City of Watertown
Brownfield Cleanup Program
Former Ogilvie Foods Site
148 North Pleasant Street
Watertown, New York 13601

Remedial Work Plan

Prepared For:

City of Watertown
245 Washington Street
Watertown, New York 13601

Prepared By:

Lu Engineers
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Pittsford, New York 14534

STATE OF NEW YORK
SUSAN ADELAIDE HILTON
079942
LICENSED PROFESSIONAL ENGINEER
9/13/2012

I, Susan A. Hilton, P.E., certify that I am currently a NYS registered professional engineer and that this Remedial Work 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).

September 2012

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ATTACHMENTS

1.0 Introduction

Lu Engineers has prepared this conceptual Remedial Work Plan (RWP) on behalf of the City of Watertown for the Former Ogilvie Foods Site (the 'Site') located at 148 North Pleasant Street. This work plan was prepared for submission to the New York State Department of Environmental Conservation (NYSDEC) in support of an application for the Brownfield Cleanup Program (BCP). As such, all work related activities will follow the procedures established by the NYSDEC in DER-10 "Technical Guidance for Site Investigation and Remediation".

The City of Watertown (the 'City') was awarded federal funding through the United States Environmental Protection Agency (EPA) Brownfield Cleanup Program for remediation of petroleum (and possibly other hazardous materials) at the former Ogilvie Foods location. The City plans to redevelop the Site as residential housing, consistent with surrounding property uses.

As requested by NYSDEC, this work plan will include a Pre-Remedial Design Investigation to further investigate existing conditions and fill data gaps from the previous investigations. Subsequent to the Pre-Remedial Design Investigation, technical plans and bid specifications will be prepared as part of the technical Remedial Action Work Plan (RAWP) to be submitted under separate cover. The RAWP will also include a summary of the cleanup alternatives analysis and selected remedy.

1.1 Site Description

The Former Ogilvie Foods Site is located at 148 North Pleasant Street, between N. Pleasant Street and California Avenue, in the City of Watertown, Jefferson County, New York (Figure 1). The Site consists of approximately 4.2 acres including tax parcels 6-15-119 and 6-15-116, owned by the City of Watertown.

Former buildings associated with dairy processing operations were demolished in 2003 and the Site is currently undeveloped. The majority of the Site is covered with crushed stone. The northern portion of the property was formerly a railroad right-of-way and is now an overgrown drainage ditch. Surrounding properties are single and multi-family residences.

The configuration of the Site is shown on the attached Site Plan (Figure 3).

1.2 Site History

The history of the Ogilvie Site reveals that the property was used for dairy operations for over 60 years. The eastern portion of the property was occupied by the National Biscuit Company from the early 1900s until approximately 1960. Ogilvie Foods, Inc. (a subsidiary of Borden, Inc.) closed whey production operations at the site in the late 1990s. The buildings were demolished in 2003 after being condemned by the City. At

that time, several chemical and milk product bulk storage tanks were reportedly removed. Building slabs, foundations, and basements were left in place. After demolition, the site was covered with large crushed stone to limit trespassing, help prevent vegetation growth, and allow water to drain more quickly.

A rail line also ran across the northern portion of the property beginning in the late 1800s. The former rail bed is now an overgrown drainage ditch.

In the winter of 2011, City of Watertown DPW crews discovered a tank inside an underground concrete vault while exploring the Site for former building foundations. Discovery of the tank was reported to NYSDEC and assigned Spill #1010788. This tank remains at the Site and according to historical records it is likely that at least one more tank is present on the property. Both of these tanks reportedly held fuel oil with a capacity of 10,000 gallons and were closed in-place in 1989.

1.3 Previous Site Investigations

Previous investigations completed at the Site have been documented in the following reports:

- *Phase I Environmental Site Assessment, Former Ogilvie Foods, 148 N. Pleasant Street, Watertown, NY 13601*, prepared by; GYMO, January 2005. (Text of report attached)

- *Phase II Environmental Site Assessment, Former Ogilvie Foods, 148 N. Pleasant Street, Watertown, NY 13601*, prepared by; GYMO, March 2005. (Attached)

- *Subsurface Investigation for the Purpose of Identifying Petroleum Contaminated Area, NYSDEC Spill # 04-13251, Ogilvie Foods, 148 N. Pleasant Street, Watertown, NY 13601*, prepared by; GYMO, April 14, 2006. (Attached)

<u>Phase I Environmental Site Assessment- 2005</u>
A Phase I Environmental Site Assessment (ESA) was completed by GYMO in January 2005, in accordance with ASTM *Standard Practice for Environmental Site Assessments E 1527-00*. The report indicates the former presence of four (4) 10,000-gallon underground storage tanks (USTs) used for fuel oil. The tanks were reportedly closed prior to April 1991. There were also three (3) registered aboveground chemical bulk storage tanks: 5,000-gallon and 500-gallon sodium hydroxide tanks, and a 500-gallon ammonium hydroxide tank. The tanks were reportedly removed prior to demolition.

<u>Phase II Environmental Site Assessment- 2005</u>
A Phase II ESA was completed by GYMO in March 2005. The investigation focused on the east side of the property, near California Avenue. A total of twenty-one (21) soil borings (B-1 through B-21) were installed to a depth of 12 feet or refusal, at the locations shown on Figure 2. Evidence of petroleum contamination (i.e., PID readings, odors,

staining) was noted in several soil borings located near the former building foundation closest to California Avenue. These findings were reported to NYSDEC and assigned Spill #04-13251. One soil sample (B-17, 7-8 ft.) collected from the California Avenue right-of-way near the corner of a former building foundation was submitted for lab analysis. All compounds detected were below Unrestricted Use Soil Cleanup Objectives (SCOs), with the exception of xylene (302 ppb). Laboratory results are summarized in Table 1. A water sample was collected from boring B-13, within the California Avenue right-of-way, using a Geoprobe Screen Point 15 retractable screen sampling probe. The water sample was non-detect for VOCs and SVOCs (EPA Method 8260 and 8270).

Subsurface Investigation- 2006

In March 2006, GYMO performed an additional "Subsurface Investigation for the Purpose of Identifying Petroleum Contaminated Area". The additional investigation included excavation of sixteen (16) test pits (001 through 016) located across the Site. Test pit locations are shown on Figure 2. A total of five (5) soil samples were collected from the test pits and submitted for lab analysis of VOCs (EPA Method 8021) and SVOCs (EPA Method 8270); and one (1) shallow soil sample was submitted for analysis of metals. All results were below Unrestricted Use SCOs, with the exception of copper (54 ppm) detected slightly above the Unrestricted Use SCO of 50 ppm in shallow soil collected from the former railroad bed (Sample 103C). The report recommended excavation and disposal of approximately 1,500 tons of petroleum impacted soil on the eastern side of the property.

Analytical results for compounds detected during previous investigations are summarized in Table 1. Data are compared to the soil cleanup objectives listed in Title 6 of the New York Codes, Rules, and Regulations (NYCRR), Subpart 375-6.8 for Unrestricted Use and Residential Use. No groundwater monitoring wells were installed at the Site during previous investigations.

Test Excavations- 2011

In addition to the investigations described above, twenty-one (21) test excavations were completed by Bernier & Carr Associates for the Neighbors of Watertown in early 2011. Test excavation locations are shown on Figure 2. The intent of the exploratory excavations was to provide an estimate for removal of the remaining building slabs and foundations in preparation for Site redevelopment. Test excavation B-10 confirmed the location of a UST. Soil with petroleum odors was noted at location B-17. No soil samples were collected from the excavations.

1.4 Contemplated Use

The Site is currently undeveloped and zoned for light industry. Proposed future use is for residential housing, consistent with surrounding land uses. This will require a zoning change to residential. The City of Watertown is the governing body for zoning changes. Local residents and the Neighbors of Watertown support the contemplated use of the Site.

2.0 Scope of Work

The major tasks and elements associated with this Work Plan are described in detail within this section.

2.1 Pre-Remedial Design Investigation

Examination of summary reports completed to date identifies an area of concern related to petroleum contamination on the northeastern portion of the Site (see Figure 2). Laboratory analysis of soil and groundwater was limited during the previous investigations, and the UST area was not investigated. Therefore, a focused Pre-Remedial Design Investigation will be conducted to better characterize impacted soil/fill, assess groundwater quality impacts, and assist with development of remedial design plans.

2.1.1 Surface Soil Sampling

Surface soil sampling will be conducted along the northern portion of the Site, in the area of the former rail bed, and other areas of accessible surface soil. An estimated total of nine (9) samples will be collected from a depth of 0-6 inches below vegetative cover using a pre-cleaned stainless steel spoon or trowel. Proposed sample locations are shown on the Site Plan – Figure 3. Samples will be submitted to an ELAP-approved analytical laboratory for analysis of the following parameters:

- SVOCs – EPA Method 8270
- TAL Metals
- Polychlorinated Biphenyls (PCBs) – EPA Method 8082
- Pesticides – EPA Method 8081

Surface soil sample locations will be field located using a Trimble© GPS unit capable of achieving sub-meter accuracy.

2.1.2 Additional Sub-Surface Investigation

The objective of the additional sub-surface investigation is to confirm the findings of previous investigations, locate a suspected additional UST, and aid in the development of a remedial design plan. Additional test pit excavations will be completed in the petroleum-impacted area on the northeastern portion of the property and in the vicinity of the UST(s).

It is anticipated that the test pit investigation will be completed in one day, using a conventional backhoe or excavator. Test pit depths will vary depending on location, intent, and characteristics observed, with at least one attempted to be completed to bedrock.

If possible, the test pit investigation may be conducted concurrently with the foundation removal to facilitate identification of the suspected UST.

Soils will be screened for VOCs with a photoionization detector (PID) and recorded on test pit logs. Soil samples will be collected from the test pits if elevated PID readings and/or visual or olfactory evidence of contamination is encountered. An estimated total of eight (8) soil samples will be submitted for laboratory analysis of the following parameters:

- VOCs – EPA Method 8260
- SVOCs base/neutrals – EPA Method 8270
- TAL Metals

Determinations as to which specific samples will be analyzed will be based on PID screening results, sample location relative to other samples and significant site features, and the judgment of the Field Team Leader. No sampling beyond the scope of work approved by the NYSDEC will be conducted without the prior consent of the City's designated representative.

Excavated material will be backfilled after field screening and sampling is complete.

2.1.3 Waste Characterization Sampling

Sub-surface soil samples will be collected for waste characterization from grossly contaminated soil associated with former USTs and past operations during the test pit investigation, as necessary, to determine disposal options. Samples will also be obtained from water/oil in the UST(s) for disposal approval.

2.1.4 Groundwater Investigation

The installation of five (5) groundwater monitoring wells is proposed for obtaining samples and establishment of Site hydrogeology. Approximate monitoring well locations are indicated on the Site Plan (Figure 3). Actual well locations will be determined based on findings of the test pit investigation, Site features, and at the discretion of the field team leader with approval from NYSDEC.

<u>Monitoring Well Installation</u>

Monitoring well installation will be performed by a qualified and licensed drilling subcontractor, under the supervision of a Lu Engineers geologist. Borings will be advanced using 4.25 ID hollow-stem augers and continuous split spoon samples will be collected at each boring. All split-spoon samples will be logged by a geologist and recorded for reference. Field screening measurements of VOCs from soil split-spoon samples will be performed using a MiniRAE 3000 PID meter. Representative soil samples will be collected from borings indicating elevated PID readings or other evidence of contamination.

Borings will be advanced approximately five (5) feet into groundwater. It is assumed that bedrock drilling will be necessary at this Site, and that the depth to groundwater is less than 25 feet. All monitoring wells will be constructed according to the following specifications.

- 10 feet of 2-inch Schedule 40 polyvinyl chloride (PVC) machine-slotted screen (0.010-inch slot) installed from the bottom of the boring up to 5 feet above the top of the water table to account for potential seasonal water level fluctuations.
- Two-inch ID Schedule 40 PVC riser casing will be used to complete the wells to grade.
- A sand filter pack composed of chemically inert, coarse-grained sand will be placed from the bottom of the boring to 1 to 2 feet above the top of the screen.
- A 2-foot thick bentonite seal will be placed above the sand, followed by Portland cement/5% bentonite mixture to the surface.
- The wells will be completed with locking, protective steel casings set in concrete drainage pads. Flush-mounted completions will be used in paved areas. Vented PVC well caps will be placed on each well upon completion.

Well construction logs will be completed for all monitoring well installations.

Based on the results of previous investigations, it is anticipated that drill cuttings and water generated during drilling will be not require off-site disposal. Investigation-derived wastes exhibiting evidence of gross contamination (i.e., elevated PID readings, sheen, strong odor) will be containerized and staged on-site. Final disposal of soils and water will be dependent on the results of the soil and groundwater analyses to be conducted during this investigation.

Split-spoons will be appropriately decontaminated prior to each use. Decontamination will involve these three steps:

1. Removal of gross debris;
2. Washing with an Alconox solution; and
3. A triple rinse with clean water.

Well Development

After construction of each well is complete, the wells will be developed using submersible pumps. Well development will consist of gentle surging followed by purging in order to draw sediments out of the sand pack and into the well for removal. Development will continue until turbidity of the discharge is 50 nephelometric turbidity units (NTU) or less, or the well is purged dry. All field instrument measurements made during development will be recorded on Well Development Logs. Development will occur no sooner than 48 hours after well installation.

Development water with no evidence of contamination will be discharged to the ground surface, allowing for infiltration in the area of the monitoring well. Purged water exhibiting evidence of gross contamination (i.e., elevated PID readings, sheen, strong odor) will be containerized and staged on-site. Final disposal of soils and water will be

dependent on the results of the soil and groundwater analyses to be conducted during this investigation.

Groundwater Sampling
Groundwater monitoring wells will be sampled no sooner than one week after development is completed in order to allow the wells to recover with groundwater representative of the underlying soil in the vicinity of the wells. Prior to sampling, the water level at each well will be measured, using an electronic water level indicator, with reference to the casing elevation and recorded.

Low-flow purging and sampling methods will be utilized to obtain an accurate representation of groundwater quality in the vicinity of the wells. Variable speed peristaltic pumps (i.e., Geopump) with ¼" polyethylene tubing will be used for collection of water samples. The following parameters will be measured in the field during sample collection using field testing equipment:

- Dissolved oxygen
- Oxidation/reduction potential
- pH
- Conductivity
- Temperature
- Turbidity

Once these parameters have stabilized, a sample will be collected from each well for analysis of VOCs (EPA 8260+STARS) and SVOCs (EPA 8270+STARS).

It is assumed that purge water generated during sampling activities will not need to be containerized.

2.2 Site Survey

A survey of the Site will be performed by a NYS Licensed Surveyor to identify property boundaries and existing features including all monitoring wells. A base map of the Site will be produced using the NAD 83 UTM Zone 18 (NYTM) coordinate system to show locations of all sample points. After the installation of monitoring wells, an instrument survey will be performed and the top of the inner casing determined to 0.01 foot by a NYS Licensed Surveyor and at least one other permanent object (i.e., property corner markers, corners of buildings, etc.) in the vicinity of the wells. All other sample locations will be mapped using a using a Trimble hand-held global positioning system (GPS) unit capable of achieving sub-meter accuracy.

2.3 UST Removal

All accessible underground storage tanks and associated piping will be excavated and disposed of in accordance with NYSDEC protocols in DER-10 Section 5.5, Petroleum Bulk Storage Regulations in 6 NYCRR Part 613.9, and other local codes. The identified tank is assumed to be a 10,000-gallon #6 fuel oil tank. An additional 10,000-gallon fuel oil tank is suspected to be present at the Site. The tank location is shown on the Site Plan (Figure 3).

