Preferred Electric Motors

MONROE COUNTY, NEW YORK

Site Management Plan

NYSDEC Site Number: 828106

Prepared for:
State Superfund Project
NYSDEC

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1.0 INTRODUCTION AND DESCRIPTION OF REMEDIAL PROGRAM

1.1 INTRODUCTION

This document is required as an element of the remedial program at Preferred Electric Motors (hereinafter referred to as the "Site") under the New York State (NYS) Inactive Hazardous waste Site Remedial Program administered by New York State Department of Environmental Conservation (NYSDEC). The site was remediated using State Superfund monies.

1.1.1 General

The potentially responsible party declined to implement the remedy at the site. The NYSDEC remediated the site using Superfund monies. Figure 1 shows the site location and boundaries of this 0.35-acre site. The boundaries of the site are more fully described in the metes and bounds site description that is part of the Environmental Notice.

After completion of the remedial work described in the Remedial Action Work Plan, soil contamination under the building was left in the subsurface at this site which required a groundwater use restriction. This is hereafter referred to as 'remaining contamination'. This Site Management Plan (SMP) was prepared to manage remaining contamination at the site until the Environmental Notice is extinguished in accordance with ECL Article 71, Title 36. All reports associated with the site can be viewed by contacting the NYSDEC or its successor agency managing environmental issues in New York State.

This SMP was prepared by NYSDEC in accordance with the requirements in NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation. This SMP addresses the means for implementing the Institutional Controls (ICs) that are required by the Environmental Notice for the site.

1.1.2 Purpose

The site contains contamination left after completion of the remedial action. Institutional Controls have been incorporated into the site remedy to control exposure to remaining contamination during the use of the site to ensure protection of public health and the environment. An Environmental Notice recorded with the Monroe County Clerk, will require compliance with this SMP and ICs placed on the site. The ICs place restrictions on site use and reporting measures for all ICs. This SMP specifies the methods necessary ensure compliance with all ICs required by the Environmental Notice for contamination that remains at the site.

This SMP provides a detailed description of all procedures required to manage remaining contamination at the site after completion of the Remedial Action, including: (1) implementation of all Institutional Controls; and (2) performance of periodic inspections and submittal of Periodic Review Reports.

To address these needs, this SMP includes Institutional Control Plan for implementation and management of ICs.

1.2 Site Background

1.2.1 Site Location and Description

The Site is located at 42 Fernwood Avenue, in the City of Rochester, Monroe County, New York (Figure 1) and is identified as Block 10490 of Deeds at Page 257 on the Monroe County Tax Map. The Site is situated on 0.35 acres in a mixed commercial and residential use area and consists of a 13,215 square foot manufacturing building with a paved/gravel parking lot (Figure 2). The Site is surrounded by residential property. The east wall of the Site building is a common wall with a neighboring storage building. JML Optical, a designer, manufacturer and distributor of precision optical components and systems, is located approximately 60 feet northwest of the Site (vacated in the spring of 2006). A former textile manufacturing facility (Vogt Manufacturing Corporation) is

located approximately 1300 feet east of the Site, at 100 Fernwood Avenue. The former textile manufacturing facility (owned by Conifer Development) is currently participating in the Department's Brownfield Cleanup Program, and investigations and/or remedial activities are currently planned for that property.

The boundaries of the site are more fully described in Appendix B– Metes and Bounds.

1.2.2 Site History

Site Operational/Disposal History

Between 1911-1951 the site was owned by W.A Margander and Co. Contractors. The southern and northern sections of the building were added during that time for automobile repair shop and equipment storage. Preferred Electric Motors (PEM) Inc, bought the property in August 1952. The company refurbished and repaired motors which they cleaned in a degreaser tank located in the north-west corner of the building. Reportedly, Preferred Electric Motors ordered approximately 3-4 drums of solvent per year in the late 1990's. In 2000 several 55 gallon drums were found to be leaking and were removed. Spent solvent drums were reportedly stored outside in the parking area.

Site Remedial History

Preferred Electric Motors contracted Environmental Products and Services to remove fifteen 55- gallon drums of spent solvent, and remove the top several inches of soil from the site yard for off-site disposal in May/June 2000. Preferred Electric Motors ceased remedial activities due to lack of funds. The Department conducted a limited post surface soil removal action, surface and sub-surface soil sampling in June 2000. A state-funded Interim Remedial Measure (IRM) was initiated in August 2000, to remove the abandoned Underground Storage Tank (UST), excavate and dispose the contaminated soils off-site, and install and operate a soil vapor extraction (SVE) system at a neighboring residence. The UST and surrounding contaminated soil was removed in February 2001. The SVE has been in operation since November 2000. In 2000, the Department listed the site as a Class 2 site in the Registry of Inactive Hazardous Waste

Disposal Sites in New York. A Class 2 site is a site where hazardous waste presents a significant threat to the public health or the environment and action is required.

1.2.3 Geologic Conditions

Overburden soils at the site are approximately eight feet thick. Bedrock in the vicinity of the site consists of near horizontally bedded Upper Silurian age dolomite and shales. The sedimentary bedrock in the Rochester area generally strikes from north-west to south-east or west to east, with a dip to the south southwest of 1 to 2 degrees. Most of the Site is covered by the Preferred Electric Motors' building. Rainwater from the roof of the building is diverted into the city storm drains. Rainwater that does not infiltrate into the gravel portion of the driveway flows to storm drains located on Fernwood Avenue. Storm water flows to a wastewater treatment plant that discharges to Lake Ontario.

Lake Ontario is the regional groundwater discharge for the area. Groundwater at the Preferred Electric Motors site occurs primarily in the bedrock/overburden interface and the water table has been measured at depths ranging from 4.4 to 12.4 feet below ground surface (elevation 473.9 to 478.7 feet above mean sea level) across the area of investigation. Groundwater flows both north and south from a groundwater divide located near the north end of the site running east-west. The groundwater flow may be influenced by sewer lines which are trenched 2 to 4 feet into bedrock along the center line of Fernwood Ave. and 4 to 6 feet into bedrock along the center line of Portland Avenue. There is no known drinking water wells located within the area.

A groundwater flow figure is shown in Figure 2.

1.3 SUMMARY OF REMEDIAL INVESTIGATION FINDINGS

The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site. The RI was conducted between June 2004 and February 2007.

The field activities and findings of the investigation are described in the RI report.

The work was performed in two phases and included:

• Geophysical survey of the Site yard to delineate the former excavation area, and identify underground piping/structures;

• Samples of the oil from the building floors were analyzed for PCB;

• Soil and water sample from within the floor drains;

• Geoprobe® subsurface soil samples and rock core sampling;

• Subsurface soil samples from monitor well borings;

• Installation and sampling of shallow bedrock monitoring wells:

• A site survey of the horizontal and vertical location of various site features;

• Background surface soil samples;

• Groundwater sampling;

• Geoprobe® soil gas sampling;

• Sub-slab soil vapor sampling;

• Indoor air sampling;

Standards, Criteria, and Guidance (SCGs)

To determine whether the soil, groundwater, and air contain contamination at levels of concern, data from the investigation were compared to the following SCGs:

• Groundwater, drinking water, and surface water SCGs are based on the Department's "Ambient Water Quality Standards and Guidance Values" and Part 5 of the New York State Sanitary Code.

• Soil SCGs are based on the Department's Cleanup Objectives ("Technical and Administrative Guidance Memorandum [TAGM] 4046; Determination of Soil Cleanup Objectives and Cleanup Levels." and 6 NYCRR Subpart 375-6 : Remedial Program Soil Cleanup Objectives).

• Concentrations of VOCs in air are evaluated using the air guidelines provided in the "Guidance for Evaluating Soil Vapor Intrusion in the State of New York," dated October 2006, for the contaminants, trichloroethene (TCE), tetrachloroethene (PCE), and 1,1,1 trichloroethane (1,1,1- TCA).

Based on the RI results, in comparison to the SCGs and potential public health and environmental exposure routes, certain media and areas of the site require remediation.

These are summarized in Section 5.1.2. More complete information can be found in the RI report.

Nature and Extent of Contamination

This section describes the findings of the investigation for all environmental media that were investigated. As described in the RI report, many soil, groundwater, and air samples were collected to characterize the nature and extent of contamination. The main categories of contaminants that exceed the SCGs were volatile organic compounds (VOCs) known as chlorinated solvents. For comparison purposes, where applicable, SCGs are provided for each medium. Chemical concentrations are reported in parts per billion (ppb) for water and waste, and parts per million (ppm) for soil. Air samples are reported in micrograms per cubic meter (mcg/m_3). The following are the media which were investigated and a summary of the findings of the investigation.

Waste Materials

Several empty drums which had contained TCE were in the building, as well as two full drums of "CTD Plus – Cold Tank Degreaser" and five drums of solid waste/soil and one drum of liquid waste from past remedial efforts located in the former equipment storage area. Waste identified during the RI/FS was addressed during the IRM conducted on September 2005.

Subsurface Soil

Volatile organic compounds (VOCs), consisting primarily of chlorinated solvents and their degradation products (1,1-dichloroethane (1,1-DCA), 1,1-dichloroethene (1,1-DCE), cis-1,2- dichloroethene (cis-1,2 DCE), trans-1,2-dichloroethene (trans-1,2 DCE), and vinyl chloride), were detected in all the Geoprobe® borings. VOCs in excess of the soil cleanup objectives were detected at three Geoprobe® locations around the former removal action excavation.

The maximum concentrations of TCE and PCE were detected at GP-14, southwest of the former excavation and on the adjacent property. 1,1,1-TCA was detected at

concentrations above the soil cleanup objectives at one boring BS-1. The highest VOC detections were generally in the deeper soils just above bedrock, although concentrations detected at GP-17, located just east of the former removal area, were highest in the shallow soils. Several semi volatile organic compounds (SVOC) were detected above soil cleanup objectives at one location, GP-7. These include benzo(a)anthracene, benzo(b)pyrene, benzo(a)fluoranthene), benzo(k)fluoranthene, chrysene, and dibenz(a,h)anthracene.

Groundwater

The groundwater analytical results indicate a groundwater source area in the vicinity of MW-1 with the VOC contaminants migrating to the south and to a lesser degree to the north. Refer to figures 5, 6 and 7 for monitoring well and groundwater sample locations. Detected concentrations of TCE and xylene, near the former degreaser location, exceeded NYS Class GA groundwater standards of 5 ppb for both compounds. The highest concentrations of the chlorinated solvent compounds 1,1,1- TCA, 1,1-DCA, 1,1-DCE, cis-1,2-DCE, trans-1,2 DCE, vinyl chloride, and PCE were detected in a groundwater sample collected from MW-1, located in the driveway immediately south of the Site building. The highest concentration of TCE was detected in MW-2 located approximately 100 feet south of MW-1.

The highest concentrations of benzene, toluene, ethyl benzene, and xylene m/p were detected at MW-1 and all exceeded the NYS groundwater standards. Detections of petroleum compounds also exceeded NYS standards at locations MW-2, MW-3, GP-01, and JML-1. Analytical results for all VOC compounds are below NYS standards to the east and to the west of the site. SVOCs, pesticides, and PCBs were not detected at concentrations above NYS standards or guidance values. The highest concentrations of PCE and TCE were detected in MW-2 located approximately 100 feet south of MW-1.

Concentrations of TCE were detected north of the site building in monitoring wells JML-1 and MW-5, and in Geoprobe® groundwater grab samples GW-002 and GW-003. In addition to the chlorinated solvents 1,1,1-TCA and TCE, their breakdown products (1,1-

DCA, 1,1-DCE, cis-1,2-DCE, trans-1,2 DCE, and vinyl chloride) were also detected in MW1, MW2, MW-5,and MW-10. Fuel-related VOCs were detected above NYS standards in MW-1 and MW-2. Benzene was detected above NYS standards at MW-9 but this is likely not site related due to its location both along the axis of the groundwater divide bisecting the site and on the other side of the 48-inch sewer trench along Portland Avenue. Vinyl chloride was detected above NYS standards at MW-10, but this detection also is not likely site-related based on its location south of the site, south of the 24-inch sewer main below Fernwood Avenue.

Analysis of samples from MW-1, MW-2, MW-3 and MW-4 detected iron, magnesium, and sodium above NYS guidance values. In addition, manganese was detected slightly above guidance values in MW-1. Metals detected were normally natural occurring constituents in groundwater. There does not appear to be a source of metals contamination or migration of metals from the site.

Floors

Three samples were taken of oil and soil residue from the floor within the PEM Building. Samples were taken from three separate rooms, one from the former metal press area one from the metal work area and one from the former degreaser/oven area and analyzed for PCBs. PCBs were detected in all three samples with Aroclor-1248 detected at concentrations ranging from 7.1 ppm to 8.4 ppm and Aroclor-1260 detected at 6.3 and 5.4 ppm in sample OS-001 (former metal work area) and OS-003 (former metal press area) respectively. The 6 NYCRR 375 Residential Use Soil Cleanup Objectives for total PCBs of 1.0 ppm is used for comparison because the site is zoned residential (R1) with a variance for a business. Detected concentrations are less than the 50 ppm concentration requiring cleanup under Toxic Substance Control Act (TSCA) guidelines, but above most guideline numbers for unrestricted facility use (i.e. 1.0 mg/kg under TSCA).

Floor Drains

A water sample was collected from Floor Drain 3, located near the former bathroom and oil storage room. Analysis of the drain water sample SW-001 showed concentrations of six chlorinated solvent related VOCs, including; TCE, cis-1,2-DCE, PCE, 1,1-dichloroethane, 1,1-dichloroethene, and trans-1,2-dichloroethene. Nineteen metals were also detected in the drain water sample. Because these samples were collected from a floor drain, there are no applicable standards or guidelines. No site-related surface water contamination of concern was identified during the RI/FS.

One soil sample SD-001 was collected from Floor Drain 1, located in the former equipment storage room. 1,2-DCA and 1,2-dichloropropane were detected at high concentrations. The total VOC concentration in the soil sample was 9.6 ppm. The total SVOCs were detected at a concentration of 116 ppm. The majority of the SVOCs detected were polycyclic aromatic hydrocarbons. The highest SVOCs detected were 2,4-dimethylphenyl, fluoranthene and phenanthrene. Two pesticides were detected in the drain sample: 4,4-DDE and gammachlordane.

Metals were also detected in the drains soil sample. Metals that may be related to historic processes at the Site include chromium, copper, lead, nickel and zinc. Because these samples were collected from a floor drain, they will be cleaned to meet the residential soil cleanup objectives. The contaminated drains identified during the RI/FS will be addressed in the remedy selection process.

Soil Vapor/Sub-Slab Vapor/Air

Soil vapor, sub-slab soil vapor and indoor air samples were collected to evaluate the potential for human exposures to VOCs volatilizing from soils and groundwater. Two sub-slab soil vapor samples were collected from beneath the Preferred Electric Motors building. A sample from the existing soil vapor extraction system installed at 40 Fernwood Avenue, and several soil gas samples (GV-1 through GV-7) from locations around the Preferred Electric Motors building were also collected. A number of VOCs were detected at low concentrations. GV-1 and GV-2 located south of the site and south

of MW-2 showed elevated concentrations of petroleum compounds and solvent related VOCs. The highest detection of chlorinated solvents,1,1,1-TCA and TCE, was in GV-6, located in the driveway southeast of MW-1.

Two sub-slab soil vapor samples, SV-1 and SV-2, were collected from beneath the Preferred Electric Motors building during the initial soil vapor sampling event. Low concentrations of fuel related VOCs were detected. SV-1 contained the highest level of PCE detected during this sample event. 1,1,1-TCA and TCE were not detected in sub-slab samples. In addition to the two sub-slab samples collected on-site, a sample (EP-001) was collected from the soil vapor extraction (SVE) treatment system at the residence adjacent to the Preferred Electric Motors facility. No chlorinated solvents were detected.

Analytical results from the initial soil gas and sub-slab soil vapor survey were used in the selection of locations for the vapor intrusion investigation. As a result, 11 sub-slab soil vapor samples, 11 basement indoor air samples and 12 first floor indoor air samples were collected from 12 private residences/ businesses. Two of the locations were on Portland Avenue and 10 were on Fernwood Avenue. Four outdoor ambient air samples were collected to evaluate background air. Twelve residences in all were tested for soil vapor intrusion. Of this twelve, one mitigation system was installed and two residences require additional monitoring.

