# REMEDIAL INVESTIGATION WORKPLAN

**for**

## FOSTER REFRIGERATION SITE
## 119 NORTH 2ND STREET
## HUDSON, NY

**Date of Preparation: March 2005**

**ECOSYSTEMS STRATEGIES, INC.**
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**ESI File: MH04055.40**

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**for**

## FOSTER REFRIGERATION SITE
## 119 NORTH 2ND STREET
## HUDSON, NY

**Date of Preparation: March 2005**

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**Prepared For:**
**City of Hudson**
**City Hall**
**520 Warren Street,**
**Hudson, New York 12534**

The undersigned has reviewed this Remedial Investigation Workplan and certifies to the City of Hudson that the information provided in this document is accurate as of the date of issuance by this office.

Any and all questions or comments, including requests for additional information, should be submitted to the undersigned.

Joseph P. Dennis, P.E.
Morris Associates

Paul H. Ciminello
President

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# 1.0 INTRODUCTION

## 1.1 Purpose

The purpose of this Draft Remedial Investigation Workplan (Workplan) is to provide specifications for investigative services to address known and/or and potential environmental conditions (see Section 1.2.2, below) at the Foster Refrigeration Site, 119 North 2nd Street, City of Hudson, Columbia County, New York (hereafter referred to as the "Site"). Specifically, the objectives of this Workplan include, but are not limited to the following:

- define the nature and extent of on-site contamination;
- identify contaminant sources;
- produce data of sufficient quantity and quality for remedial decision-making; and,
- evaluate a sufficient range of remediation alternatives to enable the preparation of a Proposed Remedial Alternatives Report (PRAP) and Record of Decision (ROD).

This Workplan is being prepared for The City of Hudson and will be considered FINAL when written approval is received from the NYSDEC. For the purpose of the work detailed in these specifications, the "Participant" is defined as the City of Hudson, which will contract with the environmental consultant to provide the services detailed in Section 2.0, below.

For the purpose of the work detailed in these specifications, a Consultant will be retained by the Participant to oversee the provision of these specified services; the designated Consultant will be hereafter referred to as the On-Site Coordinator (OSC).

## 1.2 Site Information

### 1.2.1 Site Identification and Location

The Foster Refrigeration facility is located at 119 North 2nd Street, Hudson, Columbia County, New York (see the Site Location Map, Attachment A). This property consists of one approximately three acre parcel identified in City of Hudson tax records as 109.8-1-17.

### 1.2.2 Site History and Environmental Conditions of Concern

Provided below is a summary of the history of the Site and the Environmental Conditions of Concern.

The Foster Refrigeration property was used for the manufacture of refrigerators between 1946 and 1994. The Site is occupied by one 62,652 square foot single-story industrial structure with metal siding and concrete floors. Debris is present throughout the building. Surrounding the on-site structure is an area of undeveloped land comprised of woods, fields and wetland areas.

The USEPA performed drum removal and limited associated remedial actions at the site during a short-term federal Superfund cleanup action during the second half of 1999. The files regarding these actions held at the USEPA Region 2 Offices in Edison, New Jersey were reviewed by personnel from this office. The File Review and a subsequent discussion with the USEPA project manager (Ms. Arlene Anderson) established that the USEPA's actions had concentrated on: a geophysical survey of two areas where it was reported that drums may have been buried; drum removal; underground storage tank (UST) and aboveground storage tank (AST) closure; and excavation and removal of drums buried on the northern portion of the site immediately north of the on-site structure.

The majority of the USEPA sampling at the site was performed to characterize the contents of the drums prior to disposal. However, nine post-excavation soil samples were collected immediately north of the on-site structure from an area where buried drums had been excavated (specific locations of the individual samples were not recorded by the USEPA). Records indicate that approximately 20 cubic yards of soil was removed from this location. The post-excavation samples were analyzed for TAL Metals (USEPA Methods 6000/7000), SVOCs (USEPA Method 8270), and VOCs (USEPA Method 8260).

*Metals*

Laboratory analysis of the post-excavation samples collected by the USEPA indicates the presence of metals contaminated soil in the area immediately north of the on-site structure. Concentrations of zinc, mercury, and chromium well above established NYSDEC guidance levels were detected in all samples (see Table 1, Attachment C). Lead is present above the NYSDEC guidance level (500 mg/Kg) in all but one sample. There are sporadic exceedences of nickel, magnesium, calcium, cadmium, barium, arsenic, and aluminum.

*SVOCs*

Of the nine samples submitted for analysis, sporadic exceedences of NYSDEC guidance levels were detected in five of the samples. No SVOCs were detected in three of the samples (see Table 2, Attachment C).

*VOCs*

Very low levels of five VOCs, below NYSDEC guidance levels, were detected in three of the nine samples (see Table 3, Attachment C).

These results indicate that metals and SVOC contaminated soil remain on the site immediately north of the on-site structure in the area where the USEPA excavated and removed buried drums. No other soil or groundwater data for the site is available and according to information provided by Arlene Anderson (no other soil or groundwater investigations have been performed by the USEPA.)

In a letter dated April 14, 2000 from Bruce Sprague of the USEPA to Richard Koelling of the NYSDEC, the USEPA stated that a "Removal Action" at the Foster Refrigeration site had been completed. Regarding the laboratory analysis results for the soil samples described above, the letter states: "The levels of contaminants found in these samples do not warrant further removal action under CERCLA."

*USTs*

USEPA records indicate that two "petroleum" USTs were found on the site and these were vacuum pumped, triple-washed and filled with sand. Sketch maps indicate the location of one of these USTs at the southern end of the building. The Maps do not indicate the location of the second UST; however, when queried about the location of the second UST, Arlene Anderson indicated that it was present to the east of the eastern side of the on-site structure. There is no indication that any testing was performed to determine the integrity of the USTs prior to closure. On the basis of a review of available information, ambiguity remains regarding the location, size, number and integrity of the tank(s) prior to closure.

A site inspection attended by Joe Dennis and Paul McCreary of Morris Associates, Richard Hooker of Ecosystems Strategies, Vivek Nattanmai of the NYSDEC, and Maureen E. Schuck of the State of New York Department of Health was performed on July 16, 2004 in order to identify any additional factors warranting investigation. During the inspection additional concerns were noted including numerous cracks in the concrete floor of the warehouse; buried debris was noted in the berm that extends parallel to the northern wall of the on-site structure (in the vicinity of the area of soil removal performed by the EPA.) No field evidence of the UST/USTs closed in place by the USEPA was noted.

**Summary of Conditions of Concern**

Evidence from the file review and discussions with Arlene Anderson indicate that the USEPA's actions at the site were limited to the removal of obvious potential contaminants. This included the removal of drums, ASTs, UST closure, and limited soil removal. During the site walk through performed on July 16, 2004, the floor of the warehouse was noted to be cracked at numerous locations throughout the interior of the building. Based on these findings, the following issues require further investigation:

- the vertical and lateral extent of metals-contaminated soils;
- the location of closed- in-place USTs and the integrity of subsurface soil and/or groundwater in the immediate vicinity of the former tank(s);
- the condition of subsurface soil and/or groundwater beneath the building; and,
- a general screening of the site for the presence of pesticides and PCBs, metals, VOCs and or SVOCs in areas where no documented investigation is known to have been performed.

# 2.0 PROPOSED INVESTIGATION ACTIVITIES

This section of the Workplan details investigative activities which are proposed to address the known environmental conditions on the Site, as defined in Section 1.2.2, above. Specifically, the following services are proposed: the extension of ten to fifteen borings inside the on-site structure; the extension of test pits (on lands outside the on-site structure); the installation of five groundwater monitoring wells; sampling and analysis of Site soils and groundwater; and the collection and analysis of off-site groundwater samples.

Section 2.1 provides information on services to be conducted in anticipation of intrusive fieldwork. Section 2.2 provides detailed information on the investigative services that will be conducted by the OSC to assess site conditions. A Proposed Fieldwork Map depicting relevant Site features and locations of proposed services is provided in Attachment A of this Workplan. Project deliverables (i.e., written reports) are described in Section 2.3.

## 2.1 Site Preparation Services

### 2.1.1 Project Management

The project management team will be responsible for the effective implementation of the services described in this Workplan, including adherence to the schedule set forth in Section 3.0 of this Workplan, barring unforeseen conditions. Prior to the initiation of work, the identities and qualifications of the project managers and associated staff will be supplied to the NYSDEC. All on-site staff will be appropriately trained in accordance with Occupational Safety and Health Administration (OSHA) practices (29 CFR, Part 1910).

Prior to the initiation of fieldwork, a Site Health and Safety Officer will be designated by the OSC.