Tank removal will be performed by a qualified subcontractor with oversight by Lu Engineers. The tanks will be emptied of all contents; material removed from the tanks will be disposed of in accordance with all applicable laws. The tanks will be cleaned of all residue and product prior to disposal, and the tanks will be rendered free of petroleum vapors prior to transport. All accessible connecting lines will be disconnected and removed, or securely capped or plugged.

Upon removal of the tanks and associated piping, Lu Engineers will utilize a PID to screen the excavation floor and sidewalls, along transects no more than five feet apart. Since the tank appears to be located in an underground concrete vault, soil screening may not be applicable. The area beneath the tank(s) will be evaluated for evidence of leaks or discharges. If staining or other indications of petroleum impacts are observed, additional test pits will be completed in the tank area.

2.4 Qualitative Exposure Assessment

A qualitative exposure assessment will be conducted to determine if the presence and concentrations of chemical(s) in environmental media at the Site pose potential human health concerns. The assessment will encompass both on-site and off-site risks with the results of the exposure analysis used as one of the criteria to determine the most appropriate future actions at the Site.

Updated data obtained during the pre-remedial design investigation will be used to compile a conceptual site model that outlines the source areas, possible exposure pathways, and human receptors.

2.5 Analysis of Brownfield Cleanup Alternatives (ABCA)

Subsequent to the pre-remedial design investigation, an ABCA report will be prepared to present an evaluation of alternatives for the remediation of petroleum-contaminated soil and potential groundwater impacts at the Site. The ABCA will include a detailed engineering evaluation of the technical feasibility and costs associated with different remedial alternatives. Technical feasibility will be considered based on the following criteria:

- Protection of Human Health and the Environment
- Compliance with Standards, Criteria, and Guidance (SCG)

- Short-term Effectiveness & Impacts
- Long-term Effectiveness & Permanence
- Reduction of Toxicity, Mobility, and/or Volume of Contaminants
- Implementability
- Land Use

Only remedial alternatives that meet the above criteria will be evaluated for cost effectiveness. A tabulated breakdown of estimated costs will be included for comparison. The report will be signed and stamped by a NYS licensed professional engineer. A proposed remedy will then be finalized by the City, in consultation with Lu Engineers and the NYSDEC.

2.6 Remedial Action Work Plan

Findings of the additional investigation and alternatives analysis will be used to develop a Remedial Action Work Plan (RAWP), as a supplement to this conceptual Remedial Work Plan. The work plan will include: a description of site preparation activities; a plan to manage, characterize, and dispose of contaminated soil; a storm water management plan (if necessary); technical plans and specifications; a health and safety plan; description of institutional and engineering controls; and reporting requirements. The work plan will be signed and stamped by a NYS Professional Engineer.

A full-scale Remedial Design is not anticipated to be necessary for this project.

2.7 Soil Removal

The actual quantity and locations of soil to be removed will be dependent on the findings of the ABCA and pre-remedial design investigation. A detailed Remedial Action Work Plan will be prepared and submitted for NYSDEC approval prior to any soil removal activities.

If areas of concern are easily identified and delineated during the test pit investigation, impacted soil may be removed as an interim remedial measure to address source materials, with approval by the City of Watertown and NYSDEC. Impacted soils would be disposed off-site at a permitted landfill.

3.0 Quality Assurance/Quality Control

A Quality Assurance Project Plan (QAPP) detailing quality assurance/quality control procedures that will be adhered to during this project is included in Appendix A. The QAPP was prepared in accordance with the US EPA Region 2 *Guidance for the Development of Quality Assurance Project Plans for Environmental Monitoring Projects* (April 2004).

All samples will be obtained, handled and characterized in accordance with the most recent NYSDEC Analytical Services Protocol (ASP) methods. Samples will be relinquished to a subcontracted NYSDOH Environmental Laboratory Approval Program (ELAP)-certified laboratory. All chain of custody requirements will be strictly adhered to for designated analyses.

ASP Category B deliverables will be submitted for all analytical data, unless otherwise noted in this work plan. A Data Usability Summary Report (DUSR) will be prepared to describe the compliance of the analyses with the analytical method protocols detailed in the NYSDEC ASP.

The following table identifies all samples and laboratory analytical procedures anticipated to complete this project.

Table 3.1 Sampling and Analysis Summary

Type	Location/Sample Number Scheme	Analyses	# Field Samples	Field Duplicates	MS/MSD	Total
Subsurface Soils (Backhoe and/or Drill Rig)	TP-xx	TCL VOCs, SVOCs, TAL Metals	**6**	**1**	**1/1**	**9**
	TP-xx	Waste Characterization*	**1**	**n/a**	**n/a**	**1**
	WB-xx	TCL VOCs, SVOCs (B/N only)	**3**	**-**	**-**	**3**
Surface Soils	SS-xx	SVOCs, Metals, PCBs, Pesticides	**9**	**1**	**1/1**	**12**
Groundwater	Trip Blank	TCL VOCs	**1**			**1**
	MW-xx	TCL VOCs, SVOCs	**5**	**1**	**1/1**	**8**

*Waste Characterization includes analytes to be determined based on findings and method/place of disposal.

4.0 Health and Safety Protocols

A Site-Specific Health and Safety Plan (HASP), Appendix B, was prepared for the project in accordance with applicable general industry and construction standards of the Federal Occupational Safety and Health Administration (OSHA), U.S. Department of Labor, as well as any other Federal, State or local applicable statutes or regulations. The HASP will be adhered to by all personnel involved in the investigation.

Monitoring of the work area and screening of soil and groundwater will be conducted throughout the duration of field activities to assure the safety of on-site workers.

A written Community Air Monitoring Plan (CAMP) was prepared in accordance with the requirements of the Environmental Bond Act. This Plan will be followed during all Site activities. The CAMP for Site work is attached as Appendix C.

5.0 Project Organization

Lu Engineers has established a project team for the Former Ogilvie Foods Site whose collective qualifications and experience are strongly suited for successful completion of the project. The proposed responsibilities of key staff are summarized below:

Gregory L. Andrus, CHMM, will be the Project Director for this work. Mr. Andrus will have overall responsibility for ensuring that the project meets client objectives and Lu Engineers' quality standards. In addition, the project director will be responsible for technical quality control and project oversight and will provide the project manager with access to upper management.

Laura Neubauer, CHMM, will be the Project Manager for the work. In this capacity Mr. Andrus will be responsible for the successful completion of each task including coordination and supervision of engineers and scientists, and adherence to the work plan, schedule and budget.

Eric Detweiler, will be the field geologist responsible for implementing the field effort. Responsibilities will include directing drilling subcontractors, and ensuring completion of field activities.

Susan A. Hilton, P.E., will be the Quality Assurance Officer (QAO). Ms. Hilton will assist the project manager in the development of the work plan, interface with the laboratory to make requests and resolve problems and coordinate with the data validator during development of Data Usability Summary Reports.

Qualifications of the above listed team members are included in Appendix D.

6.0 Reporting and Schedule

Following receipt of validated analytical results, Lu Engineers will prepare a summary of the pre-remedial investigation findings for inclusion in the RAWP. An ABCA report will be prepared for submission to NYSDEC along with the RAWP in an effort expedite the approval/comment process.

A Remedial Action Report will be prepared upon completion of cleanup activities, in accordance with Section 5.8 of DER-10.

A detailed project schedule, including all anticipated fieldwork and report submission, is included in Appendix E. From the time of project start-up, it is our professional estimate that the project will take approximately one year to complete. This takes program components of the BCP and associated NYSDEC review into consideration.

7.0 References

Phase I Environmental Site Assessment, Former Ogilvie Foods, 148 N. Pleasant Street, Watertown, NY 13601, prepared by; GYMO, January 2005.

Phase II Environmental Site Assessment, Former Ogilvie Foods, 148 N. Pleasant Street, Watertown, NY 13601, prepared by; GYMO, March 2005.

Subsurface Investigation for the Purpose of Identifying Petroleum Contaminated Area, NYSDEC Spill # 04-13251, Ogilvie Foods, 148 N. Pleasant Street, Watertown, NY 13601, prepared by; GYMO, April 14, 2006.

Boring Plan, Butler Place, prepared for Neighbors of Watertown, by Bernier, Carr & Associates, P.C., dated December 27, 2010, with comments from City of Watertown Department of Public Works, J. Carlsson and T. Ossola, dated 2011.

Figures

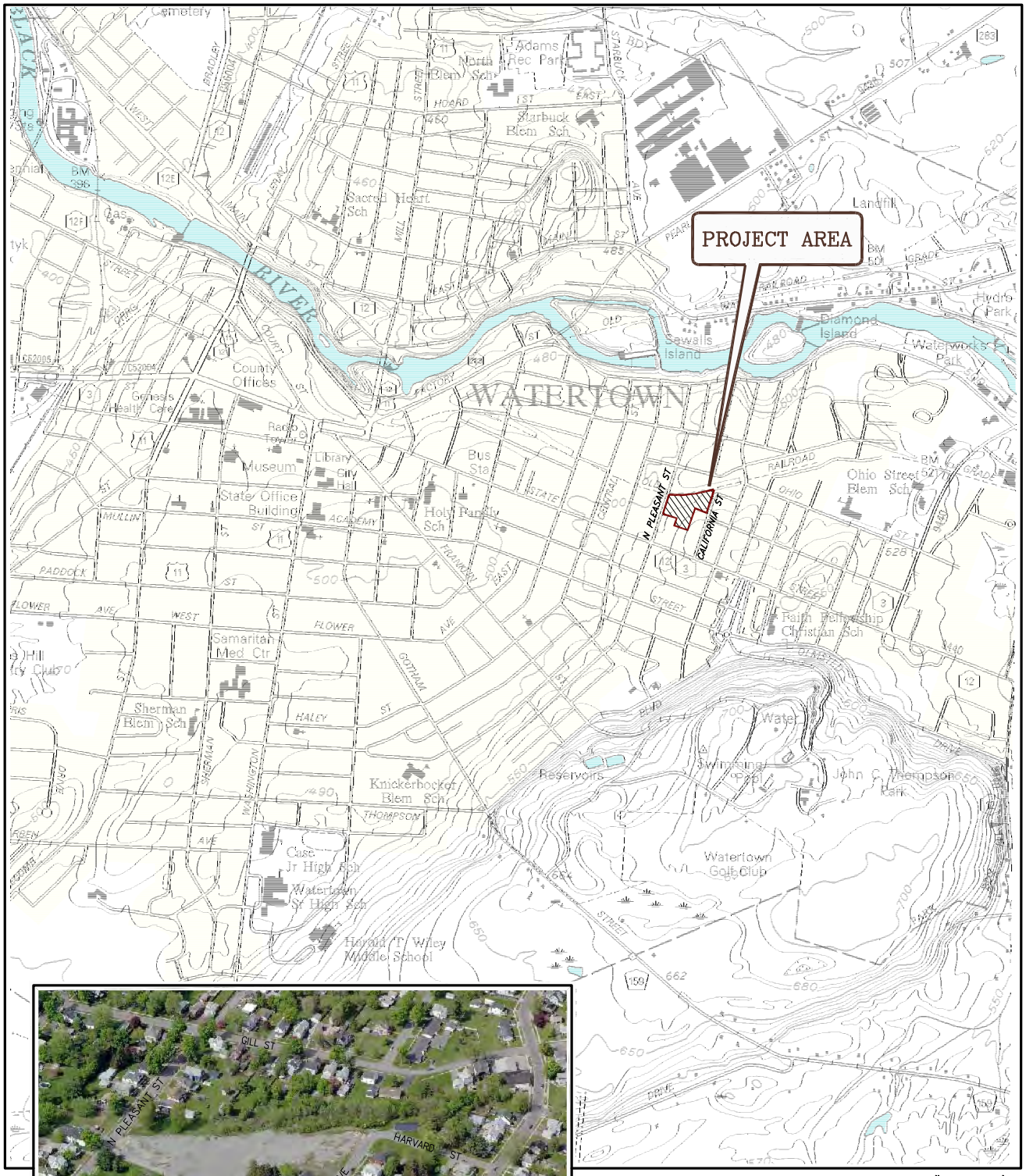

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FIGURE 1. SITE LOCATION MAP

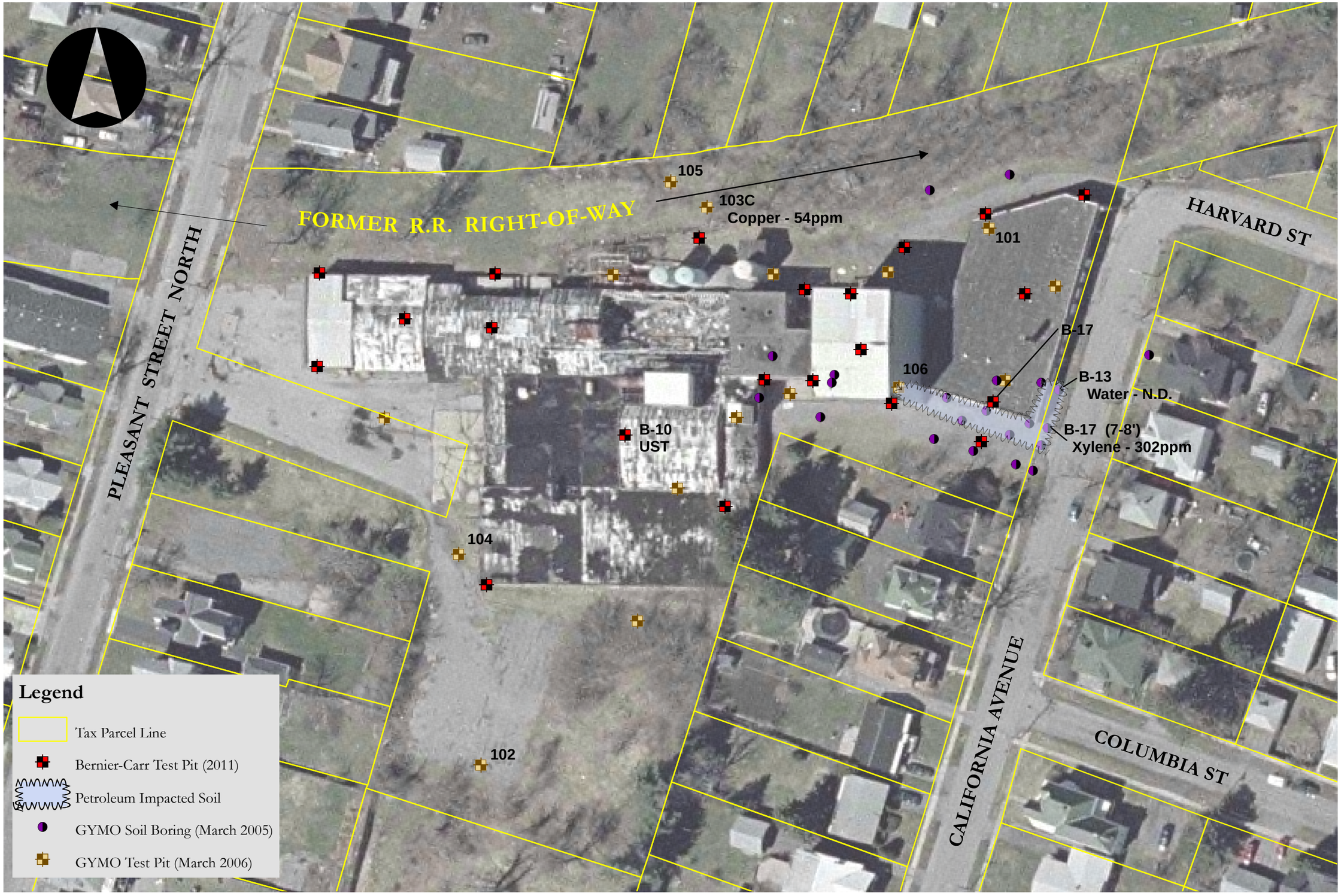
CITY OF WATERTOWN

148 PLEASANT STREET NORTH (fmr. Ogilvie Foods)
WATERTOWN | JEFFERSON COUNTY | NEW YORK

Lu P.N. 34211

DATE:	JANUARY 2012
SCALE:	1:24,000
DRAWN BY:	DLS

MAP SOURCE: NYS DOT RASTER QUADRANGLE; WATERTOWN / NEW YORK, JEFFERSON COUNTY
DOT EDITION DATE: 1996 / USGS CONTOUR DATE: 1959



