analytical sequence must be completed within 12 hours of the GC/MS Instrument Performance Check	1. Bromofluorobenzene (BFB) key ions and abundance criteria listed in the method must be met for all 9 ions and analyses must be performed within 12 hours of injection of the BFB. 2. Part of the BFB peak will not be background subtracted to meet tune criteria. 3. Documentation of all BFB analyses and evaluation must be included in the data packages.	1. Tune the mass spectrometer. 2. Document corrective action in the case narrative. 3. Samples cannot be analyzed until control limit criteria have been met.
Initial Calibration	Prior to sample analysis and when calibration verifications criteria are not met. Initial calibration will contain all target analytes in each standard. Quantitation of analyses will utilize the initial calibration results.	1. Five concentrations bracketing expected concentration range for all compounds of interest. 2. One second-source standard must be analyzed immediately following the initial calibration at the mid-calibration concentration. This standard must be within 30% recovery or within laboratory control limits. It is also recommended that a separate standard at the MDL level be analyzed after calibration is complete to check sensitivity. 3. Response factor (RF) as listed in Method 8260B, with remaining RFs factor $\geq$ 0.050 except for ketones with allowable response factor $\geq$ 0.010. 4. For compound with %RSD >15, quantitation must be performed using a separate calibration curve and the Coefficient of Determination (COD) must be $\geq$ 0.990.	1. Identify and correct problem. 2. If criteria are still not met, recalibrate. 3. Document corrective action in the case narrative. 4. Samples should not be analyzed until calibration control limit criteria are met. 5. Contact QA Officer to discuss problem target analytes before proceeding with analysis.

Audit	Frequency	Control Limits	Corrective Action
Calibration Verification	Every 12 hours, following BFB. Calibration verification will contain all target analytes in each standard at a concentration that is representative of the midpoint of the initial calibration.	1. Within percent drift or percent difference (%D) of ≤ 20 for all compounds. RF requirements are the same as listed in the initial calibration. 2. The internal standards areas and retention times must meet the method criteria.	1. Reanalyze. 2. If criteria are still not met, identify and correct problem, recalibrate. 3. Document corrective action in the case narrative; samples should not be analyzed until calibration control limit criteria are met.
Preparation Blank Analysis	Every 12 hours, following calibration verification	Methylene chloride less than 3 times QL, 2-butanone and acetone less than 5 times QL. Remaining analytes less than QL. QLs and MDLs will be provided along with the preparation blank results.	1. Reanalyze blank. 2. If limits are still exceeded, clean instrument, recalibrate analytical system, and reanalyze all samples if detected for same compounds as in blank. 3. Document corrective action in the case narrative - samples cannot be analyzed until blank criteria have been met.
Field/Equipment Blank Analysis	Collected one per sampling event, or one per 20 samples or one per matrix (for less than 20 samples)	Methylene chloride less than 3 times QL, 2-butanone and acetone less than 5 times QL. Remaining analytes less than QL. QLs and MDLs will be provided along with the preparation blank results.	1. Investigate problem. 2. Document in the case narrative.
Trip Blank	1 per cooler containing VOC samples.	Methylene chloride less than 3 times QL, 2-butanone and acetone less than 5 times QL. Remaining analytes less than QL. QLs and MDLs will be provided along with the preparation blank results.	1. Investigate problem. 2. Document in the case narrative.
Laboratory Control Sample Analysis	Each analytical batch (every 12 hours). Prepared independently from calibration standards. Spike must contain all target analytes and should be at a concentration, which is in the lower 1/2 of the calibration curve.	Recovery within laboratory control limits. For compounds without established laboratory control limits, 70-130% recovery will be used. The lowest acceptable control limits for recovery will be 10%.	1. If recovery failures are above control limits and these compounds are not detected in the associated samples, corrective action is not required. 2. If recovery failures are below control limits, reanalyze LCS and examine results of other QC analyses. 3. If other QC criteria have not been met, stop analysis, locate and correct problem, recalibrate instrument and reanalyze samples since last satisfactory LCS. 4. Document corrective action in the case narrative.
Internal Standards	All samples and blanks (including MS/MSD)	1. Response -50% - +200% of internal standards from continuing calibration of the day. 2. RT must be ± 30 sec. from associated calibration verification standard of that sequence.	1. Reanalyze. 2. If still outside of the limits, report both analyses. 3. Document corrective action in the case narrative.

Audit	Frequency	Control Limits	Corrective Action
Surrogate Spike	All samples and blanks (including MS/MSD)	Recovery within laboratory control limits. The lowest acceptable control limits for recovery will be 10%.	1. Reanalyze any environmental or QC sample with surrogates that exceed control limits. 2. If still outside of the limits, report both analyses. 3. Document corrective action in the case narrative.
Matrix Spike/ Matrix Spike Dup. (MS/MSD) Analysis	Collected one per 20 samples or one per matrix (for less than 20 samples) Samples from the investigation must be used for MS/MSD analysis. Spike must contain complete list of target analytes.	Recovery and RPD within laboratory control limits. For compounds without established laboratory control limits, 70-130% recovery will be used. The lowest acceptable control limits for recovery will be 10%.	1. Reanalyze if <10%. 2. If reanalysis is still <10%, report both analyses and document in the case narrative. 3. If >10% and LCS criteria are met, document in case narrative; no additional corrective action required. 4. If LCS criteria are exceeded also, examine other QC data for source of problem; *i.e.,* surrogate recoveries for extraction efficiency and calibration data for instrument performance issues. 5. Reanalyze samples and associated MS/MSD and LCSs as required. 6. Document corrective action in the case narrative
Field Dup. Analysis	Collected one per 20 samples or one per matrix (for less than 20 samples) Field duplicate will not be identified to the laboratory.	Validation criteria: 50% RPD for waters, 100% RPD for solids. For sample results that are less than or equal to five times the QL, the criterion of plus or minus two times the QL will be applied to evaluate field duplicates.	No corrective action required of the laboratory since the laboratory will not know the identity of the field duplicate samples. If these criteria are not met, sample results will be evaluated on a case-by-case basis.

Audit	Frequency	Control Limits	Corrective Action
Target Analyte Identification	As required for identification of target analytes	1. The intensities of the characteristic ions of a compound maximize in the same scan or within one scan of each other. Selection of a peak by a data system target compound search routine where the search is based on the presence of a target chromatographic peak containing ions specific for the target compound at a compound-specific retention time will be accepted as meeting this criterion. 2. The relative retention time (RRT) of the sample component is within ± 0.06 RRT units of the RRT of the standard component. 3. The relative intensities of the characteristic ions agree within 30% of the relative intensities of these ions in the reference spectrum. (Example: For an ion with an abundance of 50% in the reference spectrum, the corresponding abundance in a sample spectrum can range between 20% and 80%.) 4. Structural isomers that produce very similar mass spectra should be identified as individual isomers if they have sufficiently different GC retention times 5. Identification is hampered when sample components are not resolved chromatographically and produce mass spectra containing ions contributed by more than one analyte. When gas chromatographic peaks obviously represent more than one sample component (i.e., a broadened peak with shoulder(s) or a valley between two or more maxima), appropriate selection of analyte spectra and background spectra is important.	Not applicable
Target Analyte Identification	As required for identification of target analytes	Examination of extracted ion current profiles of appropriate ions can aid in the selection of spectra, and in qualitative identification of compounds. When analytes co-elute (i.e., only one chromatographic peak is apparent), the identification criteria may be met, but each analyte spectrum will contain extraneous ions contributed by the coeluting compound.	Not applicable

Audit	Frequency	Control Limits	Corrective Action
Target Analyte Quantitation	Apply USEPA Method 8000C for medium level extraction technique	Moisture correction in accordance with USEPA Method 8000C will be applied to the complete set of solid samples, regardless of the percent moisture content..	Not applicable
Tentatively Identified Compound	If required, perform for each sample and blank analysis. Non-target compounds will be reported using a Mass Spectral Library search.	Not applicable	Not applicable
Dilutions	1. When target analyte concentration exceeds upper limit of calibration curve. 2. When matrix interference is demonstrated by the lab and documented in the case narrative (highly viscous samples or a large number of nontarget peaks on the chromatogram). 3. It is recommended that a reagent blank be analyzed if an analyte saturates the detector or if highly concentrated analytes are detected. Otherwise data impacted from carryover cannot be used. 4. Laboratory will note in the data deliverables which analytical runs were reported.	1. The reagent blank will meet the method blank criteria.	1. Reanalyze reagent blank until method blank criteria are met. 2. Document corrective action in the case narrative.
Percent solids	For soil samples, the percent solids will be determined and sample results will be corrected for percent solids.	Not applicable	Not applicable
pH Determination	Once sample aliquot is taken from the VOC vial, the pH of water samples must be determined.	Record pH and report in the case narrative.	Not applicable
Sample Batching	The laboratory will batch project samples together along with QC samples specified from the project. Non-project information will not be included in the data packages.	Not applicable	Not applicable
Laboratory control limits	Generated with results for an analyte from a minimum of 20 sample analyses. The average of the sample results and the standard deviation are calculated. The internal warning limits are established at 2 times the standard deviation and the control limits are established at 3 times the standard deviation. The control limits are updated annually.	Not applicable	Not applicable

Audit	Frequency	Control Limits	Corrective Action
Deliverables	1. CLP-like deliverables must be provided to document each audit item for easy reference and inspection. 2. An example calculation will be provided for each analysis, for each type of matrix in the data package using samples from the project. 3. Any laboratory abbreviations or notations presented in the raw data or summary information will be explained or referenced in the case narrative. 4. Final spiking concentrations will be presented in summary form. 5. Standard tracing information will be provided. 6. Cooler temperatures and any observations of bubbles in sample containers will be provided in the data packages. 7. Run logs will be provided in the data packages.	Not applicable	Provide missing or additional deliverables for validation purposes.
Method and QAPP requirements	The laboratory will perform the method as presented in this QAPP and will adhere to the QAPP requirements presented herein. Otherwise the laboratory will specifically note any procedures that differ from the method or the QAPP in the data package case narrative.	Not applicable	Not applicable

Notes:

Data validation will be performed in accordance with QA/QC criteria established in these tables and the analytical methods. Excursions from QA/QC criteria will be qualified based on guidance provided in this QAPP.