### 2.1.2 Health and Safety Plan

A site-specific Health and Safety Plan (HASP) will be reviewed with site personnel prior to the initiation of fieldwork. This HASP will be reviewed with the appropriate subcontractors prior to the initiation of fieldwork. All proposed work will be performed in “Level D” personal protective equipment; however, field personnel (including subcontractors) will be prepared to continue services wearing more protective levels of equipment should field conditions warrant. A copy of the HASP is included as Attachment B of this Workplan.

### 2.1.3 Quality Assurance / Quality Control

*Scope and Goals*

In 1999 the USEPA performed drum removal and limited remedial actions at the site, but did not generate sufficient data to accurately document on-site conditions (see Section 1.2.2 above). The site investigation activities described in this Workplan are designed to generate data of sufficient quantity and quality to accurately represent existing on-site conditions. The data generated during the investigative actions will be used to generate a PRAP.

*Sampling and Decontamination Procedures*

**Equipment**

Prior to the initiation of fieldwork, all field equipment to be used during the work will be properly decontaminated in accordance with NYSDEC guidelines, and all field instruments will be properly calibrated in accordance with procedures set forth by the equipment manufacturer(s). Unless otherwise specified, a MiniRAE 2000 (Model PGM 7600) photo-ionization detector (PID) will be used for site-screening of organic vapors. The PID is calibrated to read parts per million calibration gas equivalents (ppm-cge) of isobutylene. Instrument calibration will be performed daily and a written record of calibration results will be provided in the project files.

**Laboratory**

All samples will be collected in accordance with applicable NYSDEC guidelines and will be submitted to a New York State Department of Health (NYSDOH) ELAP-certified laboratory using appropriate chain of custody procedures. Dedicated, pre-cleaned glassware for sample collection will be provided by the laboratory for this project. Chain of custody forms will be completed by field personnel involved in sample collection, and completed custody forms will be provided in the Site Investigation Report.

Analytical Methods/Quality Assurance Summary Table

| Matrix Type | Number of Samples | Number of Field and Trip Blanks per matrix | Analytical perameters per Matrix | Analytical methods per matrix | Number and type of matrix spike and matrix spike duplicate samples per matrix | Number and Type of duplicate samples | Number and type of split samples | Sample preservation per analytical method and matrix type | Minimum sample volume per analytical method and matrix type | Sample holding time per analytical method and matrix type |
|---|---|---|---|---|---|---|---|---|---|---|
| Soil | 25 | 1 per day | Volatile Organics | USEPA Method 8260 | | 3 | | Cool to 4°C | 4 oz | 7 Days extract; 40 days analyze |
| | | | Sem-Volatile Organics (PAHs Only) | USEPA Method 8270 | | | | Cool to 4°C | 4oz | 7 Days extract; 40 days analyze |
| | | | Target Analyte List (TAL): Total metals | USEPA Method 6010 (Mercury 7470) | | | | Cool to 4°C | 4.oz | 14 days |
| Groundwater | 5 | 1 per day | Volatile Organics | USEPA Method 8260 | 1 | 1 | 1 | 1:1HCl to pH<2; Cool to 4°C | 80 ml | 7 Days extract; 40 days analyze |
| | | | Sem-Volatile Organics (PAHs Only) | USEPA Method 8270 | | | | 1:1HCl to pH<2; Cool to 4°C | 1 L | 7 Days extract; 40 days analyze |
| | | | Target Analyte List (TAL): Total metals | USEPA Method 6010 (Mercury 7470) | | | | 1N $HNO_3$ to pH<2; Cool to 4°C | 1L | 14 days |
| | | | Freon | USEPA Method 8260 | | | | 1:1HCl to pH<2; Cool to 4°C | 80 ml | 7 Days extract; 40 days analyze |

### 2.1.4 Agency Notification/Communications

**Agency Notification**

All relevant project notifications from the OSC will be made to a designated representative of the NYSDEC. Unless otherwise specified or required by state regulations/local ordinances, no other public agency will be notified.

The NYSDEC will identify to the OSC a fieldwork representative who will be contacted prior to the initiation of fieldwork. Notification of the date and time of fieldwork services will be given to the NYSDEC representative in writing. A minimum of three working days notice will be provided to the NYSDEC representative, unless emergency conditions necessitate shorter notice. Every reasonable effort will be made to ensure that the NYSDEC representative is present during fieldwork.

**Scheduling Changes**

A preliminary schedule of investigative services is provided in Section 3.0 of this Workplan. Any substantive changes to this schedule will be reviewed with the NYSDEC representative and, if appropriate, other NYSDEC personnel. To the extent possible, all substantive alterations to the project schedule will be provided to the NYSDEC in writing via facsimile transmission, and a response from the NYSDEC will be secured by the OSC prior to the adoption and implementation of scheduling changes.

### 2.1.5 Utility Markout

Prior to the initiation of fieldwork, a request for a complete utility markout of the subject property will be submitted by the OSC as required by New York State Department of Labor regulations. Confirmation of underground utility locations will be secured, and a field check of the utility markout will be conducted prior to any intrusive activities.

### 2.1.6 Subcontractors

Drilling and laboratory subcontractors will be used to complete the services proposed in this Workplan. The Participant's Consultant will solicit unit price bids or quotes for all subcontracted work and will provide written quotations to the Participant for review and subcontractor determination. Project requirements are such that participation will be sought from qualified firms that are also listed as minority and/or women owned businesses. A detailed scope of work, specified dollar amount, signatories to the agreement, and a time frame for performance will be

included in all subcontracts. Subcontractors will perform the requested services as specified by the Participant's Consultant. All subcontracted work will be directly supervised by Participants's Consultant personnel.

### 2.1.7 Citizen Participation Plan

A document repository will be established at the Hudson Area Association Library to provide the public with convenient access to important project documents and other information. This information will be kept current and will include reports, data, maps, and other information gathered and developed during the course of the cleanup as well as fact sheets and public meeting announcements.

Documents related to this project will be available for review at:

HUDSON AREA ASSOCIATION LIBRARY
400 STATE ST
HUDSON, NY
Phone: (518) 828-1792

## 2.2 Field Investigative Services

The tasks detailed below will be performed by the Participant's consultant and designated subcontractors to achieve the project objectives listed in Section 1.1 of this Workplan.

### 2.2.1 Soil Borings and Test Pits

**Location and Extension**

*Soil Borings*

A total of 10 soil borings will be extended within the on-site structure. Borings will be located to provide sufficient information on the lateral and vertical extent of any encountered contamination. A Proposed Fieldwork Map illustrating the locations of the borings and groundwater monitoring wells (see Section 2.2.3, below) is provided in Attachment A of this Workplan.

Soil borings will be extended using a track-mounted Geoprobe rig equipped with a 2-inch outer diameter hollow core sampling tube, under the supervision of ESI personnel. The sampling tubes will be decontaminated prior to the initiation of fieldwork and after the collection of each sample. Decontamination will be consistent with established United States Environmental Protection Agency (USEPA) and NYSDEC protocols.

A determination will be made in the field regarding exact soil boring locations, based on the locations of underground utilities, floor drains, cracks in the floor etc.

*Test Pits*

A total of twelve test pits will be extended on exterior portions of the site in the vicinity of previous USEPA drum excavations and GPR surveys (Locations are shown on the proposed Fieldwork map). Test pits will be extended using a standard backhoe to a maximum depth of 10 feet below grade or until groundwater is reached.

Logs documenting the physical characteristics of the soils and any debris encountered during the extension of test pits will be prepared and maintained by the OSC. Discrete samples will be collected from each test pit; a determination will be made in the field as to the specific samples to be submitted for analysis (see "Soil Sample Collection", below). If areas of discoloration are noted in the test pits, grab samples will be collected. All samples will be properly identified by the particular boring ID number and the sample's depth.

A determination will be made in the field regarding exact test pit locations, based on the locations of underground utilities, nearby structures, etc. Soil generated during the excavation of test pits will be re-interred. If obvious petroleum contamination is encountered, such soils will be stockpiled on 6-mil plastic for off-site disposal (should laboratory results indicate on-site disposal is inappropriate).

**Soil Sample Collection**

Soil samples collected during fieldwork will be obtained in a manner consistent with NYSDEC sample collection protocols. It is anticipated that soil samples will be collected from each borehole where sufficient sampling material is present. Field conditions may warrant the collection and analysis of additional samples; similarly, the absence of measurable recovery in the sampling spoon may reduce the total number of samples.

Logs will be prepared for all soil samples to document subsurface conditions including soil types and description of non-soil materials, field instrument measurements, depth of groundwater (if encountered), and field evidence of contamination including soil mottling, odor, vapors, discoloration and free or residual product.