DATE: 19 July 2012

SCALE: 1" = 60'

DRAWN/CHECKED: JSB/LMN

IMAGE SOURCE: NYS CLEARINGHOUSE - 2003

FIGURE 2. PREVIOUS SAMPLE PLAN
CITY OF WATERTOWN
148 PLEASANT STREET NORTH (fmr. Ogilvie Foods)
WATERTOWN I JEFFERSON COUNTY I NEW YORK
Lu P.N. 34211

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FIGURE 3. SITE PLAN

CITY OF WATERTOWN
148 PLEASANT STREET NORTH (fmr. Ogilvie Foods)
WATERTOWN | JEFFERSON COUNTY | NEW YORK

Lu P.N. 34211

DATE: JULY 2012
SCALE: 1" = 60'
DESIGNED/DRAWN/CHECKED: LMN/DLS/GLA

IMAGE SOURCE
NEW YORK STATE DIGITAL ORTHOIMAGERY PROGRAM
GIS DATA – HIGH RESOLUTION IMAGERY, 2006

Tables

Table 1 - Previous Soil Sample Data

Detected Parameters	Unrestricted Use[3]	Residential Use[4]	B-17	101	102	103	104	105	106
		Date Sampled:	3/21/2005	3/9/2006	3/9/2006	3/9/2006	3/9/2006	3/9/2006	3/9/2006
STARS VOCs- 8021[1]									
m/p-Xylenes	-	-	302	ND	ND		ND	ND	ND
n-Propylbenzene	**3,900**	**100,000**	509	ND	ND		ND	ND	ND
1,3,5-Trimethylbenzene	**8,400**	**47,000**	360	ND	ND		ND	ND	ND
1,2,4-Trimethylbenzene	**3,600**	**47,000**	1960	ND	ND		ND	ND	ND
sec-Butylbenzene	**11,000**	**100,000**	320	ND	ND		ND	ND	ND
p-Isopropyltoluene	-	-	117	ND	ND		ND	ND	ND
n-Butylbenzene	**12,000**	**100,000**	1550	ND	ND		ND	ND	ND
Naphthalene	**12,000**	**100,000**	1118	ND	ND		ND	ND	ND
Total Xylenes	**260**	**100,000**	302	ND	ND		ND	ND	ND
SVOCs- 8270[1]									
Naphthalene	**12,000**	**100,000**	1075	ND	ND		ND	ND	ND
Fluorene	**30,000**	**100,000**	480	ND	ND		ND	ND	ND
Phenanthrene	**100,000**	**100,000**	1075	ND	ND		ND	130	ND
Fluoranthene	**100,000**	**100,000**	ND	124	ND		ND	227	272
Pyrene	**100,000**	**100,000**	ND	129	ND		ND	173	262
Benzo(a)anthracene	**1,000**	**1,000**	ND	ND	ND		ND	ND	138
Chrysene	**1,000**	**1,000**	ND	ND	ND		ND	127	156
Benzo(b)fluoranthene	**1,000**	**1,000**	ND	ND	ND		ND	ND	116
Benzo(k)fluoranthene	**800**	**1,000**	ND	ND	ND		ND	ND	129
Benzo(a)pyrene	**1,000**	**1,000**	ND	ND	ND		ND	127	133
Indeno(1,2,3-cd)pyrene	**500**	**500**	ND	ND	ND		ND	150	ND
Benzo(ghi)perylene	**100,000**	**100,000**	ND	ND	ND		ND	186	ND
METALS[2]									
Arsenic	**13**	**16**		ND	1.9	5.2	ND	ND	
Chromium (total)	**30**	**36**		4.8	6.2	8.2	2.7	5.4	
Copper	**50**	**270**		5.7	5.5	54	3.2	8.4	
Lead	**63**	**400**		5.0	8.0	30	3.2	22	
Mercury	**0.18**	**0.81**		ND	ND	0.11	ND	0.06	
Nickel	**30**	**140**		4.9	3.9	6.6	2.5	5.5	
Selenium	**3.9**	**36**		ND	0.52	0.32	ND	ND	
Zinc	**109**	**2,200**		19	14	64	8.4	32	

1- Results presented in parts per billion (ppb)

2- Results presented in parts per million (ppm)

3- NYSDEC Unrestricted Use Soil Cleanup Objectives [6 NYCRR Part 375-6.8(a)]

4- NYSDEC Residential Use Soil Cleanup Objectives [6 NYCRR Part 375-6.8(b)]

~value exceeds Unrestricted Use Soil Cleanup Objectives

Appendix A –
Quality Assurance Project Plan

Former Ogilvie Foods Site
145 N. Pleasant Street
City of Watertown
Jefferson County, New York

Quality Assurance Project Plan

Prepared For:

City of Watertown
245 Washington Street
Watertown, New York 13601

Prepared By:

Lu Engineers
ENVIRONMENTAL • TRANSPORTATION • CIVIL

175 Sully's Trail, Suite 202
Pittsford, New York 14534

September 2012

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1.0 Introduction

This Quality Assurance Project Plan (QAPP) was prepared in accordance with the United States Environmental Protection Agency (US EPA) Region 2 "Guidance for the Development of Quality Assurance Project Plans for Environmental Monitoring Projects" (April 2004) for 145 N. Pleasant Street, Watertown, New York. This QAPP provides quality assurance/quality control (QA/QC) protocols and guidance that are to be followed when implementing the Remedial Work Plan for the Site to ensure that data of a known and acceptable precision and accuracy are generated.

The QAPP also provides a summary of the project, identifies personnel responsibilities, and provides procedures to be used during sampling of environmental media, other field activities, and the analytical laboratory testing of samples.

1.1 Project Scope and Objective

The QAPP applies to the aspects of the project associated with the collection of field data, laboratory testing of field samples and QA/QC samples, and evaluation of the quality of data that is generated. The scope of work is described in the Remedial Work Plan Section 2.0. In general, the project objective is to obtain sufficient information to further characterize the nature and extent of contamination the Site to assist in the development of a technical remedial action plan.

2.0 Project Organization and Responsibility

Project organization and tentative personnel to implement the work are outlined in this section of the QAPP.

2.1 City Project Manager

Mr. Andrew Nichols will serve as the City of Watertown Project Manager on this project. Mr. Nichols will review project documents, assist in key decisions as they relate to various components of the project, etc., as deemed necessary by the City.

2.2 Lu Engineers Organization

Lu Engineers will provide environmental consulting and engineering for the project. Additional information regarding key personnel is provided below, and resumes of key personnel are included in the Remedial Work Plan - Attachment D.

<u>Project Director</u>
The project director for this project will be Gregory Andrus, CHMM. As project director, Mr. Andrus will have overall responsibility for ensuring that the project meets client objectives and Lu Engineers' quality standards. In addition, the project director will be responsible for technical quality control and project oversight and will provide the project manager with access to upper management.

Project Manager
The project manager for this project will be Laura Neubauer, CHMM. As project manager, she will be responsible for implementing the project and will have the authority to commit the resources necessary to meet project objectives and requirements. The project manager's primary function is to ensure that technical, financial, and scheduling objectives are achieved. The project manager will provide the major point of contact and control for matters concerning the project.

Quality Assurance Officer (QAO)
The QA officer responsible for QA/QC on this project is Susan Hilton, P.E. The QAO may conduct audits of the operations at the Site to ensure that work is being performed in accordance with the QAPP.

Technical Staff
The technical staff (team members) for this project will be drawn from Lu Engineers pool of resources. The technical team staff will be utilized to gather and analyze data and to prepare various task reports and support materials. All of the designated technical team members are experienced professionals who possess the degree of specialization, training and technical competence required to effectively and efficiently perform the required work.

2.3 Analytical Laboratory

Test America, Inc. (Test America) of Amherst, New York will provide analytical services for the project. Test America is a NYSDOH Environmental Laboratory Approval Program (ELAP)-certified analytical laboratory (ELAP ID 10026). A copy of Test America's Statement of Qualifications is available upon request.

The laboratory Project Manager for this project is Lisa Shaffer.

The laboratory QA Manager is Paula Benham.

2.4 Data Validation Staff

All environmental data will be validated in accordance with the USEPA Region 2, Data Validation SOPs for SW-846 methods. The third party data validation staff is to be determined.

Data validation will include technical specialists who remain independent of the laboratory and project management. The staff will independently validate analytical data to assess and summarize their accuracy, precision, and reliability and determine their usability. The staff will also perform audits and document the historical record of project activities, including any factors affecting data usability, such as data discrepancies and deviations from standard practices.

3.0 Quality Assurance/Quality Control

As part of this work plan, QA/QC protocol and procedures have been developed and are described below. The objective of the QA/QC protocol and procedures is to ensure that the information, data, and decisions associated with this project are technically sound and properly documented. These QA/QC protocol and procedures will be modified in supplemental work plans when deemed appropriate.

3.1 Operation and Calibration of On-Site Monitoring Equipment

The on-site monitoring equipment includes volatile organic compound (VOC) monitors, particulate monitors, electronic water level indicators, water quality meters, and GPS units. Operation and calibration of monitoring equipment anticipated for use during the project are discussed below.

3.1.1 VOC Monitoring Equipment

Real-time monitoring for VOCs will be conducted to evaluate the nature and extent of petroleum discharges at that Site and to monitor worker breathing zone air as noted in the HASP. The primary field instrument for monitoring VOCs will be a photoionization detector (PID). It is anticipated that a MiniRAE 3000 PID equipped with a 10.6 eV lamp will be used during this project. An accredited firm/testing laboratory will calibrate the equipment on a yearly basis. During fieldwork, the PID will be calibrated on a daily basis in accordance with the manufacturer's specifications. Isobutylene gas will be used to calibrate the PID prior to use and as necessary during fieldwork. Daily PID calibrations will be recorded in the field logbook.

3.1.2 Particulate Monitoring Equipment

Particulate monitoring will be conducted during intrusive activities as noted in the Community Air Monitoring Plan (CAMP) portion of the HASP. It is anticipated that the particulate air monitoring will be conducted using a DataRAM (or equivalent) real-time aerosol monitor particulate meter. An accredited firm/testing laboratory will calibrate the equipment on a yearly basis. During fieldwork, the particulate meter will be regularly calibrated in accordance with the manufacturer's specifications.

3.1.3 Miscellaneous Field Monitoring Equipment

Several other types of field monitoring equipment will be used during the project, including:

- An electronic static water level indicator;
- A YSI Professional Plus water quality meter that measures pH, specific conductivity, temperature, dissolved oxygen, and oxygen-reduction potential; and
- A LaMotte 2020e turbidity meter.

These meters will be calibrated, operated, and maintained in accordance with the manufacturer's recommendations.

3.2 Surface Soil Sampling

Surface soil samples will be collected from locations indicated on the sample location map. Samples will be obtained with a pre-cleaned stainless steel trowel or spoon and transferred to the appropriate clean glass containers. Sufficient sample volume (as specified by the laboratory) will be collected to fill the sample bottles. All tools to be used will be decontaminated according to procedures outlined in Section 4.0 prior to usage.

Any observable physical characteristics of the soil as it is being sampled (e.g., color, odor, physical state) will be recorded on Surface Soil Sample Logs.

3.3 General Soil Screening and Logging

During subsurface investigation, a Lu Engineers field team member will document visual observations, screen the soils with a PID, collect selected samples for laboratory analysis, photograph the field work, and prepare the appropriate field logs to document pertinent information. Pertinent information will be recorded on test pit logs and boring/well logs, and will include:

- Date, location identification, and project identification;
- Name of individual completing the log;
- Name of contractor;
- Equipment make and model, and auger size;
- Drilling methods used;
- Depths recorded in feet and fractions thereof referenced to ground surface;
- Standard penetration test (ASTM D-1586) blow counts;
- Sample depth interval and % recovered;
- Description of soil type using the Unified Soil Classification System or NYSDOT Soil Control Procedure STP-2 “An Engineering Description of Soils, Visual-Manual Procedure”;
- Depth of water encountered;
- Well specifications (materials, screened interval, etc); and
- PID screening results of soil samples.

Logs for wells advanced into bedrock will also include pertinent information pertaining to the following characteristic noted on the bedrock cores:

- Bedrock type and lithology;
- Core Recovery Calculations and Rock Quality Determinations (RQDs);
- Bedrock field strength, color, and texture;
- Bedrock degree of decomposition, weathering, and disintegration;
- Bedrock fracture types (e.g., vertical, lateral, diagonal, mechanical), density, and fracture infilling; and
- The anticipated formation name.

3.4 Well Development

After completion of the wells, but not sooner than 48 hours after grouting is completed, development will be accomplished using submersible pumps. No dispersing agents, acids, disinfectants, or other additives will be used during development nor be introduced into the well at any other time. During development, water will be removed throughout the entire water column by periodically lowering and raising the pump intake.

Well development will consist of gentle surging followed by pumping the well to remove sediments from the well screen and surrounding formation. In a case where considerable drill water is lost to the formation during drilling, an attempt to remove a volume of water greater than the volume lost will be made. If this is not feasible, a greater amount of time between development and groundwater sampling will be allotted.

The development process will continue until clarity (goal of <50 NTUs) of the discharge is achieved, the well is purged dry repeatedly, or for a maximum of two hours. Pertinent information from development activities will be recorded on Well Development Field Forms.

3.5 Low-Flow Groundwater Purging and Sampling

Prior to purging and sampling, static water level measurements will be taken from each well using a Solinst water level meter, or similar instrument. The presence and thickness of any light non-aqueous phase liquids (LNAPL) will be noted in the field logbook.

A portable peristaltic pump (i.e., Geopump) connected to new disposable polyethylene tubing will be used for collection of groundwater samples. The tubing will be lowered into the well and positioned at or slightly above the mid-point of the well screen. Care will be taken to install and lower the tubing slowly in order to minimize disturbance of the water column.

A pumping rate of less than 500 ml/min will be selected. The water level in the well will be measured and the pump rate will be adjusted until the drawdown is stabilized. The water level in the well will be measured periodically using an electronic water level meter to ensure optimum flow rate for purging and sampling.

When the water level in the well has stabilized (i.e., goal of <0.3 feet of drawdown once stabilized), water quality parameters will be monitored at a frequency of 3-5 minutes with a YSI Professional Plus (or equivalent) water quality meter using an in-line flow-through cell. Turbidity will be measured with a LaMotte 2020e (or equivalent) turbidity meter. Water quality indicator parameters will be considered stabilized after three consecutive readings for each of the following parameters are achieved:

- pH ($\pm$ 0.1)
- specific conductance ($\pm$ 3%)
- dissolved oxygen ($\pm$ 10%)
- oxidation-reduction potential ($\pm$ 10 mV)
- temperature ($\pm$ 10%)
- turbidity ($\pm$ 10%, when turbidity is greater than 10 NTUs)

Following stabilization of water quality parameters, the flow-through cell will be disconnected and a groundwater sample will be collected from the tubing. The pumping rate during sampling will remain at the established purge rate or it may be adjusted downward to minimize aeration. A pumping rate below 250 ml/min will be used when collecting VOC samples.