Communications with Plumley Engineering will be documented and included in the data packages.

ATTACHMENT 3

SEMI-VOLATILE ORGANIC COMPOUNDS USING EPA METHOD 8270 QUALITY CONTROL REQUIREMENTS AND CORRECTIVE ACTIONS

ATTACHMENT 3

SEMI-VOLATILE ORGANIC COMPOUNDS USING EPA METHOD 8270
QUALITY CONTROL REQUIREMENTS AND CORRECTIVE ACTIONS

Audit	Frequency	Control Limits	Corrective Action
Holding Times	Samples must be extracted and analyzed within holding time.	Extract within 7 days from collection for aqueous samples; 14 days for soil samples. Analyze extracts within 40 days of extraction.	If holding times are exceeded for initial or any re-analyses required due to QC excursions, notify the QA Officer since re-sampling may be required.
GC/MS Instrument Performance Check	Once every 12 hours prior to initial calibration and calibration verification. Must contain 50ng/uL of 4,4-DDT, pentachlorophenol, and benzidine. Analytical sequence must be completed within 12 hours of the GC/MS Instrument Performance Check	1. Decafluorotriphenylphosphine (DFTPP) key ions and abundance criteria listed in the method must be met for all 13 ions and analyses must be performed within 12 hours of injection of the DFTPP. 2. Part of the DFTPP peak will not be background subtracted to meet tune criteria. 3. Documentation of all DFTPP analyses and evaluations must be included in the data packages. 4. Degradation of 4,4-DDT <20%. Peak tailing must not be evident.	1. Tune the mass spectrometer. 2. Document corrective action in the case narrative - samples cannot be analyzed until control limit criteria have been met.
Initial Calibration	Prior to sample analysis and when calibration verification criteria are not met. Initial calibration will contain all target analytes in each standard. Quantitation of analyses will utilize the initial calibration results.	1. Five concentrations bracketing expected concentration range for all compounds of interest. 2. One second-source standard must be analyzed immediately following the initial calibration at the mid-calibration concentration. This standard must be within 30% recovery or within laboratory control limits. It is also recommended that a separate standard at the MDL level be analyzed after calibration is complete to check sensitivity. 3. Response factors must meet criteria listed in Method 8270C with the remaining RFs 0.05 with allowable response factor for n-nitroso-di-n-propylamine and 2,4-dimethylphenol of 0.01. 4. For compounds with %RSD >15, quantification must be performed using a separate calibration curve and the COD must be $\geq$ 0.990.	1. Identify and correct problem. 2. If criteria are still not met, recalibrate. 3. Document corrective action in the case narrative - samples should not be analyzed until calibration control limit criteria are met.

Audit	Frequency	Control Limits	Corrective Action
Calibration Verification	Every 12 hours, following DFTPP. Calibration verification will contain all target analytes in each standard at a concentration that is representative of the midpoint of the initial calibration.	1. Within method specified criteria, percent drift or percent difference (%D) $\leq$ 20 for all compounds. Response factor requirements as listed in initial calibration. 2. The internal standards areas and retention times must meet the method criteria.	1. Reanalyze. 2. If criteria are still not met, identify and correct problem, recalibrate. 3. Document corrective action in the case narrative - samples should not be analyzed until calibration control limit criteria are met.
Preparation Blank Analysis	Prepared with each extraction batch of no more than 20 analytical samples.	1. Common laboratory contaminants (phthalate) less than 5 x QL. Remaining analytes less than QL. 2. QLs and MDLS will be provided along with the preparation blank results.	1. Reanalyze blank. 2. If limits are still exceeded, clean instrument, recalibrate analytical system and re-extract and reanalyze all samples if detected for same compounds as in the blank. 3. Document corrective action in the case narrative - samples should not be analyzed until blank criteria have been met.
Field/ Equipment Blank Analysis	Collected one per sampling event, or one per 20 samples or one per matrix (for less than 20 samples)	1. Common laboratory contaminants (phthalate) less than 5 x QL. Remaining analytes less than QL. 2. QLs and MDLS will be provided along with the blank results.	1. Investigate problem. 2. Document in the case narrative.
Laboratory Control Sample Analysis	Prepared with each extraction batch, of no more than 20 analytical samples. Prepared independently from calibration standards. Spike must contain all target compounds and should be at a concentration that is approximately in the lower 1/2 of the calibration curve.	Recovery within laboratory control limits. For compounds without established laboratory control limits, 70 to 130% recovery will be used. The lowest acceptable control limits for recovery will be 10%.	1. If recovery failures are above control limits and these compounds are not detected in the associated samples, no corrective action is required. 2. If recovery failures are below the control limits, reanalyze LCS and examine results of other QC analyses. 3. If other QC criteria have not been met, stop analysis, locate and correct problem, recalibrate instrument and reanalyze samples since last satisfactory LCS. 4. Document corrective action in the case narrative.

Audit	Frequency	Control Limits	Corrective Action
Internal Standards	All samples and blanks (including MS/MSD).	1. Response -50% - +200% of the internal standards from the continuing cal of the day. 2. RT must be ± 30 sec. from calibration verification of that sequence.	1. Reanalyze. 2. If recovery is still outside criteria, report both analyses. 3. Document corrective action in the case narrative.
Surrogate Spike	All samples and blanks (including MS/MSD).	Recovery within laboratory control limits. The lowest acceptable control limits for recovery will be 10%.	1. Reanalyze if more than 1 AE or 1 BN fails, or if any one surrogate recovery is < 10%. 2. If recovery meets criteria, report both analyses. 3. If re-analysis recovery fails and if the recovery is <10%, re-extract sample if within holding time and re-analyze. 4. If re-analysis recovery fails and if the recovery is >10%, report both analyses. 5. Document corrective action in the case narrative.
Matrix Spike/ Matrix Spike Dup. (MS/MSD) Analysis	Collected one per 20 samples or one per matrix (for less than 20 samples) Samples from the investigation must be used for MS/MSD analysis. Spike must contain complete list of target analytes.	Recovery and RPD within laboratory control limits. For compounds without established laboratory control limits, 70-130% recovery will be used. The lowest acceptable control limits for recovery will be 10%.	1. Reanalyze if <10%. 2. If reanalysis is < 10%, report both analyses and document in the case narrative. 3. If reanalysis is >10%, and LCS criteria are met, document in the case narrative. 4. If LCS criteria are exceeded also, examine other QC data for source of problem; i.e. surrogate recoveries for extraction efficiency and calibration data for instrument performance issues; re-extract or reanalyze samples and associated MS/MSD and LCSs as required.
Field Dup. Analysis	Collected one per 20 samples or one per matrix (for less than 20 samples) Field duplicate will not be identified to the laboratory.	Validation criteria: 50% RPD for waters, 100% RPD for solids. For sample results that are less than or equal to five times the QL, the criterion of plus or minus two times the QL will be applied to evaluate field duplicates.	No corrective action required of the laboratory since the laboratory will not know the identity of the field duplicate samples. If these criteria are not met, sample results will be evaluated on a case-by-case basis.

Audit	Frequency	Control Limits	Corrective Action
Target Analyte Identification	As required for identification of target analytes	1. The intensities of the characteristic ions of a compound maximize in the same scan or within one scan of each other. Selection of a peak by a data system target compound search routine where the search is based on the presence of a target chromatographic peak containing ions specific for the target compound at a compound-specific retention time will be accepted as meeting this criterion. 2. The relative retention time (RRT) of the sample component is within ± 0.06 RRT units of the RRT of the standard component. 3. The relative intensities of the characteristic ions agree within 30% of the relative intensities of these ions in the reference spectrum. (Example: For an ion with an abundance of 50% in the reference spectrum, the corresponding abundance in a sample spectrum can range between 20% and 80%.) 4. Structural isomers that produce very similar mass spectra should be identified as individual isomers if they have sufficiently different GC retention times. 5. Identification is hampered when sample components are not resolved chromatographically and produce mass spectra containing ions contributed by more than one analyte. When gas chromatographic peaks obviously represent more than one sample component (i.e., a broadened peak with shoulder(s) or a valley between two or more maxima), appropriate selection of analyte spectra and background spectra is important. 6. Examination of extracted ion current profiles of appropriate ions can aid in the selection of spectra, and in qualitative identification of compounds. When analytes coelute (i.e., only one chromatographic peak is apparent), the identification criteria may be met, but each analyte spectrum will contain extraneous ions contributed by the coeluting compound.	Not applicable
Cleanup	Gel permeation chromatography should be performed for water should extracts with high molecular weight contaminants.	Calibrate according to method. Criteria must be met as listed in method for calibration and blank analysis.	Clean GPC column or replace.