Grossly contaminated soil will not be returned to the subsurface and will be disposed of in accordance with applicable guidance and regulations.

Decontaminated stainless steel trowels and dedicated gloves will be used at each sample location to place the material into jars pre-cleaned at the laboratory. Prior to and after the collection of each material sample, the sample collection instrument will be decontaminated to avoid cross-contamination between samples. Decontamination procedures will be consistent with established USEPA and NYSDEC protocols.

**Soil Sample Analysis**

A selection of the soil samples will be submitted to the laboratory for chemical testing based on visual observation and field instrument readings. Samples selected for submission to the laboratory will be analyzed for TAL metals, volatile organic compounds (VOCs) using USEPA Method 8260 plus MTBE and semi-volatile organic compounds (SVOCs) using USEPA Method 8270.

It is anticipated that a minimum of (ten) 10 soil boring soil samples, twelve (12) test pit discrete soil samples, and five (5) groundwater samples will be submitted for analysis. In addition, ten (10) surface samples from selected soil boring and test pit locations will be collected. All samples will be analyzed for TAL metals. Five (5) of the soil boring samples and six (6) of the test pit samples will be analyzed for VOCs (full list), SVOCs (full list), and pesticides/PCBs.

### 2.2.2 Groundwater Monitoring

This Workplan proposes that five soil boreholes be completed as groundwater monitoring wells. The locations for well placement are depicted on the Proposed Fieldwork Map is provided in Attachment A.

**Installation of Proposed Monitoring Wells**

Five boreholes will be completed as two-inch diameter groundwater monitoring wells, installed as indicated on the Proposed Fieldwork Map:

- Each well will be constructed of two-inch PVC casing and a ten foot length of 0.01-inch slotted PVC well screening across the water table. No glue will be used to thread the casing lengths. A locked riser cap with vent will be installed at the top of the PVC riser.

- Wells will be constructed such that a minimum of 0.5 foot of screening will extend above the water table; approximately 9.5 feet of screening will extend below the water level.

- The annular space between well screen and the borehole will be backfilled with clean #1 silica sand to a depth of one to two feet above the well screen. A one-foot thick bentonite seal will be poured down the borehole above the sand pack and allowed to hydrate before grouting the remaining annular space with cement.

- All on-site groundwater monitoring wells will be surveyed to the nearest 0.01 foot in relation to a permanent datum and horizontally to an accuracy of one-tenth of a second latitude and longitude. The survey will be referenced to NAD 83 and NGVD 29 and will include a marked spot on the top of the well riser and ground elevation adjacent to the well. All the soil boring and test pit locations will be included in the survey.

**Groundwater Monitoring Well Development**

Well development will begin at the top of the saturated portion of the screened interval to prevent clogging of the pump within the well casing. The wells will be developed until the discharge water is free of sediment and the indicator parameters (pH, temperature, turbidity, dissolved oxygen and specific conductivity) have stabilized. Well development shall be discontinued when the turbidity of the discharged water is below 50 NTUs and the other parameters have stabilized. Upon completion, the pump assembly will be removed from the well while the pump is still running to avoid discharge of purged water back into the well.

**Groundwater Monitoring Well Sampling**

Groundwater sampling will begin at the potentially least contaminated well (as determined from well location and/or previous data) and proceed to the most contaminated well. New latex gloves will be worn by the sampler at each well location. Provided below is a description of the sampling protocol.

1. Basic climatological data (e.g., temperature, precipitation, conductivity, etc.) will be recorded in the field logbook.

2. The protective casing on the well will be unlocked.

3. The air in the well head will be screened for organic vapors using the PID.

4. The well's static water level will be measured to the nearest 0.01 foot with a decontaminated Solinst water level meter, and the measurement will be recorded in the logbook. The measurement will be made relative to the top of the PVC casing.

5. From the well diameter, total well depth, and the measured depth of the standing water, the volume of standing water in the well will be calculated to determine the amount of water to be purged from the well prior to sampling. This volume will be recorded in the logbook.

6. The well will be purged using a 1-7/8" diameter submersible pump. The pump will be properly decontaminated between wells to prevent cross-contamination. Dedicated polyethylene tubing will be used at each well. The pump(s) will be placed at the top of the water column and lowered as the water level decreases to minimize groundwater agitation. At the end of purging, the pump should be raised through the water column until suction breaks to ensure that any water in the stagnant zone is removed. The actual number of well volumes to be removed during purging may vary. Field parameters will be measured throughout well purging to determine the efficiency of the purging. At a minimum, three well volumes will be removed from each well prior to sampling. The purged volumes will be calculated by discharging the well water into a container of known volume.

   The time at the beginning and the end of purging will be recorded in the logbook. All observations, including turbidity, odor, presence of a sheen, etc., will also be recorded in the field logbook.

7. A single trip blank will be included in each cooler where VOC analyses are requested.

8. Groundwater samples will be collected from the well using a dedicated, disposal bailer in accordance with procedures outlined according to NYSDEC protocol. During sample collection, the bailer will not touch the ground or any object except for the well casing).

9. Each groundwater VOC sample will be placed in two, appropriately labeled, 40-ml glass vials preserved at the laboratory with HCl; precautions will be taken to ensure that there are no air bubbles in the vials during sample collection. Samples to be analyzed for SVOC will be collected in labeled, one liter amber, unpreserved jars.

10. All samples will be stored on ice and the sample information recorded in the field logbook, as well as on the laboratory's Chain of Custody forms.

11. The standing water level in the well after sampling will be remeasured, with levels recorded in the logbook. The time will be noted as well.

12. The protective cap on the well will be replaced and locked.

13. The field sampling crew will move to the next most contaminated well and the process will be repeated.

After sample collection the containers will be placed in a cool (4°C) dry place prior to their transport via to a New York State Department of Health-approved laboratory. All samples will be accompanied by proper chain of custody documentation.

**Groundwater Sample Analysis**

Samples obtained from the groundwater monitoring wells will be submitted for laboratory analysis of TAL Metals, VOCs using USEPA Method 8260 plus MTBE and Freon, and SVOCs using USEPA Method 8270.

**Groundwater Flow Calculations**

The direction of groundwater flow will be determined based on elevations of static groundwater, measured prior to water quality sample collection. Measurements will be collected with an electronic depth meter with an accuracy of measuring depth to the nearest 0.01 foot. Data will be recorded in field logs for use in generating a Direction of Groundwater Flow Map in the final project SI Report (see Section 2.3, below).

## 2.3 Site Investigation Report

Upon completion of all site investigation services, a Site Investigation Report (SI Report) summarizing all services performed on the Site will be prepared. This SI Report will conform with the requirements of Section 5.1 of the Brownfields Procedures Handbook (TAGM #4058) and will include the following:

- documentation of field activities, including relevant supporting documents (e.g., soil boring logs);
- summary of laboratory analytical data, including a comparison of data to appropriate NYSDEC guidance documents;
- maps and drawings of sufficient specificity to provide a working description of site conditions including groundwater surface contour maps;
- an assessment of documented contaminants present on the Site, including an assessment of likely off-site impacts associated with known on-site conditions; and
- if appropriate, an analysis of potential remedial options and cost estimates will be provided for each identified environmental condition based on documented site conditions.

Upon completion, the SI Report will be submitted to the NYSDEC for review and comment.

## 3.0 TIME SCHEDULE

The schedule outlined below will be maintained throughout this project, unless revised by mutual consent of the NYSDEC and the Participant. Week one begins with authorization to proceed by the Participant subsequent to the NYSDEC approve of this Workplan and the execution of the State Assistance Contract.