Field observations, water quality parameters, and other pertinent information obtained during sampling will be recorded on Low-Flow Groundwater Sampling Field Records.

3.6 Field QC Samples

Various types of field QC samples are used to check the cleanliness and effectiveness of field handling methods. They are analyzed in the laboratory as samples, and their purpose is to assess the sampling and transport procedures as possible sources of sample contamination and document overall sampling and analytical precision.

- **Trip Blanks** are similar to field blanks with the exception that they are not exposed to field conditions. Their analytical results give the overall level of contamination from everything except ambient field conditions. Trip blanks are prepared at the lab prior to the sampling event and shipped with the sample bottles. Trip blanks are prepared by adding organic-free water to a 40-ml VOA vial. One trip blank will be used with every batch of water samples shipped for volatile organic analysis. Each trip blank will be transported to the sampling location, handled like a sample, and returned to the laboratory for analysis without being opened in the field.
- **Field Equipment/Rinseate Blanks** are blank samples designed to demonstrate that sampling equipment has been properly prepared and cleaned before field use and that cleaning procedures between samples are sufficient to minimize cross-contamination. Rinseate blanks are prepared by passing analyte-free water over sampling equipment and analyzing the samples for all applicable parameters. If a sampling team is familiar with a particular site, its members may be able to predict which areas or samples are likely to have the highest concentration of contaminants. Unless other constraints apply, these samples should be taken last to avoid excessive contamination of sampling equipment. Rinseate blanks are not required if dedicated sampling equipment is used for sample collection.

Field QC samples and the frequency of analysis for this project are summarized in Table 1.

4.0 Equipment Decontamination Procedures

All decontamination will be performed in accordance with USEPA Region 2 decontamination procedures. Sampling methods and equipment have been chosen to minimize decontamination requirements and prevent the possibility of cross-contamination. All drilling equipment will be decontaminated prior to drilling, after drilling each boring/monitoring well, and after the completion of all drilling. Special attention will be given to the drilling assembly, augers, split-spoons, and PVC casing. Split-spoons will be decontaminated prior to and following each use.

Split-spoons, other non-disposable sampling equipment, and stainless steel spoons will be decontaminated using the following procedure:

- Alconox/tap water wash
- Tap water rinse
- Deionized/distilled water rinse
- Air dry

During periods of transportation and non-use, all decontaminated sampling equipment should be wrapped in aluminum foil.

One field rinsate blank will be collected for each type of equipment used each day a decontamination event is carried out.

All drill cuttings and water generated during drilling and monitoring well installation will remain on-site. It is anticipated that decontamination fluids may be discharged to the ground surface, allowing for infiltration.

If necessary, a temporary decontamination pad will be established in a secure area on-site using 6-mil polyethylene sheeting. The drill rig and associated tooling will be decontaminated using steam-cleaning methods at the designated location. Fluids generated during decontamination will be collected in the plastic-lined decontamination pad. All decontamination wastes will be transferred into drums or an on-site holding tank for appropriate staging and disposal. The City's contractor/representative will be responsible for proper staging and disposal of all investigation-derived wastes. Final disposal of soils and water will be dependent on the results of the soil and groundwater analyses to be conducted during this investigation.

5.0 Sample Handling and Custody Requirements

This section describes procedures for sample handling and chain-of-custody to be followed by Lu Engineers sampling personnel and the analytical laboratory. The purpose of these procedures is to ensure that the integrity of the samples is maintained during their collection, transportation, storage, and analysis. All chain-of-custody requirements comply with SOPs indicated in EPA sample-handling protocols, described in the EPA QAPP guidance and Contract Laboratory Protocols.

Sample identification documents will be carefully prepared so that sample identification and chain-of-custody can be maintained and sample disposition controlled. Sample identification documents include field notebooks, sample labels, custody seals, chain-of-custody records, and laboratory sample log-in and tracking forms.

The primary objective of the chain-of-custody procedures is to provide an accurate written record that can be used to trace the possession and handling of a sample from the moment of its collection through it analyses. A sample is in custody if it is:

- In someone's physical possession;
- In someone's view;
- Locked up; or
- Kept in a secured area that is restricted to authorized personnel.

5.1 Sample Containers and Preservation

New laboratory-grade sample containers obtained from a reliable supplier will be provided by the analytical laboratory. All containers provided by the laboratory are precleaned (Level 1), with Certificates of Analysis available for each bottle type. Certifications of Analysis provided by the vendor are kept on file by the laboratory.

All samples will be stored on ice pending delivery to the laboratory. A list of preservatives and holding times for each type of analysis is included in the following table.

Table 5.1
Sample Preservation and Holding Times

Sample Matrix	Analysis	Container Type and Size	Preservation	Holding Time
Soil	VOC	2-4 oz. wide mouth glass jar with Teflon-lined cap	Cool to 4°C; minimize headspace	14 days
	SVOC	2-4 oz. amber wide mouth glass jar with Teflon-lined cap	Cool to 4°C	14 days
	Metals	glass	Cool to 4°C	6 months
	PCBs	2-4 oz. glass jar with Teflon-lined cap	Cool to 4°C	14 days
Waste samples	TCLP-metals Mercury Cyanide	1 L polyethylene or glass jar	Cool to 4°C; HNO_3 to pH<2	6 months 28 Days 14 Days
	TCLP- VOC	3 - 40-ml.glass vial with Teflon-lined cap	Cool to 4°C	14 days
	TCLP-SVOC	2 - ½ L Amber Glass Jars with Teflon-lined cap	Cool to 4°C	14 days
Groundwater	VOC	3 - 40-ml.glass vial with Teflon-lined cap	Cool to 4°C; minimize headspace	14 days
	SVOC	2 - ½ L Amber Glass Jars with Teflon-lined cap	Cool to 4°C;	7 days
	Metals Mercury Cyanide	40-ml. polyethylene or glass	HNO_3 to a pH <2	6 months 28 Days 14 Days
	PCBs	2 - ½ L Amber Glass Jars	Cool to 4°C	7 days

* Holding times are based on verified time of sample receipt

Sample preservation will be verified at the lab just prior to extraction, digestion, and/or analysis and the pH will be recorded in the extraction/digestion logbook. The pH may be checked upon arrival, if desired. If the samples are improperly preserved, a QA/QC discrepancy form will be submitted to the lab manager and QA coordinator for appropriate follow-up action (i.e., evaluation of the data during the data validation process and, if necessary, additional instruction of personnel regarding proper procedures).

5.2 Sample Identification

All containers of samples collected by Lu Engineers from the project will be identified using a format identified in the field on a label affixed to the sample container (labels are to be covered with clear tape). Generally, the format will include the following.

- Two letters identifying the type of sample:
  GP- Geoprobe soil sample
  TP- test pit soil sample

MW- groundwater sample
WB- well boring soil sample
SV- soil vapor sample
SS- surface soil sample

- Two numbers identifying a sample location;
- Additional letters identifying special parameters, if applicable.

  D – Field Duplicate
  MS – Matrix Spike
  MD- Matrix Spike Duplicate
- For subsurface soil samples, the depth interval below ground surface in feet indicated in parentheses (x-x).

Example: TP-05D(4-5) is a duplicate soil sample collected from test pit location TP-05 at a depth of 4-5 ft. below grade.

Each sample will be sealed and labeled immediately after collection. To minimize handling of sample containers, labels may be filled out prior to sample collection. The sample label will be filled out using waterproof ink and will be firmly affixed to the sample containers and protected with Mylar tape. The sample label will give the sample number, the date of the collection, analysis required, and pH and preservation, if appropriate.

5.3 Field Custody Procedures

- Sample bottles must be obtained pre-cleaned from the laboratory or directly from an approved retail source. All containers will be prepared in a manner consistent with the NYSDEC ASP 1991 bottle-washing procedures. Coolers or boxes containing cleaned bottles should be sealed with a custody tape seal during transport to the field or while in storage prior to use.
- All containers will have assigned lot numbers to ensure traceability through the supplier.
- As few persons as possible should handle samples.
- The sample collector is personally responsible for the care and custody of samples collected until the samples are relinquished to another person or dispatched properly under chain-of-custody rules.
- The sample collector will record sample data in the field notebook.
- The project manager will determine whether proper custody procedures were followed during the fieldwork and decide if additional samples are required.

5.3.1 Custody Seals

Custody seals are preprinted adhesive-backed seals with security slots designed to break if the seals are disturbed. A custody seal is placed over the cap of individual sample bottles by the sampling technician. Sample shipping containers (coolers, cardboard boxed, etc., as appropriate) are sealed in as many places as necessary to ensure security. Seals must be signed and dated before use. Strapping tape should be placed around the lid to ensure that seals are not accidentally broken during shipment and in a manner that allows easy removal

by laboratory personnel. On receipt at the laboratory, the custodian must check (and certify, by completing logbook entries) that seals on boxes and bottles are intact.

5.3.2 Chain-of-Custody Record

The chain-of-custody record must be fully completed in duplicate, using black carbon paper where possible, by the field technician who has been designated by the project manager as responsible for sample shipment to the appropriate laboratory for analysis. In addition, if samples are known to require rapid turnaround in the laboratory because of project time constraints or analytical concerns (e.g., extraction time or sample retention period limitations, etc.), the person completing the chain-of-custody record should note these constraints in the "Remarks" section of the custody record.

5.4 Sample Handling, Packaging and Shipping

The transportation and handling of samples must be accomplished in a manner that not only protects the integrity of the sample but also prevents any detrimental effects due to the possible hazardous nature of samples. Regulations for packaging, marking, labeling, and shipping hazardous materials are promulgated by the United States Department of Transportation (DOT) in the Code of Federal Regulations, 49 CFR 171 through 177.

5.4.1 Sample Packaging

Samples must be packaged carefully to avoid breakage or cross-contamination and must be shipped to the laboratory at proper temperatures. The following sample packaging requirements will be followed:

- Sample bottle lids must never be mixed. All sample lids must stay with the original containers.
- The sample bottle should never be completely filled except for VOA bottles. At a minimum, a 10% void space should be left in the bottle to allow for expansion.
- All sample bottles must be sealed around the neck or the jar lid with clear tape. Any custody seals should be affixed prior to sealing the bottle.
- All sample bottles shall be placed in plastic Zip-lock bags to minimize contact with inert packing material, unless foam inserts are used.
- Foam inserts should be used as inert packing material when shipping low hazard water samples via a common carrier to the laboratory.
- Low-hazard environmental samples are to be cooled. "Blue ice" or some other artificial icing material, or ice placed in plastic bags, may be used. Ice will not be used as a substitute for packing material.
- A duplicate custody record must be placed in a plastic bag and taped to the inside of the cooler lid. Custody seals are affixed to the sample cooler.

5.4.2 Shipping Containers

Environmental samples will be properly packaged and labeled for transport and dispatched for analysis to the appropriate subcontracted laboratory. A separate chain-of-custody record must be prepared for each container. The following requirements for marking and labeling of shipping containers will be observed:

- Use abbreviations only where specified;
- The words "This End Up" or "This Side Up" must be clearly printed on the top of the outer package. Upward-pointing arrows should be placed on the sides of the package. The words "Laboratory Samples" should also be printed on the top of the package; and
- After a container has been closed, two custody seals are placed on the container—one on the front and one on the back. The seals are protected from accidental damage by placing strapping tape over them.

Field personnel will make timely arrangements for transportation of samples to the laboratory. When custody is relinquished to a shipper, field personnel will telephone the laboratory custodian to inform him of the expected time of arrival of the sample shipment and to advise him of any time constraints on sample analysis.

5.4.3 Shipping Procedures

- The coolers in which the samples are packed must be accompanied by a chain-of-custody record. When transferring samples, the individuals relinquishing and receiving them must sign, date, and note the time on the record. This record documents sample custody transfer.
- Samples must be dispatched to the laboratory for analysis with a separate chain-of-custody record accompanying each shipment. Shipping containers must be sealed with custody seals for shipment to the laboratory. The method of shipment, name of courier, and other pertinent information are entered in the "Remarks" section of the chain-of-custody record.
- All shipments must be accompanied by the chain-of-custody record identifying their contents. The original record accompanies the shipment, and the yellow copy is retained by the site team leader.
- If sent by mail, the package is registered with return receipt requested. If sent by common carrier, a bill of lading is used. Freight bills, Postal Service receipts, and bills of lading are retained as part of the permanent documentation.
- Samples must be shipped to the analytical laboratory within 24 to 48 hours from the time of collection.

5.5 Laboratory Custody Procedures

The designated sample custodian at the laboratory will be responsible for maintaining the chain-of-custody for samples received at the lab. Among other things, the custodian must adhere to the following basic requirements:

- When the sample arrives at the lab, the custodian will complete a Cooler Receipt & Preservation Form for each cooler/package container.
- Upon receipt, the coolers are examined for the presence and condition of custody seals, locks, shipping papers, etc. Shipping labels are removed and placed on scrap paper and added to the receiving paper work. The custodian then completes the chain-of-custody record by signing and recording the date and time the package is opened.
- Acceptance criteria for cooler temperature is 0-6^{o}C. If a cooler exhibits a temperature outside this range, the anomalies are noted on the Cooler Receipt & Preservation Form.
- The custodian will then unload the samples from the cooler(s)/container(s), assign an identification number to each sample container, and affix a barcode label to each sample container for logging in and out of the LIMS system.

Adherence to this procedure will ensure that all samples can be referenced in the computer tracking system. All sample control and chain-of-custody procedures applicable to the analytical laboratory are presented in laboratory SOPs available for review.

6.0 Analytical Quality Assurance/Quality Control

All laboratory analyses will be performed by Test America, Inc., an accredited and appropriately (NYSDEC ELAP CLP) certified analytical laboratory.

Method detection limits are determined according to procedures outlined in 40 CFR Part 136, Appendix B or EPA CLP. General analytical detection limits are usually determined by the lowest point on the curve. Detection limits are determined at least annually for all appropriate analytical methods. A listing of the laboratory's method detection limits is available upon request.

6.1 Quality Control Samples

Laboratory QC consists of analysis of laboratory blanks, duplicates, spikes, standards, and QC check samples as appropriate to the methodology. These laboratory QC samples are described below.

6.1.1 Laboratory Blanks

Three types of laboratory blanks, one or more of which will be utilized depending on the analysis are described below:

- Method blanks consist of analyte-free water and are subjected to every step of the analytical procedure to determine possible contamination.
- Reagent blanks are similar to method blanks but incorporate only one of the preparation reagents in the analysis. When a method blank indicates significant contamination, one or more reagent blanks are analyzed to determine the source.
- Calibration blanks consist of pure reagent matrix and are used to zero an instrument's response, thus establishing the baseline.

6.1.2 Calibration Standards

A calibration standard may be prepared in the laboratory by dissolving a known amount of a pure compound in an appropriate matrix. The final concentration calculated from the known quantities is the true value of the standard. The results obtained from these standards are used to generate a standard curve and thereby quantitate the compound in the environmental sample. A minimum of three calibration standards will be used to generate a standard curve for all analyses.

6.1.3 Reference Standard

A reference standard is prepared in the same manner as a calibration standard but from a different source. Reference standards may be obtained from the EPA. The final concentration calculated from the known quantities is the "true" value of the standard. The important difference in a reference standard is that it is not carried through the same process used for the environmental samples, but is analyzed without digestion or extraction. A

reference standard result is used to validate an existing concentration calibration standard file or calibration curve.