Audit	Frequency	Control Limits	Corrective Action
Tentatively Identified Compounds	If required, for each sample and blank analysis. Non-target compounds will be reported using a Mass Spectral Library search.	Not applicable	Not applicable
Sample Batching	The laboratory will batch project samples together along with QC samples specified from the project. Non-project information will not be included in the data packages.	Not applicable	Not applicable
Percent solids	For soil/ samples, the percent solids will be determined and sample results will be corrected for percent solids.	Not applicable	Not applicable
Dilutions	1. When target analyte concentration exceed upper limit of calibration curve. 2. When matrix interference demonstrated by lab and documented in the case narrative (highly viscous samples or a large number of non-target peaks on the chromatogram). 3. Samples should be cleaned up during sample preparation/extraction procedure using appropriate methods when matrix interference is present. 4. Laboratory will note in the data deliverables which analytical runs were reported.	Not applicable	Not applicable
Laboratory control limits	1. Generated with results for an analyte from a minimum of 20 sample analyses. The average of the sample results and the standard deviation are calculated. The internal warning limits are established at 2 times the standard deviation and the control limits are established at 3 times the standard deviation. The control limits are updated annually.	Not applicable	Not applicable

Audit	Frequency	Control Limits	Corrective Action
Deliverables	1. CLP-like deliverables must be provided to document each audit item for easy reference and inspection. 2. An example calculation will be provided for each analysis, for each type of matrix in the data package using samples from the project. 3. Any laboratory abbreviations or notations presented in the raw data or summary information will be explained or referenced in the case narrative. 4. Final spiking concentrations will be presented in summary form. 5. Standard tracing information will be provided. 6. Cooler temperatures will be provided in the data packages. 7. Run logs will be provided in the data packages.	Not applicable	Provide missing or additional deliverables for validation purposes.
Method and QAPP requirements	The laboratory will perform the method as presented in this QAPP and will adhere to the QAPP requirements presented herein. Otherwise the laboratory will specifically note any procedures that differ from the method or the QAPP in the data package case narrative.	Not applicable	Not applicable

Notes:

Data validation will be performed in accordance with QA/QC criteria established in these tables and the analytical methods. Excursions from QA/QC criteria will be qualified based on guidance provided in this QAPP.

Communications with Plumley Engineering will be documented and included in the data packages.

APPENDIX F

HEALTH AND SAFETY PLAN

HEALTH AND SAFETY PLAN

for

EXCAVATION ACTIVITIES

at the

FORMER MARKET BASKET SITE
Gates Avenue
City of Geneva, Ontario County, New York
ERP Site No. B00018-8

Prepared for:

CITY OF GENEVA
47 Castle Street
Geneva, New York 14456

Prepared by:

PLUMLEY ENGINEERING

8232 Loop Road
Baldwinsville, New York 13027
(315) 638-8587
Project No. 2016018

July 2016

TABLE OF CONTENTS

1.0 PURPOSE AND APPLICABILITY

This Health and Safety Plan (HASP) outlines precautions and protective measures that employees and subcontractors ("Workers") of Plumley Engineering and Eddington Environmental must take to minimize the risk to health and safety while performing field tasks for on-site activities to be conducted at the former Market Basket site, located on Gates Avenue in the City of Geneva, Ontario County, New York. The site consists of two parcels and has been investigated and remediated under the Environmental Restoration Program (ERP). While clearing overgrown vegetation on the southern block, what appears to be a subsurface hydraulic cylinder was encountered. A Remedial Action Work Plan Addendum detailing the proposed actions to remove the cylinder was submitted to the New York State Department of Environmental Conservation (DEC) on April 20, 2016. Each worker shall review the HASP prior to working on the site and sign an acknowledgement indicating the worker agrees to comply with the HASP requirements. If activities require parties other than the engineer or its subcontractors to be at the site, these parties are solely responsible for maintaining compliance with all applicable regulations and for their own health and safety procedures. All on-site workers must have received the appropriate level of training for their specific duties in accordance with Occupational Safety and Health Administration (OSHA) 29 CFR 1910.120 (e).

2.0 SITE DESCRIPTION

The site is located in a mixed residential-industrial area in the City of Geneva, New York and consists of two parcels, one north of Gates Avenue and one south of Gates Avenue. The buildings that formerly occupied the site were demolished and both parcels are now vacant properties. Refer to Figure 1 for additional information.

3.0 SCOPE OF WORK

The following tasks are proposed to address the apparent cylinder:

- The top of the cylinder structure will be uncovered by carefully removing the overlying soil.

- Excavated soil will be staged on polyethylene sheeting in a dedicated pile and carefully screened throughout the excavation process for indications of potential releases. Screening will consist of visual and olfactory monitoring and the use of a photoionization detection (PID) meter to screen for volatile organic compounds (VOCs). If evidence of a release is suspected, a separate soil pile will be started (also placed on polyethylene sheeting).

- Once the top of the cylinder is fully exposed, the sides will be exposed by carefully extending the excavation around the cylinder. Particular attention will be paid to uncovering, but not breaking, any hydraulic line connections that may be present. If line connections are encountered, they will be followed to assess the current or former location of a hydraulic reservoir.

- After fully exposing the cylinder and attached components, it will be inspected for any potential releases and to assess the best method of removal.

- The equipment will be removed and placed on and covered with polyethylene sheeting until off-site disposal is arranged. Free liquids will be drained and containerized for proper off-site disposal.

- The resulting excavation will be inspected for potential releases. Any soil showing evidence of impact will be excavated and placed on polyethylene sheeting. All soil piles will be covered with polyethylene sheeting at the completion of each workday.

- It is anticipated that the excavation will be relatively small. If no evidence of a release is encountered, one grab soil sample will be collected from the excavation bottom and submitted to an ELAP-certified environmental laboratory for analysis of semi-volatile organic compounds (SVOCs) via EPA Method 8270 for confirmation purposes.

- If impacted soils are removed, one grab soil sample will be collected from the bottom and each side wall of the excavation, for a total of five confirmation samples.

- The south block is currently fenced and the excavation will be left open pending, receipt of the laboratory results of the confirmation samples. Stakes and plastic fencing will be placed around the excavation as an added precaution.

- Any excavated soil suspected of being contaminated will be disposed off-site. Characterization samples will be collected as required by the disposal facility. Following approval from the disposal site, an appropriately permitted hauler will transport the material to the disposal site.

- If the results of the confirmation samples meet the soil cleanup objectives for restricted commercial use, the excavation will be backfilled with clean fill that meets the requirements of Appendix 5 of DER-10.

- The removal tasks will be documented in the Site Management Plan and the Final Engineering Report that are currently being prepared.

- A 1-foot cover of clean fill meeting the requirements of Appendix 5 of DER-10 will be placed over the south block following DEC approval of the completed removal tasks. This material will be placed and graded in a manner similar to that used on the north block, and a grass cover will be established.

These field activities are anticipated to take place during the 2016 calendar year.

4.0 HEALTH AND SAFETY PERSONNEL

The following personnel are responsible for the development, implementation and maintenance of this HASP:

Project Manager.....Gordon P. Eddington

Site Safety Officer.....Gordon P. Eddington

Although responsibility for implementing this HASP is with the Site Safety Officer, the primary responsibility for health and safety lies with the individual workers. Each worker must be familiar with and conform to the safety procedures outlined in this HASP. The Site Safety Officer is responsible for all decisions regarding health and safety policies, procedures and protective measures. It is the responsibility of the Site Safety Officer to provide the resources required to allow the work to be conducted in conformance with this HASP.

The Site Safety Officer will also be responsible for:

- Maintaining a complete copy of the HASP at the site during all field activities.
- Assuring that all workers at the site are familiar with the procedures outlined in the HASP.
- Assuring that all workers have undergone the required OSHA training program.
- Assuring that workers have, and properly use and maintain, all specified personal protective and other health and safety equipment.
- Assuring that proper decontamination procedures are followed.
- Initiating immediate response actions, if necessary, and coordinating these actions with all workers at the site, any other individuals at the site, any involved agencies or medical facilities.
- Recommending improvements to this HASP, if needed.

The Site Safety Officer has the authority to:

- Direct any worker to alter or suspend any work practice they deem is not sufficient to protect human health.

- Deny access to the site to any individual or organization who does not have a complete copy of the HASP and/or the appropriate training and personal protective equipment (PPE) for the potential health and safety hazards at the site.

The presence or absence of the Site Safety Officer shall in no way relieve any individual or organization of their obligation to comply with the HASP or any applicable Federal, State and local laws and regulations.

5.0 GENERAL INFORMATION

Plan Prepared By / Date: Plumley Engineering / July 2016

Plan Approved By / Date: David K. Meixell, P.E. / July 2016

Proposed Date(s) of Work: Initial activities will be in July 2016. Follow-up activities may occur at various times throughout 2016.