Interim Remedial Measures

September 2005

Several empty drums of TCE were noted in various locations in the building, as well as, two full drums of “CTD Plus – Cold Tank Degreaser” located in the former equipment storage area and five drums of solid waste/soil. Also one drum of liquid waste from past remedial efforts was found at the site. The IRM consisted of the removal and proper disposal of these wastes materials.

January 2007

Mitigation measures were taken at one off-site location to address potential human exposures (via inhalation) to volatile organic compounds associated with soil vapor intrusion. The IRM consisted of the installation of a sub-slab depressurization system at the off-site residence.

1.4: SUMMARY OF REMEDIAL ACTIONS

The site was remediated in accordance with the NYSDEC-approved Remedial Design specifications dated September 15, 2010.

The following is a summary of the Remedial Actions performed at the site:

The Project generally consisted of the following major work elements:

• mobilization and Site preparation

• performance of soil investigations, and design and installation of shoring/ sheeting/ bracing required to perform excavations adjacent to buildings

• removal and disposal of accumulated sediment in floor drains within the building

• building concrete floor scarifying and replacement

• installation of erosion and sedimentation control items

• select site demolition including pavement and utilities within the excavation limits

• abandonment of groundwater monitoring well MW-1 located within the excavation limits

• removal of the existing SVE system, including the extraction trench and piping and the SVE shed, located within the excavation limits

• soil excavation to bedrock (approximately 9 ft. BGS)

• transport and disposal of contaminated and non-contaminated subsurface material removed within the limit of excavation including soils, asphalt, and piping

• application of bioremediation organic substrate

• installation of injection points and trenches within the completed excavation areas to allow future application of organic substrate to subsurface soils

• replacement of existing utility services removed as part of the excavation activities, and

site restoration including backfill excavated areas, fence replacement, restoration of lawn areas, and installation of new asphalt pavement to serve as soil cover system and will be added as a monitoring component.

• execution and recording of an Environmental Notice to restrict land use, groundwater use and prevent future exposure to any contamination remaining at the site.

• development and implementation of a Site Management Plan for long term management of remaining contamination as required by the Environmental Notice, which includes plans for: (1) Institutional Controls and (2) reporting;

Remedial activities were completed at the site on July 31, 2011.

1.4.1 Removal of Contaminated Materials from the Site

The contaminated soil was removed from two areas at the site as shown in the attached figure to the restricted residential clean up goals per NYCRR part 375-6. The primary contaminant in soil was tetrachloroethene. The concrete flooring inside the building was scarified to remove the PCB contamination in the concrete surface and new concrete flooring was placed. Approximately 500 cu.yds of soil was excavated and disposed in an off-site landfill.

Since the soil underneath the building is not removed the future use of the site shall be restricted to commercial/garage type use as currently zoned. A soil cover system, consisting of asphalt pavement, was installed over the excavated area of the parking lot to reduce infiltration of precipitation and reduce migration of any residual contamination.

1.4.2 Post Remedial Activites

Phase I

• collection of a post-remedial action baseline round of groundwater samples at the Site;
• collection of soil vapor intrusion (SVI) samples, including sub-slab soil vapor and indoor air sample from an adjacent residence;

• begin injection of the bioremediation reagent (EHC) into two injection points in remedial action excavation Areas 1 and 2;
• securing of the plastic vapor barrier in the dirt crawl space within the adjacent residence; and,
• upgrading of the existing sub-slab depressurization (SSD) system at the adjacent residence by joining the sub-slab piping in the basement and crawl space through a manifold and extraction riser piping to above the roofline of the structure (information pertaining to the SSD upgrade and completion is presented in a separate trip report [MACTEC, 2011b]).

Phase II

1. The injection of the remaining volume of the bioremediation reagent into two subsurface trenches (Area 1 and Area 2) on the Site. In addition, the bioremediation reagent was also injected into an adjacent monitoring well (MW-13) to the Site.
2. Collection of a second round of groundwater samples at the Site, approximately three months after the remaining bioremediation reagent injections.

The reports are attached as appendices. The results of the groundwater samples obtained during Phase II post remedial activities shows that the site-related contaminants PCE and TCE have not achieved groundwater standards. Therefore, continued groundwater monitoring is required for the site. The site and the area surrounding the site are serviced by the municipal water supply. If the current owner or future owner of the site would want to use the groundwater for potable or process water, notification shall be forwarded to the NYSDEC prior to making the plans.

1.4.3 Site-Related Treatment Systems

Two SSDS systems were installed off-site as part of the site remedy during the RI. One SSDS system was installed at the residential property located adjacent to the site during the remedial action.

1.4.4 Remaining Contamination

- The following are the remaining contamination at the site:
    - The access to the flooring area inside the building located underneath ~~a~~ steel shelving fixed to the wall and the floor was restricted and scarification could not be performed in that area to remove contaminated concrete. Concrete flooring was extended to that area and an additional layer of concrete was applied to eliminate exposure.
    - Due to the presence of buildings, contaminated soil underneath the building was not removed.

Figure 6 shows the area where soil remaining at the site after completion of Remedial Action that exceed the restricted residential SCOs.

2.0 ENGINEERING AND INSTITUTIONAL CONTROL PLAN

2.1 INTRODUCTION

2.1.1 General

Since remaining contaminated soil, groundwater and soil vapor exists beneath the site, Engineering controls and Institutional Controls (EC/ICs) are required to protect human health and the environment. This Institutional Control Plan describes the procedures for the implementation and management of all EC/ICs at the site. The EC/IC Plan is one component of the SMP and is subject to revision by NYSDEC.

2.1.2 Purpose

This plan provides:

- A description of all EC/ICs on the site;
- The basic implementation and intended role of each EC/IC;
- A description of the key components of the EC/ICs set forth in the Environmental Notice;
- A description of the features to be evaluated during each required inspection and periodic review;
- A description of plans and procedures to be followed for implementation of EC/ICs, such as the implementation of the Excavation Work Plan for the proper handling of remaining contamination that may be disturbed during maintenance or redevelopment work on the site; and
- Any other provisions necessary to identify or establish methods for implementing the EC/ICs required by the site remedy.

2.2 ENGINEERING CONTROLS

2.2.1 Engineering Control Systems

2.2.1.1 Soil Cover

Exposure to remaining contamination in soil/fill at the site is prevented by a soil cover system placed over the site. This cover system is comprised of a asphalt pavement. The Excavation Work Plan that appears in Appendix A outlines the procedures required to be implemented in the event the cover system is breached, penetrated or temporarily removed, and any underlying remaining contamination is disturbed. Procedures for the inspection and maintenance of this cover are provided in the Monitoring Plan.

2.2.1.2 Sub-slab Depressurization System (SSDS)

Two SSDS are installed off-site which are referred in the February 2007 RI report and one SSDS system installed during the remedial action is included in the May 2012 SSDS installation report prepared by MACTEC.

Procedures for monitoring the SSDS are included in the Monitoring Plan. The Monitoring Plan also addresses severe condition inspections in the event that a severe condition, which may affect controls at the site, occurs.

2.2.2 Criteria for Completion of Remediation/Termination of Remedial Systems

Generally, remedial processes are considered completed when effectiveness monitoring indicates that the remedy has achieved the remedial action objectives identified by the decision document. The framework for determining when remedial processes are complete is provided in Section 6.6 of NYSDEC DER-10.

2.2.2.1 Asphalt Cover System

The composite cover system is a permanent control and the quality and integrity of this system will be inspected at defined, regular intervals in perpetuity.

2.2.2.2 Sub-slab Depressurization System (SSDS)

The active SSD system will not be discontinued unless prior written approval is granted by the NYSDEC. In the event that monitoring data indicates that the SSD system

is no longer required, a decision to discontinue the SSD system will be made by the NYSDEC and NYSDOH.

In addition, the indoor air quality will be monitored at two properties as outlined in the February 2007 RI report. The results will be evaluated to determine the necessity for future monitoring.

2.2.2.3 Goundwater Monitoring

Groundwater monitoring activities will continue, until residual groundwater concentrations are found to be consistently below NYSDEC standards or have become asymptotic at an acceptable level over an extended period. Monitoring will continue until the NYSDEC decided to discontinue. If groundwater contaminant levels become asymptotic at a level that is not acceptable, additional source removal, treatment and/or control measures will be evaluated.

2.3 INSTITUTIONAL CONTROLS

A series of Institutional Controls is required by the ROD to: (1) prevent future exposure to remaining contamination by controlling disturbances of the subsurface contamination; and, (2) limit the use and development of the site to restricted residential uses only. Adherence to these Institutional Controls on the site is required by the Environmental Notice and will be implemented under this Site Management Plan. These Institutional Controls are:

- Compliance with the Environmental Notice and this SMP by the Grantor and the Grantor's successors and assigns;
- Information pertinent to Site Management of the Controlled Property must be reported at the frequency and in a manner defined in this SMP;

Institutional Controls identified in the Environmental Notice may not be discontinued without an amendment to or extinguishment of the Environmental Notice.

The site has a series of Institutional Controls in the form of site restrictions. Adherence to these Institutional Controls is required by the Environmental Notice. Site restrictions that apply to the Controlled Property are:

- The property may only be used for restricted commercial use provided that the long-term Institutional Controls included in this SMP are employed.
- The property may not be used for a higher level of use, such as unrestricted or restricted residential use without additional remediation and amendment of the Environmental Permit, as approved by the NYSDEC;
- All future activities on the property that will disturb remaining contaminated material must be conducted in accordance with this SMP;
- The use of the groundwater underlying the property is prohibited;
- The potential for vapor intrusion must be evaluated for any buildings developed in the area, and any potential impacts that are identified must be monitored or mitigated;
- The site owner or remedial party will submit to NYSDEC a written statement that certifies, under penalty of perjury, that: (1) controls employed at the Controlled Property are unchanged from the previous certification or that any changes to the controls were approved by the NYSDEC; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. NYSDEC retains the right to access such Controlled Property at any time in order to evaluate the continued maintenance of any and all controls. This certification shall be submitted annually, or an alternate period of time that NYSDEC may allow and will be made by an expert that the NYSDEC finds acceptable.

2.3.1 Excavation Work Plan

The site has been remediated for restricted residential clean up goals. Any future intrusive work that will disturb the remaining contamination will be performed in compliance with the Excavation Work Plan (EWP) that is attached as Appendix A to this SMP. Any work conducted pursuant to the EWP must also be conducted in accordance with the procedures defined in a Health and Safety Plan (HASP) and Community Air Monitoring Plan (CAMP) prepared for the site. A sample HASP is attached as Appendix D to this SMP that is in current compliance with DER-10, and 29 CFR 1910, 29 CFR 1926, and all other applicable Federal, State and local regulations. Based on future changes to State and federal health and safety requirements, and specific methods employed by future contractors, the HASP and CAMP will be updated and re-submitted

with the notification provided in Section A-1 of the EWP. Any intrusive construction work will be performed in compliance with the EWP, HASP and CAMP, and will be included in the periodic inspection and certification reports submitted under the Site Management Reporting Plan (See Section 5).

The site owner and associated parties preparing the remedial documents submitted to the State, and parties performing this work, are completely responsible for the safe performance of all intrusive work, the structural integrity of excavations, proper disposal of excavation de-water, control of runoff from open excavations into remaining contamination, and for structures that may be affected by excavations (such as building foundations and bridge footings). The site owner will ensure that site development activities will not interfere with, or otherwise impair or compromise, the ~~engineering~~ controls described in this SMP.

2.3.2 Soil Vapor Intrusion Evaluation

Prior to the construction of any enclosed structures located over areas that contain remaining contamination and the potential for soil vapor intrusion (SVI) has been identified (see Figure 6), an SVI evaluation will be performed to determine whether any mitigation measures are necessary to eliminate potential exposure to vapors in the proposed structure. Alternatively, an SVI mitigation system may be installed as an element of the building foundation without first conducting an investigation. This mitigation system will include a vapor barrier and passive sub-slab depressurization system that is capable of being converted to an active system.

Prior to conducting an SVI investigation or installing a mitigation system, a work plan will be developed and submitted to the NYSDEC and NYSDOH for approval. This work plan will be developed in accordance with the most recent NYSDOH "Guidance for Evaluating Vapor Intrusion in the State of New York". Measures to be employed to mitigate potential vapor intrusion will be evaluated, selected, designed, installed, and maintained based on the SVI evaluation, the NYSDOH guidance, and construction details of the proposed structure.

Preliminary (unvalidated) SVI sampling data will be forwarded to the NYSDEC and NYSDOH for initial review and interpretation. Upon validation, the final data will

be transmitted to the agencies, along with a recommendation for follow-up action, such as mitigation. SVI sampling results, evaluations, and follow-up actions will also be summarized in the next Periodic Review Report.

2.4 INSPECTIONS AND NOTIFICATIONS

2.4.1 Inspections

Inspections of all remedial components installed at the site will be conducted at the frequency specified in the SMP Monitoring Plan schedule. A comprehensive site-wide inspection will be conducted annually, regardless of the frequency of the Periodic Review Report. The inspections will determine and document the following:

- If site records are complete and up to date; and
- If the engineering and institutional controls are in place

If an emergency, such as a natural disaster or an unforeseen failure of any of the ECs occurs, an inspection of the site will be conducted within 5 days of the event to verify the effectiveness of the EC/ICs implemented at the site by a qualified environmental professional as determined by NYSDEC.

2.5 Contingency Plan

2.5.1 Emergency Telephone Numbers

In the event of any environmentally related situation or unplanned occurrence requiring assistance, contact the appropriate party from the contact list below. For emergencies, appropriate emergency response personnel should be contacted. These emergency contact lists must be maintained in an easily accessible location at the site.

Table 3: Emergency Contact Numbers

Medical, Fire, and Police:	911
One Call Center:	(800) 272-4480 this is now 811 (3 day notice required for utility markout)
Poison Control Center:	(800) 222-1222
Pollution Toxic Chemical Oil Spills:	(800) 424-8802
NYSDEC Spills Hotline	(800) 457-7362
Vivek Nattanmai	518-402-9814

* Note: Contact numbers subject to change and should be updated as necessary

2.5.2 Map and Directions to Nearest Health Facility

Site Location: 42 Fernwood Avenue, Rochester, NY

Nearest Hospital Name: Rochester General

Hospital Location: 1425 Portland Ave., Rochester, NY

Directions to the Hospital: Refer to figure for hospital route and the map

Total Distance: 1.3 miles

Total Estimated Time: about 4 minutes

Figure 10 Shows Route from the site to the Hospital

2.5.3 Response Procedures

As appropriate, the fire department and other emergency response group will be notified immediately by telephone of the emergency. The emergency telephone number list is found at the beginning of this Contingency Plan (Table 10). The list will also be posted prominently at the site and made readily available to all personnel at all times.

This should include a description of:

- Procedures for spills;
- Evacuation plans;
- Amendments to the contingency plan.

3.0 SITE MONITORING PLAN

3.1 INTRODUCTION

3.1.1 General

The Monitoring Plan describes the measures for evaluating the performance and effectiveness of the remedy to reduce or mitigate contamination at the site, the soil cover system, and all affected site media identified below. This Monitoring Plan may only be revised with the approval of NYSDEC.

3.1.2 Purpose and Schedule

This Monitoring Plan describes the methods to be used for:

- Sampling and analysis of all appropriate media (e.g., groundwater, indoor air, soil vapor);
- Assessing compliance with applicable NYSDEC standards, criteria and guidance, particularly ambient groundwater standards;
- Assessing achievement of the remedial performance criteria.
- Evaluating site information periodically to confirm that the remedy continues to be effective in protecting public health and the environment; and
- Preparing the necessary reports for the various monitoring activities.

To adequately address these issues, this Monitoring Plan provides information on:

- Sampling locations, protocol, and frequency;
- Information on all designed monitoring systems (e.g., well logs);
- Analytical sampling program requirements;
- Reporting requirements;
- Quality Assurance/Quality Control (QA/QC) requirements;
- Inspection and maintenance requirements for monitoring wells;
- Monitoring well decommissioning procedures; and
- Annual inspection and periodic certification.

Annual monitoring of the performance of the remedy and overall reduction in contamination on-site and off-site will be conducted for the first year after the reclassification of the site. The frequency thereafter will be determined by NYSDEC. Trends in contaminant levels in air and groundwater in the affected areas will be evaluated to determine if the remedy continues to be effective in achieving remedial goals. Monitoring programs are summarized in Table 4.