6.1.4 Spike Sample

A spike sample is prepared by adding to an environmental sample (before extraction or digestion) a known amount of pure compound of the same type that is to be assayed for in the environmental sample. Spikes are added at one to 10 times the expected sample concentration or approximately 10 times the method detection limit. These spikes simulate the background and interferences found in the actual samples, and the calculated percent recovery of the spike is taken as a measure of the accuracy of the total analytical method.

A blank spike is the same as a spike sample except the spike is added to analyte-free water. The blank spike is used to determine whether the sample preparation and analysis are under control.

6.1.5 Surrogate Standard

A surrogate is prepared by adding a known amount of pure compound to the environmental sample; the compound selected is not one expected to be found in the sample, but is similar in nature to the compound of interest. Surrogate compounds are added to the sample prior to extraction or digestion. Surrogate spike concentrations indicate the percent recovery of the analytes and, therefore, the efficiency of the methodology.

6.1.6 Internal Standard

Internal standards are similar to surrogate standards in chemical composition but are used to quantify the concentration of analytes sampled based on the relative response factor. Internal standards are added to the environmental sample just prior to instrumental analysis.

6.1.7 Laboratory Duplicate or Matrix Spike Duplicate

Laboratory duplicates are aliquots of the same sample that are split prior to analysis and treated exactly the same throughout the analytical method. Spikes and duplicates for the batch are normally aliquots of the same sample. For organics, spikes are added at approximately 10 times the method detection limit. The RPD between the values of the matrix spike and matrix spike duplicate for organics or between the original and the duplicate for inorganics is taken as a measure of the precision of the analytical method.

In general, the tolerance limit for RPDs between laboratory duplicates should not exceed 20% for validation in homogeneous samples.

6.1.8 Check Standard/Samples

Inorganic and organic check standards or samples are prepared with reference standards or are available from the EPA. They are used as a means of evaluating analytical techniques of the analyst. Check standards or samples are subjected to the entire sample procedure, including extraction, digestion, etc., as appropriate for the analytical method utilized. The check standard or sample can provide information on the accuracy of the analytical method independent of various sample matrices.

6.2 Laboratory Instrumentation

Laboratory capabilities will be demonstrated initially for instrument and reagent/standards performance as well as accuracy and precision of analytical methodology. A discussion of reagent/standard procedures and brief descriptions of calibration procedures for major instrument types follow.

All standards are obtained directly from EPA or through a reliable commercial supplier with a proven record for quality standards. All commercially supplied standards will be traceable to EPA or NIST reference standards and appropriate documentation will be obtained from the supplier. In cases where documentation is not available, the laboratory will analyze the standard and compare the results to a known EPA-supplied or previous NIST-traceable standard.

All sections of the laboratory will have SOP for standard and reagent procedures to document specific standard receipt, documentation, and preparation activities. In general, the individual SOPs incorporate the following items:

- Documentation and labeling of date received, lot number, date opened, and expiration date;
- Documentation of traceability;
- Preparation, storage, and labeling of stock and working solutions; and
- Establishing and documenting expiration dates and disposal of unusable standards.

Each laboratory instrument will be labeled clearly with a unique identifier that relates to all laboratory calibration documentation. Laboratory SOPs and calibration procedures are detailed in the laboratory's Quality Assurance Manual, available upon request.

7.0 Data Reporting and Validation

Laboratory test results will be reported in NYSDEC Analytical Services Protocol (ASP) Category B deliverable reports. In addition, analytical results will be provided using the NYSDEC's Equis Format.

7.1 Category B Data Package

All analytical data will be reported by the laboratory with NYSDEC ASP Category B deliverables. The Category B data package includes:

1. A detailed summary of the report contents and any quality control outliers or corrective actions taken.
2. Chain of Custody documentation
3. Sample Information including: date collected, date extracted, date analyzed, and analytical methods.
4. Data (including raw data) for:
   - samples
   - laboratory duplicates
   - method blanks
   - spikes and spike duplicates
   - surrogate recoveries
   - internal standard recoveries
   - calibrations
   - any other applicable QC data
5. Method detection limits and/or instrument detection limits
6. Run logs, standard preparation logs, and sample preparation logs
7. Percent solids (where applicable).

7.2 Quality Assurance Reports

For the laboratory, a general QA report summarizing problems encountered throughout the laboratory effort, including sample custody, analyses, and reporting, is provided to Lu Engineers' project QA management by the QA coordinator. This report identifies areas of concern and possible resolutions in an effort to ensure data quality.

Upon completion of a project sampling effort, analytical and QC data will be included in a comprehensive report that summarizes the work and provides a data evaluation. A discussion of the validity of the results in the context of QA/QC procedures will be made, as well as a summation of all QA/QC activity.

Serious analytical or sampling problems will be reported to NYSDEC. Time and type of corrective action, if needed, will depend on the severity of the problem and relative overall project importance. Corrective actions may include altering procedures in the field, conducting

an audit, or modifying laboratory protocol. All corrective actions will be implemented after notification and approval of NYSDEC.

In addition to the laboratory report narrative, QA data validation reports that include any contractual requirements will also be provided to NYSDEC. These QA reports will be submitted with the analytical data, on a monthly basis, or at the conclusion of the project.

7.3 Data Validation and Usability

Prior to the submission of the report to NYSDEC, all data will be evaluated for precision, accuracy, and completeness.

QA/QC requirements from both methodology and company protocols will be strictly adhered to during sampling and analytical work. All data generated will be reviewed by comparing and interpreting results from instrumental responses, retention time, determination of percent recovery of spiked samples or blanks, and reproducibility of duplicate sample results. All calculations and data manipulations are included in the appropriate methodology references. Control charts and calibration curves will be used to review the data and identify outlying results.

7.3.1 Data Validation

A third-party validator will be responsible for an independent review of all analytical work performed under the NYSDEC ASP-CLP protocol. The functions will be to assess and summarize the quality and reliability of the data for the purpose of determining its usability and to document for the historical record of each site any factors affecting data usability, such as discrepancies, poor laboratory practices, and site locations that are difficult to analyze. The data validator will be responsible for determining completeness and compliance. Lu Engineers' QA officer will be responsible for determining data usability and overseeing the work of the data validator.

Information available to the data validator and the QA officer for performance of these functions include the NYSDEC ASP Category B data package, information from the sampling team regarding field conditions and field QA samples, chain-of-custody and shipping forms. The data package is designed to provide all necessary documentation to verify compliance with NYSDEC ASP CLP protocol and the accuracy and reliability of the reported results.

The laboratory will deliver the data package to the project QA coordinator for processing prior to submission to the data validator. The project QA coordinator will review the report for immediate problems, summarize the data for in-house use, and process the work order for the third-party data-validation subcontract within five working days.

In order to effectively review the data package, the data validator will obtain a general overview of each case. This includes the exact number of samples, their assigned numbers, and their matrix. The data validator will deliver the data validation report within 30 days of receipt of the data package.

If a problem arises between the data validator and the laboratory, the data validator must submit written questions to the laboratory. The laboratory will be required to respond in writing within 10 working days to correct any deficiencies. If the data validator does not receive a written response from the laboratory within the specified time period, the data in question shall be considered noncompliant.

Sampling locations will be obtained from the sampling records, such as the chain-of-custody forms. This information is necessary for preparation of the data summary, evaluation of adherence to sample holding times, discussion of matrix problems, and discussion of contaminants detected in the samples.

The following is a brief outline of the data validation process:

- Compilation of all samples with the dates of sampling, laboratory receipt, and analysis;
- Compilation of all QC samples, such as field blanks, field duplicates, MS/MSD samples, laboratory blanks, and laboratory replicates;
- Review of chain-of-custody documents for completeness and correctness;
- Review of laboratory analytical procedure and instrument performance criteria;
- Qualification of data outside acceptable QC criteria ranges;
- Preparation of a memorandum summarizing any problems encountered and the potential effects on data usability;
- Preparation of a data summary, including validated results, with sample matrix, location, and identification; and
- Tabulation of field duplicates, laboratory replicate, and blank results.

Copies of all data validation and usability reports, as well as all data summary packages, will be provided to the NYSDEC project manager. In addition, copies of all analytical raw data will be provided to NYSDEC upon request.

7.3.2 Data Usability

A Data Usability Summary Report (DUSR) will be provided after review and evaluation of the analytical data package. The DUSR will contain required elements listed in Appendix 2B of *DER-10 Technical Guidance for Site Investigation and Remediation*.

The DUSR will include a description of the samples and analytical procedures used. Any data deficiencies, protocol deviations, or quality control problems will be discussed as to their effect on data results. The report will also include any suggestions for resampling or reanalysis.

TABLE 1
SAMPLING AND ANALYSIS SUMMARY

Sample Type	Sample Location	Analytical Parameter	Analytical Method	Reporting Level	# Field Samples	Field Duplicates	Blanks		MS/MSD	Total
							Equip	Trip		
Surface soils	SS-1 through SS-9	SVOC TAL Metals PCBs, Pesticides	8270 6010B 8082, 8081	Category B (Level IV)	**9**	**1**			**1/1**	**12**
Subsurface Soils	Test Pits	TCL VOC, SVOC TAL Metals	8260, 8270 6010B		**6**	**1**			**1/1**	**9**
	Soil borings (for monitoring wells)	TCL VOC, SVOC TAL Metals	8260, 8270 6010B		**2**		**1**			**3**
Groundwater	MW-1 through MW-5	TCL VOC, SVOC	8260, 8270		**5**	**1**		**1**	**1/1**	**9**

Appendix B –
Health & Safety Plan

City of Watertown
Former Ogilvie Foods Site
148 North Pleasant Street
Watertown, New York 13601

Health and Safety Plan

Prepared For:

City of Watertown
245 Washington Street
Watertown, New York 13601

Prepared By:

Lu Engineers
ENVIRONMENTAL • TRANSPORTATION • CIVIL

175 Sully's Trail, Suite 202
Pittsford, New York 14534

Table of Contents

Lu Engineers
Site Safety Plan

A. GENERAL INFORMATION

Project Title: Former Ogilvie Foods Site Lu Project No. 34211
Jefferson County, New York
Remedial Work Plan

Project Manager: Laura M. Neubauer, CHMM Project Director: Gregory L. Andrus, CHMM

Location: Former Ogilvie Foods Site, 148 N. Pleasant St.
City of Watertown, Jefferson County, New York

Prepared by: Janet M. Bissi, CHMM Date Prepared: March 8, 2012
Date Revised: August 27, 2012

Approved by: Laura Neubauer, CHMM Date Approved: August 27, 2012

Site Safety Officer Review: _____ Date Reviewed: _____

Scope/Objective of Work:

- Task 1: Surface soil sampling
- Task 2: Sub-surface investigation
- Task 3: Groundwater investigation
- Task 4: Site survey
- Task 5: Underground storage tank (UST) removal

Proposed Date of Field Activities: Fall 2012

Background Information: [X] Complete [X]* Preliminary (limited analytical data)
* Background information provided by GYMO

Overall Chemical Hazard: [ ] Serious [ ] Moderate
[X] Low [ ] Unknown

Overall Physical Hazard: [ ] Serious [ ] Moderate
[X] Low [ ] Unknown

B. SITE/WASTE CHARACTERISTICS

Waste Type(s):

[X] Liquid [X] Solid [X] Sludge [ ] Gas/Vapor

Characteristic(s):

[X] Flammable/Ignitable [X] Volatile [X] Corrosive [ ] Acutely Toxic
[ ] Explosive (moderate) [ ] Reactive [X] Carcinogen [ ] Radioactive
Other: _____

Physical Hazards:

[X] Overhead [ ] Confined Space [X] Below Grade [X] Trip/Fall
[X] Puncture [ ] Burn [X] Cut [X] Splash
[X] Noise [X] Other: Heat Stress/Cold Stress

Site History/Description and Unusual Features:

The Former Ogilvie Foods Site is a 4.2-acre property located at 148 North Pleasant Street, between N. Pleasant Street and California Avenue, in the City of Watertown, Jefferson County, New York. The Site was used for dairy operations for over 60 years. The eastern portion of the property was occupied by the National Biscuit Company from the early 1900s until approximately 1960. Ogilvie Foods, Inc. (a subsidiary of Borden, Inc.) closed whey production operations at the site in the late 1990s. The buildings were demolished in 2003 after being condemned by the City of Watertown. At that time, several chemical and milk product bulk storage tanks were reportedly removed. Building slabs, foundations, and basements were left in place. After demolition, the site was covered with large crushed stone to limit trespassing, help prevent vegetation growth, and allow water to drain more quickly. A rail line also ran across the northern portion of the property beginning in the late 1800s. The former rail bed is now an overgrown drainage ditch.

In the winter of 2011, City of Watertown Department of Public Works crews discovered a tank inside an underground concrete vault while exploring the Site for former building foundations. Discovery of the tank was reported to New York State Department of Environmental Conservation (NYSDEC) and assigned Spill #1010788. This tank remains at the Site and according to historical records it is likely that at least one more tank is present on the property. Both of these tanks reportedly held fuel oil with a capacity of 10,000 gallons and were closed in-place in 1989.

Review of Phase I and Phase II Environmental Assessments completed to date identifies an area of concern related to petroleum contamination on the northeastern portion of the Site. A focused Pre-Remedial Design Investigation will be conducted to better characterize impacted soil/fill, assess groundwater quality impacts, and assist with development of remedial design plans.

Locations of Chemicals/Wastes: Soil and/or groundwater.

Estimated Volume of Chemicals/Wastes: Estimated 1500 tons petroleum-contaminated soil

Site Currently in Operation: [ ] Yes [X] No [ ] Not Applicable

C. HAZARD EVALUATION

PHYSICAL HAZARD EVALUATION:		
TASK	**HAZARD(S)**	**HAZARD PREVENTION**
Tasks 1 through 5	Heat stress/ cold stress exposure	Implement heat stress management techniques such as shifting work hours, increasing fluid intake, and monitoring employees**. See Appendix A.**
	Weather Extremes	Establish site-specific contingencies for severe weather situations. Discontinue work in severe weather.
	Slip/ tripping/ fall	Observe terrain and be aware of the dangers of machete, while walking to minimize slips and falls. Steel-toed boots provide additional support and stability. Use adequate lighting. Inspect Site and mark existing hazards.
	Noise	**See Appendix B**
	General physical hazards associated with drilling and excavating operations (overhead equipment, noise).	Hard hats, eye protection, and steel-toed boots required at all times while working on Site. Keep distance from equipment. **See Appendix B.**
	Heavy Equipment Operation	Define equipment routes, traffic patterns, and site-specific safety measures. Ensure that operators are properly trained and equipment has been properly inspected and maintained. Verify back-up alarms. Ensure that ground spotters are assigned and informed of proper hand signals and communication protocols. Identify special PPE and monitoring needs. Ensure that field personnel do not work in close proximity to operating equipment. Ensure that lifting capacities, load limits, etc., are not exceeded. Overhead obstructions and falling objects.
	Overhead Hazards/ Falling Objects	Wear hard hat. Identify overhead hazards prior to each task.
	Contact with or inhalation of contaminants, potentially in high concentration in soil.	To minimize exposure to chemical contaminants, a thorough review of suspected contaminants should be completed and implementation of an adequate protection program.
	Contact with or inhalation of decontamination solutions.	Material Safety Data Sheets for all decon solutions. First aid equipment available. **See Appendix C.**
	Native wildlife presents the possibility of insect bites and associated diseases.	Avoid wildlife when possible. Use insect repellant.
	Biological (flora, fauna, etc.)	Establish site-specific procedures for working around identified hazards.
	Power Tools	Ensure compliance with 29 CFR 1910 Subpart P.
	Utility Lines	Identify/locate existing utilities prior to work. Ensure overhead utility lines are at least 25 feet away from project activities. Contact utilities to confirm locations, as necessary.