Within six weeks of authorization to proceed:

- Soil borings will be extended on the Site, which will be immediately followed by laboratory analysis of the samples collected from the boreholes;

- The locations for monitoring wells will be selected and wells will be installed, depending on field screening results;

Within eight weeks of authorization to proceed:

- The monitoring wells will be sampled and samples submitted for laboratory analysis;

Within twelve weeks of authorization to proceed:

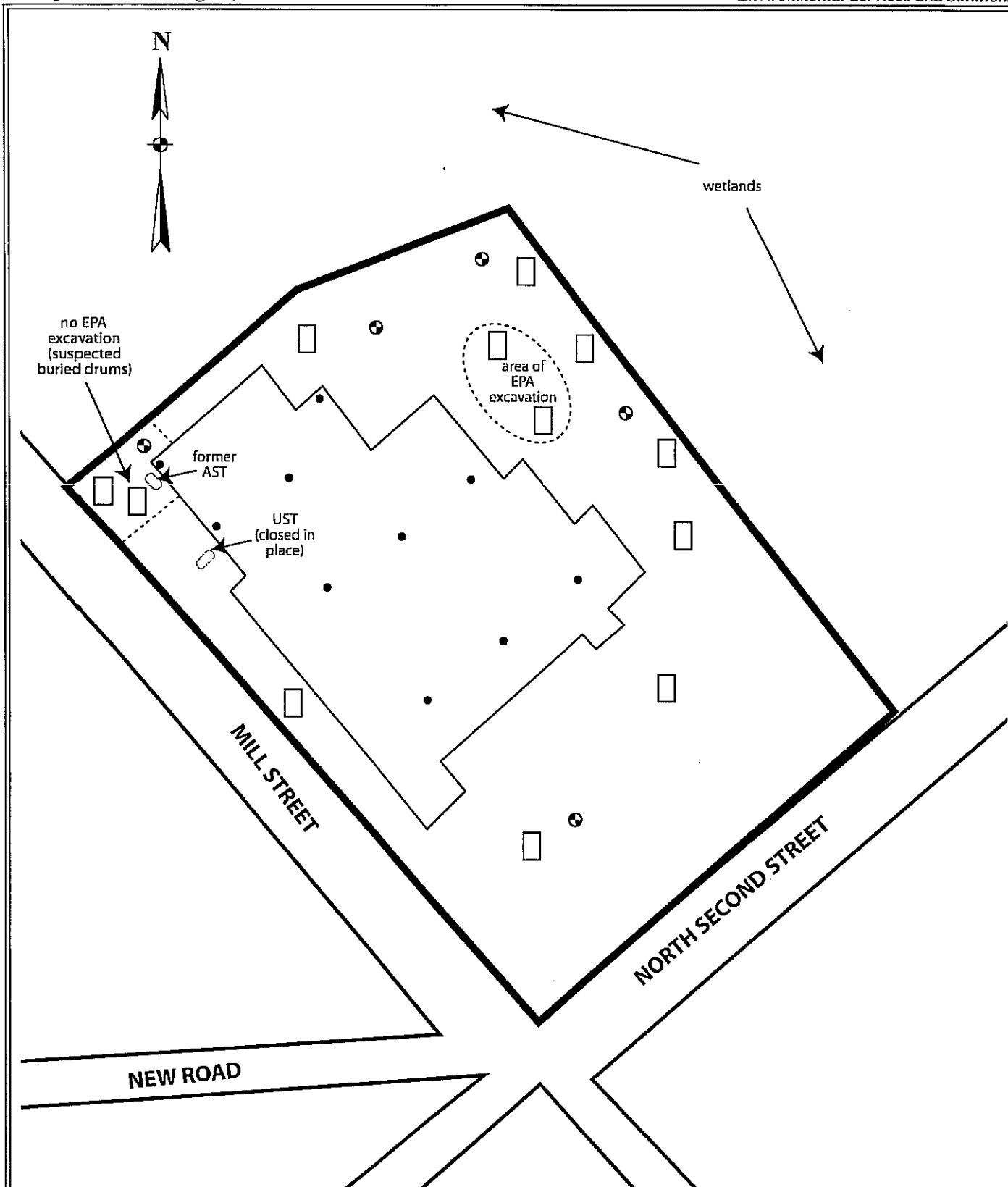
- A written Site Investigation Report (SI Report) summarizing the completion of described tasks will be provided to the NYSDEC. The SI Report will include laboratory results, manifests, relevant maps, soil boring logs, and an assessment of recommended remedial actions.

## 4.0 Cost Estimates

| | |
|---|---|
| Fieldwork will take five days | $4,000 |
| Backhoe for 1 day | $1,000 |
| Driller for 2 days | $4,000 |
| Laboratory Analysis | $18,000 |
| Report Preparation | $ 5,000 |

# ATTACHMENT A

## Proposed Fieldwork Map




All feature locations are approximate. This map is intended as a schematic to be used in conjunction with the associated report, and it should not be relied upon as a survey for planning or other activities.

## Proposed Fieldwork Map

Foster Refrigeration Site
119 North 2nd Street
Hudson, New York

Legend:
- subject property border
- proposed test pits
- proposed monitoring well
- proposed boring location

ESI File: MH04055.40
March 2004
Scale: 1" = 50' (approx.)
Attachment A

# ATTACHMENT B

## Health and Safety Plan

# HEALTH AND SAFETY PLAN

# FOR SITE INVESTIGATION

PREPARED FOR THE

FOSTER REFRIGERATION SITE
119 NORTH 2ND STREET
HUDSON, NY

Date of Preparation: March 2005

ECOSYSTEMS STRATEGIES, INC.
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ATTACHMENT

*Proposed Fieldwork Map*

# 1.0 INTRODUCTION

## 1.1 Purpose

This Health and Safety Plan (HASP) has been developed to provide the requirements and general procedures to be followed by Ecosystems Strategies, Inc. (ESI) and designated subcontractors while performing site investigation at the former Foster Refrigeration Property (the "Site"), located at 119 North 2nd Street, Hudson, Columbia County, New York County, New York. Site Location and Proposed Fieldwork Maps are attached to this HASP.

This HASP describes the responsibilities, training requirements, protective equipment, and standard operating procedures to be utilized by all personnel while on the Site. This HASP incorporates by reference the applicable Occupational Safety and Health Administration (OSHA) requirements in 29 CFR 1910 and 29 CFR 1926.

The requirements and guidelines in this HASP are based on a review of available information and evaluation of potential on-site hazards. This HASP will be discussed with Site personnel and will be available on-site for review while work is underway. On-site personnel will report to the Site Safety and Health Officer (SSHO) in matters of health and safety. The on-site project supervisor(s) are responsible for enforcement and implementation of this HASP.

This HASP is specifically intended for the conduct of activities within the defined scope of work in specified areas of the Site. Changes in site conditions and future actions that may be conducted at this site may necessitate the modification of the requirements of the HASP. Although this HASP can be made available to interested persons for informational purposes, ESI has no responsibility over the interpretations or activities of any other persons or entities other than employees of ESI and designated subcontractors to ESI.

## 1.2 Site Location and Description

The Site as defined in this HASP is the Foster Refrigeration facility located at 119 North 2nd Street, Hudson, Columbia County, New York (see the Site Location Map, Attachment A). This property consists of one parcel of approximately three acres in size identified in tax records as 109.8-1-17. A Fieldwork Map is included as Attachment A of this HASP and illustrates the configuration of the Site as well as the areas of proposed remedial activities (see Section 1.3, below).

### 1.3 Work Activities

Environmental investigation activities are detailed in the Draft Remedial Investigation Workplan (Draft Workplan) dated November 2003. The specific tasks detailed in the Draft Workplan are wholly incorporated by reference into this HASP. The tasks described in the Draft Workplan are proposed to address the potential presence of elevated concentrations of volatile organic compounds (VOCs); semi-volatile organic compounds (SVOCs); and Metals in on-site soils and groundwater.

The following field tasks will be performed:

- Extension of soil borings and test pits;
- Soil sampling to document levels of VOCs, SVOCs and Metals;
- Installation of monitoring wells; and,
- Water sample collection to document levels of VOCs, SVOCs and Metals

## 2.0 HEALTH AND SAFETY HAZARDS

The potential exists for the presence of elevated levels of petroleum hydrocarbons and TAL metals in on-site soils. During site investigation work the possibility exists for on-site personnel to have contact with identified contaminated soils, water and vapor. The compounds may be released at levels which may present a skin contact hazard and/or inhalation or ingestion hazard.

Working in the vicinity of heavy equipment is the primary safety hazard at the Site. Physical hazards in working near heavy construction equipment include the following: overhead hazards, slips/trip/falls, hand and foot injuries, moving part hazards, improper lifting/back injuries, and noise.

## 3.0 PERSONAL PROTECTIVE EQUIPMENT

The levels of protection identified for the services specified in the Draft Workplan represent a best estimate of exposure potential and protective equipment needed for that exposure. Determination of levels was based on data provided by previous studies of the Site and information reviewed on current and past Site usage. The SSHO may recommend revisions to these levels based on an assessment of actual exposures.

The level of protective clothing and equipment selected for this project is Level D. Workers will wear Level D protective clothing including, but not limited to, a hard hat, steel-toed boots, latex gloves (when handling soils and/or groundwater), and safety goggles (when decontaminating equipment). Personal protective equipment (PPE) will be worn at all times, as designated by this HASP.

The need for an upgrade in PPE will be determined based upon measurements taken in the breathing zone of the work area using a photo-ionization detector (PID). As outlined in Section 5.0, below, an upgrade to a higher level of protection will begin when PID readings and/or dust levels above specified limits are measured.