Background Review: Preliminary ___ Complete X

A review of prior site investigation and environmental site assessment reports has been completed sufficiently to support the preparation of the site HASP. As more detailed information is obtained or if new information is obtained that requires a modification to the HASP, an addendum will be issued.

6.0 SITE CONTAMINANT CHARACTERISTICS

Definition of Site Contaminants of Concern

The site was a former food storage facility and tool rental company. The northern block had also been used as a do-it-yourself auto body repair business. Remedial activities at the site were completed in 2008 and 2009. Contaminants of concern (COCs) that were addressed in the remedial activities included:

- VOCs, including chlorobenzene, trichloroethene and xylenes.
- SVOCs, including acenaphthene, fluorene, phenanthrene, anthracene, chrysene, benzo(a) pyrene, naphthalene and 2-methylnaphthalene.
- Several metals.

Potential Hazardous Material(s)

The suspected hydraulic cylinder is not located in an area identified during the Remedial Investigation as containing hazardous constituents. A representative of Plumley Engineering will monitor the work for visual or olfactory evidence of contamination as the cylinder is exposed and removed, and will screen the excavation with a PID meter.

7.0 HAZARD EVALUATION AND REDUCTION

VOCs can present an inhalation hazard from breathing air contaminated with these materials resulting from exposures to contaminated equipment, site soils or groundwater disturbed by site activities. Although less volatile than the VOCs, SVOCs may also be present in the breathing zone.

Chemical constituents could occur in soil and groundwater at the site, and thus pose a potential dermal exposure risk that can result from handling site soil and groundwater or equipment that has come into contact with impacted soil or groundwater.

The current OSHA permissible exposure limits (PEL) standards are provided in Table 1. Workers are not expected to be exposed to conditions exceeding the PEL.

Based on the nature of the contaminant and the type of work being performed, the most significant hazards at this site are:

- Potential direct contact with VOCs and SVOCs during excavation activities. The PPE requirements for the project are designed to eliminate this risk to the extent practical.

- Physical hazards related to operating and working with excavation equipment. All equipment operators and inspectors shall be familiar with the associated physical hazards and shall have had at least five years of related experience. Environmental contractors shall provide copies of their current HASP to the project engineer for review. The PPE requirements for the project are designed to eliminate this risk to the extent practical.

There are three primary pathways by which site workers can be exposed to chemical hazards: inhalation, ingestion and dermal contact. The chemical exposures across these pathways can cause two types of effects: acute and chronic. Acute effects occur during or shortly after exposure to a sufficiently high concentration of a chemical. Chronic effects occur after repeated or constant exposures for a long period of time. Regulatory exposure limits, such as PELs, are related to both acute effects (such as respiratory irritation) and chronic effects (such as cancer). Symptoms of chemical exposure may include behavioral changes, breathing difficulties, skin color changes, coordination difficulties, coughing, dizziness, weakness, irritability, skin irritation, eye irritation, respiratory tract irritation, headache, nausea, lightheadedness, sneezing, etc.

The primary pathway exposures associated with site VOCs is inhalation and dermal contact with affected media or tools that have come into contact with the affected media. SVOCs may also be

present in the breathing space, although typically at concentrations less than VOCs. Real-time ambient air monitoring, appropriate engineering controls, PPE and good hygiene practices will be employed to minimize exposure to VOCs. Exposures to SVOCs, metals, pesticides and polychlorinated biphenyls (PCBs) is primarily by dermal contact with affected media or tools that have come into contact with the affected media.

Another potential pathway for exposure to COCs is through inhalation and dermal contact with airborne dust derived from contaminated soil. However, there are no site activities proposed at this time that will expose large areas of unstabilized soil, and vegetation is well developed at the site. The cylinder excavation pit will be backfilled upon completion and is not expected to be a source of dust.

The following precautions will be taken to reduce the potential exposure to site COCs during site investigation and remediation activities:

- Field personnel will conduct air monitoring with a PID meter during excavation activities to measure total concentrations of VOCs in the work zone breathing space.

- Engineering controls and/or appropriate respiratory protection will be used if visible dust does become present in the breathing space.

- The work procedures shall be modified if VOCs in the breathing space rise above action levels.

- Site investigation activities will be conducted in Level D PPE to minimize dermal exposure to potentially affected media (i.e., specifying the use of disposable protective gloves when handling site materials during field sampling activities) and reduce the risk of physical hazards (by requiring hard hats and safety glasses when inspecting drilling or test pits), as detailed in Section 8. The PPE will be upgraded, as necessary, for organic vapor, dermal and dust inhalation hazards.

- Any non-disposable PPE that comes in contact with potentially affected facility media will be decontaminated prior to leaving the work area.

- Soap, clean water and paper towels for washing hands will be provided at the site during all field activities. Hands will be washed thoroughly prior to eating, drinking and leaving the site.

The Site Safety Officer will have the NIOSH *Pocket Guide to Chemical Hazards* available for reference at the site. This reference identifies exposure routes, exposure symptoms, physical properties, chemical incompatibilities, first aid treatment and other information for many chemical compounds.

Physical hazards expected during the investigation and remediation activities are related to working with heavy construction equipment (backhoe), potential utility conflicts for the excavation work, and slip, trip and fall hazards. Additional physical hazards may include heat or cold stress. These hazards will be evaluated by the Site Safety Officer prior to beginning work in a new area and as conditions change in the work area. The following precautions will be taken to reduce the physical hazards:

- A utility clearance program shall be completed prior to initiating the project, to include contacting Dig Safely New York and researching private utilities. No subsurface borings or test pits will be started at any location prior to utility clearance.

- "Tailgate" safety briefings will be conducted by the Site Safety Officer to identify additional safety protocols, as needed.

- The specified PPE shall be worn by all workers in the project exclusion zone.

- No confined space entries will take place under this HASP. If a confined space entry becomes necessary, appropriate confined space entry procedures will be detailed in an addendum to this plan.

- A warming space will be provided during cold weather, if needed.

- Good housekeeping in the work area will be maintained.

If VOCs in the breathing space are detected above action levels (or as determined by the monitoring plan), work will cease until a determination is made as to whether further controls are required.

If necessary, engineering controls will be developed to minimize dust generation at the sampling location. For example, water may be sprayed on the surface soils to reduce breathing space dust concentrations.

Encountering unknown or unexpected substances or containers of a hazardous nature is possible, though not expected based on the degree of prior investigation and remedial activities undertaken at the site. Work will be discontinued if field measurements or observations indicate there is a potential exposure to a hazard that was not anticipated, is not adequately characterized and controlled, or may exceed the protection provided by the PPE specified for the task.

8.0 SITE SAFETY WORK PLAN

Site Map

Figure 1 shows the main features on and adjacent to the site, and the locations of prior environmental sampling points.

Site Security

A security fence with a locked gate encloses the southern portion of the site where the cylinder is to be excavated. The gate is kept locked at all times except during times when investigation

activities are underway. The gate will be closed when personnel are on-site working to limit incoming traffic to authorized personnel only.

Training

All authorized workers will receive a HASP briefing and will be required to read and sign the HASP at the beginning of the field work. The following main items shall be covered:

- The tasks the workers will be required to perform, as detailed in the Work Plan.
- Site ingress, egress and decontamination procedures.
- Site hazards, accident prevention and overexposure symptoms.
- The required PPE plan and exclusion zone requirements.
- Emergency response procedures.

Attachment A is a record of all authorized workers who have either attended the startup training session or received a similar briefing from the Site Safety Officer, to include any visitors. This shall be kept up-to-date throughout the project.

Should unexpected site conditions be encountered requiring utilization of Level C or higher protection and/or other specialized operations (e.g., a confined space entry), the work shall not be carried out until a Response Team comprised of personnel with proper training in accordance 29 CFR Part 1910.120 (e) (f) (g) is formed to complete such work.

Any new personnel assigned to this project shall receive the HASP briefing and be required to read and sign the HASP before being allowed to perform work. The briefing will be given by the Site Safety Officer or a delegated safety representative who has previously completed this training.

The Site Safety Officer will be responsible for insuring that visitors receive the necessary site-specific visitor training applicable to the visitors' anticipated activities. Site visitors shall not be allowed access to the project exclusion zone unless they receive a site-specific training brief, can demonstrate they have received the appropriate training per 29 CFR Part 1910.120 (e) and have received the required project PPE equipment.

Zone(s) of Contamination Identified

Workers are to assume that COCs may occur anywhere on the site in the surface soils, subsurface soil and groundwater.

Medical Surveillance

If used, subcontractors shall be current with medical surveillance requirements in accordance with 29 CFR Part 1910.120 (f).

Exclusion Zone

Temporary exclusion zones will be established around all subsurface drilling and sampling locations while such operations are being conducted. No unauthorized personnel will be allowed to approach the location, as monitored by the Site Safety Officer. Traffic cones will be used to designate the area, set at a safe distance from the associated hazard, as determined by the Site Safety Officer. Any worker in the exclusion zone shall comply with all aspects of the HASP.

Decontamination Area

A central decontamination area where decontamination materials shall be placed and stored, and procedures conducted, will be designated at the outset of the project. Portable decontamination equipment will also be used to expedite the work.

Personal Protection Equipment

- Level of protection in the exclusion zone shall be Level D – Modified.