Physical Hazard Evaluation: Basic health and safety protection (steel-toed boots, work clothes, and safety glasses or goggles) will be worn by all personnel at all times. Any allergies should be reported to the Site Safety Officer prior to the start of the project.

D. SITE SAFETY WORK PLAN

Site Control: Site is covered with stone to prevent contact with soil. UST area is fenced with orange construction fence. Open excavations and/or tank pits will be securely fenced.

Perimeter Identified? [Y] **Site Secured? [N]**

Work Areas Designated? [Y] **Zone(s) of contamination identified? [Y]**

Anticipated Level of Protection (cross-reference task numbers in Section C):

A	B	C	D
		Available	X

All Site work will be performed at Level D (steel-toed boots, work clothes, eye protection, gloves and hard hats) unless monitoring indicates otherwise. Chemical resistant boots or booties shall be worn as appropriate to avoid contact with wet areas. Level C will be available and shall be donned if sustained photoionization detector (PID) readings exceed 5 ppm and/or olfactory indications warrant.

Air Monitoring:

Contaminant	Monitoring Device	Frequency
Organic Vapors	MiniRAE 3000 PID	As Necessary

Action Level:
PID readings of **>5 ppm to 10 ppm** above background in the breathing zone, sustained for greater than 1 minute,
Action: Hault work activities and move away from the vapor source. Consider vapor suppression actions. If PID readings drop to within 5 ppm above background, work may resume with continuous air monitoring.

PID readings of **10 ppm to <25 ppm** above background at breathing zone, sustained for greater than 1 minute,
Action: Stop work and consider upgrade to Level C protection.

PID readings of **>25 ppm** above background at breathing zone, sustained for greater than 1 minute,
Action: Stop work.

All air monitoring results as well as wind direction and speed (estimates) will be documented in the site-specific log book.

Decontamination Solutions and Procedures for Equipment, Sampling Gear, etc.
Specified in work plan.

Personnel Decon Protocol: Soap, water, and paper towels or baby wipes will be available for all personnel and will be used before eating, drinking or leaving the site. Personnel will shower upon return to home or hotel. Disposable PPE will be double bagged and disposed of in a sanitary waste dumpster.

Decon Solution Monitoring Procedures, if Applicable: Based on previous investigations, it is assumed that decontamination solutions may be discharged onsite to the ground surface.

Special Site Equipment, Facilities or Procedures
(Sanitary Facilities and Lighting Must Meet 29CFR 1910.120):
All personnel will be required to maintain the Buddy System at all times. All parties will be required to attend an on-Site briefing, which will identify the roles of each organization's personnel and will integrate emergency procedures for all Site participants.

Sanitary facilities are available at the City Hall located at 245 Washington Street.

Site Entry Procedures and Special Considerations:
Entry to the Site should be limited to authorized personnel during field work activities.

Work Limitations (time of day, weather conditions, etc.) and Heat/Cold Stress Requirements:
All work will be completed during daylights hours. Severe inclement weather may be cause to suspend outdoor activities. Heat stress protocol will dictate work/rest regimen. Heavy equipment will not be used during electrical storms.

Investigation Derived Material (i.e., Expendables, Decon Waste, Cuttings) Disposal:
Specified in work plan.

Sampling Handling Procedures Including Protective Wear: All sample handling will be performed while wearing nitrile gloves. To minimize hazards to lab personnel, sample volumes will be no larger than necessary, and the outside of all sample containers will be wiped clean prior to shipment.

Accident and Injury Reporting: Any work-related incident, accident, injury, illness, exposure, or property loss must be reported to the Lu Engineers project manager. This includes:

- Accident, injury, illness, or exposure of an employee;
- Injury of a subcontractor;
- Damage, loss, or theft of property, and/or
- Any motor vehicle accident regardless of fault, which involves a company vehicle, rental vehicle, or personal vehicle while employee is acting in the course of employment.

E. TRAINING REQUIREMENTS

All personnel conducting field activities on site are required to have completed training sessions in accordance with Occupational Safety and Health Administration (OSHA) for Parts 1926 and 1910 (Title 29 Code of Federal Regulations [CFR] Part 1926.65 and Part 1910.120 - Hazardous Waste Operations and Emergency Response- 'HazWOPER'). This training shall consist of a minimum of 40 hours of instruction off-site and three days of actual field experience under the direct supervision of a trained, experienced supervisor. Each employer will maintain documentation stating that its on-site personnel have complied with this regulation.

In addition, all personnel will have reviewed this HASP and received a site-specific health and safety briefing prior to participating in field work.

All visitors entering the work area must review the HASP and be equipped with the proper PPE. All site personnel and visitors shall sign the last page of the HASP as an acknowledgement that they have read and understand the Site health and safety requirements.

Medical Surveillance Requirements: All Lu Engineers field staff who engage in onsite activities for 30 days or more per year participate in a medical monitoring program and have completed applicable training per 29CFR 1910.120. Respiratory protection program meets requirements of 29CFR 1910.134.

Team Member*	**Responsibility**
Gregory L. Andrus	Project Manager
Laura Neubauer	Field Team Leader
Eric Detweiler	Field Geologist
Sue Hilton	Quality Assurance Officer

* All entries into the work zone require "Buddy System" use. All Lu Engineers' field staff participated in a medical monitoring program and have completed applicable training per 29CFR 1910.120. Respiratory protection program meets requirements of 29CFR 1910.134.

F. EMERGENCY INFORMATION

LOCAL RESOURCES

Ambulance:	911
Hospital Emergency Room:	Samaritan Medical Center (315) 785-4000
	830 Washington Street, Watertown, New York
Poison Control Center:	911
Police (include local, county sheriff, state):	911
Fire Department:	911
Airport:	N/A
Laboratory:	Test America: 118 Boss Rd., Syracuse, NY 13211 (315) 431-0171
UPS/Federal Express:	Fed Ex: 22530 Fisher Rd., Watertown, NY (latest ground pickup 5:00 pm M-F)

SITE RESOURCES

Site Emergency Evaluation Alarm Method:	Sound vehicle horn.
Water Supply Source:	Gallons of water will be available in vehicles
Telephone Location, Number:	None available
Cellular Phone, if Available:	Onsite cell # TBD
Radio:	TBD
Other:	TBD

EMERGENCY CONTACTS

1.	Fire/Police:	911
2.	Lu Engineers, Safety Director:	(585) 385-7417 (office)
3.	Lu Engineers, Gregory L. Andrus	(585) 385-7417, Ext. 215 (office) (585) 732-5786 (Cellular phone)

EMERGENCY ROUTES

Note: Field team must know route(s) prior to start of work.

Directions from the site to Strong Memorial Hospital (map on following page):
Head northwest on Columbia Street toward Pleasant Street North (207 ft). Turn left onto Pleasant Street North (0.1 miles). Take first right onto State Street (0.2 miles). Take the 3rd left Onto Rutland Street South (0.2 miles). Take the 2nd right onto Academy Street (289 feet). Take the 1st left onto Flower Avenue East (0.9 miles). Turn left onto Sherman Street and arrive at the Samaritan Medical Center.

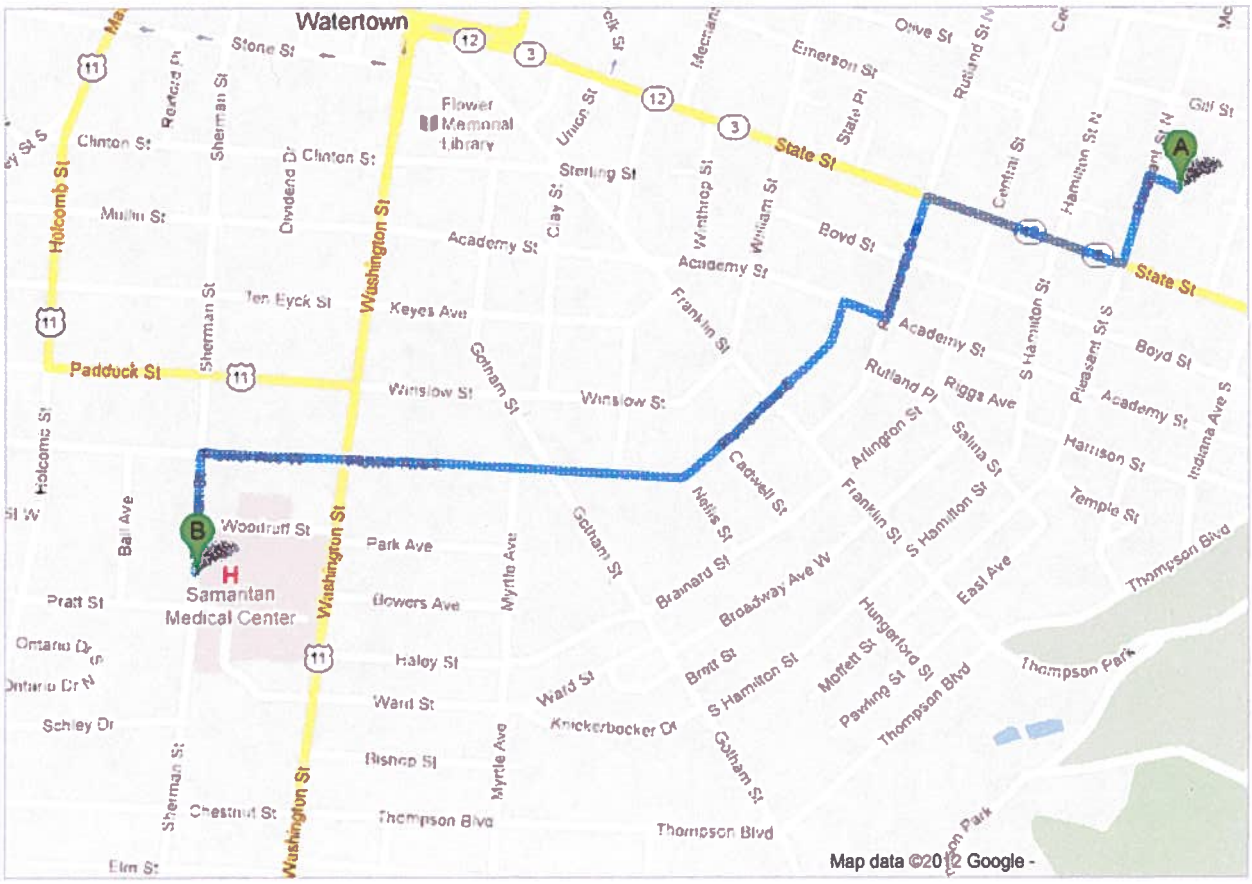
On-site Assembly Area: At Site entry point.

Off-site Assembly Area: Columbia Street and North Pleasant Street.

Emergency egress routes to get off-Site: Northeast to Harvard Street or south/southwest to Columbia Street.

To see all the details that are visible on the screen, use the "Print" link next to the map.

Google



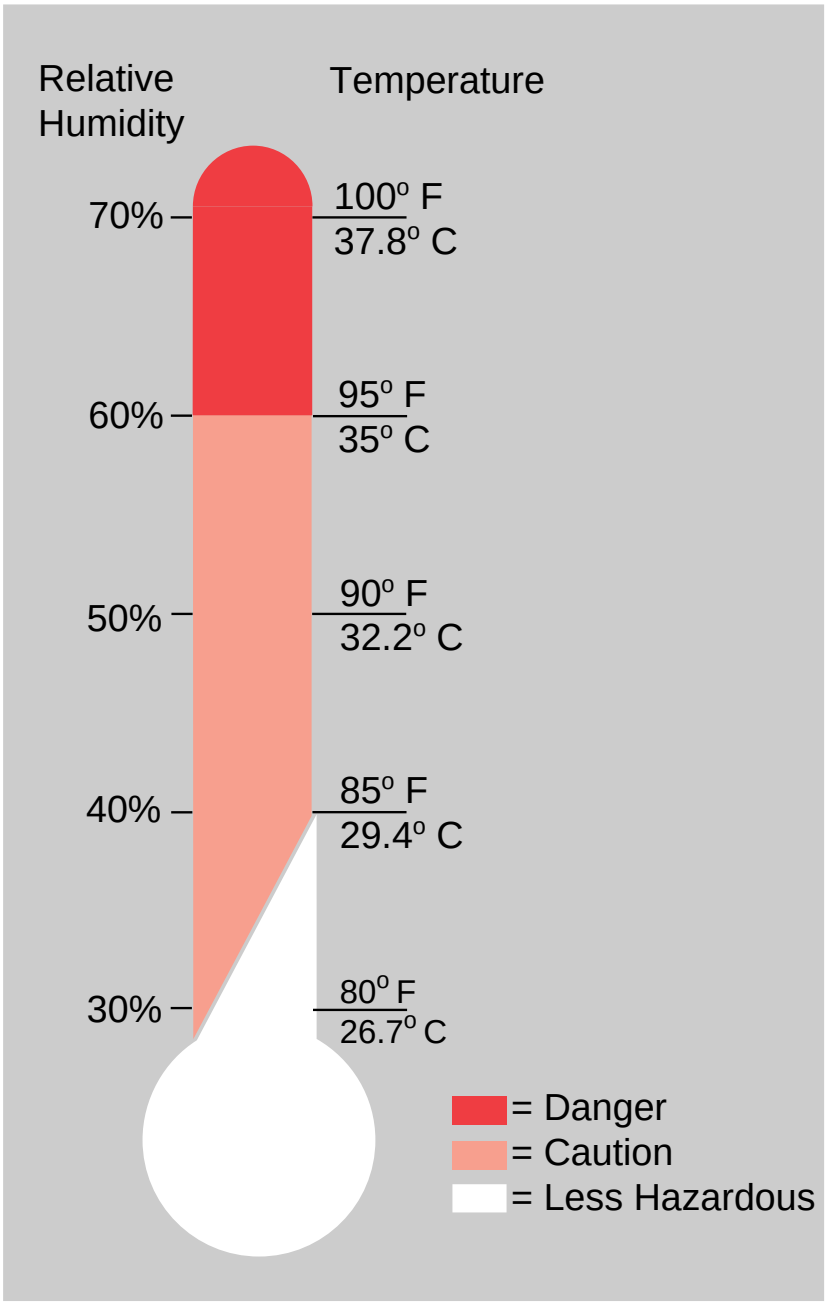
APPENDIX B-1

HEAT STRESS AND COLD EXPOSURE

THE HEAT EQUATION

HIGH TEMPERATURE + HIGH HUMIDITY + PHYSICAL WORK = HEAT ILLNESS

When the body is unable to cool itself through sweating, **serious** heat illnesses may occur. The most severe heat-induced illnesses are **heat exhaustion** and **heat stroke**. If actions are not taken to treat heat exhaustion, the illness could progress to heat stroke and possible **death**.



U.S. Department of Labor
Occupational Safety and Health Administration

OSHA 3154
1998

HEAT EXHAUSTION

What Happens to the Body:

HEADACHES, DIZZINESS/LIGHT HEADEDNESS, WEAKNESS, MOOD CHANGES (irritable, or confused/can't think straight), FEELING SICK TO YOUR STOMACH, VOMITING/THROWING UP, DECREASED and DARK COLORED URINE, FAINTING/PASSING OUT, and PALE CLAMMY SKIN.

What Should Be Done:

- Move the person to a cool shaded area to rest. Don't leave the person alone. If the person is dizzy or light headed, lay them on their back and raise their legs about 6-8 inches. If the person is sick to their stomach lay them on their side.
- Loosen and remove any heavy clothing.
- Have the person drink some cool water (a small cup every 15 minutes) if they are not feeling sick to their stomach.
- Try to cool the person by fanning them. Cool the skin with a cool spray mist of water or wet cloth.
- If the person does not feel better in a few minutes call for emergency help (Ambulance or Call 911).