If any equipment fails and/or any employee experiences a failure or other alteration of their protective equipment that may affect its protective ability, that person will immediately leave the work area. The Project Manager and the SSHO will be notified and, after reviewing the situation, determine the effect of the failure on the continuation of on-going operations. If the failure affects the safety of personnel, the work site, or the surrounding environment, personnel will be evacuated until appropriate corrective actions have been taken.

With regard to physical hazards, all personnel will maintain a safe distance from construction equipment in order to not interfere with their operation. Those personnel not involved directly with observation and supervision of site investigation activities involving heavy equipment will stand at a safe distance from all such equipment. All personnel will be familiar with the location and operation of the kill switch on utilized equipment. Precautions will be taken in lifting any heavy equipment. Additionally, hearing protection will be utilized during any operations generating excessive noise levels.

## 4.0 CONTAMINANT CONTROL

Precautions will be taken during dry weather (e.g., wetting or covering exposed soils) to avoid breathing dust-generated from soils. A PID and a P-5 Digital Dust Indicator or equivalent equipment will be used to monitor potential contaminant levels. Response to the monitoring will be in accordance with the action levels provided in Section 5.0.

## 5.0 MONITORING AND ACTION LEVELS

Concentrations of petroleum hydrocarbons and metals in the air are expected to be below OSHA permissible exposure limits (PELs). A Community Air Monitoring Plan will be implemented for all fieldwork. A copy of the Community Air Monitoring Plan is provided as an attachment to the Draft Workplan. Air monitoring will be conducted for VOCs, SVOCs, and dust. Monitoring will be conducted at all times that construction activities which are likely to generate emissions are occurring. PID readings consistently in excess of 5 ppm, and dust levels in excess of 150 ug/$m^3$

will be used as an indication of the need to initiate personnel monitoring and/or increase worker protective measures.

PID and/or dust readings that consistently exceed background in the breathing zone (during any of the proposed tasks) will necessitate moving away from the source or implementing a higher PPE level.

## 6.0 SITE ACCESS AND CONTROL

Site control procedures will be established to reduce the possibility of worker contact with compounds present in the soil, to protect the public in the area surrounding the Site and to limit access to the Site to only those persons required to be in the work zone. Measures (e.g., placement of traffic cones and warning tape) will be taken to limit the entry of unauthorized personnel into the specific areas of field activity.

## 7.0 PERSONNEL TRAINING

Work zones that will accomplish the general objective stated above will be established by the Project Manager and the SSHO. Site access will be monitored by the SSHO, who will maintain a log-in sheet for personnel that will include, at the minimum, personnel on the Site, their arrival and departure times, and their destination on the Site. Personnel exiting the work zone(s) will be decontaminated prior to exit. The SSHO will establish a decontamination system and decontamination procedures appropriate to the Site and the work that will prevent potentially hazardous materials from leaving the Site (see Section 8.0).

Site-specific training will be provided to each employee. Personnel will be briefed by the SSHO as to the potential hazards to be encountered. Topics will include:

- Availability of this HASP;
- General site hazards and specific hazards in the work areas, including those attributable to the chemicals present;
- Selection, use, testing, and care of the body, eye, hand, and foot protection being worn, with the limitations of each;
- Decontamination procedures for personnel, their personal protective equipment, and other equipment used on the Site;
- Emergency response procedures and requirements;
- Emergency alarm systems and other forms of notification, and evacuation routes to be followed; and
- Methods to obtain emergency assistance and medical attention.

# 8.0 DECONTAMINATION

Vehicles will be brushed to remove materials adhering to the surfaces. Sampling equipment will be segregated and, after decontamination, stored separately from splash protection equipment. Decontaminated or clean sampling equipment not in use will be covered with plastic and stored in a designated storage area in the work zone.

# 9.0 EMERGENCY RESPONSE

## 9.1 Notification of Site Emergencies

In the event of an emergency, the SSHO will be immediately notified of the nature and extent of the emergency.

Table 1 in this HASP contains Emergency Response Telephone Numbers, and immediately following is a map detailing the directions to the nearest hospital. This information will be maintained at the work Site by the SSHO. The location of the nearest telephone will be determined prior to the initiation of on-site activities. In addition to any permanent phone lines, a cellular phone will be available for use on-site.

## 9.2 Responsibilities

The SSHO who is responsible for responding to emergencies and prior to the initiation of on-site work activities will:

1. Notify individuals, authorities, and/or health care facilities of the potentially hazardous activities and potential wastes that may develop as a result of the investigation;
2. Confirm that the following safety equipment is available: first aid supplies and a fire extinguisher;
3. Have a working knowledge of safety equipment available; and,
4. Confirm that a map detailing the most direct route to the hospital is prominently posted with the emergency telephone numbers.

The SSHO will be responsible for directing notification, response, and follow-up actions and for contacting outside response personnel (ambulance, fire department, or others). In the case of an evacuation, the SSHO will account for personnel. A log of individuals entering and leaving the Site will be kept so that everyone can be accounted for in an emergency.

Upon notification of an exposure incident, the SSHO will contact the appropriate emergency response personnel for recommended medical diagnosis and, if necessary, treatment. The SSHO will determine whether and at what levels exposure actually occurred, the cause of such exposure, and the means to prevent similar incidents from occurring.

### 9.3 Accidents and Injuries

In the event of an accident or injury, measures will be taken to assist those who have been injured or exposed and to protect others from hazards. If an individual is transported to a hospital or doctor, a copy of the HASP will accompany the individual.

The SSHO will be notified and will respond according to the severity of the incident. The SSHO will perform an investigation of the incident and prepare a signed and dated report documenting the investigation. An exposure-incident report will also be completed by the SSHO and the exposed individual. The form will be filed with the employee's medical and safety records to serve as documentation of the incident and the actions taken.

### 9.4 Communication

No special hand signals will be utilized within the work zone. Field personnel will utilize standard hand signals during the operation of heavy equipment.

### 9.5 Safe Refuge

Vehicles and on-site structures will serve as the immediate place of refuge in the event of an emergency. If evacuation from the area is necessary, project vehicles will be used to transport on-site personnel to safety.

### 9.6 Site Security and Control

Site security and control during emergencies, accidents, and incidents will be monitored by the SSHO. The SSHO is responsible for limiting access to the Site to authorized personnel and for oversight of reaction activities.

### 9.7 Emergency Evacuation

In case of an emergency, personnel will evacuate to the safe refuge identified by the SSHO, both for their personal safety and to prevent the hampering of response/rescue efforts.

## 9.8 Resuming Work

A determination that it is safe to return to work will be made by the SSHO and/or any personnel assisting in the emergency, e.g., fire department, police department, utility company, etc. No personnel will be allowed to return to the work areas until a full determination has been made by the above-identified personnel that all field activities can continue unobstructed. Such a determination will depend upon the nature of the emergency (e.g., downed power lines -- removal of all lines from the property; fire -- extinguished fire; injury – safe transport of the injured party to a medical facility with either assurance of acceptable medical care present or completion of medical care; etc.).

Before on-site work is resumed following an emergency, necessary emergency equipment will be recharged, refilled, or replaced. Government agencies will be notified as appropriate. An Incident Report Form will be filed.

## 9.9 Fire Fighting Procedures

A fire extinguisher will be available in the work zone during on-site activities. This extinguisher is intended for small fires. When a fire cannot be controlled with the extinguisher, the area will be evacuated immediately. The SSHO will be responsible for directing notification, response, and follow-up actions and for contacting ambulance and fire department personnel.

## 9.10 Emergency Decontamination Procedure

The extent of emergency decontamination depends on the severity of the injury or illness and the nature of the contamination. Whenever possible, minimum decontamination will consist of washing, rinsing, and/or removal of contaminated outer clothing and equipment. If time does not permit decontamination, the person will be given first aid treatment and then wrapped in plastic or a blanket prior to transport to medical care.

## 9.11 Emergency Equipment

The following on-site equipment for safety and emergency response will be maintained in the on-site vehicle of the SSHO:

1. fire extinguisher;
2. first aid kit; and,
3. extra copy of this Health and Safety Plan.

# 10.0 SPECIAL PRECAUTIONS AND PROCEDURES

The activities associated with this investigation may involve potential risks of exposure to both chemical and physical hazards. The potential for chemical exposure to hazardous or regulated substances will be significantly reduced through the use of monitoring, personal protective clothing, engineering controls, and implementation of safe work practices.