Table 4: Monitoring/Inspection Schedule

Monitoring Program	Frequency*	Matrix	Analysis
1	Annual (first year)	Groundwater	VOC
2	Annual (first year)	Indoor air	VOC
3	Annual (first year)	Asphalt system	NA
4	Annual (first year)	SSDS systems	NA

* The frequency of events will be conducted as specified until otherwise approved by NYSDEC and NYSDOH

3.2 COVER SYSTEM INSPECTION

The asphalt cover will be inspected as indicated in table 4.

3.3 MEDIA MONITORING PROGRAM

3.3.1 Groundwater Monitoring

Groundwater monitoring will be performed on a periodic basis to assess the performance of the remedy.

The network of monitoring wells has been installed to monitor both up-gradient and down-gradient groundwater conditions at the site. The sampling frequency may be modified with the approval NYSDEC. The SMP will be modified to reflect changes in sampling plans approved by NYSDEC.

Deliverables for the groundwater monitoring program are specified below.

3.3.1.1 Sampling Protocol

All monitoring well sampling activities will be recorded in a field book. Other observations (e.g., well integrity, etc.) will be noted. For detailed protocol please refer to the Field Sampling Plan included with the February 2007 RI report.

3.3.1.2 Monitoring Well Repairs, Replacement And Decommissioning

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

Add additional text as necessary.

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

The NYSDEC will be notified prior to any repair or decommissioning of monitoring wells for the purpose of replacement, and the repair or decommissioning and replacement process will be documented in the subsequent periodic report. Well decommissioning without replacement will be done only with the prior approval of NYSDEC. Well abandonment will be performed in accordance with NYSDEC's "Groundwater Monitoring Well Decommissioning Procedures." Monitoring wells that are decommissioned because they have been rendered unusable will be reinstalled in the nearest available location, unless otherwise approved by the NYSDEC.

3.4 SITE-WIDE INSPECTION

Site-wide inspections will be performed on a regular schedule at a minimum of once a year. Site-wide inspections will also be performed after all severe weather conditions that may affect Engineering Controls or monitoring devices. Obtain sufficient information to assess the following:

- Compliance with all ICs, including site usage;
- An evaluation of the condition and continued effectiveness of ECs;

- General site conditions at the time of the inspection;
- The site management activities being conducted including, where appropriate, confirmation sampling and a health and safety inspection;
- Compliance with permits and schedules included in the Operation and Maintenance Plan; and
- Confirm that site records are up to date.

3.5 MONITORING QUALITY ASSURANCE/QUALITY CONTROL

All sampling and analyses will be performed in accordance with the requirements of the Quality Assurance Project Plan (QAPP) prepared for the site included in the February 2007 RI report. Main Components of the QAPP include:

- QA/QC Objectives for Data Measurement;
- Sampling Program:
    - Sample containers will be properly washed, decontaminated, and appropriate preservative will be added (if applicable) prior to their use by the analytical laboratory. Containers with preservative will be tagged as such.
    - Sample holding times will be in accordance with the NYSDEC ASP requirements.
    - Field QC samples (e.g., trip blanks, coded field duplicates, and matrix spike/matrix spike duplicates) will be collected as necessary.
- Sample Tracking and Custody;
- Calibration Procedures:
    - All field analytical equipment will be calibrated immediately prior to each day's use. Calibration procedures will conform to manufacturer's standard instructions.
    - The laboratory will follow all calibration procedures and schedules as specified in USEPA SW-846 and subsequent updates that apply to the instruments used for the analytical methods.
- Analytical Procedures;

- Preparation of a Data Usability Summary Report (DUSR), which will present the results of data validation, including a summary assessment of laboratory data packages, sample preservation and chain of custody procedures, and a summary assessment of precision, accuracy, representativeness, comparability, and completeness for each analytical method.
- Internal QC and Checks;
- QA Performance and System Audits;
- Preventative Maintenance Procedures and Schedules;
- Corrective Action Measures.

3.6 MONITORING REPORTING REQUIREMENTS

Forms and any other information generated during regular monitoring events and inspections will be kept on file on-site. All forms, and other relevant reporting formats used during the monitoring/inspection events, will be (1) subject to approval by NYSDEC and (2) submitted at the time of the Periodic Review Report, as specified in the Reporting Plan of this SMP.

All monitoring results will be reported to NYSDEC on a periodic basis in the Periodic Review Report. A letter report will also be prepared, subsequent to each sampling event. The report (or letter) will include, at a minimum:

- Date of event;
- Personnel conducting sampling;
- Description of the activities performed;
- Type of samples collected (e.g., sub-slab vapor, indoor air, outdoor air, etc);
- Copies of all field forms completed (e.g., well sampling logs, chain-of-custody documentation, etc.);
- Sampling results in comparison to appropriate standards/criteria;
- A figure illustrating sample type and sampling locations;

- Copies of all laboratory data sheets and the required laboratory data deliverables required for all points sampled (o be submitted electronically in the NYSDEC-identified format);
- Any observations, conclusions, or recommendations; and
- A determination as to whether groundwater conditions have changed since the last reporting event.

4.0 OPERATION AND MAINTENANCE PLAN

4.1 INTRODUCTION

This Operation and Maintenance Plan describes the measures necessary to operate, monitor and maintain the SSDS installed off-site. Refer to the February 2007 RI report and May 2012 SSDS installation report for the location of the system, construction details of the system and the technical details of the blower.

4.2 ENGINEERING CONTROL SYSTEM OPERATION AND MAINTENANCE

As indicated in Section 4.1, the general details of the property where the SSDS is installed, technical specifications, location of the property, as-built drawings, photographs and other pertinent details can be found in the February 2007 RI report and May 2012 SSDS installation report prepared by MACTEC.

4.3 ENGINEERING CONTROL SYSTEM PERFORMANCE MONITORING

Refer to Sections 4.1 and 4.2.

4.4 MAINTENANCE AND PERFORMANCE MONITORING REPORTING REQUIREMENTS

Maintenance reports and any other information generated during regular operations at the site will be kept on-file on-site. All reports, forms, and other relevant information generated will be available upon request to the NYSDEC and submitted as part of the Periodic Review Report.

5. INSPECTIONS, REPORTING AND CERTIFICATIONS

5.1 SITE INSPECTIONS

5.1.1 Inspection Frequency

All inspections will be conducted at the frequency specified in the schedules provided in Section 3 Monitoring Plan and Section 4 Operation and Maintenance Plan of this SMP. At a minimum, a site-wide inspection will be conducted annually. Inspections of remedial components will also be conducted when a breakdown of any treatment system component has occurred or whenever a severe condition has taken place, such as an erosion or flooding event that may affect the ECs.

5.1.2 Inspection Forms, Sampling Data, and Maintenance Reports

All inspections and monitoring events will be recorded on the appropriate forms for their respective system. .

All applicable inspection forms and other records, including all media sampling data and system maintenance reports, generated for the site during the reporting period will be provided in electronic format in the Periodic Review Report.

5.1.3 Evaluation of Records and Reporting

The results of the inspection and site monitoring data will be evaluated as part of the EC/IC certification to confirm that the:

- EC/ICs are in place, are performing properly, and remain effective;
- The Monitoring Plan is being implemented;
- Operation and maintenance activities are being conducted properly; and, based on the above items,
- The site remedy continues to be protective of public health and the environment and is performing as designed in the RAWP and FER.

5.2 CERTIFICATION OF ENGINEERING AND INSTITUTIONAL CONTROLS

After the last inspection of the reporting period, the following certification will be prepared:

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

- The inspection of the site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under my direction;
- The institutional control and/or engineering control employed at this site is unchanged from the date the control was put in place, or last approved by the Department;
- Nothing has occurred that would impair the ability of the control to protect the public health and environment;
- Nothing has occurred that would constitute a violation or failure to comply with any site management plan for this control;
- Access to the site will continue to be provided to the Department to evaluate the remedy, including access to evaluate the continued maintenance of this control;
- If a financial assurance mechanism is required under the oversight document for the site, the mechanism remains valid and sufficient for the intended purpose under the document;
- Use of the site is compliant with the environmental easement;
- The engineering control systems are performing as designed and are effective;
- To the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program; and
- The information presented in this report is accurate and complete.

The signed certification will be included in the Periodic Review Report described below.

5.3 PERIODIC REVIEW REPORT

A Periodic Review Report will be prepared for every monitoring event. In the event that the site is subdivided into separate parcels with different ownership, a single Periodic Review Report will be prepared that addresses the site. The report will be prepared in accordance with NYSDEC DER-10. Media sampling results will also incorporated into the Periodic Review Report. The report will include:

- Identification, assessment and certification of all ECs/ICs required by the remedy for the site;
- Results of the required annual site inspections and severe condition inspections, if applicable;
- All applicable inspection forms and other records generated for the site during the reporting period in electronic format;
- A summary of any discharge monitoring data and/or information generated during the reporting period with comments and conclusions;
- Data summary tables and graphical representations of contaminants of concern by media (groundwater, soil vapor), which include a listing of all compounds analyzed, along with the applicable standards, with all exceedances highlighted. These will include a presentation of past data as part of an evaluation of contaminant concentration trends;
- Results of all analyses, copies of all laboratory data sheets, and the required laboratory data deliverables for all samples collected during the reporting period will be submitted electronically in a NYSDEC-approved format;
- A site evaluation, which includes the following:
    - The compliance of the remedy with the requirements of the site-specific RAWP, ROD or Decision Document;
    - The operation and the effectiveness of all treatment units, etc., including identification of any needed repairs or modifications;
    - Any new conclusions or observations regarding site contamination based on inspections or data generated by the Monitoring Plan for the media being monitored;

- Recommendations regarding any necessary changes to the remedy and/or Monitoring Plan; and
- The overall performance and effectiveness of the remedy.

5.4 CORRECTIVE MEASURES PLAN

If any component of the remedy is found to have failed, or if the periodic certification cannot be provided due to the failure of an institutional or engineering control, a corrective measures plan will be submitted to the NYSDEC for approval. This plan will explain the failure and provide the details and schedule for performing work necessary to correct the failure. Unless an emergency condition exists, no work will be performed pursuant to the corrective measures plan until it is approved by the NYSDEC.

TABLE 1
Nature and Extent of Contamination

SURFACE SOIL (0-2 feet depth)	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)[a]	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs)	Trichloroethene	0.003 - 18	10	1 / 12
Semivolatile Organic Compounds (SVOCs)	Benzo(a)anthracene	3.5	1	1 / 1
	Benzo(a)pyrene	2.7	1	1 / 1
	Benzo(b)fluoranthene	2.3	1	1 / 1
	Benzo(k)fluoranthene	2.7	1	1 / 1
	Chrysene	3.4	1	1 / 1
	Dibenz(a,h)anthracene	0.61	0.33	1 / 1
	Indeno(1,2,3-cd)pyrene	1.8	0.5	1 / 1
Inorganics Compounds	Chromium	38.5	22	1 / 1
SUBSURFACE SOIL	**Contaminants of Concern**	**Concentration Range Detected (ppm)[a]**	**SCG[b] (ppm)[a]**	**Frequency of Exceeding SCG**
Volatile Organic Compounds (VOCs)	Tetrachloroethene	0.002 - 390	5.5	1 / 32
	Trichloroethene	0.002 - 22	10	2 / 32
FLOOR SURFACE	**Contaminants of Concern**	**Concentration Range Detected (ppm)[a]**	**SCG[b] (ppm)[a]**	**Frequency of Exceeding SCG**
PCB/Pesticides	Aroclor-1248	7.1 - 8.4	1	3 / 3
	Aroclor-1260	5.4 - 6.3	1	2 / 3
FLOOR DRAINS	**Contaminants of Concern**	**Concentration Range Detected (ppm)[a]**	**SCG[b] (ppm)[a]**	**Frequency of Exceeding SCG**
Semivolatile Organic Compounds (SVOCs)	Benzo(a)anthracene	2.2 - 6.6	1	2 / 2
	Benzo(a)pyrene	3.4 - 6.9	1	2 / 2
	Benzo(b)fluoranthene	2.8 - 6.3	1	2 / 2
	Benzo(k)fluoranthene	2.4 - 4.8	1	2 / 2
	Chrysene	3.9 - 8.1	1	2 / 2
	Dibenz(a,h)anthracene	0.61 - 0.61	0.33	2 / 2
	Indeno(1,2,3-cd)pyrene	2.7 - 4.6	0.5	2 / 2
	pentachlorophenol	38.0 - 4.6	2.4	2 / 2

SUBSURFACE SOIL	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)[a]	Frequency of Exceeding SCG
Inorganics Compounds	Cadmium	33.8 - 29.5	2.5	2 / 2
	Chromium	74.8 - 78.0	22/36	2 / 2
	Copper	792.0 - 690.0	270	2 / 2
	Lead	4440.0 - 4170.0	400	2 / 2
	Mercury	0.9 - 0.83	0.81	2 / 2
GROUNDWATER	**Contaminants of Concern**	**Concentration Range Detected (ppb)[a]**	**SCG[b] (ppb)[a]**	**Frequency of Exceeding SCG**
Volatile Organic Compounds (VOCs)	1,1,1-Trichloroethane	0.4 - 2500	5	6 / 38
	1,1-Dichloroethane	2 - 730	5	7 / 38
	1,1-Dichloroethene	0.8 - 52	5	4 / 38
	Benzene	0.7 - 130	1	10 / 38
	Chloroform	0.81 - 11	7	1 / 38
	Cis-1,2-Dichloroethene	0.96 - 70	5	9 / 38
	Ethyl benzene	0.7 - 40	5	4 / 38
	Isopropylbenzene	1 - 15	5	4 / 38
	Tetrachloroethene	1.2 - 88	5	6 / 38
	Toluene	0.5 - 8	5	4 / 38
	trans-1,2-Dichloroethene	0.64 - 20	5	3 / 38
	Trichloroethene	0.6 - 400	5	15 / 38
	Vinyl chloride	1 - 34	2	7 / 38
	xylene -mp	0.18 - 110	5	4 / 38
Semivolatile Organic Compounds (SVOCs)	2,4-Dimethylphenol	1 - 1	1	1 / 3
Inorganic Compounds	Iron	618 - 8810	300	4 / 4
	Magnesium	27200 - 67900	35000	3 / 4
	Manganese	35.2 - 320	300	1 / 4
	Sodium	33700 - 114000	20000	4 / 4
	Chloride	14700 - 396000	250000	4 / 11
	Nitrate as N	940 - 10500	10000	1 / 11
	Sulfide	1650 - 1650	50	1 / 11

SEWER	Contaminants of Concern	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)[a]	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs)	1,1,1-Trichloroethane	1 - 5.5	NA	2 / 10
	1,1-Dichloroethane	1 - 2.9	NA	2 / 10
	Acetone	5 - 220	NA	10 / 10
	Benzene	1 - 1.2	NA	1 / 10
	Bromodichloromethane	1 - 1.1	NA	2 / 10
	Carbon Disulfide	1 - 1	NA	1 / 10
	Chloroform	1 - 6.4	NA	9 / 10
	Chloromethane	1 - 1	NA	1 / 10
	Cis-1,2-Dichloroethene	1 - 3	NA	6 / 10
	Toluene	1 - 7.9	NA	8 / 10
	Trichloroethene	1 - 1.6	NA	2 / 10
	Vinyl chloride	1 - 4	NA	1 / 10
	xylene,m/p	1 - 1.2	NA	1 / 10
SOIL VAPOR	**Contaminants of Concern**	**Concentration Range Detected ($\mu g/m^3$)[a]**	**SCG[b] (mcg/m^3)[a]**	**Frequency of Exceeding SCG**
Volatile Organic Compounds (VOCs)	1,1,1-Trichloroethane	9.2 - 130	NA	NA
	Cis-1,2-Dichloroethene	100 - 100	NA	NA
	Tetrachloroethene	2 - 11	NA	NA
	Trichloroethene	5.1 - 970	NA	NA
SUB SLAB SOIL VAPOR	**Contaminants of Concern**	**Concentration Range Detected ($\mu g/m^3$)[a]**	**SCG[b] (mcg/m^3)[a]**	**Frequency of Exceeding SCG**
Volatile Organic Compounds (VOCs)	1,1,1-Trichloroethane	6.7 - 2300	1000	1/16
	Tetrachloroethene	11 - 15	1000	0/16
	Trichloroethene	8.7 - 2800	250	1/16
AIR	**Contaminants of Concern**	**Concentration Range Detected ($\mu g/m^3$)[a]**	**SCG[b] (mcg/m^3)[a]**	**Frequency of Exceeding SCG**
Volatile Organic Compounds (VOCs)	1,1,1-Trichloroethane	0.14 - 3.5	NA	NA
	Tetrachloroethene	0.14 - 0.88	NA	NA
	Trichloroethene	0.14 - 29	NA	NA