(If heat exhaustion is not treated, the illness may advance to heat stroke.)

HEAT STROKE—A MEDICAL EMERGENCY

What Happens to the Body:

DRY PALE SKIN (no sweating), HOT RED SKIN (looks like a sunburn), MOOD CHANGES (irritable, confused/not making any sense), SEIZURES/FITS, and COLLAPSE/PASSED OUT (will not respond).

What Should Be Done:

- Call for emergency help (Ambulance or Call 911).
- Move the person to a cool shaded area. Don't leave the person alone. Lay them on their back and if the person is having seizures/fits remove any objects close to them so they won't strike against them. If the person is sick to their stomach lay them on their side.
- Remove any heavy and outer clothing.
- Have the person drink some cool water (a small cup every 15 minutes) if they are alert enough to drink anything and not feeling sick to their stomach.
- Try to cool the person by fanning them. Cool the skin with a cool spray mist of water, wet cloth, or wet sheet.
- If ice is available, place ice packs under the arm pits and groin area.

How to Protect Workers

- Learn the signs and symptoms of heat-induced illnesses and what to do to help the worker.
- Train the workforce about heat-induced illnesses.
- Perform the heaviest work in the coolest part of the day.
- Slowly build up tolerance to the heat and the work activity (usually takes up to 2 weeks).
- Use the buddy system (work in pairs).
- Drink plenty of cool water (one small cup every 15-20 minutes)
- Wear light, loose-fitting, breathable (like cotton) clothing.
- . Take frequent short breaks in cool shaded areas (allow your body to cool down).
- Avoid eating large meals before working in hot environments.
- Avoid caffeine and alcoholic beverages (these beverages make the body lose water and increase the risk for heat illnesses).

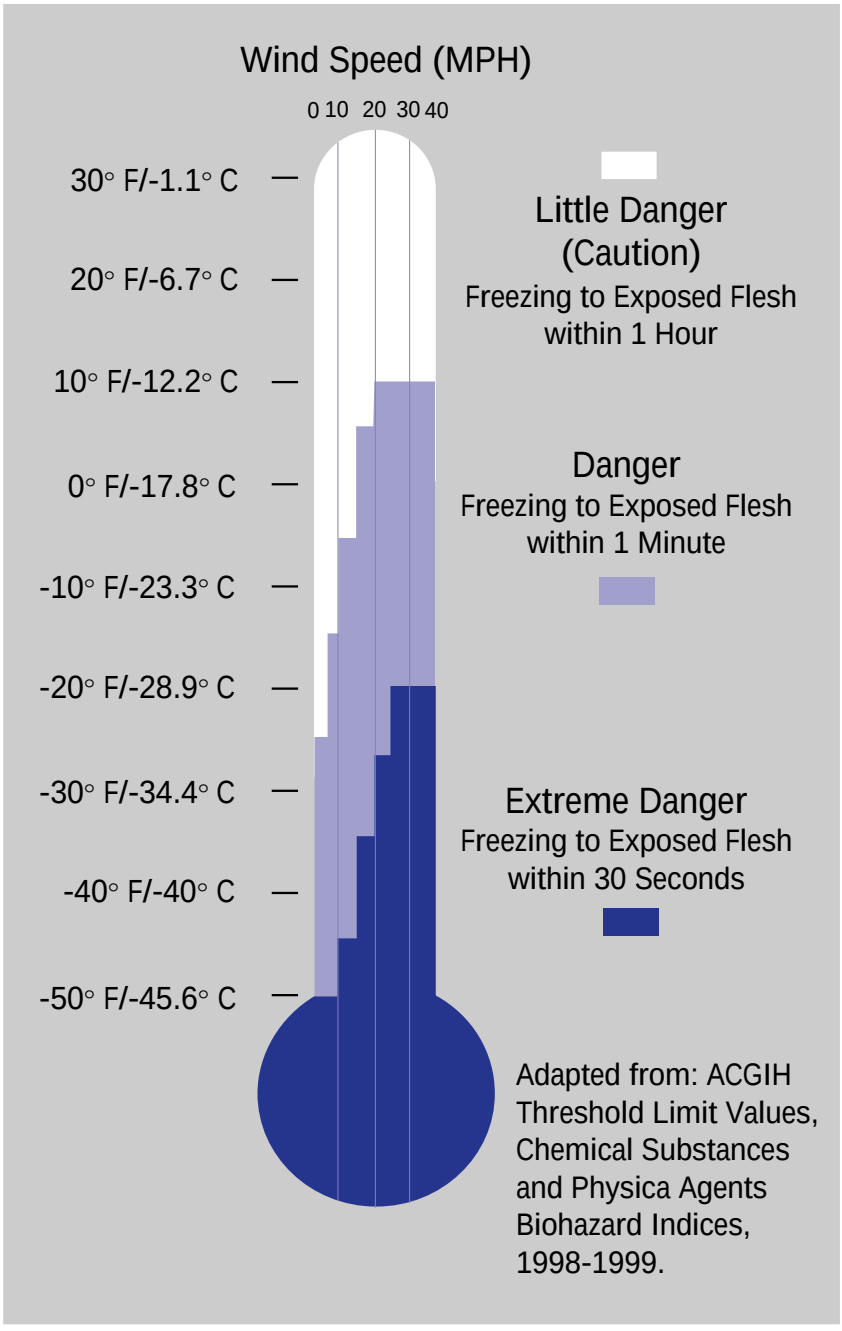
Workers Are at Increased Risk When

- They take certain medication (check with your doctor, nurse, or pharmacy and ask if any medicines you are taking affect you when working in hot environments).
- They have had a heat-induced illness in the past.
- They wear personal protective equipment (like respirators or suits).

THE COLD STRESS EQUATION

LOW TEMPERATURE + WIND SPEED + WETNESS = INJURIES & ILLNESS

When the body is unable to warm itself, serious cold-related illnesses and injuries may occur, and permanent tissue damage and death may result. **Hypothermia** can occur when *land temperatures* are **above** freezing or *water temperatures* are below 98.6°F/ 37°C. Cold-related illnesses can slowly overcome a person who has been chilled by low temperatures, brisk winds, or wet clothing.



U.S. Department of Labor
Occupational Safety and Health Administration

OSHA 3156
1998

FROST BITE

What Happens to the Body:

FREEZING IN DEEP LAYERS OF SKIN AND TISSUE; PALE, WAXY-WHITE SKIN COLOR; SKIN BECOMES HARD and NUMB; USUALLY AFFECTS THE FINGERS, HANDS, TOES, FEET, EARS, and NOSE.

What Should Be Done: (land temperatures)

- Move the person to a warm dry area. Don't leave the person alone.
- Remove any wet or tight clothing that may cut off blood flow to the affected area.
- **DO NOT** rub the affected area, because rubbing causes damage to the skin and tissue.
- **Gently** place the affected area in a warm (105°F) water bath and monitor the water temperature to **slowly** warm the tissue. Don't pour warm water directly on the affected area because it will warm the tissue too fast causing tissue damage. Warming takes about 25-40 minutes.
- After the affected area has been warmed, it may become puffy and blister. The affected area may have a burning feeling or numbness. When normal feeling, movement, and skin color have returned, the affected area should be dried and wrapped to keep it warm. **NOTE:** If there is a chance the affected area may get cold again, do not warm the skin. If the skin is warmed and then becomes cold again, it will cause severe tissue damage.
- Seek medical attention as soon as possible.

HYPOTHERMIA - (Medical Emergency)

What Happens to the Body:

NORMAL BODY TEMPERATURE (98.6° F/37°C) DROPS TO OR BELOW 95°F (35^0 C); FATIGUE OR DROWSINESS; UNCONTROLLED SHIVERING; COOL BLUISH SKIN; SLURRED SPEECH; CLUMSY MOVEMENTS; IRRITABLE, IRRATIONAL OR CONFUSED BEHAVIOR.

What Should Be Done: (land temperatures)

- Call for emergency help (i.e., Ambulance or Call 911).
- Move the person to a warm, dry area. Don't leave the person alone. Remove any wet clothing and replace with warm, dry clothing or wrap the person in blankets.
- Have the person drink warm, sweet drinks (sugar water or sports-type drinks) if they are alert. **Avoid drinks with caffeine** (coffee, tea, or hot chocolate) or alcohol.
- Have the person move their arms and legs to create muscle heat. If they are unable to do this, place warm bottles or hot packs in the arm pits, groin, neck, and head areas. **DO NOT** rub the person's body or place them in warm water bath. This may stop their heart.

What Should Be Done: (water temperatures)

- Call for emergency help (Ambulance or Call 911). Body heat is lost up to 25 times faster in water.
- **DO NOT** remove any clothing. Button, buckle, zip, and tighten any collars, cuffs, shoes, and hoods because the layer of trapped water closest to the body provides a layer of insulation that slows the loss of heat. Keep the head out of the water and put on a hat or hood.
- Get out of the water as quickly as possible or climb on anything floating. **DO NOT** attempt to swim unless a floating object or another person can be reached because swimming or other physical activity uses the body's heat and reduces survival time by about 50 percent.
- If getting out of the water is not possible, wait quietly and conserve body heat by folding arms across the chest, keeping thighs together, bending knees, and crossing ankles. If another person is in the water, huddle together with chests held closely.

How to Protect Workers

- Recognize the environmental and workplace conditions that lead to potential cold-induced illnesses and injuries.
- Learn the signs and symptoms of cold-induced illnesses/injuries and what to do to help the worker.
- Train the workforce about cold-induced illnesses and injuries.
- Select proper clothing for cold, wet, and windy conditions. Layer clothing to adjust to changing environmental temperatures. Wear a hat and gloves, in addition to underwear that will keep water away from the skin (polypropylene).
- Take frequent short breaks in warm dry shelters to allow the body to warm up.
- Perform work during the warmest part of the day.
- Avoid exhaustion or fatigue because energy is needed to keep muscles warm.
- Use the buddy system (work in pairs).
- Drink warm, sweet beverages (sugar water, sports-type drinks). Avoid drinks with caffeine (coffee, tea, or hot chocolate) or alcohol.
- Eat warm, high-calorie foods like hot pasta dishes.

Workers Are at Increased Risk When…

- They have predisposing health conditions such as cardiovascular disease, diabetes, and hypertension.
- They take certain medication (check with your doctor, nurse, or pharmacy and ask if any medicines you are taking affect you while working in cold environments).
- They are in poor physical condition, have a poor diet, or are older.

APPENDIX B-2

ADDITIONAL POTENTIAL PHYSICAL AND CHEMICAL HAZARDS

ADDITIONAL POTENTIAL PHYSICAL AND CHEMICAL HAZARDS	
POTENTIAL PHYSICAL HAZARDS	**CONTROL METHODS**
Overhead Hazards/Falling Objects	Overhead hazards will be identified prior to each task (i.e., inspecting drill rig mast, building structure). Hard hats will be required for each task that poses an overhead hazard.
Contact with Utilities	Prior to initiating site activities, all utilities will be located by the appropriate utility company and will be marked and/or barricaded to minimize the potential of accidental contact. A minimum distance of 25 feet between the derrick and overhead power lines must be maintained at all times.
Noise Exposure	Areas of potentially high sound pressure levels (>85 dBA) will be restricted to authorized personnel only. Engineering controls will be used to the extent possible. Hearing protection will be made available to all workers on site. Exposure to time-weighted average levels in excess of 85 dBA is not anticipated.
POTENTIAL CHEMICAL HAZARDS	**GENERAL CONTROL METHODS**
Contaminant Inhalation	Direct reading instruments (Op-Tech) and/or olfactory indications will be used to monitor airborne contaminants. Established Lu Engineers' action levels will limit exposure to safe levels. Respiratory protection will be used as appropriate.
Contaminant Ingestion	Standard safety procedures such as restricting eating, drinking, and smoking to the support zone and utilizing proper personal decontamination procedures will minimize ingestion as a potential route of exposure.
Dermal Contaminant Contact	The proper selection and use of personal protective clothing and decontamination procedures will minimize dermal contaminant contact.
Potential contact with lower concentration waste and naturally occurring contaminants (i.e., methane)	Dermal contact with contaminants will be minimized by proper use of the following PPE: • Tyvex coveralls • Neoprene gloves • Booties (latex) or over-boots.

APPENDIX B-3

HAZARD EVALUATION SHEETS / MSDS

CHEMICAL HAZARD EVALUATION

Task Number	Compound	Exposure Limits (TWA)			Dermal Hazard (Y/N)	Route(s) of Exposure	Acute Symptoms	Odor Threshold/ Description	FID/PID	
		PEL	REL	TLV					Relative Response	Ioniz. Poten. (eV)
1 through 5	Benzene*	1 ppm	---	10 ppm	Y	Inh, Abs, Ing, Con	Irritation to eyes, skin, nose, respiratory system; headache, nausea, dizziness, drowsiness, unconsciousness, harmful, fatal if aspirated into lungs	Colorless to light yellow liquid, sweet aromatic odor	0.5	9.25
1 through 5	Toluene	200 ppm	---	50 ppm	Y	Inh, Abs, Ing, Con	Irritation to eyes, skin, nose; upper respiratory tract, fatigue, weak, confusion, dizziness, headache, drowsiness, abdominal spasms, dilated pupils, euphoria	Colorless liquid, sweet pungent, benzene like odor	0.5	8.82
1 through 5	Ethylbenzene	100 ppm	---	100 ppm	Y	Inh, Ing, Con	Irritation to eyes, skin, mucous membranes; dermatitis, narcosis, , trouble breathing, paralysis, headache, nausea, headache, dizziness, coma	Colorless liquid, aromatic odor	0.5	8.77

CHEMICAL HAZARD EVALUATION

Task Number	Compound	Exposure Limits (TWA)			Dermal Hazard (Y/N)	Route(s) of Exposure	Acute Symptoms	Odor Threshold/ Description	FID/PID	
		PEL	REL	TLV					Relative Response	Ioniz. Poten. (eV)
1 through 5	Xylene(s)	100 ppm	---	100 ppm	Y	Inh, Ing, Abs, Con	Irritation to eyes, nose, throat, skin; nausea, vomiting, headache, ringing in ears, severe breathing difficulties (that may be delayed in onset), substernal pain, coughing hoarseness, dizziness, excited, burning in mouth, stomach, dermatitis (removes oils from skin), corneal burns	Colorless liquid, aromatic odor (solid below 56 F	.5	8.44

KEY:

PEL = Permissible Exposure Limit
REL = Recommended Exposure Limit
--- = Information not available
TLV = Threshold Limit Value(ACGIH)
Inh = Inhalation
Ing = Ingestion
mg/m^3 = Milligrams per cubic meter
* = Chemical is a known or suspected carcinogen
Abs = Skin Absorption
Con = Skin and/or eye Contact
ppm = Parts per million
sk = Skin notation

Appendix C –
Community Air Monitoring Plan

New York State Department of Health
Generic Community Air Monitoring Plan

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. 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. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical- specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for volatile organic compounds (VOCs) and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate NYSDEC/NYSDOH staff.

Continuous monitoring will be required for all 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 the 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. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations 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 residence.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. 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 contaminant(s) of concern 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 parts per million (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 that 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 shutdown.

All 15-minute readings must be recorded and be available for State (DEC and DOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate 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, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, 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 readings must be recorded and be available for State (DEC and DOH) personnel to review.