## 10.1 Heat/Cold Stress

Training in prevention of heat/cold stress will be provided as part of the site-specific training. The timing of this project is such that heat/cold stress may pose a threat to the health and safety of personnel. Work/rest regimens will be employed, as necessary, so that personnel do not suffer adverse effects from heat/cold stress. Special clothing and appropriate diet and fluid intake regimens will be recommended to personnel to further reduce this temperature-related hazard. Rest periods will be recommended in the event of high/low temperatures and/or humidity to counter the negative effects of heat/cold stress.

## 10.2 Heavy Equipment

Precautions will be taken when standing near or working adjacent to any heavy equipment.

## 10.3 Additional Safety Practices

The following are important safety precautions which will be enforced during this investigation:

1. Medicine and alcohol can aggravate the effect of exposure to certain compounds. Controlled substances and alcoholic beverages will not be consumed during investigation activities. Consumption of prescribed drugs will only be at the discretion of a physician familiar with the person's work.

2. Eating, drinking, chewing gum or tobacco, smoking, or other practices that increase the probability of hand-to-mouth transfer and ingestion of material is prohibited except in areas designated by the SSHO.

3. Contact with potentially contaminated surfaces will be avoided whenever possible. Workers will not unnecessarily walk through puddles, mud, or other discolored surfaces; kneel on the ground; or lean, sit, or place equipment on drums, containers, vehicles, or the ground.

4. Personnel and equipment in the work areas will be minimized, consistent with effective site operations.

5. Unsafe equipment left unattended will be identified by a "DANGER, DO NOT OPERATE" tag.

6. Work areas for various operational activities will be established.

### 10.4 Daily Log Contents

The SSHO will establish a system appropriate to the Site, the work, and the work zones that will record, at a minimum, the following information:

1. Personnel on the Site, their arrival and departure times, and their destination on the Site.

2. Incidents and unusual activities that occur on the Site such as, but not limited to, accidents, spills, breaches of security, injuries, equipment failures, and weather-related problems.

3. Changes to the HASP.

4. Daily information generated such as: changes to work and health and safety plans; work accomplished and the current Site status; and monitoring results.

# 11.0 TABLES AND FIGURES

## Table 1: Emergency Response Telephone Numbers

| Emergency Agencies | Phone Numbers |
|---|---|
| EMERGENCY | 911 |
| Columbia Memorial Hospital<br>71 prospect Ave<br>Hudson, N.Y.<br>12534 | (518) 828 7601 or 911 |
| City of Hudson Police Department | (518) 828-3388 or 911 |
| City of Hudson Fire Department | (518) 828-3009 or 911 |
| City of Hudson Mayor's Office | (518) 828-7217 |

**Figure 1: Directions to Hospital / Map**

Start at 199 N 2ND ST, HUDSON - go 0.2 mile south

Turn left on Mill St – go 0.1 mile

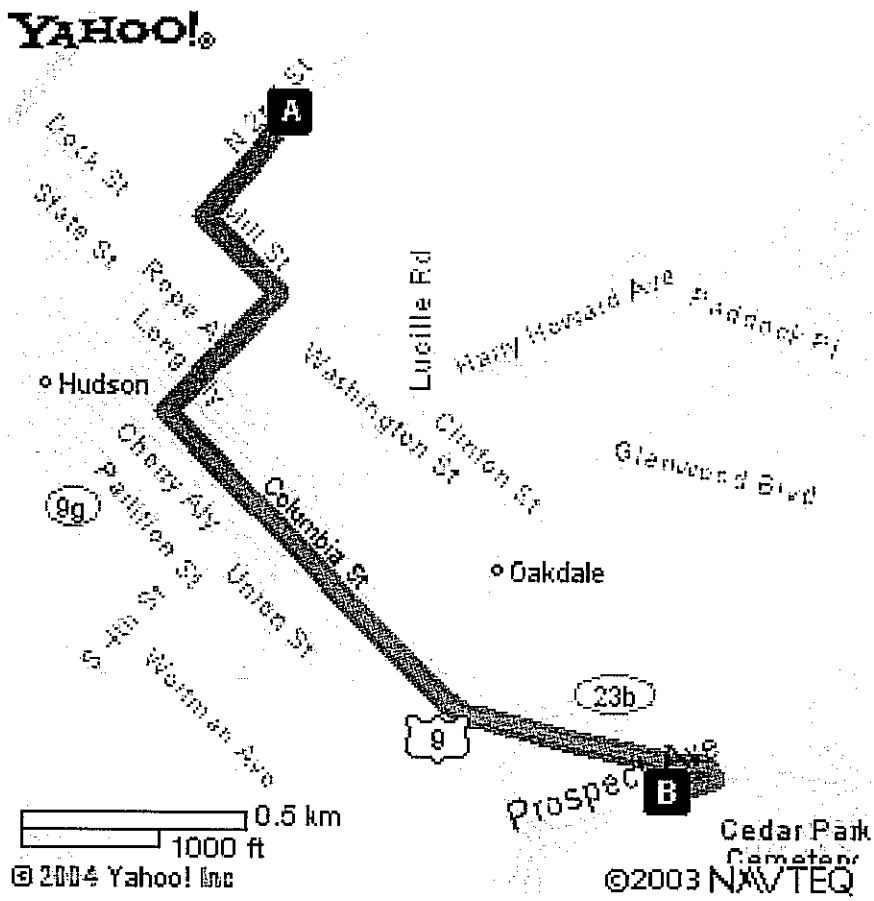
Turn right on N 3rd Street – go 0.2 mile

Make hard right on Prospect Ave – go 0.1 mile

Arrive at 71 Prospect Avenue, Hudson on the right

SEE MAP TO HOSPITAL ON FOLLOWING PAGE

## Overview of Route



## Community Air Monitoring Plan

Real-time air monitoring for particulate levels and volatile organic compounds (VOCs) at the perimeter of the exclusion zone or work area will be necessary for the proposed scope of services. This Community Air Monitoring Plan includes protocols for VOC and particulate monitoring and appropriate response actions.

Particulate Monitoring, Response Levels, and Actions

The particulate monitoring will 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 will be equipped with an audible alarm to indicate exceedence of the action level (see below). In addition, fugitive dust migration will be visually assessed during all work activities. All readings will be recorded and be available for State (DEC and DOH) personnel to review.

Particulate concentrations will be monitored continuously at the upwind and downwind perimeters of the immediate work area (i.e., the exclusion zone) at temporary particulate monitoring stations.

If the downwind PM-10 particulate level is 100 micrograms per cubic meter ($\mu g/m^3$) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques will be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 $\mu g/m^3$ 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 $\mu g/m^3$ above the upwind level, work will 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 $\mu g/m^3$ of the upwind level and in preventing visible dust migration.

VOC Monitoring, Response Levels, and Actions

Monitoring should be performed using equipment capable of calculating 15-minute running average concentrations. Equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. 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.

VOCs must be monitored continuously at the downwind perimeter of the immediate work. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions.