[a] ppb = parts per billion, which is equivalent to micrograms per liter, ug/L, in water; ppm = parts per million, which is equivalent to milligrams per kilogram, ppm, in soil; $\mu g/m^3$ = micrograms per cubic meter

Table 2: September 2011 Groundwater VOC Results

	Location ID	MW-02		MW-04		MW-05		MW-06		MW-06	
	Field Sample Date	9/27/2011		9/26/2011		9/26/2011		9/26/2011		9/26/2011	
	Field Sample Depth (ft bgs)	19		14		12		11		11	
	Field Sample ID	828106MW00201901XX		828106MW00401401XX		828106MW00501201XX		828106MW00601101XD		828106MW00601101XX	
	QC Code	FS		FS		FS		FD		FS	
Parameter Name	**Criteria**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
1,1,1-Trichloroethane	5	1	U	1	U	1	U	1	U	1	U
1,1-Dichloroethane	5	**120**		1	U	**1**	J	1	U	1	U
1,1-Dichloroethene	5	**4.2**		1	U	1	U	1	U	1	U
2-Butanone	50	5	U	5	U	5	U	5	U	5	U
Acetone	50	5	UJ	5	U	5	U	5	UJ	5	U
Benzene	1	**16**		1	U	1	U	1	U	1	U
Carbon disulfide	60	1	U	1	U	1	U	1	U	1	U
Chloroethane	5	1	U	1	U	1	U	1	U	1	U
Chloroform	7	1	U	**1.9**		1	U	1	U	1	U
Cis-1,2-Dichloroethene	5	**53**		**0.58**	J	**19**		1	U	1	U
Cyclohexane	NS	**11**		1	U	1	U	1	U	1	U
Isopropylbenzene	5*	1	U	1	U	1	U	1	U	1	U
Methyl cyclohexane	NS	**0.58**	J	1	U	1	U	1	U	1	U
Tetrachloroethene	5	**1.5**		1	U	1	U	1	U	1	U
Toluene	5	1	U	1	U	1	U	1	U	1	U
trans-1,2-Dichloroethene	5	**3.6**		1	U	**2**		1	U	1	U
Trichloroethene	5	**21**		**1.6**		**20**		1	U	**0.71**	J
Vinyl chloride	2	**18**		1	U	**1.3**		1	U	1	U
Xylene, m/p	5	2	U	2	U	2	U	2	U	2	U

Notes:
Results reported in micrograms per liter (µg/L)
Only detected compounds shown.
Samples analyzed for VOCs by EPA Method SW8260B
ft bgs = feet below ground surface
QC Code:
FS = Field Sample
FD = Field Sample
Qualifiers:
U = Not detected greater than the reporting limit
J = Estimated value
Criteria = Groundwater guidance or standard values from Technical and Operational Guidance Series (TOGS) 1.1.1, "Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations" (NYSDEC, 1998).
* = Guidance Value
NS = No guidance value for compound
NA = Not Applicable
Bold = Compound detected in sample
Highlighted results exceed criteria

Table 2 - September 2011 Groundwater VOC Results

	Location ID	MW-07		MW-10		MW-13		JML-2		PZ-2	
	Field Sample Date	9/27/2011		9/28/2011		9/27/2011		9/26/2011		9/28/2011	
	Field Sample Depth (ft bgs)	15		15		15		6		9	
	Field Sample ID	828106MW00701501XX		828106MW01001501XX		828106MW01301501XX		828106JML0200601XX		828106PZ200901XX	
	QC Code	FS		FS		FS		FS		FS	
Parameter Name	**Criteria**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
1,1,1-Trichloroethane	5	1	U	1	U	**28**		1	U	1	U
1,1-Dichloroethane	5	1	U	1	U	**290**	D	1	U	1	U
1,1-Dichloroethene	5	1	U	1	U	**4.7**		1	U	1	U
2-Butanone	50	5	U	5	U	**32**		5	U	**4.5**	J
Acetone	50	5	UJ	5	UJ	**33**		5	UJ	**25**	
Benzene	1	1	U	1	U	**12**		1	U	1	U
Carbon disulfide	60	1	U	1	U	**0.61**	J	1	U	**0.47**	J
Chloroethane	5	1	U	1	U	**1.4**		1	U	1	U
Chloroform	7	1	U	1	U	1	U	1	U	**1.6**	
Cis-1,2-Dichloroethene	5	1	U	1	U	**48**		1	U	**0.49**	J
Cyclohexane	NS	1	U	1	U	**17**		1	U	1	U
Isopropylbenzene	5*	1	U	1	U	**1.1**		1	U	1	U
Methyl cyclohexane	NS	1	U	1	U	**9.4**		1	U	1	U
Tetrachloroethene	5	1	U	1	U	1	U	1	U	1	U
Toluene	5	1	U	1	U	**1.4**		1	U	1	U
trans-1,2-Dichloroethene	5	1	U	1	U	**4.7**		1	U	1	U
Trichloroethene	5	**1.3**		1	U	1	U	1	U	**6.6**	
Vinyl chloride	2	1	U	**8.6**		**28**		1	U	1	U
Xylene, m/p	5	2	U	2	U	**4.8**		2	U	2	U

Notes:
Results reported in micrograms per liter (µg/L)
Only detected compounds shown.
Samples analyzed for VOCs by EPA Method SW8260B
ft bgs = feet below ground surface
QC Code:
FS = Field Sample
FD = Field Sample
Qualifiers:
U = Not detected greater than the reporting limit
J = Estimated value
Criteria = Groundwater guidance or standard values from Technical and Operational Guidance Series (TOGS) 1.1.1, "Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations" (NYSDEC, 1998).
* = Guidance Value
NS = No guidance value for compound
NA = Not Applicable
Bold = Compound detected in sample
Highlighted results exceed criteria

Table 2: July 2012 Groundwater VOC Results

Location ID		MW-2		MW-4		MW-5		MW-6		MW-6	
Field Sample Date		7/9/2012		7/10/2012		7/9/2012		7/9/2012		7/9/2012	
Field Sample ID		828106-MW00201902		828106-MW00401102		828106-MW00501202		828106-MW00601102		828106-MW00601102D	
Field Sample Depth (ft bgs)		19		11		12		11		11	
QC Code		FS		FS		FS		FS		FD	
Parameter Name	**Criteria**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
1,1-Dichloroethane	5	**170**		0.5	U	0.5	U	0.5	U	0.5	U
Benzene	1	**20**		0.5	U	0.5	U	0.5	U	0.5	U
Chloroethane	5	0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U
Cis-1,2-Dichloroethene	5	**13**		0.5	U	**30**	J	0.5	U	0.5	U
Cyclohexane	NS	**13**	J	0.5	UJ	0.5	UJ	0.5	UJ	0.5	UJ
Ethyl benzene	5	1.5		0.5	U	0.5	U	0.5	U	0.5	U
Isopropylbenzene	5	**0.83**	J	0.5	U	0.5	U	0.5	U	0.5	U
Methyl cyclohexane	NS	3.4		0.5	U	0.5	U	0.5	U	0.5	U
Toluene	5	**0.91**	J	0.5	U	0.5	U	0.5	U	0.5	U
trans-1,2-Dichloroethene	5	**5.3**		0.5	U	**2.4**		0.5	U	0.5	U
Trichloroethene	5	**5.8**		**1.2**		**25**	J	**1.4**		**0.94**	J
Vinyl chloride	2	**120**		0.5	U	**2.1**		0.5	U	0.5	UJ
Xylenes (m&p)	5	1	U	1	U	1	U	1	U	1	U

Notes:

Results reported in micrograms per liter (µg/L)

Only detected compounds shown.

Samples analyzed for VOCs by EPA Method SW8260B

ft bgs = feet below ground surface

QC Code:

FS = Field Sample

FD = Field Sample

Qualifiers:

U = Not detected greater than the reporting limit

J = Estimated value

Criteria = Groundwater guidance or standard values from Technical and Operational Guidance Series (TOGS) 1.1.1, "Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations" (NYSDEC, 1998).

* = Guidance Value

NS = No guidance value for compound

Bold = Compound detected in sample

Highlighted results exceed criteria

Table 2: July 2012 Groundwater VOC Results

Location ID		MW-7		MW-8		MW-10		MW-13		JML-2	
Field Sample Date		7/10/2012		7/10/2012		7/9/2012		7/9/2012		7/9/2012	
Field Sample ID		828106-MW00701502		828106-MW00801202		828106-MW01001502		828106-MW01301502		828106-JML0200602	
Field Sample Depth (ft bgs)		15		12		15		15		6	
QC Code		FS		FS		FS		FS		FS	
Parameter Name	**Criteria**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
1,1-Dichloroethane	5	0.5	U	0.5	U	0.5	U	**36**		0.5	U
Benzene	1	0.5	U	0.5	U	0.5	U	**4**		0.5	U
Chloroethane	5	0.5	U	0.5	U	0.5	U	**3**		0.5	U
Cis-1,2-Dichloroethene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Cyclohexane	NS	0.5	UJ	0.5	UJ	0.5	UJ	**4.9**	J	0.5	UJ
Ethyl benzene	5	0.5	U	0.5	U	0.5	U	**1**	J	0.5	U
Isopropylbenzene	5	0.5	U	0.5	U	0.5	U	**0.7**	J	0.5	U
Methyl cyclohexane	NS	0.5	U	0.5	U	0.5	U	**8.2**		0.5	U
Toluene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
trans-1,2-Dichloroethene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichloroethene	5	**1.3**		0.5	U	0.5	U	0.5	U	0.5	U
Vinyl chloride	2	0.5	U	0.5	U	**11**		0.5	UJ	0.5	U
Xylenes (m&p)	5	1	U	1	U	1	U	**1.5**	J	1	U

Notes:

Results reported in micrograms per liter (µg/L)

Only detected compounds shown.

Samples analyzed for VOCs by EPA Method SW8260B

ft bgs = feet below ground surface

QC Code:

FS = Field Sample

FD = Field Sample

Qualifiers:

U = Not detected greater than the reporting limit

J = Estimated value

Criteria = Groundwater guidance or standard values from Technical and Operational Guidance Series (TOGS) 1.1.1, "Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations" (NYSDEC, 1998).

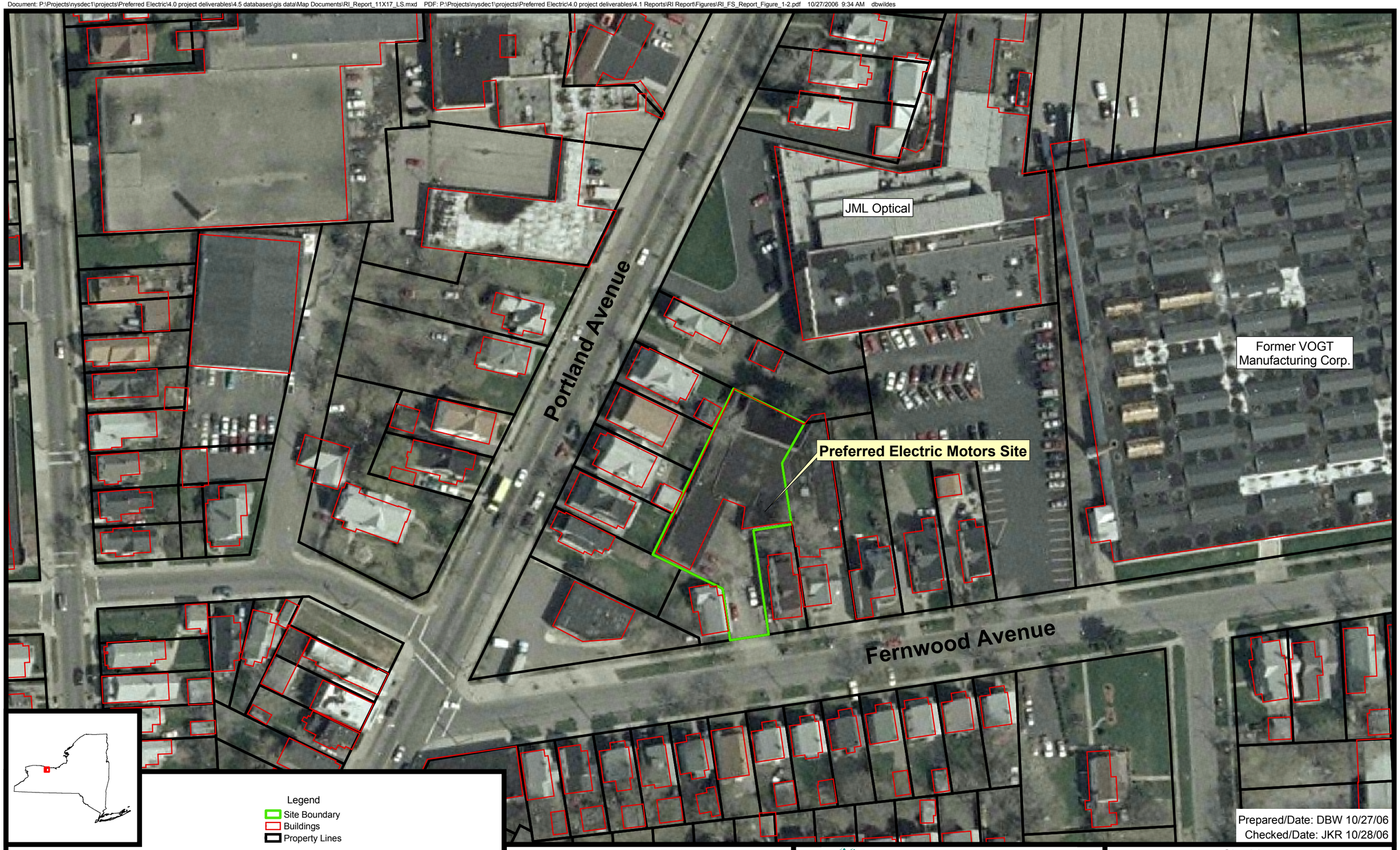
* = Guidance Value

NS = No guidance value for compound

Bold = Compound detected in sample

Highlighted results exceed criteria

Document: P:\Projects\nysdec1\projects\Preferred Electric\4.0 project deliverables\4.5 databases\gis data\Map Documents\RI_Report_11X17_LS.mxd PDF: P:\Projects\nysdec1\projects\Preferred Electric\4.0 project deliverables\4.1 Reports\RI Report\Figures\RI_FS_Report_Figure_1-2.pdf 10/27/2006 9:34 AM dbwildes



Legend
- Site Boundary
- Buildings
- Property Lines

N
0 40 80
Feet

Note: 2002 Aerial photo from NYS GIS Clearinghouse.
Property lines and buildings from Monroe County GIS Services