- Level D PPE in the exclusion zone shall consist of the use of hard hats, rubber (nitrile) gloves, steel-toed boots if inspecting drilling or test pits operations, ear plugs and safety glasses. Latex gloves will be used by inspectors for handling soil samples.

- Drillers and any other site worker who is in close contact with soils during ground intrusive activities shall wear coveralls or other appropriate clothing to safeguard against debris and skin contact.

- A cellular telephone in proper working order shall be available at the work site at all times.

- Eating, drinking, smoking and carrying food or tobacco products are prohibited in the exclusion zone.

Decontamination Procedures

- ***Personnel:*** Workers shall remove coveralls and wash face and hands with soap and water prior to eating, drinking, using restroom facilities or leaving the site.

- ***Protective Equipment:*** A detergent wash and clean water rinse will be used for rubber boots, hard hats, safety glasses and hand sampling tools.

- ***Sampling Equipment:*** A detergent wash and clean water rinse shall be used to clean sampling equipment before exiting the work site. Decontamination of tools shall be performed at the designated decontamination pad facility. Sampling tools will be dry brushed, as appropriate, prior to detergent cleaning.

- ***Disposal:*** Gloves, coveralls, etc., used at the site will be collected at a central location for disposal in accordance with all applicable laws of the State of New York or, where applicable, properly cleaned and disinfected for reuse. All water generated from decontamination shall be collected and containerized for proper testing and disposal in accordance with all applicable laws of the State of New York.

Equipment Checklist

Level D Modified

Hardhat

Steel toed work boots

Safety glasses

Safety goggles or shield, if necessary

Tyvek coveralls, if necessary

Rubber and latex gloves

Hearing Protection

Ear Plugs

Decontamination Materials

Alconox

Brushes

Buckets

Potable water source and portable containers

Low pressure sprayer

Decontamination pad materials, including water containment

Plastic drop cloth material

Garbage can and plastic liners

Field Instruments

PID / Calibrated HNU, 10.6 eV

Other

Disposal dust masks

Glove and helmet liners for cold weather

9.0 ENVIRONMENTAL MONITORING PLAN

Work Zone Monitoring

Air monitoring in the exclusion zone near the point of operation will be periodically tested by the Site Safety Officer using a PID meter as a general precaution at a frequency of once every 60 minutes, or whenever a fugitive odor suggestive of possible VOCs is encountered. Should readings exceeding 5 parts per million (ppm) be recorded, additional readings in the operator breathing zone will be obtained. Should these levels continue to exceed 5 ppm over a sustained period of one minute, work will be discontinued until appropriate engineering controls (e.g. fan ventilation, vapor suppression) and a Community Air Monitoring Program (CAMP) are employed. The Site Safety Officer will continue to evaluate the situation and, if necessary, upgrade the PPE requirements to include air purifying respirators. Should Level C respirator PPE be required, all workers shall have had the proper training for their use and have had a

fitness test performed current within the previous one-year period in accordance with 29 CFR 1910.120.134, Appendix A. Readings will be documented on the form provided in Attachment C.

Community Air Monitoring Program

A CAMP requires real-time monitoring for VOCs and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at the site. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors, including residences and businesses, and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions and/or work shutdown.

Continuous CAMP monitoring for VOCs and particulates will be required for ***ground intrusive*** activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during ***non-intrusive*** activities, such as collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging and taking a reading prior to leaving a sample location. Continuous monitoring may be required during sampling activities in some instances, depending upon the proximity of potentially exposed individuals. Examples of such a situation include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or day care.

VOC CAMP Monitoring, Response Levels and Actions

VOCs must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone). Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the COCs or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 ppm above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions and monitoring continued. After these steps, work activities can resume, provided the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less (but in no case less than 20 feet), is below 5 ppm over background for the 15-minute average.

- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shut down.

Particulate CAMP Monitoring, Response Levels and Actions

Particulate concentrations should be monitored **continuously** at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate

monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area. If downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level after implementation of dust suppression techniques, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

All 15-minute readings must be recorded and be available for review by DEC and New York State Department of Health (DOH) personnel. Instantaneous readings, if any, used for decision purposes should also be recorded.

10.0 INVESTIGATION WASTE DISPOSAL PLAN

Investigation derived wastes (IDW) generated during the completion of the remedial investigation shall be handled as follows:

- Drill cuttings may be disposed of back within the borehole, provided the cuttings are not grossly contaminated (containing sheen or free product) and the borehole does not penetrate an aquitard or bedrock, nor creates a significant avenue for vertical migration of

contamination. Such backfilling shall be completed to within 12 inches of grade, followed by the placement of 6 inches of bentonite, followed by 6 inches of clean soil (drilling sand) when in outdoor, unpaved areas. Patch with asphalt if in a paved area and with concrete if inside the building.

- Drill cuttings that are grossly contaminated shall be containerized in New York State Department of Transportation (DOT) approved drums or temporarily stockpiled on and covered with plastic sheeting, and handled in accordance with the off-site disposal requirements discussed below. For test pits, grossly impacted soils shall be containerized in DOT-approved drums or temporarily stockpiled on and covered with plastic sheeting, and disposed of in accordance with the off-site disposal requirements discussed below. Such soils are not to be placed directly on the ground during the excavation procedures. All other soils may be placed back in the pit in the order they were removed and the surface left graded with clean soil to promote runoff.

- Groundwater generated from developing, purging and sampling monitoring wells is to be containerized upon production to allow visual observations and can subsequently be discharged to the ground near the point of on-site generation, provided the groundwater:

    - Is free of visual sheen or oil (no free product). No water is to be discharged at the site if it contains visual product.

    - Has no olfactory indicators.

    - Does not contain a known high concentration of COCs, based on prior site sampling work.

  Water containing any of the above characteristics is to be stored in labeled containers in an area affording secondary containment and handled in accordance with the off-site disposal requirements discussed below. Water generated by decontamination procedures is to be handled following the same protocol.

- PPE wastes can be disposed of in a Part 360 permitted solid waste landfill, provided none of the materials contain free product staining. These latter materials are to be handled similarly to grossly impacted soils, as discussed below.

    - Representative samples of the IDW wastes must be collected and analyzed to properly allow the materials to be classified, treated or disposed of.

    - Any IDW materials determined to be hazardous or solid wastes are to be transported by haulers permitted in accordance with New York Codes, Rules and Regulations, Title 6 (6 NYCRR) Part 364. Waste manifests are to be provided.

    - All IWD materials taken from the site for disposal must be disposed of or treated in DEC-permitted facilities.

11.0 EMERGENCY RESPONSE PLAN

A copy of the HASP and a NIOSH *Pocket Guide of Chemical Hazards* shall be available at the site at all times.

The Site Safety Officer is to be immediately notified of any on-site emergency.

USE THE 911 SYSTEM FOR ANY THREATENING EMERGENCY.

All workers will be alerted upon the occurrence of an emergency involving a potentially ongoing dangerous condition (e.g. a fire, explosion or electrical condition within or adjacent to the site) and the affected area evacuated immediately.

Emergency situations will be evaluated by the Site Safety Officer and initial emergency response measures will be undertaken, if appropriate.

Contact the Project Manager as soon as possible. Emergency telephone numbers are provided.

The following general sequential guidelines are provided for emergency situations:

1. If possible, remove the exposed or injured person(s) from immediate danger. Evacuate other personnel on the property to a safe distance until the Site Safety Officer determines it is safe to return to work.

2. Obtain paramedic and ambulance service (or fire department response, if needed) immediately by calling 911. Render first aid, as applicable to the rescuers' training.

3. If there is any doubt regarding the condition of the area, work shall not commence until all safety issues are resolved.

4. The Site Safety Officer shall contact the Project Manager at the earliest time practical and provide details of the incident.

5. A written report of the incident shall be forwarded to the Project Manager within 24 hours following the incident.

EMERGENCY TELEPHONE NUMBERS

Plumley Engineering..... (315) 638-8587

FOR ALL EMERGENCIES..... 911
(Fire Department, Police Department, Ambulance)

Other Agencies

Fire Department (non-emergency)..... (315) 789-2121

NYSEG (Gas Emergency) ..... (800) 572-1121

NYSEG (Electrical Emergency)..... (800) 572-1131

Geneva General Hospital ..... (315) 787-4000

DEC Region 8, Avon Office ..... (585) 226-2466

DEC Spill Hotline ..... (800) 457-7362

Nearest Hospital:

Name: Geneva General Hospital

Location 196 North Street
Geneva, New York 14456
(less than one mile from site)

Telephone: (315) 787-4000

Written directions to the hospital from the site:

- Head west on Gates Avenue toward North Genesee Street
- Turn left on North Genesee Street and proceed to North Street (6 blocks)
- Turn right onto North Street and proceed approximately 4 blocks to the hospital.

FIGURE

Key

- R.O.W. — Right of Way
- Soil Boring
- Soil Boring w/ Monitoring Well

Plan View

1" = 60' SCALE 30 0 30 60 FEET

Basemap Reference:

"City of Geneva, Former Market Basket Property, Environmental Resoration Program, Ontario County, New York"; Prepared by: Obrien Gere Engineers, Inc.; Dated: January 2009; File No.: 1740.30852.101.