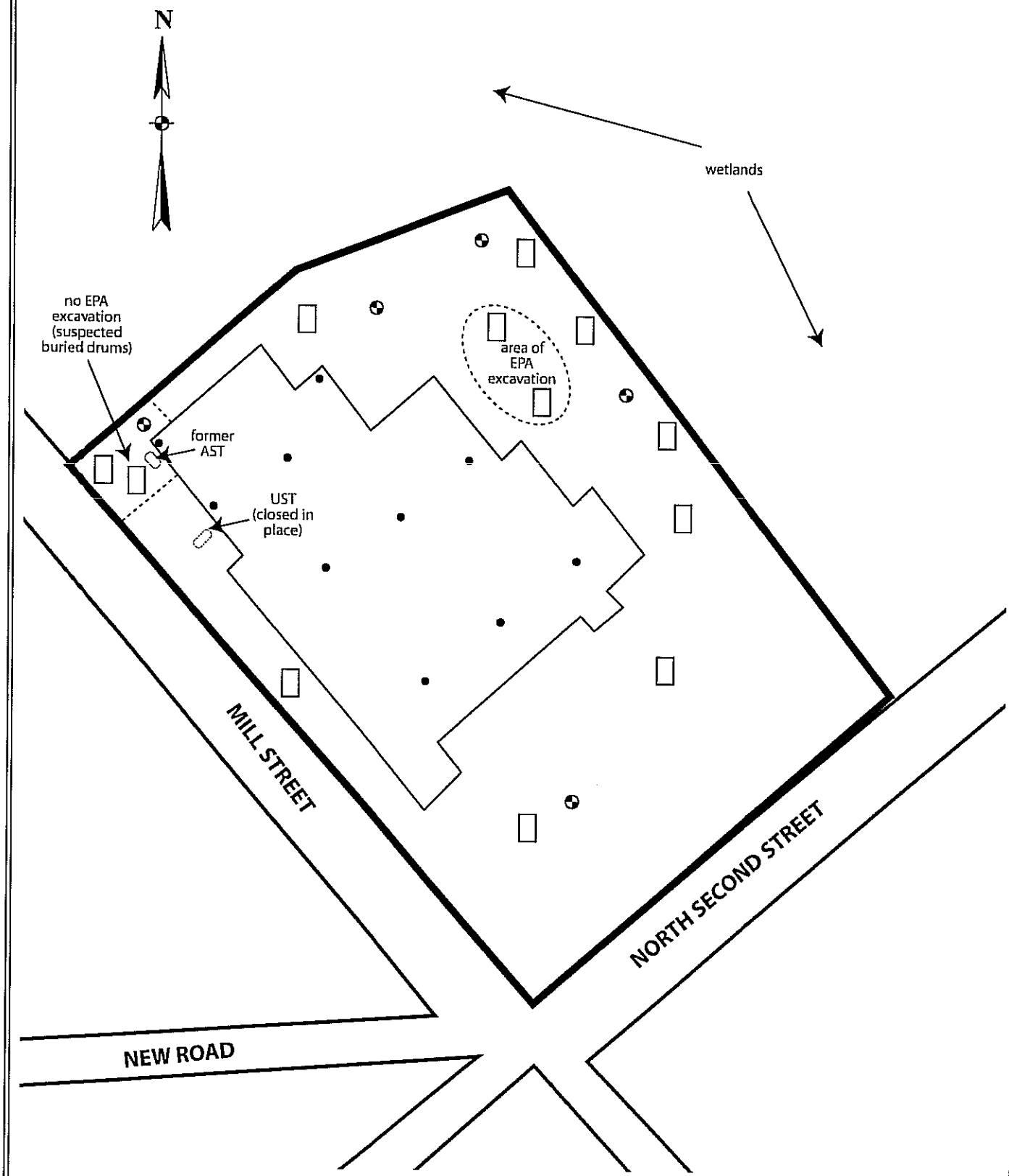
If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily 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. When work shutdown occurs, downwind air monitoring, as directed by the Safety Officer, will be implemented to ensure that vapor emission does not impact the nearest residential or commercial structure at levels exceeding 5 ppm over background.

# ATTACHMENT

## Proposed Fieldwork Map




All feature locations are approximate. This map is intended as a schematic to be used in conjunction with the associated report, and it should not be relied upon as a survey for planning or other activities.

# Proposed Fieldwork Map

Foster Refrigeration Site
119 North 2nd Street
Hudson, New York

Legend:
- subject property border
- proposed test pits
- proposed monitoring well
- proposed boring location

ESI File: MH04055.40
March 2004
Scale: 1" = 50' (approx.)
Attachment

# ATTACHMENT C

## Tables

**Table 1 : Summary of TAL Metals in Soil Samples**
All results measured in mg/kg (parts per million, ppm). Results in **bold** exceed designated guidance levels.

| Compound | Eastern USA Background | Guidance level | Sample Identification | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | NEA1 S001 | NEA1 S002 | NEA1 S003 | NWA1 S0041 | NWA1 S002 | NWA1 S003 | NWA1 S004 | NWA1 S005 | NWA1 S006 |
| Aluminum | 33,000 | SB | 8,300 | 6,800 | **45,000** | 9,900 | 7,800 | 8,400 | 5,600 | 8,100 | 8,700 |
| Antinomy | NA | SB | ND | ND | 19 | 18 | 15 | 45 | ND | ND | ND |
| Arsenic | 3 – 12 | 7.5 or SB | 8.3 | 10 | ND | **14** | **17** | **110** | 9.3 | 9.5 | **16** |
| Barium | 15 – 600 | 300 or SB | 320 | 310 | **1,300** | 350 | **730** | **1,500** | 210 | **1,400** | **1,100** |
| Beryllium | 0-1.75 | 0.16 | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Cadmium | 0.1 – 1 | 1 or SB | ND | ND | **63** | ND | ND | ND | ND | ND | ND |
| Calcium | 130-35,000 | SB | **100,000** | 1,600 | **58,000** | 16,000 | 17,000 | **35,000** | 13,000 | 19,000 | 21,000 |
| Chromium | 1.5 – 4.0 | 10 or SB | **18** | **32** | **530** | **24** | **36** | **83** | **12** | **21** | **34** |
| Cobalt | 2.5-60 | 30 or SB | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Copper | 1-50 | 25 or SB | ND | **130** | **1,600** | **210** | **180** | **560** | 49 | **120** | **190** |
| Iron | 2,000 to 550,000 | 2,000 or SB | 49,000 | 28,000 | 60,000 | 51,000 | 62,000 | 170,000 | 600 | 1,700 | 46,000 |
| Lead | 4 – 500 | SB | **520** | **970** | **1,200** | **1,100** | **2,600** | **6,800** | 420 | **930** | **1,800** |
| Magnesium | 100-5,000 | SB | **6,200** | 2,300 | **5,000** | 1,400 | 1,600 | 3,500 | 510 | 3,000 | 2,400 |
| Manganese | 50-5,000 | SB | 470 | 380 | 830 | 410 | 400 | 430 | 140 | 390 | 410 |
| Mercury | 0.001 – 0.2 | 0.1 | **0.896** | **1.28** | **1.43** | **0.579** | **2.6** | **2.06** | **0.312** | **1.0** | **2.24** |
| Nickel | 0.5-25 | 13 or SB | 19 | 22 | **160** | **53** | 19 | **59** | 13 | 20 | 27 |
| Potassium | 8,500-43,000 | SB | 1,100 | 820 | 1,200 | 1,500 | 1,100 | 1,600 | 660 | 1,200 | 1,200 |
| Selenium | 0.1-3.9 | SB | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Silver | Not available | SB | ND | ND | 16 | ND | ND | ND | ND | ND | ND |
| Sodium | 6,000-8,000 | SB | ND | 36 | 280 | 170 | 140 | 87 | 130 | 33 | 87 |
| Thallium | Not available | SB | ND | ND | ND | 34 | 31 | 160 | ND | ND | 25 |
| Vanadium | 1-300 | 150 or SB | 14 | 25 | 17 | 32 | 32 | 8.2 | 26 | 20 | 25 |
| Zinc | 9-50 | 20 or SB | **440** | **570** | **2,100** | **840** | **1,400** | **2,000** | **550** | **800** | **1,400** |

Notes:

Background levels and guidance levels for metals are based on NYSDEC Technical and Administrative Guidance Memorandum #4046 (TAGM), dated January 24, 1994, and subsequent, relevant NYSDEC memoranda.

ND = Not Detected NP = Not Provided SB = Site Background

**Table 2: Summary of SVOCs in Soil** (Results provided in parts per billion. Results in **bold** exceed guidance levels).