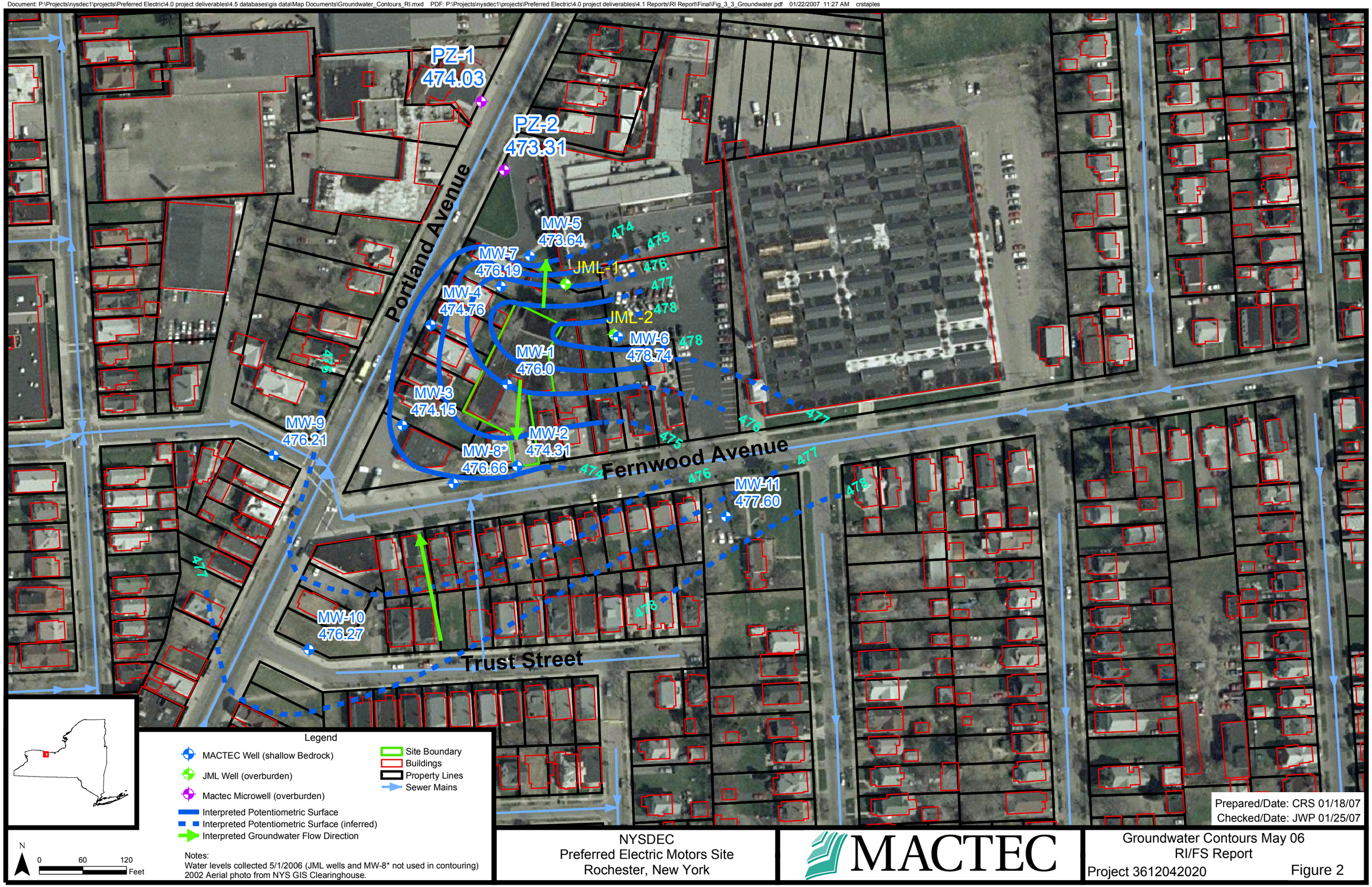
Prepared/Date: DBW 10/27/06
Checked/Date: JKR 10/28/06

NYSDEC
Preferred Electric Motors Site
Rochester, New York

MACTEC

Site Map
RI/FS Report
Project 3612042020

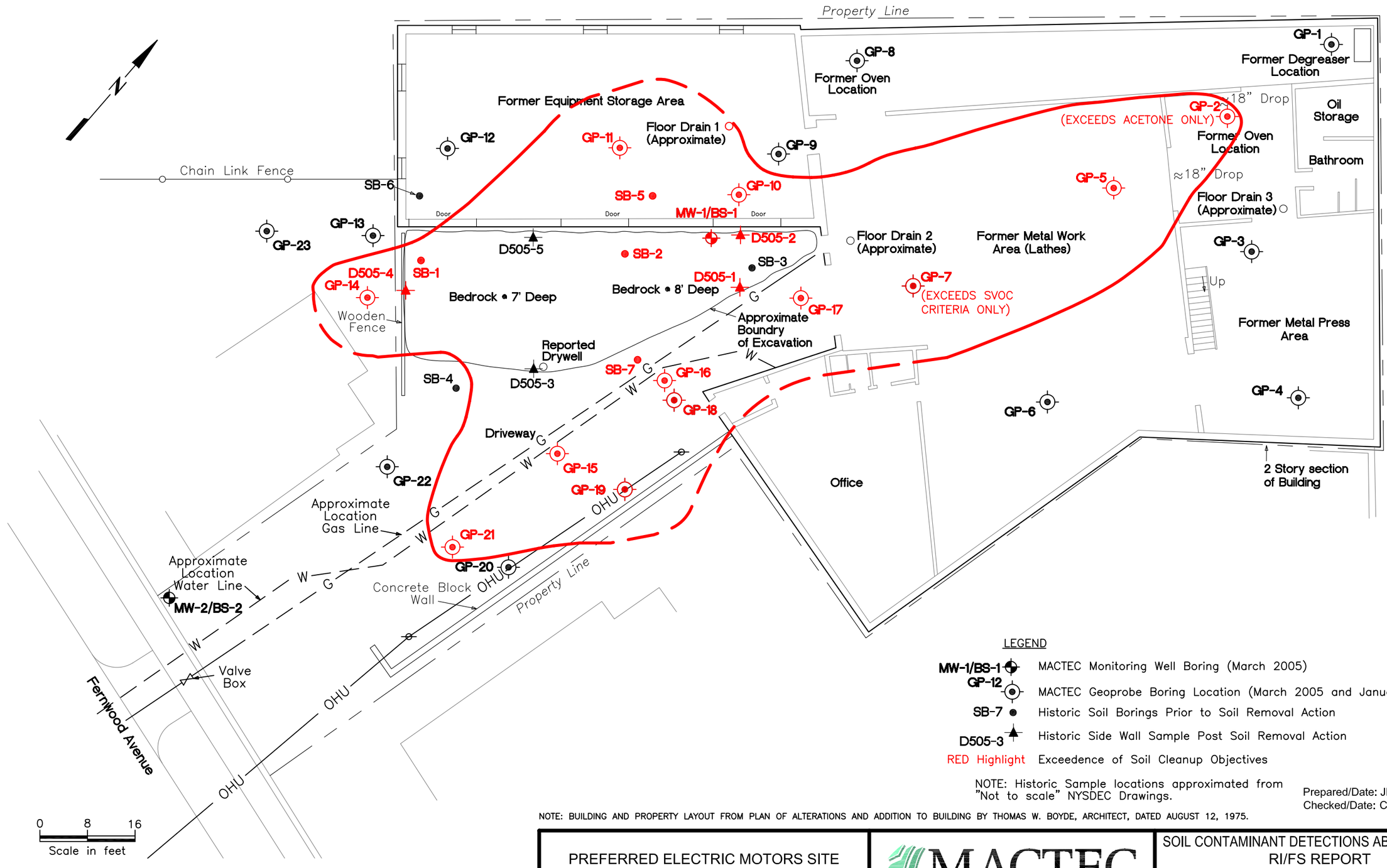
Figure 1



NYSDEC
Preferred Electric Motors Site
Rochester, New York

MACTEC

Groundwater Contours May 06
RI/FS Report
Project 3612042020 Figure 2



LEGEND

MW-1/BS-1	MACTEC Monitoring Well Boring (March 2005)
GP-12	MACTEC Geoprobe Boring Location (March 2005 and January 2006)
SB-7	Historic Soil Borings Prior to Soil Removal Action
D505-3	Historic Side Wall Sample Post Soil Removal Action
RED Highlight	Exceedence of Soil Cleanup Objectives

NOTE: Historic Sample locations approximated from "Not to scale" NYSDEC Drawings.

Prepared/Date: JKR 10/26/06
Checked/Date: CRS 01/22/07

NOTE: BUILDING AND PROPERTY LAYOUT FROM PLAN OF ALTERATIONS AND ADDITION TO BUILDING BY THOMAS W. BOYDE, ARCHITECT, DATED AUGUST 12, 1975.

PREFERRED ELECTRIC MOTORS SITE
ROCHESTER, NEW YORK

MACTEC

SOIL CONTAMINANT DETECTIONS ABOVE CRITERIA
RI/FS REPORT
Project 3612042020
Figure 3

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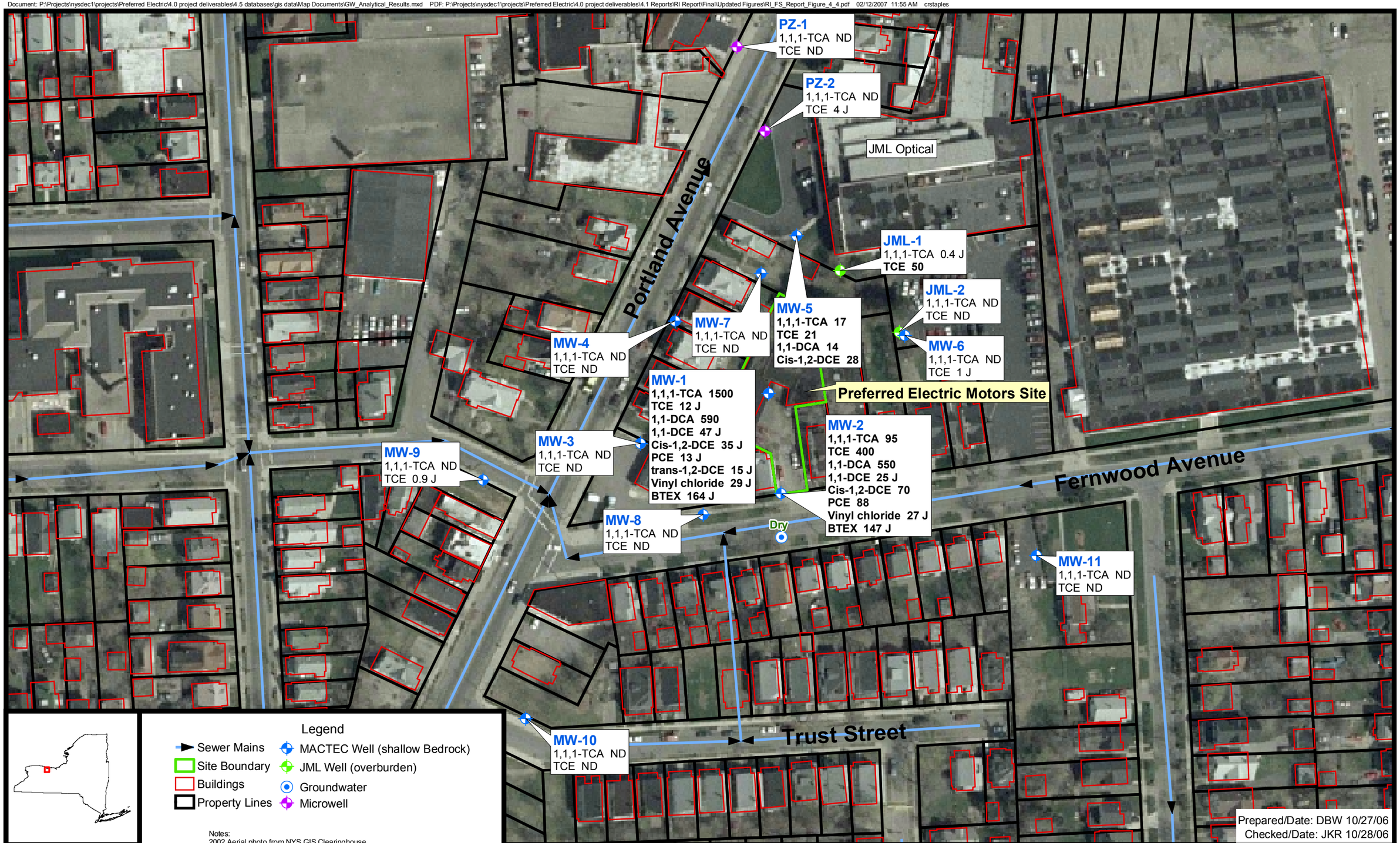

NYSDEC
Preferred Electric Motors Site
Rochester, New York

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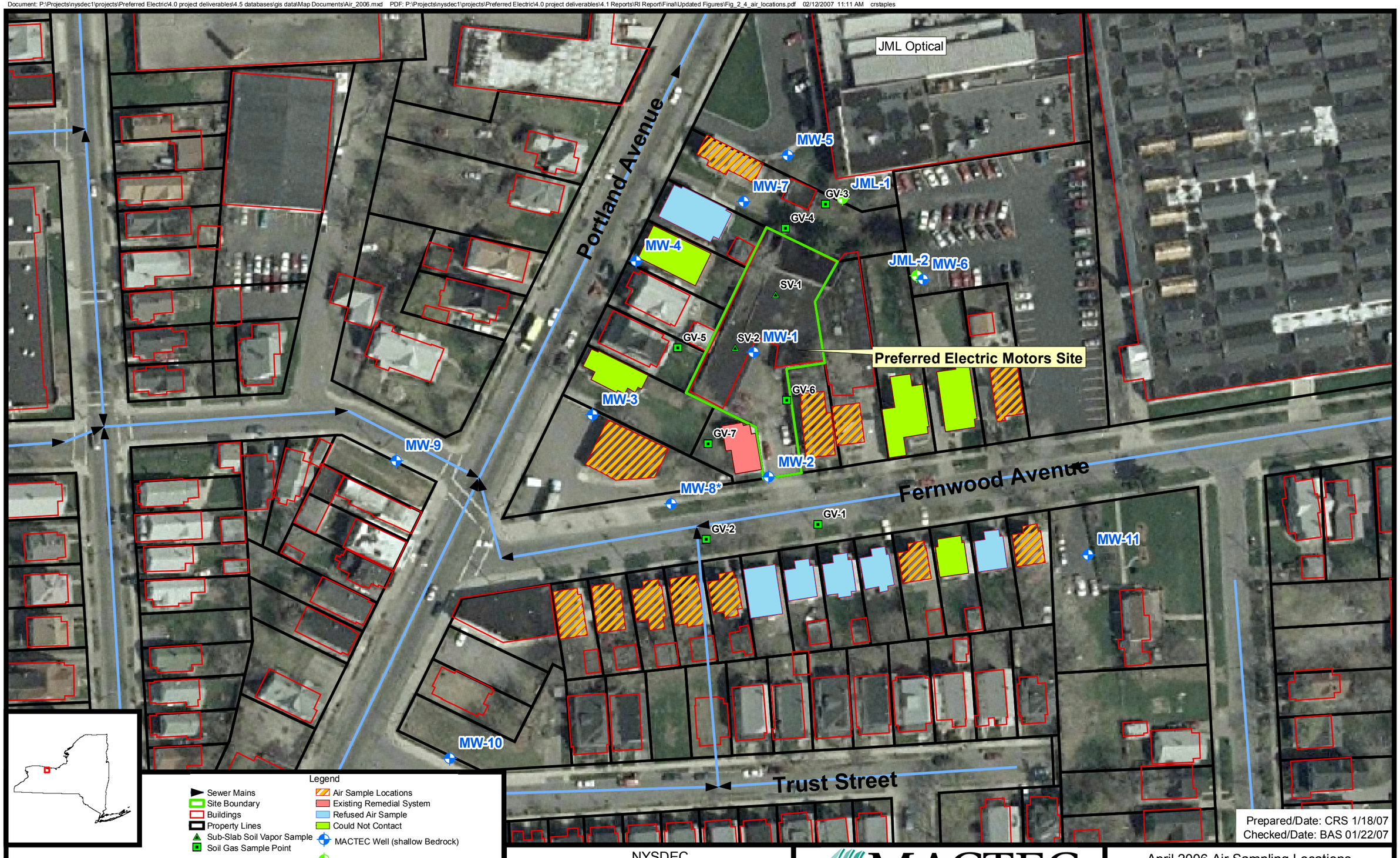
Phase II GW Results - VOC's Round 3
RI/FS Report
Project 3612042020

Figure 4

Document: P:\Projects\nysdec1\projects\Preferred Electric\4.0 project deliverables\4.5 databases\gis data\Map Documents\Air_2006.mxd PDF: P:\Projects\nysdec1\projects\Preferred Electric\4.0 project deliverables\4.1 Reports\RI Report\Final\Updated Figures\Fig_2_4_air_locations.pdf 02/12/2007 11:11 AM crstaples



Prepared/Date: CRS 1/18/07
Checked/Date: BAS 01/22/07

NYSDEC
Preferred Electric Motors Site
Rochester, New York

MACTEC

April 2006 Air Sampling Locations

Project 3612042020

Figure 5

under these metal shelving units located inside the building, PCB contaminated floors could not be scarified because of access. The floor area (approx. 170 sq. ft.) beneath these shelving received approx. 2 to 3 inches of concrete as cover..

The soils underneath the building (the greyed area) were not addressed. the building acts a natural cover for these soils.