PLUMLEY ENGINEERING
Civil and Environmental Engineering
PLUMLEY ENGINEERING, P.C.
8232 LOOP ROAD
BALDWINSVILLE, NY 13027
TELEPHONE: (315) 638-8587
FAX: (315) 638-9740
WWW.PLUMLEYENG.COM

REVISIONS: DATE: BY:

PROJECT: *MARKET BASKET PROPERTY ENVIRONMENTAL RESTORATION PROGRAM*

DWG. TITLE: SITE PLAN

CLIENT: CITY GENEVA

LOCATION: CITY OF GENEVA, ONTARIO COUNTY, NEW YORK

PROJECT No.: 2016018
FILE NAME.: EV01P
SCALE: AS NOTED
DATE: JULY 2016
ENG'D BY: DKM
DRAWN BY: JMD
CHECKED BY: DKM

SHEET NO.:

FIGURE 1

TABLE

FORMER MARKET BASKET SITE
Gates Avenue
City of Geneva, Ontario County, New York
ERP Site B00018-8633077

TABLE 1 - HEALTH AND SAFETY DATA FOR SELECTED CONTAMINANTS OF CONCERN

Contaminant	Synonyms	CAS Number	Ionization Potential (eV)	Odor Threshold (ppm)	PEL 8 hour (ppm)	PEL 15 minute (ppm)	TLV/ TWA (ppm)	STEL (ppm)	Flammable	Explosive Limits	
										LEL	UEL
1,1,1-Trichloroethane	Methyl chloroform	71-55-6	11.00	390	350	NA	350	450	No	NA	NA
1,1-Dichloroethane	Ethylidene chloride	75-34-3	NA	NA	100	NA	100	NA	Yes	NA	NA
Benzene	Benzol	71-43-2	9.24	NA	1	5	0.1	1	Yes	1.2%	7.8%
Chlorobenzene	Benzene chloride	106-90-7	9.07	NA	75	NA	NA	NA	Yes	1.3%	9.6%
cis-1,2-Dichloroethene	1,2- Dichloroethylene	156-59-2	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	Ethylbenzol	100-41-4	8.76	NA	100	NA	100	125	Yes	0.8%	6.7%
m-Xylene	Xylol	108-38-3	8.56	NA	100	NA	100	150	Yes	1.1%	7.0%
o-Xylene	Xylol	95-47-6	8.56	NA	100	NA	100	150	Yes	0.9%	6.7%
p-Xylene	Xylol	106-42-3	8.44	NA	100	NA	100	150	Yes	1.1%	7.0%
Tetrachloroethene	Perchloroethylene	127-18-4	9.32	47	100	200	25	100	No	NA	NA
Toluene	Methyl benzene	108-88-3	NA	2.9	200	300	50	150	Yes	1.3%	7.0%
trans-1,2-Dichloroethene	NA	156-60-5	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	Trichloroethylene	79-01-6	9.45	82-110	100	200	50	100	No	NA	NA
Vinyl Chloride	Chloroethene, Chloroethylene	75-01-4	9.995	NA	1	5	5	NA	Yes	4.0%	22.0%

Notes:

eV electron volts
ppm parts per million
NA Not applicable

ATTACHMENTS

ATTACHMENT A
DEC ERP Site No. B00018-8
AUTHORIZED PERSONNEL

I have read, understand and by signing, agree to comply with the provisions contained in the health and safety plan for this site.

	Name	Representing	Signature	Date
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				

ATTACHMENT B
DEC ERP Site No. B00018-8

DAILY WORK ZONE AND PERIMETER AIR MONITORING LOG SHEET

Job: _____ Date: _____ Start Time: _____

Monitoring Personnel: _____

Instruments (circle): PID: _____ HNU LEL Draeger Tubes Other_____

Weather Conditions

Temperature: _____ Sky (circle): Clear P. Cloudy Cloudy Overcast

Wind Speed (approx.): _____ Wind Direction:_____ Precipitation:_____

TIME	PID/LEL READINGS	WORK ZONE OR PERIMETER	COMMENTS (activities, changes in wind direction, temperature, etc.)

Monitoring Performed By: _____

Were Respirators Worn: Yes No

How Long? _____ Who? _____

Why? _____

APPENDIX G

SITE MANAGEMENT FORMS

Site-Wide Inspection Form
Former Market Basket Site
Geneva, New York

Date: _____ Inspector's Name (Print): _____

Site Owner: _____ Inspector's Phone Number: _____

1. Does the site comply with the required institutional controls? Yes __ No __

   If no, explain deficiencies: _____

2. Describe condition and effectiveness of the soil cover: _____

3. Describe general site conditions: _____

4. Is the annual groundwater monitoring program current? Yes __ No __

5. Have the requirements of the Operation and Maintenance Plan been maintained? Yes __ No __

   If no, explain deficiencies: _____

6. Are site records up to date? Yes __ No __

   If no, explain deficiencies: _____

Additional Comments (if appropriate): _____

_____

_____

_____

Recommended Actions (if appropriate): _____

_____

_____

_____

Signature of Inspector: _____

PLUMLEY ENGINEERING, P.C.

GROUNDWATER SAMPLING FIELD LOG

Client/Site: _____ **Project No.:** _____
Monitoring Location: _____ **Date:** _____
Source Description: _____ **Sampler:** _____

Well & Water Level Data:

Total Depth of Well: _____ **feet**
Initial Depth to Water: _____ **feet**
Length of Water Column (LWC): _____ **feet**

Purge Volume Calculation:

Well Diameter (inches):	Calculated Well Volume To Be Removed
1	LWC * 0.041 * 3 = _____ Gallons
1.25	LWC * 0.064 * 3 = _____ Gallons
1.5	LWC * 0.092 * 3 = _____ Gallons
2	LWC * 0.163 * 3 = _____ Gallons
3	LWC * 0.367 * 3 = _____ Gallons
4	LWC * 0.653 * 3 = _____ Gallons
6	LWC * 1.469 * 3 = _____ Gallons

Free Product Check: **Free Product Present:** **Yes** **No**
Measured Thickness/Comment: _____

Purge Data: **Purge Date:** _____

Purging Time: **From:** _____ **To:** _____

Type of Purging Equipment Used: _____
Purged Water Comments: _____

Sampling Data: **Depth to Water at Sampling:** _____ **feet**

Color of Sample: _____ **Sample Date:** _____
Turbidity: _____ **Sample Time:** _____

Type of Sampling Equipment Used: _____

Field Indicators Present During Sample Collection:

Odor _____
Sheen _____
Free Product _____
None _____

Notes:

_____

_____

_____

Weather: **Temperature ^{0}F** _____ **Sunny Cloudy Rain Snow**

APPENDIX H

DER-10 APPENDIX 5 ALLOWABLE CONSTITUENT LEVELS FOR IMPORTED FILL OR SOIL

Appendix 5
Allowable Constituent Levels for Imported Fill or Soil
Subdivision 5.4(e)

Source: This table is derived from soil cleanup objective (SCO) tables in 6 NYCRR 375. Table 375-6.8(a) is the source for unrestricted use and Table 375-6.8(b) is the source for restricted use.

Note: For constituents not included in this table, refer to the contaminant for supplemental soil cleanup objectives (SSCOs) in the Commissioner Policy on *Soil Cleanup Guidance*. If an SSCO is not provided for a constituent, contact the DER PM to determine a site-specific level.

Constituent	Unrestricted Use	Residential Use	Restricted Residential Use	Commercial or Industrial Use	If Ecological Resources are Present
Metals					
Arsenic	13	16	16	16	13
Barium	350	350	400	400	433
Beryllium	7.2	14	47	47	10
Cadmium	2.5	2.5	4.3	7.5	4
Chromium, Hexavalent[1]	1 [3]	19	19	19	1 [3]
Chromium, Trivalent[1]	30	36	180	1500	41
Copper	50	270	270	270	50
Cyanide	27	27	27	27	NS
Lead	63	400	400	450	63
Manganese	1600	2000	2000	2000	1600
Mercury (total)	0.18	0.73	0.73	0.73	0.18
Nickel	30	130	130	130	30
Selenium	3.9	4	4	4	3.9
Silver	2	8.3	8.3	8.3	2
Zinc	109	2200	2480	2480	109
PCBs/Pesticides					
2,4,5-TP Acid (Silvex)	3.8	3.8	3.8	3.8	NS
4,4'-DDE	0.0033 [3]	1.8	8.9	17	0.0033 [3]
4,4'-DDT	0.0033 [3]	1.7	7.9	47	0.0033 [3]
4,4'-DDD	0.0033 [3]	2.6	13	14	0.0033 [3]
Aldrin	0.005	0.019	0.097	0.19	0.14
Alpha-BHC	0.02	0.02	0.02	0.02	0.04 [4]
Beta-BHC	0.036	0.072	0.09	0.09	0.6
Chlordane (alpha)	0.094	0.91	2.9	2.9	1.3
Delta-BHC	0.04	0.25	0.25	0.25	0.04 [4]
Dibenzofuran	7	14	59	210	NS
Dieldrin	0.005	0.039	0.1	0.1	0.006
Endosulfan I	2.4[2]	4.8	24	102	NS
Endosulfan II	2.4[2]	4.8	24	102	NS
Endosulfan sulfate	2.4[2]	4.8	24	200	NS
Endrin	0.014	0.06	0.06	0.06	0.014
Heptachlor	0.042	0.38	0.38	0.38	0.14
Lindane	0.1	0.1	0.1	0.1	6
Polychlorinated biphenyls	0.1	1	1	1	1