| Compound (USEPA Method 8270) | Guidance level | Sample Identification | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | NEA1 S001 | NEA1 S002 | NEA1 S003 | NWA1 S0041 | NWA1 S002 | NWA1 S003 | NWA1 S004 | NWA1 S005 |
| Acenaphthene | 50,000 | 120 | ND | ND | ND | ND | ND | ND | ND |
| Acenaphthylene | 41,000 | ND | ND | ND | ND | ND | ND | 170 | ND |
| Aniline | 100 | ND | ND | ND | ND | ND | ND | ND | ND |
| Anthracene | 50,000 | 120 | ND | ND | ND | ND | 2,400 | 210 | ND |
| Benzoic acid | ** | ND | ND | ND | ND | ND | ND | ND | ND |
| Benz (a)anthracene | 224 | **440** | ND | ND | ND | ND | **11,000** | **1,600** | ND |
| Benzo(a)pyrene | 61 | **380** | ND | ND | ND | ND | **9,700** | **1,600** | ND |
| Benzo(b)fluoranthene | 1,100 | 360 | ND | ND | ND | ND | **8,200** | **1,300** | ND |
| Benzo(g,h,i)perylene | 50,000 | 240 | ND | ND | ND | ND | 4,700 | 800 | ND |
| Benzo(k)fluoranthene | 1,100 | 420 | ND | ND | ND | ND | **9,000** | 1,500 | ND |
| Benzyl alcohol | ** | ND | ND | ND | ND | ND | ND | ND | ND |
| Bis(2-chloroethoxy)methane | ** | ND | ND | ND | ND | ND | ND | ND | ND |
| Bis(2-chloroethyl)ether | ** | ND | ND | ND | ND | ND | ND | ND | ND |
| Bis(2-chloroisopropyl)ether | ** | ND | ND | ND | ND | ND | ND | ND | ND |
| Bis(2-ethylhexyl)phthalate | 50,000 | 560 | ND | **150,000** | ND | ND | ND | ND | ND |
| 4-Bromophenyl phenyl ether | ** | ND | ND | ND | ND | ND | ND | ND | ND |
| Butyl benzyl phthlate | 50,000 | ND | ND | ND | ND | ND | ND | ND | ND |
| 4-Chloroaniline | 220 | ND | ND | ND | ND | ND | ND | ND | ND |
| 4-Chloro-3-methylphenol | 240 | ND | ND | ND | ND | ND | ND | ND | ND |
| 2-Chloronapthalene | ** | ND | ND | ND | ND | ND | ND | ND | ND |
| 2-Chlorophenol | 800 | ND | ND | ND | ND | ND | ND | ND | ND |
| 4-Chlorophenyl phenyl ether | ** | ND | ND | ND | ND | ND | ND | ND | ND |
| Chrysene | 400 | **500** | ND | ND | ND | ND | **13,000** | **1,800** | **1,200** |
| Dibenzo(a,h)anthracene | 14 | ND | ND | ND | ND | ND | ND | ND | ND |
| Dibenzofuran | 6,200 | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,2-Dichlorobenzene | ** | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,3-Dichlorobenzene | ** | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,4-Dichlorobenzene | ** | ND | ND | ND | ND | ND | ND | ND | ND |
| 3,'-Dichlorobenzidine | ** | ND | ND | ND | ND | ND | ND | ND | ND |
| 2,4-Dichlorophenol | 400 | ND | ND | ND | ND | ND | ND | ND | ND |
| Diethyl phthalate | 7,100 | ND | ND | ND | ND | ND | ND | ND | ND |
| 2,4-Dimethylphenol | ** | ND | ND | ND | ND | ND | ND | ND | ND |
| Dimethyl phthalate | 2,000 | ND | ND | ND | ND | ND | ND | ND | ND |
| Di-n-butyl phthalate | 8,100 | ND | ND | ND | ND | ND | ND | ND | ND |
| Fluoranthene | 50,000 | ND | ND | ND | ND | ND | 25,000 | 6,300 | 1,900 |
| 4,6-Dinitro-2-methylphenol | ** | ND | ND | ND | ND | ND | ND | ND | ND |
| 2,4-Dinitrophenol | 0.200 | ND | ND | ND | ND | ND | ND | ND | ND |
| 2,4-Dinitrotoluene | ** | ND | ND | ND | ND | ND | ND | ND | ND |
| 2,6-Dinitrotoluene | 1.0 | ND | ND | ND | ND | ND | ND | ND | ND |
| Di-n-octyl phthalate | 50 | ND | ND | ND | ND | ND | ND | ND | ND |

## Table 2: Summary of SVOCs in Soil - continued

| Compound (USEPA Method 8270) | Guidance level | Sample Identification | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | NEA1 S001 | NEA1 S002 | NEA1 S003 | NWA1 S0041 | NWA1 S002 | NWA1 S003 | NWA1 S004 | NWA1 S005 |
| Fluoranthene | 50,000 | ND | ND | ND | 230 | ND | ND | ND | ND |
| Fluorene | 50,000 | ND | ND | ND | ND | ND | 1,500 | ND | ND |
| Hexachlorobenzene | 410 | ND | ND | ND | ND | ND | ND | ND | ND |
| Hexachlorobutadiene | ** | ND | ND | ND | ND | ND | ND | ND | ND |
| Hexachloropentadiene | ** | ND | ND | ND | ND | ND | ND | ND | ND |
| Hexachloroethane | ** | ND | ND | ND | ND | ND | ND | ND | ND |
| Indeno(1,2,3-cd)pyrene | 3,200 | ND | ND | ND | ND | ND | 6,400 | 1,100 | ND |
| Isophorone | 4,400 | ND | ND | ND | ND | ND | ND | ND | ND |
| 2-Methylnapthalene | 36,400 | ND | ND | ND | ND | ND | ND | ND | ND |
| 2-Methylphenol | 100 | ND | ND | ND | ND | ND | ND | ND | ND |
| 4-Methylphenol | 900 | ND | ND | ND | ND | ND | ND | ND | ND |
| Naphthalene | 13,000 | ND | ND | ND | ND | ND | ND | ND | ND |
| 2-Nitroaniline | 430 | ND | ND | ND | ND | ND | ND | ND | ND |
| 3-Nitroaniline | 500 | ND | ND | ND | ND | ND | ND | ND | ND |
| 4-Nitroaniline | ** | ND | ND | ND | ND | ND | ND | ND | ND |
| Nitrobenzene | 200 | ND | ND | ND | ND | ND | ND | ND | ND |
| 2-Nitrophenol | 330 | ND | ND | ND | ND | ND | ND | ND | ND |
| 4-Nitrophenol | 100 | ND | ND | ND | ND | ND | ND | ND | ND |
| N-Nitrosodi-n-propylamine | ** | ND | ND | ND | ND | ND | ND | ND | ND |
| N-Nitrosodiphenylamine | ** | ND | ND | ND | ND | ND | ND | ND | ND |
| Pentachlorophenol | 1,000 | ND | ND | ND | ND | ND | ND | ND | ND |
| Phenanthrene | 50,000 | ND | ND | ND | ND | ND | 18,000 | 2,100 | ND |
| Phenol | 30 | ND | ND | ND | ND | ND | ND | ND | ND |
| Pyrene | 50,000 | ND | ND | ND | ND | ND | 28,000 | 3,600 | 2,900 |
| 1,2,4-Trichlorobenzene | ** | ND | ND | ND | ND | ND | ND | ND | ND |
| 2,4,5-Trichlorophenol | 100 | ND | ND | ND | ND | ND | ND | ND | ND |
| 2,4,6-Trichlorophenol | ** | ND | ND | ND | ND | ND | ND | ND | ND |

Notes:

* Guidance levels based on NYSDEC TAGM and subsequent memoranda.
** TAGM cleanup objective not established (total individual and sum of VOCs not listed must be less than or equal to 10 ppm)
ND Not Detected

## Table 3: VOCs in Soils (8260B)

Results provided in µg/kg (parts per billion). Results shown in **bold** exceed guidance levels.

| Compound (USEPA Method 8260B) | Guidance level* | Sample Identification | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | NEA1 S001 | NEA1 S002 | NEA1 S003 | NWA1 S0041 | NWA1 S002 | NWA1 S003 | NWA1 S004 | NWA1 S005 | NWA1 S006 |
| **Acetone** | **200** | ND | ND | ND | ND | ND | ND | ND | ND | 62 |
| **Benzene** | **60** | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| **Bromodichloromethane** | ** | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| **Bromoform** | ** | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| **Bromomethane** | ** | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| **2-Butanone** | **300** | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| **Carbon disulfide** | **2,700** | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| **Carbon tetrachloride** | **600** | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| **Chlorobenzene** | **1,700** | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| **Chlorodibromomethane** | ** | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| **Chloroethane** | **1,900** | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| **Chloroform** | **300** | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| **Chloromethane** | ** | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| **1,1-Dichloroethane** | **200** | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| **1,2-Dichloroethane** | **100** | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| **1,1-Dichloroethene** | **400** | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| **Cis-1,2-Dichloroethene** | ** | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| **trans-1,2-Dichloroethene** | ** | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| **1,2-Dichloropropane** | ** | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| **cis-1,3-Dichloropropene** | ** | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| **trans-1,3-Dichloropropene** | ** | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| **Ethylbenzene** | **5,500** | ND | ND | 19 | ND | ND | ND | ND | ND | ND |
| **2-Hexanone** | ** | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| **Methyl chloride** | **100** | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| **4-Methyl-2-pentanone** | **1,000** | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| **Methyl tert-butyl ether** | **120** | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| **Styrene** | ** | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| **1,1,2,2-Tetrachloroethane** | ** | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| **Tetrachloroethene** | **1,400** | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| **Toluene** | **1,500** | ND | ND | ND | ND | 3.3 | ND | ND | ND | ND |
| **1,1,1-Trichloroethane** | **800** | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| **1,1,2-Trichloroethene** | ** | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| **Trichlorofluoromethane** | ** | ND | ND | 19 | ND | ND | ND | ND | ND | ND |
| **Vinyl chloride** | **200** | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| **Total xylenes** | **1,200** | ND | ND | 100 | ND | 9.9 | ND | ND | ND | ND |

Notes:
* Guidance levels based on NYSDEC TAGM and subsequent memoranda.
** TAGM cleanup objective not established (total individual and sum of VOCs not listed must be less than or equal to 10 ppm).
ND Not Detected