SVI Evaluation
Remaining contamination underneath the building and the potential for soil vapor intrusion (SVI) has been identified as the entire building foot print (the greyed area).

PROPERTY LINE

SHELVING UNIT

METAL SHELVING UNIT

NO ACCESS

CLEAN OUT

WOOD FRAME WALL

CUT & REMOVED BY OWNER TO FACILITATE MILLING

AS-BUILT

Former Equipment Storage Area

Former Oven Location

Former Degreaser Location

Former Metal Work Area (Lathes)

Former Metal Press Area

Oil Storage

Bathroom

Floor Drain 1 (Approximate)

Floor Drain 2 (Approximate)

Floor Drain 3 (Approximate)

Approximate Boundary of Previous Soil Excavation

Bedrock • 7' Deep

Bedrock • 8' Deep

AREA 14,618 Sq. Ft. or 0.3402 Ac.

GP-1 GP-2 GP-3 GP-4 GP-5 GP-6 GP-7 GP-8 GP-9 GP-10 GP-11 GP-12 GP-13 GP-14 GP-15 GP-16 GP-17 GP-18 GP-19 GP-20 GP-21 GP-22 GP-23

SB-1 SB-2 SB-3 SB-4 SB-5 SB-6 SB-7

SS-1 SS-2 SS-3 SS-4 SS-5

D505-1 D505-2 D505-3 D505-4 D505-5

SV-1 SV-2

OS-001 OS-002 OS-003

MW-1/BS-1 MW-2/BS-2 MW-12

SD-001 SW-001 TB-1

GV-6 GV-7

ESTEBAN LOPEZ (REPUTED OWNER)

FERNWOOD LAND TRUST #80101 GARY JOHNSON AS TRUSTEE (REPUTED OWNER)

REYES REALTY GROUP, INC. (REPUTED OWNER)

WILMA BLOSS (REPUTED OWNER)

FRANCOIS G. PUSCHKIN (REPUTED OWNER)

FERNWOOD AVENUE

N 26°06'00" E 165.00' (MAP & MEAS.)

N 63°54'00" W 68.19' (68.25' MAP)

S 63°54'00" E 70.88' (70.88' MAP)

S 81°17'09" W 35.00' (MAP & MEAS.)

S 8°42'57" E 55.00' (MAP & MEAS.)

N 8°42'57" W 47.65' (47.78' MAP)

S 8°42'57" E 95.00' (MAP & MEAS.)

S 31°05'13" W 41.16' (41.11 MAP)

0.7' BLDG. 0.6' BLDG. 0.2' BLDG.

SOURCE:
BASE DATA TAKEN FROM PREFERED ELECTRIC MOTORS SITE PLAN TITLED "BOUNDARY & TOPOGRAPHIC MAP, CITY OF ROCHESTER, COUNTY OF MONROE, STATE OF NEW YORK", BY POPLI CONSULTING ENGINEERS AND SURVEYORS, PENFIELD, NEW YORK, JOB NO. 3282.05, DATED APRIL 27, 2009.

0 5 10 20
SCALE IN FEET

FILE NAME: M:\Projects\nysdec1\PREFERRED ELECTRIC\Remedial Design\C-101.DWG PLOT DATE: Thu, 16 Sep 2010 PLOT TIME: 10:08 AM

STATE OF NEW YORK * MARK JAMES STELMACK * 080317 * LICENSED PROFESSIONAL ENGINEER
4-15-10

NO.	DATE	DSGN	DR	CHK	APVD	BY
0	9/15/10	Mark A. Peters	Richard H. Holman	Mark J. Stelmack	Mark J. Stelmack	MAP MJS
		ISSUED FOR BID				
B	12/07/09	90% DESIGN SUBMITTAL TO NYSDEC				MAP MJS
A	6/26/09	30% DESIGN SUBMITTAL TO NYSDEC				MAP MJS
		REVISION				

New York State Department of Environmental Conservation

REMEDIAL DESIGN
PREFERRED ELECTRIC MOTOR SITE
ROCHESTER, NY
NYSDEC SITE NUMBER 8-28-106

MACTEC Engineering and Consulting, Inc.
P.O. Box 7050, 511 Congress Street
Portland, Maine 04112-7050
(207) 775-5401

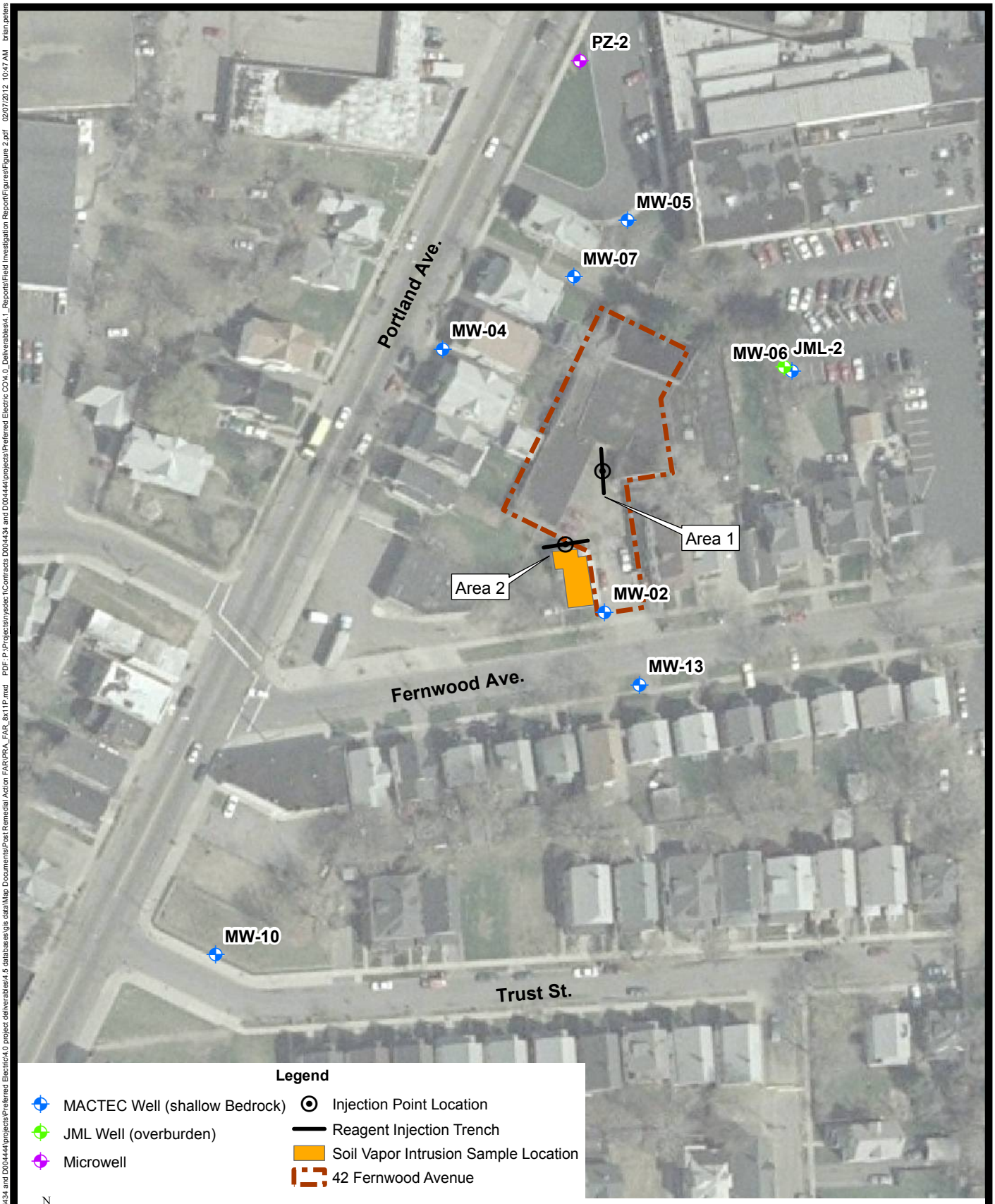
MACTEC

CIVIL
EXISTING CONDITIONS PLAN

Figure 6

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	06/18/07
PROJ	3612082118
DWG	C-101
SHEET	3 OF 6



Monroe County color digital orthoimagery (2002) obtained from New York State GIS Clearinghouse at: http://www.nysgis.state.ny.us

Prepared/Date: BRP 02/07/12
Checked/Date: BAS 02/07/12

NYSDEC
Preferred Electric Motors Site
Rochester, New York

MACTEC

Sample Locations
Post-Remedial Action
Field Activities Report
Project 3612102171 Figure 7

Google

Directions to Rochester General Hospital
1425 Portland Ave, Rochester, NY 14621
1.3 mi – about **4 mins**

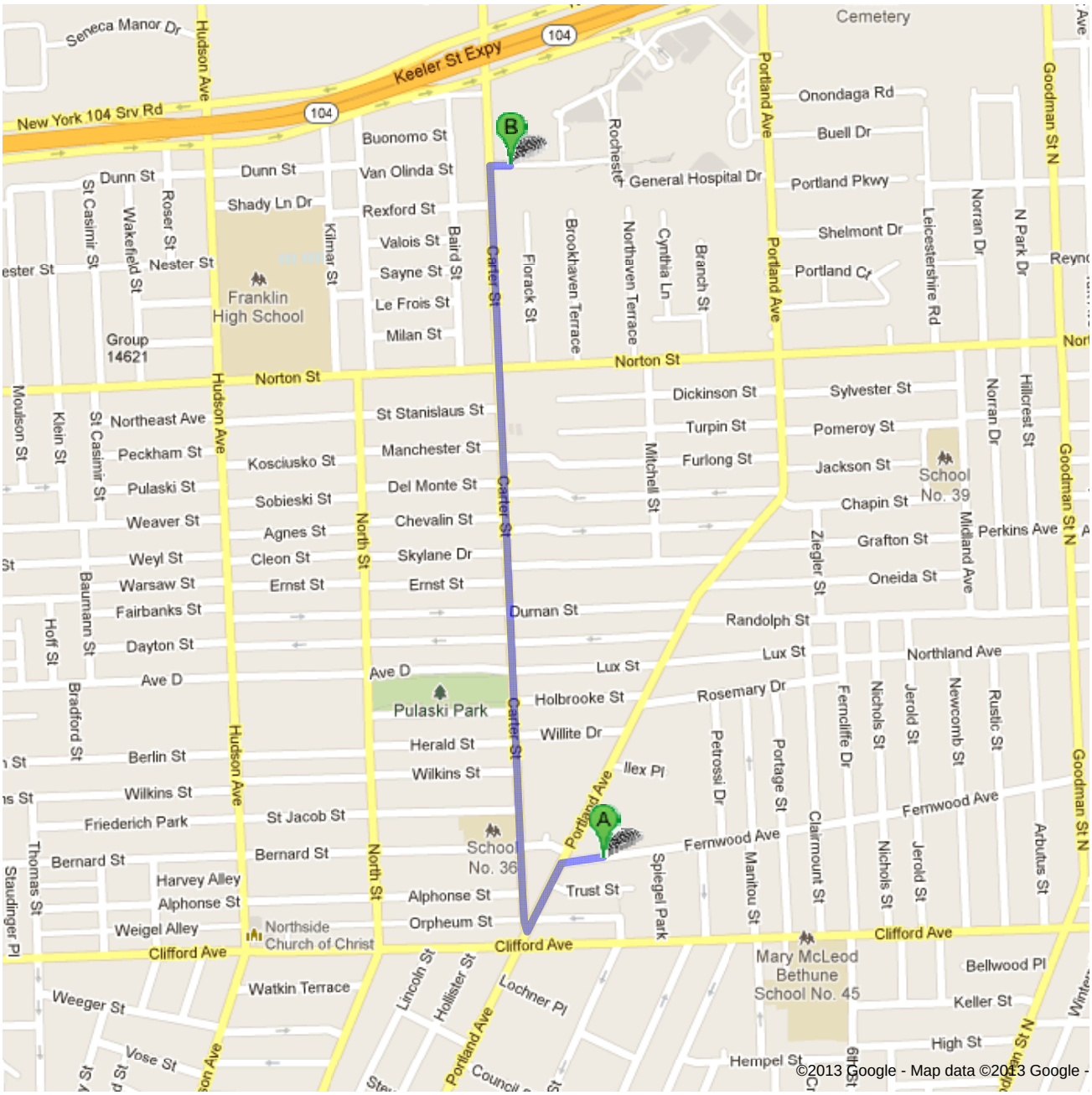


Figure 8

A 42 Fernwood Ave, Rochester, NY 14621

1.	Head **west** on **Fernwood Ave** toward **Portland Ave**	go 315 ft total 315 ft
2.	Turn left onto **Portland Ave** About 48 secs	go 0.1 mi total 0.2 mi
3.	Take the 1st right onto **Carter St** About 3 mins	go 1.1 mi total 1.2 mi
4.	Turn right onto **Rochester General Hospital** Destination will be on the right	go 151 ft total 1.3 mi

B **Rochester General Hospital**
1425 Portland Ave, Rochester, NY 14621

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

Directions weren't right? Please find your route on maps.google.com and click "Report a problem" at the bottom left.

APPENDIX A – EXCAVATION WORK PLAN

A-1 NOTIFICATION

At least 15 days prior to the start of any activity that is anticipated to encounter remaining contamination, the site owner or their representative will notify the Department.

This notification will include:

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

A-2 SOIL SCREENING METHODS

Visual, olfactory and instrument-based soil screening will be performed by a qualified environmental professional during all remedial and development excavations into known or potentially contaminated material (remaining contamination). Soil screening will be performed regardless of when the invasive work is done and will include all excavation and invasive work performed during development, such as excavations for foundations and utility work, after issuance of the COC.

Soils will be segregated based on previous environmental data and screening results into material that requires off-site disposal, material that requires testing, material that can be returned to the subsurface, and material that can be used as cover soil.

A-3 STOCKPILE METHODS

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

Stockpiles will be kept covered at all times with appropriately anchored tarps. Stockpiles will be routinely inspected and damaged tarp covers will be promptly replaced.

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

A-4 MATERIALS EXCAVATION AND LOAD OUT

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

The owner of the property and its contractors are solely responsible for safe execution of all invasive and other work performed under this Plan.

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

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

A truck wash will be operated on-site. The qualified environmental professional will be responsible for ensuring that all outbound trucks will be washed at the truck wash before leaving the site until the activities performed under this section are complete.

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

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

A-5 MATERIALS TRANSPORT OFF-SITE

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

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

All trucks will be washed prior to leaving the site. Truck wash waters will be collected and disposed of off-site in an appropriate manner.

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

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

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

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

A-6 MATERIALS DISPOSAL OFF-SITE

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

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

Non-hazardous historic fill and contaminated soils taken off-site will be handled, at minimum, as a Municipal Solid Waste per 6NYCRR Part 360-1.2. Material that does not meet Track 1 unrestricted SCOs is prohibited from being taken to a New York State recycling facility (6NYCRR Part 360-16 Registration Facility).

A-7 MATERIALS REUSE ON-SITE

Chemical criteria for on-site reuse of material have been approved by NYSDEC and are listed in Table 3. The qualified environmental professional will ensure that

procedures defined for materials reuse in this SMP are followed and that unacceptable material does not remain on-site. Contaminated on-site material, including historic fill and contaminated soil, that is acceptable for re-use on-site will be placed below the demarcation layer or impervious surface, and will not be reused within a cover soil layer, within landscaping berms, or as backfill for subsurface utility lines.

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

A-8 FLUIDS MANAGEMENT

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

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

A-10 BACKFILL FROM OFF-SITE SOURCES

All materials proposed for import onto the site will be approved by the qualified environmental professional and will be in compliance with provisions in this SMP prior to receipt at the site.

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

All imported soils will meet the backfill and cover soil quality standards established in 6NYCRR 375-6.7(d). Based on an evaluation of the land use, protection of groundwater and protection of ecological resources criteria, the resulting soil quality standards are listed in Table 3. Soils that meet ‘exempt’ fill requirements under 6

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

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

A-11 STORMWATER POLLUTION PREVENTION

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

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

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

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

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

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

A-12 CONTINGENCY PLAN

If underground tanks or other previously unidentified contaminant sources are found during post-remedial subsurface excavations or development related construction,

excavation activities will be suspended until sufficient equipment is mobilized to address the condition.