Constituent	Unrestricted Use	Residential Use	Restricted Residential Use	Commercial or Industrial Use	If Ecological Resources are Present
Semi-volatile Organic Compounds					
Acenaphthene	20	98	98	98	20
Acenaphthylene	100	100	100	107	NS
Anthracene	100	100	100	500	NS
Benzo(a)anthracene	1	1	1	1	NS
Benzo(a)pyrene	1	1	1	1	2.6
Benzo(b)fluoranthene	1	1	1	1.7	NS
Benzo(g,h,i)perylene	100	100	100	500	NS
Benzo(k)fluoranthene	0.8	1	1.7	1.7	NS
Chrysene	1	1	1	1	NS
Dibenz(a,h)anthracene	0.33 [3]	0.33 [3]	0.33 [3]	0.56	NS
Fluoranthene	100	100	100	500	NS
Fluorene	30	100	100	386	30
Indeno(1,2,3-cd)pyrene	0.5	0.5	0.5	5.6	NS
m-Cresol(s)	0.33 [3]	0.33 [3]	0.33 [3]	0.33 [3]	NS
Naphthalene	12	12	12	12	NS
o-Cresol(s)	0.33 [3]	0.33 [3]	0.33 [3]	0.33 [3]	NS
p-Cresol(s)	0.33	0.33	0.33	0.33	NS
Pentachlorophenol	0.8 [3]	0.8 [3]	0.8 [3]	0.8 [3]	0.8 [3]
Phenanthrene	100	100	100	500	NS
Phenol	0.33 [3]	0.33 [3]	0.33 [3]	0.33 [3]	30
Pyrene	100	100	100	500	NS
Volatile Organic Compounds					
1,1,1-Trichloroethane	0.68	0.68	0.68	0.68	NS
1,1-Dichloroethane	0.27	0.27	0.27	0.27	NS
1,1-Dichloroethene	0.33	0.33	0.33	0.33	NS
1,2-Dichlorobenzene	1.1	1.1	1.1	1.1	NS
1,2-Dichloroethane	0.02	0.02	0.02	0.02	10
1,2-Dichloroethene(cis)	0.25	0.25	0.25	0.25	NS
1,2-Dichloroethene(trans)	0.19	0.19	0.19	0.19	NS
1,3-Dichlorobenzene	2.4	2.4	2.4	2.4	NS
1,4-Dichlorobenzene	1.8	1.8	1.8	1.8	20
1,4-Dioxane	0.1 [3]	0.1 [3]	0.1 [3]	0.1 [3]	0.1
Acetone	0.05	0.05	0.05	0.05	2.2
Benzene	0.06	0.06	0.06	0.06	70
Butylbenzene	12	12	12	12	NS
Carbon tetrachloride	0.76	0.76	0.76	0.76	NS
Chlorobenzene	1.1	1.1	1.1	1.1	40
Chloroform	0.37	0.37	0.37	0.37	12
Ethylbenzene	1	1	1	1	NS
Hexachlorobenzene	0.33 [3]	0.33 [3]	1.2	3.2	NS
Methyl ethyl ketone	0.12	0.12	0.12	0.12	100
Methyl tert-butyl ether	0.93	0.93	0.93	0.93	NS
Methylene chloride	0.05	0.05	0.05	0.05	12

Volatile Organic Compounds (continued)					
Propylbenzene-n	3.9	3.9	3.9	3.9	NS
Sec-Butylbenzene	11	11	11	11	NS
Tert-Butylbenzene	5.9	5.9	5.9	5.9	NS
Tetrachloroethene	1.3	1.3	1.3	1.3	2
Toluene	0.7	0.7	0.7	0.7	36
Trichloroethene	0.47	0.47	0.47	0.47	2
Trimethylbenzene-1,2,4	3.6	3.6	3.6	3.6	NS
Trimethylbenzene-1,3,5	8.4	8.4	8.4	8.4	NS
Vinyl chloride	0.02	0.02	0.02	0.02	NS
Xylene (mixed)	0.26	1.6	1.6	1.6	0.26

All concentrations are in parts per million (ppm)
NS = Not Specified

Footnotes:
[1] The SCO for Hexavalent or Trivalent Chromium is considered to be met if the analysis for the total species of this contaminant is below the specific SCO for Hexavalent Chromium.
[2] The SCO is the sum of endosulfan I, endosulfan II and endosulfan sulfate.
[3] For constituents where the calculated SCO was lower than the contract required quantitation limit (CRQL), the CRQL is used as the Track 1 SCO value.
[4] This SCO is derived from data on mixed isomers of BHC.

APPENDIX I

RESPONSIBILITIES OF OWNER AND RESPONSIBLE PARTY

APPENDIX I

RESPONSIBILITIES of

OWNER and REMEDIAL PARTY

Responsibilities

THIS WILL BE MODIFIED IF THE SITE MANAGEMENT IS CARRIED OUT BY MULITIPLE PARTIES. FOR EXAMPLE, IT CAN BE USED WHEN A REMEDIAL PARTY DOES NOT OWN THE SITE PROPERTY, AND, THEREFORE, MUST SHARE SITE MANAGEMENT AND/OR REPORTING OBLIGATIONS WITH A SITE OWNER.

The responsibilities for implementing the Site Management Plan ("SMP") for the Market Basket site (the "site"), number B00018, are divided between the site owner(s) and a Remedial Party, as defined below. The owner is currently listed as:
the City of Geneva (the "owner").

Solely for the purposes of this document and based upon the facts related to a particular site and the remedial program being carried out, the term Remedial Party ("RP") refers to any of the following: certificate of completion holder, volunteer, applicant, responsible party, and, in the event the New York State Department of Environmental Conservation ("NYSDEC") is carrying out remediation or site management, the NYSDEC and/or an agent acting on its behalf. The RP is: the City of Geneva, 47 Castle Street, Geneva, New York 14456.

Nothing on this page shall supersede the provisions of an Environmental Easement, Consent Order, Consent Decree, agreement, or other legally binding document that affects rights and obligations relating to the site.

Site Owner's Responsibilities:

1) The owner shall follow the provisions of the SMP as they relate to future construction and excavation at the site.

2) In accordance with a periodic time frame determined by the NYSDEC, the owner shall periodically certify, in writing, that all Institutional Controls set forth in a(n) Deed Restriction remain in place and continue to be complied with. The owner shall provide a written certification to the RP, upon the RP's request, in order to allow the RP to include the certification in the site's Periodic Review Report (PRR) certification to the NYSDEC.

3) In the event the site is delisted, the owner remains bound by the Deed Restriction and shall submit, upon request by the NYSDEC, a written certification that the Deed Restriction is still in place and has been complied with.

4) The owner shall grant access to the site to the RP and the NYSDEC and its agents for the purposes of performing activities required under the SMP and assuring compliance with the SMP.

5) The owner is responsible for assuring the security of the remedial components located on its property to the best of its ability. In the event that damage to the remedial components or vandalism is evident, the owner shall notify the site's RP and the NYSDEC in accordance with the timeframes indicated in Section 1.3-Notifications.

6) In the event some action or inaction by the owner adversely impacts the site, the owner must notify the site's RP and the NYSDEC in accordance with the time frame indicated in Section 1.3- Notifications and (ii) coordinate the performance of necessary corrective actions with the RP.

7) The owner must notify the RP and the NYSDEC of any change in ownership of the site property (identifying the tax map numbers in any correspondence) and provide contact information for the new owner of the site property. 6 NYCRR Part contains notification requirements applicable to any construction or activity changes and changes in ownership. Among the notification requirements is the following: Sixty days prior written notification must be made to the NYSDEC. Notification is to be submitted to the NYSDEC Division of Environmental Remediation's Site Control Section. Notification requirements for a change in use are detailed in Section 2.4 of the SMP. A 60-Day Advance Notification Form and Instructions are found at http://www.dec.ny.gov/chemical/76250.html.

8) In accordance with the tenant notification law, within 15 days of receipt, the owner must supply a copy of any vapor intrusion data, that is produced with respect to structures and that exceeds NYSDOH or OSHA guidelines on the site, whether produced by the NYSDEC, RP, or owner, to the tenants on the property. The owner must otherwise comply with the tenant and occupant notification provisions of Environmental Conservation Law Article 27, Title 24.

Remedial Party Responsibilities

1) The RP must follow the SMP provisions regarding any construction and/or excavation it undertakes at the site.

2) The RP shall report to the NYSDEC all activities required for remediation, operation, maintenance, monitoring, and reporting. Such reporting includes, but is not limited to, periodic review reports and certifications, electronic data deliverables, corrective action work plans and reports, and updated SMPs.

3) Before accessing the site property to undertake a specific activity, the RP shall provide the owner advance notification that shall include an explanation of the work expected to be completed. The RP shall provide to (i) the owner, upon the owner's request, (ii) the NYSDEC, and (iii) other entities, if required by the SMP, a copy of any data generated during the site visit and/or any final report produced.

4) If the NYSDEC determines that an update of the SMP is necessary, the RP shall update the SMP and obtain final approval from the NYSDEC. Within 5 business days after NYSDEC approval, the RP shall submit a copy of the approved SMP to the owner(s).