Source: DRAFT DER-10 Technical Guidance for Site Investigation and Remediation, December 2002- Appendix 1A

Appendix D – Qualifications

Greg Andrus, CHMM

Greg Andrus, the Project Manager, will lead the Lu Engineers team for the project. Greg brings more than 23 years of experience including a diverse range of geologic and environmental engineering projects. Greg's areas of expertise include remedial investigation, geology and hydrogeology.

PERSONAL PROFILE

EDUCATION

B.S., Geology, 1987
Washington & Lee University, VA

Hydrogeology, Graduate Level Studies
SUNY Brockport
Brockport, NY

CERTIFICATIONS

Certified Hazardous Materials Manager (CHMM)

OSHA 40-Hour Training and Refresher Courses

Air Program Information Management Systems

ACHMM Finger Lakes Chapter Former President

PC Application in Risk Assessment, Modeling, and GIS

NYS Council of Professional Geologists

National Groundwater Association

PAPERS/PUBLICATIONS

Joint Services Environmental Management Conference, Presenter-Columbus, OH 2008

National Brownfield Conference
Denver, CO 2007
Philadelphia, PA 2011

National Air and Waste Management Association Conference
Detroit, MI 2010

PROJECT EXPERIENCE

Orchard Whitney Brownfield Investigation, Rochester NY

- Project Manager for City of Rochester Environmental Restoration Project
- Remedial Investigation/ Interim Remedial Measures
- Geophysical Investigation
- Contaminated soil and groundwater remediation

Sewall's Island City of Watertown, NY

- Managed remediation
- Remedial Investigation/ Alternatives Analysis Report
- Geophysical investigation
- Extensive soil and groundwater remediation

Former Frink America Site Clayton, NY

- Project Engineer for Environmental Restoration Project
- Identified vertical and horizontal contamination
- Conducted hydro-geologic and engineering review

Karenlee Drive, Henrietta NY

- Provided oversight for the VCP investigation and remediation
- Installation of seven monitoring wells

Town of Clarkson, ERP Investigation Clarkson, NY

- Project Manager for RI/IRM of the former gas station
- Prepared a Remedial Investigation Work Plan

Port Leyden ERP Investigation Leyden, NY

- Project Manager for NYSDEC –funded ERP site
- Site a former gas/service station
- Geophysical investigation
- IRM included removal of six underground storage tanks and contaminated soils
- Engineering services included a sub-slab depressurization system

Churchville Ford Site Churchville, NY

- Identified extent of chlorinated solvent contamination
- Remedial site design
- hydrogeologic and engineering review
- Designed in-situ remedial approach facilitating site closure

Former David-Howland Oil Company Facility Rochester, NY

- Project Manager for remedial design, construction oversight, and remedial operations
- Implemented a remediation system with groundwater pump and treatment, vapor extraction and air sparging
- Treatment included a thermal/catalytic oxidizer

Rome Research Site Environmental Term Contract USAF, Rome NY

- Program Manager for civil and environmental engineering services
- UST closures and disposal area closures
- Designed backflow preventers
- On-call environmental sampling services
- Demolition and HAZMAT assessment

Laura Neubauer, CHMM

Laura's eight years of experience include site investigations, remediation project management and oversight of field activities including, but not limited to, drilling, Geoprobe borings, tank removal, test excavations, and groundwater monitoring.

PERSONAL PROFILE

EDUCATION

B.S., Environmental Management Technology
RIT, Rochester NY

CERTIFICATIONS

Certified Hazardous Materials Manager (CHMM)

OSHA 40-Hour Hazardous Waste Site Operations and Emergency Response (HAZWOPER) Certification

OSHA Confined Space Entry Training

Attended OSHA 501 Trainer's Course

PROJECT EXPERIENCE

Orchard Whitney Brownfield Investigation, Rochester NY

- Subsurface investigation including soil borings, groundwater well installations, development, and sampling
- Foundation and utility evaluation for the Pre-Development Study

Sewall's Island City of Watertown, NY

- Surface and subsurface soil sampling
- Provided oversight of well installation as part of the total fluids extraction system

Former Frink America Site Clayton, NY

- Created required documents (i.e. QAPP, CPP, RI Work Plan, RI Report, IRM Work Plan)
- Conducted soil vapor sampling and indoor air sampling in accordance with NYSDOH guidelines as part of an exposure assessment

Former Nichol Inn, ERP Brownfield Site Pulteney, NY

- As Project Manager developed the RI Work Plan, IRM Work Plan, and CPP as part of the remedial investigation
- Field activities included a geophysical survey, soil borings, groundwater well installations, test pits, and a soil vapor intrusion assessment
- Assisted with an asbestos and hazardous materials assessment
- Prepared specifications and bid documents on behalf of Steuben County
- Provided oversight of tank and soil removal
- Prepared a Construction Completion Report, RI Report, AA Report, and a Site Management Plan upon project completion

Remediation at State Police Barracks-Warsaw, NY

- Assisted with remediation that included the excavation, staging , and removal of contaminated soil

Former Bero Property Corrective Action Plan Waterloo, NY

- Project Manager for the Corrective Action Plan
- Provided oversight of contractors and subconsultants during the excavation of 2,912 tons of petroleum–impacted soils

Clarkson ERP Investigation Clarkson, NY

- Field Team Leader, provided oversight of contractors and subconsultants
- Geophysical survey, surface soil sampling, test pits, and installation of four groundwater monitoring wells to determine the extent of contamination

Port Leyden ERP Investigation-Leyden, NY

- Soil Vapor Intrusion Assessment
- Oversight of removal of six USTs and contaminated soil
- RI/AA Report and SMP
- Surface and subsurface soil sampling

Eric Detweiler

Eric Detweiler will act as the field geologist for this project. Eric's 16 years of experience include management of field activities including, but not limited to, drilling, geoprobe borings, test excavations, and the installation of a variety of remediation systems.

PERSONAL PROFILE

EDUCATION

B.S., Geology, 1994
St. Lawrence University
Canton, NY

CERTIFICATIONS

OSHA 40-Hour Hazardous Waste Site Operations and Emergency Response (HAZWOPER) Certification

OSHA Confined Space Entry Training

NYSDOL Asbestos Building Inspector Certification

NYS Council of Professional Geologists

National Groundwater Association

PROJECT EXPERIENCE

Orchard Whitney Brownfield Investigation, Rochester NY

- Hazardous Materials Assessment within the former building structures
- Contractor oversight during hazardous materials removal
- Delineate contamination from former plating operations
- Community Air Monitoring, aquifer testing, installation of groundwater monitoring wells and oversight of test excavations
- Investigation, and evaluation and removal of nine USTs

Sewall's Island City of Watertown, NY

- Surface and subsurface soil sampling
- Provided oversight for all investigative and remedial tasks
- Remedial Alternatives Report
- Implementation and oversight of a Total Fluids Extraction System

Former Frink America Site Clayton, NY

- Lead field activities for Environmental Restoration Project
- Identified extent of vertical and horizontal contamination
- Aquifer testing, soil vapor sampling
- Supervised the removal and disposal of 19,000 tons of contaminated soil
- Assisted in writing the RI/FER report
- Achieved unrestricted use site classification following remediation

Churchville Ford Site Churchville, NY

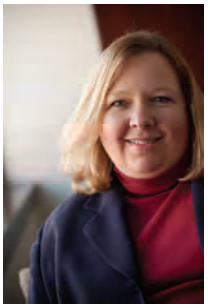
- Developed a work plan for the investigation
- Soil and sediment sampling
- Storm water drainage system evaluation
- Groundwater investigation including monitoring well installation, evaluation of oil/water separator
- Oversight of remedial injection system
- Completed FER

Former David-Howland Oil Company Facility Rochester, NY

- Project Oversight/Site Engineer for remedial design, construction oversight, and remedial operations and management of site
- Implemented, monitored, and maintained remediation system with groundwater pump and treatment, vapor extraction and air sparging
- Treatment system and OM&M included a thermal/catalytic oxidizer

Wilcox Press ERP Investigation and Cleanup Dansville, NY

- Provided oversight of field crews and sub-consultants during all remedial activities at the Site, including contaminated soil removal
- Completed FER for the project



Susan A. Hilton, P.E.

Ms. Hilton will act as the Quality Assurance Officer for the project. Sue has 17 years of experience in the areas of asbestos, lead, hazardous waste, pollution prevention, building demolition, and wastewater. She has prepared demolition plans, specification and estimates, hazardous waste management plans and designed abatement plans for numerous public and private clients. Ms. Hilton is certified as an asbestos inspector and project designer.

PERSONAL PROFILE

EDUCATION

B.S., Chemical Engineering
Clarkson University, 1993

CERTIFICATIONS

Professional Engineer, State of New York 79942

NYSDOL Asbestos Designer

NYSDOL Asbestos Inspector

OSHA 40-Hour Hazardous Waste Site Operations and Emergency Response (HAZWOPER) Certification

FTA / National Transit Institute: NEPA Environmental Process

PROJECT EXPERIENCE

DASNY Asbestos/ Environmental Term Contract 2008-2010

- Project Manager for term contract
- Dormitory Authority facilities statewide, including colleges, DDSO facilities and NYSDOH facilities

Smith Hall Renovations SUNY Brockport Brockport, NY

- As Project Manager provided oversight of Air /Project Monitoring for multi-phase abatement project

Renovations to Letchworth Dining Hall SUNY Geneseo Geneseo, NY

- As Project Manager provided oversight of asbestos, lead and PCB Pre-Renovation Survey of the interior and exterior of Letchworth Dining Hall

Asbestos Pre-Renovation Survey and Asbestos Design Services-GUS/Corner Pocket SUNY Geneseo Geneseo, NY

- As Project Manager provided oversight for the preparation of pre-renovation asbestos survey
- Prepared Asbestos Design Documents outlining asbestos removal necessary for new Fusion Market

Rochester Housing Authority (RHA) Term Contract- Rochester, NY

- Project Manager for term contract
- Services under term contract included preparation of Asbestos Surveys, Asbestos Abatement Designs, Site-Specific Variances, and Air/Project Monitoring

City of Rochester Environmental Term Contract - Rochester, NY

- Project Engineer for term contract
- Projects include Asbestos Surveys and Asbestos Abatement
- Coordinated Air/Project Monitoring efforts during asbestos removal

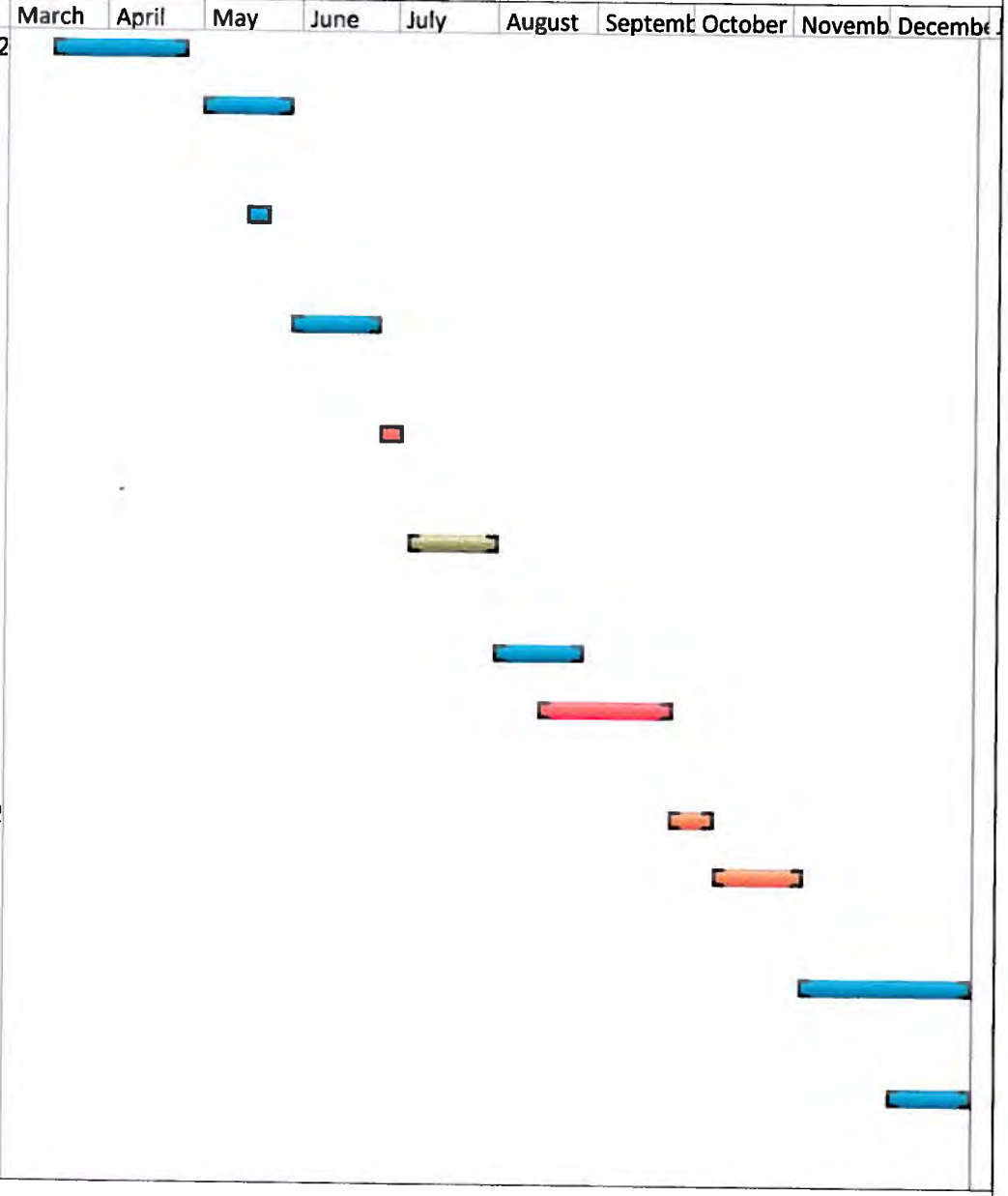
NYSDOT Asbestos Consulting Term Contract– Regions 3, 4, 5, and 6

- Asbestos Group Leader for term contract
- Asbestos survey and inspection of buildings, bridges, and utilities
- Designed remediation plans for removal and disposal of Asbestos Containing Material (ACM)
- Coordinated Air/Project Monitoring efforts during asbestos removal

Appendix E –
Estimated Project Schedule

Former Ogilvie Foods Site
City of Watertown
Remedial Action Schedule

ID	Task Name	Duration	Start	Finish
1	Remedial Work Plan Approval	6 wks	Thu 3/15/12	Wed 4/25/12
2	Pre-Remedial Design Investigation	4 wks	Tue 5/1/12	Mon 5/28/12
3	UST Removal	1 wk	Tue 5/15/12	Mon 5/21/12
4	Analysis of Brownfield Cleanup Alternatives	4 wks	Tue 5/29/12	Mon 6/25/12
5	Remedy Selection	1 wk	Tue 6/26/12	Mon 7/2/12
6	Remedial Action Plan Preparation (incl. bid pkg)	4 wks	Thu 7/5/12	Wed 8/1/12
7	Remedial Action Plan Approval	4 wks	Wed 8/1/12	Tue 8/28/12
8	Contractor Selection & Coordination	6 wks	Wed 8/15/12	Tue 9/25/12
9	Remedial Action Field Work	2 wks	Tue 9/25/12	Mon 10/8/12
10	Remedial Action Report Preparation	4 wks	Tue 10/9/12	Mon 11/5/12
11	Report Approval & Public Comment Period	8 wks	Mon 11/5/12	Fri 12/28/12
12	Site Mgmt Plan Preparation & Approval	4 wks	Mon 12/3/12	Fri 12/28/12



LU ENGINEERS
FEBRUARY 16, 2012