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

Identification of unknown or unexpected contaminated media identified by screening during invasive site work will be promptly communicated by phone to NYSDEC's Project Manager. Reportable quantities of petroleum product will also be reported to the NYSDEC spills hotline. These findings will be also included in the periodic reports prepared pursuant to Section 5 of the SMP.

A-13 COMMUNITY AIR MONITORING PLAN

A figure showing the location of air sampling stations based on generally prevailing wind conditions shall be prepared. These locations will be adjusted on a daily or more frequent basis based on actual wind directions to provide an upwind and at least two downwind monitoring stations.

Exceedances of action levels listed in the CAMP will be reported to NYSDEC and NYSDOH Project Managers.

A-14 ODOR CONTROL PLAN

This odor control plan is capable of controlling emissions of nuisance odors off-site. If nuisance odors are identified at the site boundary, or if odor complaints are received, work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. NYSDEC and NYSDOH will be notified of all odor events and of any other complaints about the project. Implementation of all odor controls, including the halt of work, is the responsibility of the property owner's Remediation Engineer, and any measures that are implemented will be discussed in the Periodic Review Report.

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

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

A-15 DUST CONTROL PLAN

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

- Dust suppression will be achieved through the use of a dedicated on-site water truck for road wetting. The truck will be equipped with a water cannon capable of spraying water directly onto off-road areas including excavations and stockpiles.
- Clearing and grubbing of larger sites will be done in stages to limit the area of exposed, unvegetated soils vulnerable to dust production.
- Gravel will be used on roadways to provide a clean and dust-free road surface.
- On-site roads will be limited in total area to minimize the area required for water truck sprinkling.

A-16 OTHER NUISANCES

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

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

APPENDIX B – METES and BOUNDS

APPENDIX C – ENVIRONMENTAL NOTICE

APPENDIX D – HEALTH and SAFETY PLAN and COMMUNITY AIR MONITORING PLAN

APPENDIX D – HEALTH and SAFETY PLAN and COMMUNITY AIR MONITORING PLAN

SPEC 00003

MINIMUM REQUIREMENTS FOR HEALTH AND SAFETY

1. GENERAL

1.01 Description

A. The **CONTRACTOR** is solely responsible and liable for the health and safety of all on-site personnel and any off-site community potentially impacted by the remediation.

B. This section describes the minimum health and safety requirements for this project including the requirements for the development of a written Health and Safety Plan (HASP). All on-site workers must comply with the requirements of the HASP. The **CONTRACTOR's** HASP must comply with all applicable federal and state regulations protecting human health and the environment from the hazards posed by activities during this site remediation. The HASP is a required deliverable for this project. The HASP will be reviewed by the **ENGINEER**. The **CONTRACTOR** will resubmit the HASP, addressing all review comments from the **ENGINEER**. The **CONTRACTOR** shall not initiate on-site work in contaminated areas until an acceptable HASP addressing all comments has been developed.

C. Consistent disregard for the provision of these health and safety specifications shall be deemed just and sufficient cause for immediate stoppage of work and/or termination of the Contract or any Subcontract without compromise or prejudice to the rights of the **DEPARTMENT** or the **ENGINEER**.

D. Any discrepancies between this HASP and the specifications (or OSHA requirements) shall be resolved in favor of the more stringent requirements as determined by the **ENGINEER**.

1.02 Basis

A. The Occupational Safety and Health Administration (OSHA) Standards and Regulations contained in Title 29, Code of Federal Regulations, Parts 1910 and 1926 (20 CFR 1910 and 1926) and subsequent additions and/or modifications, the New York State Labor Law Section 876 (Right-to-Know Law), the Standard Operating Safety Guidelines by the United States Environmental Protection Agency (EPA), Office of Emergency and Remedial Response and the Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities (NIOSH, OSHA, USCG, and EPA) provide the basis for the safety and health program. Additional specifications within this section are in addition to OSHA regulations and reflect the positions of both the EPA and the National Institute for Occupation Safety and Health (NIOSH) regarding procedures required to ensure safe operations at abandoned hazardous waste disposal sites.

B. The safety and health of the public and project personnel and the protection of the environment will take precedence over cost and schedule considerations for all project work. Any additional costs will be considered only after the cause for suspension of operations is addressed and work is resumed. The **ENGINEER's** on-site representative and the **CONTRACTOR's** Superintendent will be kept appraised, by the Safety Officer, of conditions which may adversely affect the safety and health of project personnel and the community. The **ENGINEER** may stop work for health and safety reasons. If work is suspended for health and/or safety reasons, it shall not resume until approval is obtained from the **ENGINEER**. The cost of work stoppage due to health and safety is the responsibility of the **CONTRACTOR** under this Contract.

1.03 Health and Safety Definitions

A. The following definitions shall apply to the work of this Contract:

1. Project Personnel: Project personnel include the **ENGINEER**, the **ENGINEER's** On-site Representatives, **CONTRACTOR**, Subcontractors, and Federal and State Representatives, working or having official business at the Project Site.

2. Authorized Visitor: Authorized visitors who work for the State of New York shall receive approval to enter the site from the **DEPARTMENT**. The Safety Officer has primary responsibility on determining who is qualified and may enter the site. The Site Safety Officer will only allow authorized visitors with written proof that they have been medically certified and trained in accordance with 29 CFR 1910.120 to enter the contamination reduction zone and/or exclusion area.

3. Health and Safety Coordinator (HSC): The HSC shall be a Certified Industrial Hygienist (CIH) or Certified Safety Professional (CSP) retained by the **CONTRACTOR**. The HSC will be responsible for the development and implementation of the HASP.

4. Safety Officer (SO): The SO will be the **CONTRACTOR's** on-site person who will be responsible for the day-to-day implementation and enforcement of the HASP.

5. Health and Safety Technicians (HST): The HST(s) will be the **CONTRACTOR's** on-site personnel who will assist the SO in the implementations of the HASP, in particular, with air monitoring in active work areas and maintenance of safety equipment.

6. Medical Consultant (MC): The MC is a physician retained by the **CONTRACTOR** who will be responsible for conducting physical exams as specified under the Medical Monitoring Programs in this section.

7. Project Site: The area designated on the Site Sketch, which includes the Contractor Work Area.

8. Contractor Work Area: An area of the project site including the Support Zone, access road, staging area, and Exclusion Zone.

9. Contractor Support Zone: An area of the Contractor Work Area outside the Exclusion Zone, accessible for deliveries and visitors. No persons, vehicles, or equipment may enter these areas from the Exclusion Zone without having gone through specified decontamination procedures in the adjacent Contamination Reduction Zone.

10. Staging Areas: Areas within the Exclusion Zone for the temporary staging of contaminated soil and debris.

11. Exclusion Zone: The innermost area within the Contractor Work Area that encloses the area of contamination. Protective clothing and breathing apparatus as specified in the health and safety requirements and in the **CONTRACTOR's** approved HASP must be worn.

12. Contamination Reduction Zone: An area at the Exit Point of the Exclusion Zone through which all personnel, vehicles, and equipment must enter and exit. All decontamination of vehicles and equipment and removal of personal protective clothing and breathing apparatus must take place at the boundary between the Exclusion Zone and the Contamination Reduction Zone.

13. **ENGINEER's** on-site representative: The **ENGINEER's** representative assigned responsibility and authority by the **ENGINEER** for day-to-day field surveillance duties.

14. Work: Work includes all labor, materials, and other items that are shown, described, or implied in the Contract and includes all extra and additional work and material that may be ordered by the **ENGINEER**.

15. Monitoring: The use of direct reading field instrumentation to provide information regarding the levels of gases and/or vapor, which are present during remedial action. Monitoring shall be conducted to evaluate employee exposures to toxic materials and hazardous conditions.

1.04 Responsibilities

A. The **ENGINEER** will be responsible for the following:

1. Reviewing the HASP for the acceptability for its personnel and the impact on the site and human health.

2. Reviewing modifications to the HASP.

B. The **CONTRACTOR** will be responsible for the following:

C. The **CONTRACTOR** will perform all work required by the Contract Documents in a safe and environmentally acceptable manner. The **CONTRACTOR** will provide for the safety of all project personnel and the community for the duration of the Contract.

D. The **CONTRACTOR** shall:

1. Employ an SO who shall be assigned full-time responsibility for all tasks herein described under this HASP. In the event the SO cannot meet his responsibilities, the **CONTRACTOR** shall be responsible for obtaining the services of an "alternate" SO meeting the minimum requirements and qualifications contained herein. No work will proceed on this project in the absence of an approved SO.

2. Ensure that all project personnel have obtained the required physical examination prior to and at the termination of work covered by the contract.

3. Be responsible for the pre-job indoctrination of all project personnel with regard to the HASP and other safety requirements to be observed during work, including but not limited to (a) potential hazards, (b) personal hygiene principles, (c) personal protection equipment, (d) respiratory protection equipment usage and fit testing, and (e) emergency procedures dealing with fire and medical situations.

4. Be responsible for the implementation of this HASP, and the Emergency Contingency and Response Plan.

5. Provide and ensure that all project personnel are properly clothed and equipped and that all equipment is kept clean and properly maintained in accordance with the manufacturer's recommendations or replaced as necessary.

6. Alert appropriate emergency services before starting any hazardous work and provide a copy of the Emergency Contingency Plan to the respective emergency services.

7. Have sole and complete responsibility of safety conditions for the project, including safety of all persons (including employees).

8. Be responsible for protecting the project personnel and the general public from hazards due to the exposure, handling, and transport of contaminated materials. Barricades, lanterns, roped-off areas, and proper signs shall be furnished in sufficient amounts and locations to safeguard the project personnel and public at all times.

9. Ensure all OSHA health and safety requirements are met.

10. Maintain a chronological log of all persons entering the project site. It will include organization, date, and time of entry and exit. Each person must sign in and out.

1.05 Health and Safety Plan

A. The HASP is a deliverable product of this project. The **ENGINEER** will review and comment on the **CONTRACTOR's** HASP. Agreed upon responses to all comments will be incorporated into the final copy of the HASP. The HASP shall govern all work performed for this contract. The HASP shall address, at a minimum, the following items in accordance with 29 CFR 1910.120(I)(2):

1. Health and Safety Organization.

2. Site Description and Hazard Assessment.

3. Training.

4. Medical Surveillance.

5. Work Areas.

6. Standard Operating Safety Procedures and Engineering Controls.

7. Personal Protective Equipment (PPE).

8. Personnel Hygiene and Decontamination.

9. Equipment Decontamination.

10. Air Monitoring.

11. Emergency Equipment/First Aid Requirements.

12. Emergency Response and Contingency Plan.

13. Confined-Space Entry Procedures.

14. Spill Containment Plan.

15. Heat & Cold Stress.

16. Record Keeping.

17. Community Protection Plan.

B. The following sections will describe the requirements of each of the above-listed elements of the HASP.

1.06 Health and Safety Organization

A. The **CONTRACTOR** shall list in the HASP a safety organization with specific names and responsibilities. At a minimum, the **CONTRACTOR** shall provide the services of a Health and Safety Coordinator, SO, Health and Safety Technician, and a Medical Consultant.

B. Health and Safety Coordinator: The **CONTRACTOR** must retain the services of a Health and Safety Coordinator (HSC). The HSC must be an American Board of Industrial Hygiene (ABIH) Certified Industrial Hygienist (CIH) or a Certified Safety Professional (CSP). The HSC must have a minimum of two years experience in hazardous waste site remediations or related industries and have a working knowledge of federal and state occupational health and safety regulations. The HSC must be familiar with air monitoring techniques and the development of health and safety programs for personnel working in potentially toxic atmospheres.

In addition to meeting the above requirements the HSC will have the following responsibilities:

1. Responsibility for the overall development and implementation of the HASP.

2. Responsibility for the initial training of on-site workers with respect to the contents of the HASP.

3. Availability during normal business hours for consultation by the Safety Officer.

4. Availability to assist the Safety Officer in follow-up training and if changes in site conditions occur.

C. Safety Officer: The designated SO must have, at a minimum, two years of experience in the remediation of hazardous waste sites or related field experience. The SO must have formal training in health and safety and be conversant with federal and state regulations governing occupational health and safety. The SO must be certified in CPR and first aid and have experience and training in the implementation of personal protection and air monitoring programs. The SO must have "hands-on" experience with the operation and maintenance of real-time air monitoring equipment. The SO must be thoroughly knowledgeable of the operation and maintenance of air-purifying respirators (APR) and supplied-air respirators (SAR) including SCBA and airline respirators.

In addition to meeting the above qualifications, the SO will be responsible for the following minimum requirements:

1. Responsibility for the implementation, enforcement, and monitoring of the health and safety plan.

2. Responsibility for the pre-construction indoctrination and periodic training of all on-site personnel with regard to this safety plan and other safety requirements to be observed during construction, including:

   a. Potential hazards.

   b. Personal hygiene principles.

   c. PPE.

   d. Respiratory protection equipment usage and fit testing.

   e. Emergency procedures dealing with fire and medical situations.

   f. Conduct daily update meetings in regard to health and safety.

3. Responsibility for alerting the **ENGINEER's** on-site representative prior to the **CONTRACTOR** starting any particular hazardous work.

4. Responsibility for informing project personnel of the New York State Labor Law Section 876 (Right-to-Know Law).

5. Responsibility for the maintenance of separation of Exclusion Zone (Dirty) from the Support Zone (Clean) areas as described hereafter.

D. Health and Safety Technicians: The Health and Safety Technician (HST) must have one year of hazardous waste site or related experience and be knowledgeable of applicable occupational health and safety regulations. The HST must be certified in CPR and first aid. The HST will be under direct supervision of the SO during on-site work. The HST must be familiar with the operations, maintenance and calibration of monitoring equipment used in this remediation. An HST will be assigned to each work crew or task in potentially hazardous areas.

E. Medical Consultant: The **CONTRACTOR** is required to retain a Medical Consultant (MC) who is a physician, certified in occupational medicine. The physician shall have experience in the occupational health area and shall be familiar with potential site hazards of remedial action projects. The MC will also be available to provide annual physicals and to provide additional medical evaluations of personnel when necessary.

1.07 Site Description and Hazard Assessment

A. The **CONTRACTOR** shall perform a hazard assessment to provide information to assist in selection of PPE and establish air monitoring guidelines to protect on-site personnel, the environment, and the public. The **CONTRACTOR** shall provide a general description of the site, its location, past history, previous environmental sampling results, and general background on the conditions present at the site.

1. Chemical Hazards: A qualitative evaluation of chemical hazards shall be based on the following:

   - Nature of potential contaminants;
   - Location of potential contaminants at the project site;
   - Potential for exposure during site activities; and
   - Effects of potential contaminants on human health.

2. Biological Hazards: A qualitative evaluation of biological hazards consisting of the elements listed for chemical hazards.

3. Physical Hazards: The **CONTRACTOR** shall assess the potential for physical hazards affecting personnel during the performance of on-site work.

B. The **CONTRACTOR** shall develop a hazard assessment for each site task and operation established in the HASP.

1.08 Training

A. OSHA Training

1. The **CONTRACTOR** is responsible to ensure that all project personnel have been trained in accordance with OSHA 1910.120 regulations.

2. The **CONTRACTOR** shall ensure that all employees are informed of the potential hazards of toxic chemicals to the unborn child and of the risks associated with working at the project site.

3. The **CONTRACTOR** shall be responsible for, and guarantee that, personnel not successfully completing the required training are not permitted to enter the project site to perform work.

B. Safety Meetings

1. The SO will conduct daily safety meetings for each working shift that will be mandatory for all project personnel. The meetings will provide refresher courses for existing equipment and protocols, and will examine new site conditions as they are encountered.

2. Additional safety meetings will be held on an as-required basis.

C. Should any unforeseen or site-specific safety-related factor, hazard, or condition become evident during the performance of work at this site, the **CONTRACTOR** will bring such to the attention of the SO in writing as quickly as possible for resolution. In the interim, the **CONTRACTOR** will take prudent action to establish and maintain safe working conditions and to safeguard employees, the public, and the environment.

1.09 Medical Surveillance

A. The **CONTRACTOR** shall utilize the services of a Physician to provide the minimum medical examinations and surveillance specified herein. The name of the Physician and evidence of examination of all **CONTRACTOR** and Subcontractor on-site personnel shall be kept by the SO.