5) The RP shall notify the NYSDEC and the owner of any changes in RP ownership and/or control and of any changes in the party/entity responsible for the operation, maintenance, and monitoring of and reporting with respect to any remedial system (Engineering Controls). The RP shall provide contact information for the new party/entity. Such activity constitutes a Change of Use pursuant to 375-1.11(d) and requires 60-days prior notice to the NYSDEC. A 60-Day Advance Notification Form and Instructions are found at http://www.dec.ny.gov/chemical/76250.html.

6) The RP shall notify the NYSDEC of any damage to or modification of the systems as required under Section 1.3- Notifications] of the SMP.

7) Prior to a change in use that impacts the remedial system or requirements and/or responsibilities for implementing the SMP, the RP shall submit to the NYSDEC for approval an amended SMP.

8) Any change in use, change in ownership, change in site classification (*e.g.*, delisting), reduction or expansion of remediation, and other significant changes related to the site may result in a change in responsibilities and, therefore, necessitate an update to the SMP and/or updated legal documents. The RP shall contact the Department to discuss the need to update such documents.

Change in RP ownership and/or control and/or site ownership does not affect the RP's obligations with respect to the site unless a legally binding document executed by the NYSDEC releases the RP of its obligations.

Future site owners and RPs and their successors and assigns are required to carry out the activities set forth above.

APPENDIX J

FIELD SAMPLING AND ANALYSIS PLAN

Field Sampling and Analysis Plan
Market Basket Property
Geneva, New York
Site No. B-00018-8

Introduction and Site Background

The Market Basket site is located on the north side of Geneva, New York, and consists of two parcels located on either side of Gates Avenue between Lehigh Street and a former railroad right-of-way (ROW). The combined site is approximately 2.6 acres in size. The parcel south of Gates Avenue was formerly nearly fully occupied by a multi-story building that was operated by Geneva Cutlery Company and Stearns Nursery, Inc., prior to being combined with the northern parcel. The parcel located north of Gates Avenue appears to have been vacant until at least 1915. The 1925 Sanborn Fire Insurance Map indicates that Market Basket had constructed several buildings on the northern site by that time. A document published by the Geneva Historical Society entitled "Industrial Pursuits: The History of Manufacturing in Geneva, New York" states that Market Basket ceased operations in 1956, and the combined site was acquired by Mr. William Yalden in September 1962. The full extent of activities at the site since that time is unclear. However, some activities that have been identified include the Great Eastern Company (a storage warehouse), and Old Town Tool Rental. In addition, the Geneva Historical Society document states that Mr. Yalden also provided rented space to the public for paint booths used for automotive body repairs. The combined property has reportedly been vacant since 1988, and the buildings on both parcels were demolished in 2002.

The City of Geneva acquired and remediated the site under the New York State Department of Environmental Conservation's (NYSDEC's) Environmental Restoration Program.

NYSDEC issued a Record of Decision (ROD) in March 2002 which included the following remedy:

- Building demolition, including asbestos abatement, to access potentially contaminated areas beneath the floor slab. This step has been completed.
- Sub-slab soil characterization to accurately delineate areas of contamination beneath the footprints of the buildings. This step has been completed.
- Excavation and off-site disposal of contaminated soil in the vicinity of a former tank pit (apparent gasoline spill) and the former boiler room (apparent fuel oil spill) and any contamination found beneath the footprints of the buildings. This step has been completed.
- A ground water monitoring program for a minimum of five years to monitor natural attenuation of any residual compounds that may remain at the site; and
- Deed restrictions to prohibit the use of ground water as a potable or process water source without treatment to achieve New York State standards; and ensure that if site soil is excavated, it is managed, characterized, and properly disposed of in accordance with NYSDEC regulations and directives. The deed restrictions also require owners to annually certify to NYSDEC that the restrictions have been adhered to and that the conditions at the site are fully protective of public health and the environment in accordance with the proposed plan and subsequent Record of Decision. This step has been completed.

Objectives of the Sampling Plan

The objectives of this Sampling Plan are to monitor groundwater conditions at the site as well as on-site soils prior to any disturbance.

Sampling Protocols

To accomplish the previously listed objectives, the following protocols will be followed:

1. Prior to any disturbance of site soils, the NYSDEC Project Manager will be notified in accordance with the Excavation Work Plan (EWP) included in the approved Site Management Plan (SMP). Following NYSDEC approval, the excavation will proceed following the soil screening and management procedures included in the EWP. If requested by the Department soil samples may be collected for laboratory analyses. Soil samples will be screened with a photoionization detector (PID) and visually inspected by an environmental professional. Soil samples may be submitted to a New York State approved environmental laboratory (Laboratory) for analysis of volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs) via USEPA Methods 8020/8021 and 8270, respectively. In addition, the samples may be analyzed for other parameters requested by the Department. Sample points will be staked and surveyed to document the locations.
2. In accordance with Section 3.4 of the SMP, groundwater monitoring will be performed semi-annually to assess the performance of the remedy. The designated wells will be sampled, and the ground water samples will be submitted to an approved laboratory for analysis in accordance with the Quality Assurance Project Plan (QAPP) included in the SMP.

Methods

Installation of Borings. If required in the future, soil borings will be completed within unconsolidated materials to the water table using direct-push drilling methods. Soil samples will be collected continuously at each boring from the ground surface to the end depth (assumed to be 15 ft). Each soil sample will be screened in the field using a PID to assess if VOCs are present in the soil and a boring log will be prepared. One unsaturated soil sample will be collected for analysis. The sample will be selected based on visual inspection and field monitoring results.

Installation of Monitoring Wells. If a new or replacement well should be required, the well will be set approximately 7 ft below the water table. It is assumed that the monitoring well will be completed within unconsolidated materials to a maximum depth of 20 ft. The boring for the installation of the monitoring well will be completed using conventional hollow stem auger drilling methods using a minimum 4.25-inch inside diameter auger. The monitoring well will be constructed of a ten-foot length of 2-inch diameter PVC well screen attached to a PVC riser casing. The well screen will be positioned to straddle the water table; however, the top of the well screen will be positioned no less than 3 ft below grade to allow for the placement of an adequate annular seal. The well will be completed with above-grade protective casings.

Any new wells will be developed following installation to remove fine-grained sediment that may have settled in the borehole during drilling and to increase the hydraulic connection between the well and the aquifer. New wells will be developed until evacuated water is visually clear and free of sediment, monitoring parameters have stabilized, and a minimum of three well volumes have been removed. Monitoring parameters will include pH, conductivity, temperature, and turbidity, and will be considered stabilized when they vary less than 10 percent between three successive readings taken at least three

minutes apart. Turbidity will be reduced to less than 50 NTU, if attainable. Water generated during the well development will be contained pending characterization and disposal.

Ground water samples will be collected from designated wells and placed in a cooler for delivery to the laboratory for analysis. Ground water samples will be collected using low-flow purging and sampling techniques, as specified in USEPA's "Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures," and using peristaltic pumps. Field measurements of pH, conductivity, turbidity, dissolved oxygen, redox potential, and temperature will be made during evacuation and prior to collection of the sample. Monitoring parameters will be considered stabilized when three successive readings are within ± 0.1 for pH, ±3% for conductivity, ±10 mv for redox potential, and ± 10% for turbidity and dissolved oxygen. Turbidity will be reduced to less than 50 NTU if the field geologist feels this level is attainable.

Decontamination. **T**he drilling equipment will be decontaminated following completion of each boring or well using high-pressure hot water or steam. Decontamination procedures will take place on a temporary decontamination pad constructed of plastic sheeting on-site. Water generated during the decontamination procedures will be contained in 55-gallon drums for off-site disposal.

Survey. Elevations and locations of new monitoring wells will be surveyed to provide information pertaining to the ground water flow direction. The survey will be referenced to a USGS datum or a pre-established on-site benchmark. The location and elevations (ground surface, PVC casing, steel casing) of the monitoring wells will be surveyed.

Investigation derived waste (IDW). Drill cuttings will be managed in accordance with DER-10 Section 3.3(e). IDW water will be collected in drums and will be left on the site in the location that they are generated. Upon receipt of the analytical data, the water will be disposed offsite at a permitted facility in accordance with applicable regulations or either be released on site to a permeable ground surface to allow infiltration with NYSDEC Project Manager approval. NYSDEC Project Manager's approval must be obtained prior to any discharge to the ground surface.

Underground utilities. The drilling contractor will contact the local underground facilities protective organization to locate utilities at the site prior to initiating the field program. The utilities will only identify the locations of subsurface lines on public property and rights-of-way. The location of on-site utilities will be reviewed with the City to approve the locations where drilling will take place.

Health and Safety. A Health and Safety Plan (HASP) has been prepared for the site and is included in the SMP.

Report

Following receipt of the analytical results, a report will be prepared documenting the sampling events and presenting the analytical data as compared with the cleanup objectives listed in the 6 NYCRR Part 375 and NYSDEC ground water standards. The report will contain:

- a description of the field activities that were performed, including modifications to this plan and the reasons for those modifications
- a description of the analytical data developed by the program
- an evaluation of the data obtained to date with respect to applicable criteria
- conclusions regarding the necessity for remediation
- recommendations for remedial activities, if appropriate

- boring logs, sample location maps, and analytical data sheets will be appended to the report, as will other information as appropriate.