B. **CONTRACTOR** and Subcontractor project personnel involved in this project shall be provided with medical surveillance prior to onset of work. Immediately at the conclusion of this project, and at any time there is suspected excessive exposure to substances that would be medically detectable, all project personnel will be medically monitored. The costs for these medical exams, including state field representatives, (four maximum) are to be borne by the **CONTRACTOR**.

C. Physical examinations are required for:

1. Any and all personnel entering hazardous or transition zones or performing work that required respiratory protection.

2. All **CONTRACTOR** personnel on site who are dedicated or may be used for emergency response purposes in the Exclusion Zone.

3. **CONTRACTOR** supervisors entering hazardous or transition zones, or on site for more than 16 hours during the length of the contract.

D. Physical examinations are not required for people making periodic deliveries provided they do not enter hazardous or transition zones.

E. In accordance with good medical practice, the examining Physician or other appropriate representative of the Physician shall discuss the results of such medical examination with the individual examined. Such discussion shall include an explanation of any medical condition that the Physician believes required further evaluation or treatment and any medical condition which the Physician believes would be adversely affected by such - individual's employment at the project site. A written report of such examination shall be transmitted to the individual's private physician upon written request by the individual.

F. The examining Physician or Physician group shall notify the SO in writing that the individual has received a medical examination and shall advise the SO as to any specific limitations upon such individual's ability to work at the project site that were identified as a result of the examination. Appropriate action shall be taken in light of the advice given pursuant to this subparagraph.

G. The physical examination shall also include but not be limited to the following minimum requirements:

1. Complete blood profile;

2. Blood chemistry to include: chloride, CO_2, potassium, sodium, BUN, glucose, globulin, total protein, albumin, calcium, cholesterol, alkaline phosphatase, triglycerides, uric acid, creatinine, total bilirubin, phosphorous, lactic dehydrogenase, SGPT, SGOT;

3. Urine analysis;

4. "Hands on" physical examination to include a complete evaluation of all organ systems including any follow-up appointments deemed necessary in the clinical judgement of the examining physician to monitor any chronic conditions or abnormalities;

5. Electrocardiogram;

6. Chest X-ray (if recommended by examining physician in accordance with good medical practice);

7. Pulmonary function;

8. Audiometry - To be performed by a certified technician, audiologist, or physician. The range of 500 to 8,000 hertz should be assessed.

9. Vision screening - Use a battery (TITMUS) instrument to screen the individual's ability to see test targets well at 13 to 16 inches and at 20 feet. Tests should include an assessment of muscle balance, eye coordination, depth perception, peripheral vision, color discrimination, and tonometry.

10. Tetanus booster shot (if no inoculation has been received within the last five years); and

11. Complete medical history.

1.10 Site Control

A. Security

1. Security shall be provided and maintained by the **CONTRACTOR**.

2. The **CONTRACTOR** shall contact law enforcement officials, emergency medical care units, local fire departments and utility emergency teams to ascertain the type of response required in any emergency situation and to coordinate the responses of the various units. A standard operating procedure describing security force response to foreseeable contingencies shall be developed. The **CONTRACTOR** shall also prepare and update a list of emergency points of contact, telephone numbers, radio frequencies, and call signs to ensure dependable responses.

3. Security personnel shall record their presence while patrolling the site using a watchman's clock. The Tapes or punch cards shall be delivered to the **ENGINEER** once a week.

4. Security identification, specific to the project site, shall be provided by the **CONTRACTOR** for all project personnel entering the project site. The **CONTRACTOR** shall be responsible for and ensure that such identification shall be worn by each individual, visible at all times, while the individual is on the site. Vehicular access to the site, other than to designated parking areas, shall be restricted to authorized vehicles only.

5. Use of on-site designated parking areas shall be restricted to vehicles of the **ENGINEER**, **ENGINEER's** on-site representative, **CONTRACTOR**, subcontractor, and service personnel assigned to the site and actually on duty but may also be used on short-term basis for authorized visitors.

6. The **CONTRACTOR** shall be responsible for maintaining a log of security incidents and visitor access granted.

7. The **CONTRACTOR** shall require all personnel having access to the project site to sign-in and sign-out, and shall keep a record of all site access.

8. All approved visitors to the site shall be briefed by the SO on safety and security, provided with temporary identification and safety equipment, and escorted throughout their visit.

9. Site visitors shall not be permitted to enter the hazardous work zone unless approved by the **DEPARTMENT** with appropriate site access agreement.

10. Project sites shall be posted, "Warning Hazardous Work Area, Do Not Enter Unless Authorized," and access restricted by the use of a snow fence or equal at a minimum. Warning signs shall be posted at a minimum of every 500 feet.

B. Site Control

1. The **CONTRACTOR** shall provide the following site control procedures as a minimum:

- A site map;
- A map showing site work zones;
- The use of a "buddy system"; and
- Standard operating procedures or safe work practices.

C. Work Areas

1. The **CONTRACTOR** will clearly lay out and identify work areas in the field and will limit equipment, operations and personnel in the areas as defined below:

a. Exclusion Zone (EZ) - This will include all areas where potential environmental monitoring has shown or it is suspected that a potential hazard may exist to workers. The level of PPE required in these areas will be determined by the SO after air monitoring and on-site inspection has been conducted. The area will be clearly delineated from the decontamination area. As work within the hazardous zone proceeds, the delineating boundary will be relocated as necessary to prevent the accidental contamination of nearby people and equipment. The Exclusion Zone will be delineated by fencing (e.g., chain link, snow fencing, or orange plastic fencing).

b. Contamination Reduction Zone - This zone will occur at the interface of "Hazardous" and "Clean" areas and will provide for the transfer of equipment and materials from the Support Zone to the Exclusion Zone, the decontamination of personnel and clothing prior to entering the "Clean" area, and for the physical segregation of the "Clean" and "Hazardous" areas. This area will contain all required emergency equipment, etc. This area will be clearly delineated by fencing (e.g., chain link, snow fencing, or orange plastic fencing). It shall also delineate an area that although not contaminated at a particular time may become so at a later date.

c. Support Zone - This area is the remainder of the work site and project site. The Support Zone will be clearly delineated and procedures implemented to prevent active or passive contamination from the work site. The function of the Support Zone includes:

1. An entry area for personnel, material and equipment to the Exclusion Zone of site operations through the Contamination Reduction Zone;

2. An exit for decontamination personnel, materials and equipment from the "Decontamination" area of site operations;

3. The housing of site special services; and

4. A storage area for clean, safety, and work equipment.

1.11 Standard Operating Safety Procedures (SOSP), Engineering Controls

A. General SOSP

1. The **CONTRACTOR** will ensure that all safety equipment and protective clothing is kept clean and well maintained.

2. All prescription eyeglasses in use on this project will be safety glasses and will be compatible with respirators. No contact lenses shall be allowed on site.

3. All disposable or reusable gloves worn on the site will be approved by the SO.

4. During periods of prolonged respirator usage in contaminated areas, respirator filters will be changed upon breakthrough. Respirator filters will always be changed daily.

5. Footwear used on site will be covered by rubber overboots or booties when entering or working in the Exclusion Zone area or Contamination Reduction Zone. Boots or booties will be washed with water and detergents to remove dirt and contaminated sediment before leaving the Exclusion Zone or Contamination Reduction Zone.

6. All PPE used on site will be decontaminated or disposed of at the end of the work day. The SO will be responsible for ensuring decontamination of PPE before reuse.

7. All respirators will be individually assigned and not interchanged between workers without cleaning and sanitizing.

8. **CONTRACTOR**, subcontractor and service personnel unable to pass a fit test as a result of facial hair or facial configuration shall not enter or work in an area that requires respiratory protection.

9. The **CONTRACTOR** will ensure that all project personnel shall have vision or corrected vision to at least 20/40 in one eye.

10. On-site personnel found to be disregarding any provision of this plan will, at the request of the SO, be barred from the project.

11. Used disposable outerwear such as coveralls, gloves, and boots shall not be reused. Used disposable outerwear will be removed upon leaving the hazardous work zone and will be placed inside disposable containers provided for that purpose. These containers will be stored at the site at the designated staging area and the **CONTRACTOR** will be responsible for proper disposal of these materials at the completion of the project. This cost shall be borne by the **CONTRACTOR**.

12. Protective coveralls that become torn or badly soiled will be replaced immediately.

13. Eating, drinking, chewing gum or tobacco, smoking, etc., will be prohibited in the hazardous work zones and neutral zones.

14. All personnel will thoroughly cleanse their hands, face, and forearms and other exposed areas prior to eating, smoking or drinking.

15. Workers who have worked in a hazardous work zone will shower at the completion of the work day.

16. All personnel will wash their hands, face, and forearms before using toilet facilities.

17. No alcohol, firearms or drugs (without prescriptions) will be allowed on site at any time.

18. All personnel who are on medication should report it to the SO who will make a determination whether or not the individual will be allowed to work and in what capacity. The SO may require a letter from the individual's personal physician stating what limitations (if any) the medication may impose on the individual.

B. Engineering Controls - Air Emissions

1. The **CONTRACTOR** shall provide all equipment and personnel necessary to monitor and control air emissions.

1.12 Personal Protective Equipment

A. General

1. The **CONTRACTOR** shall provide all project personnel with the necessary safety equipment and protective clothing, taking into consideration the chemical wastes at the site. The **CONTRACTOR** shall supply the **ENGINEER's** on-site personnel (average two people for the project duration) with PPE as specified. The **ENGINEER** will require specific manufacturers and styles of PPE, which are detailed in the Safety Equipment Specifications portion of this section. At a minimum, the **CONTRACTOR** shall supply
<u>all</u> project personnel with the following:

   a. Two (2) sets of cotton work clothing to include underwear, socks, work shirts, and work pants. Leather steel-toed work boots, and such other clothing and outer garments as required by weather conditions (e.g., insulated coveralls and winter jacket);

   b. Sufficient disposable coveralls;

   c. One pair splash goggles;

   d. Chemical-resistant outer and inner gloves;

   e. Rubber overshoes (to be washed daily);

   f. Hard hat;

g. One full-face mask with appropriate canisters. The **ENGINEER** and the **DEPARTMENT** will supply their own full-face mask. The **CONTRACTOR** will supply the appropriate canisters to all on-site project personnel including the **ENGINEER** and the **DEPARTMENT**. The **CONTRACTOR** shall supply MSA canisters; and

h. For all project personnel involved with Level B protection, a positive-pressure SCBA or in-line air. A 5-minute escape bottle must be included with the in-line air apparatus.

B. Levels of Protection

1. It is planned that Levels C and D PPE will be required in this remediation. Although Levels A and B are not planned, site conditions may be encountered that require their use. The following sections described the requirements of each level of protection.

a. Level A Protection

1. PPE:

a. Supplied-air respirator approved by the Mine Safety and Health Administration (MSHA) and NIOSH. Respirators may be:

- Positive-pressure SCBA; or
- Positive-pressure airline respirator (with escape bottle for Immediately Dangerous to Life and Health [IDLH] or potential for IDLH atmosphere).

b. Fully encapsulating chemical-resistant suit.

c. Coveralls.

d. Cotton long underwear.*

e. Gloves (inner), chemical-resistant.

f. Boots, chemical-resistant, steel toe and shank. (Depending on suit construction, worn over or under suit boot.)

g. Hard hat (under suit).*

h. Disposal gloves and boot covers (worn over fully encapsulating suit).

i. Cooling unit.*

j. Two-way radio communications (inherently safe).*

* Optional

2. Criteria for Selection:

Meeting any of these criteria warrants use of Level A protection:

a. The chemical substance has been identified and requires the highest level of protection for skin, eyes, and the respiratory system based on:

- Measures (or potential for) high concentration of atmospheric vapors, gases, or particulates, or

- Site operations and work functions involves high potential for splash, immersion, or exposure to unexpected vapors, gases, or particulates of materials highly toxic to the skin.

b. Substances with a high degree of hazard to the skin are known or suspected to be present, and skin contact is possible.

c. Operations must be conducted in confined, poorly ventilated areas until the absence of substances requiring Level A protection is determined.

d. Direct readings on field Flame Ionization Detectors (FID) or Photoionization Detectors (PID) and similar instruments indicate high levels of unidentified vapors and gases in the air.

3. Guidance on Selection:

a. Fully encapsulating suits are primarily designed to provide a gas- or vapor-tight barrier between the wearer and atmospheric contaminants. Therefore, Level A is generally worn when high concentrations of airborne substances could severely effect the skin. Since Level A requires the use of SCBA, the eyes and respiratory system are also more protected.

Until air surveillance data become available to assist in the selection of the appropriate level of protection, the use of Level A may have to be based on indirect evidence of the potential for atmospheric contamination or other means of skin contact with severe skin affecting substances.

Conditions that may require Level A protection include:

- Confined spaces: Enclosed, confined, or poorly ventilated areas are conducive to the buildup of toxic vapors, gases, or particulates. (Explosive or oxygen-deficient atmospheres are also more probable in confined spaces). Confined-space entry does not automatically warrant wearing Level A

protection, but should serve as a cue to carefully consider and to justify a lower level of protection.

- Suspected/known highly toxic substances: Various substances that are highly toxic, especially skin absorption, for example, fuming corrosives, cyanide compounds, concentrated pesticides, Department of Transportation Poison "A" materials, suspected carcinogens, and infectious substances may be known or suspected to be involved. Field instruments may not be available to detect or quantify air concentrations of these materials. Until these substances are identified and concentrations measured, maximum protection may be necessary.

- Visible emissions: Visible air emissions from leaking containers or railroad/vehicular tank cars, as well as smoke from chemical fires and others, indicate high potential for concentrations of substances that could be extreme respiratory or skin hazards.

- Job Functions: Initial site entries are generally walk-throughs, in which instruments and visual observations are used to make a preliminary evaluation of the hazards.

In initial site entries, Level A should be worn when:

- There is a probability for exposure to high concentrations of vapors, gases, or particulates; and

- Substances are known or suspected of being extremely toxic directly to the skin or by being absorbed.

Subsequent entries are to conduct the many activities needed to reduce the environmental impact of the incident. Levels of protection for later operations are based not only on data obtained from the initial and subsequent environmental monitoring, but also on the probability of contamination and ease of decontamination.

Examples of situations where Level A has been worn are:

- Excavating of soil to sample buried drums suspected of containing high concentrations of dioxin;

- Entering a cloud of chlorine to repair a valve broken in a railroad accident;

- Handling and moving drums known to contain oleum; and

- Responding to accidents involving cyanide, arsenic, and undiluted pesticides.

b. The fully encapsulating suit provides the highest degree of protection to skin, eyes, and respiratory system if the suit material resists chemicals during the time the suit is worn. While Level A provides maximum protection, all suit material may be rapidly permeated and degraded by certain chemicals from extremely high air concentrations, splashes, or immersion of boots or gloves in concentrated liquids or sludges. These limitations should be recognized when specifying the type of fully encapsulating suit. Whenever possible, the suit material should be matched with the substance it is used to protect against.

b. Level B Protection

1. PPE:

a. Positive-pressure SCBA (MSHA/NIOSH approved); or

b. Positive-pressure air line respirator (with escape bottle for IDLH or potential for IDLH atmosphere) MSHA/NIOSH approved;

c. Chemical-resistant clothing (overalls and long-sleeved jacket; coveralls or hooded, one- or two-piece chemical-splash suit; disposable chemical-resistant, one-piece suits);

d. Cotton long underwear;*

e. Coveralls;

f. Gloves (outer), chemical-resistant;

g. Gloves (inner), chemical-resistant;

h. Boots (inner), leather work shoe with steel toe and shank;

i. Boots (outer), chemical-resistant, (disposable);

j. Hard hat (face shield*);

k. 2-way radio communication;* and

l. Taping between suit and gloves, and suit and boots.

*Optional

2. Criteria for Selection:

Any one of the following conditions warrants use of Level B Protection:

a. The type and atmospheric concentration of toxic substances have been identified and require a high level of respiratory protection, but less skin protection than Level A. These atmospheres would:

- Have IDLH concentrations; or
- Exceed limits of protection afforded by an air-purifying mask; or
- Contain substances for which air-purifying canisters do not exist or have low removal efficiency; or
- Contain substances requiring air-supplied equipment, but substances and/or concentrations do not represent a serious skin hazard.

b. The atmosphere contains less than 19.5% oxygen.

c. Site operations make it highly unlikely that the work being done will generate high concentrations of vapors, gases or particulates, or splashes of material that will affect the skin of personal wearing Level B protection.

d. Working in confined spaces.

e. Total atmospheric concentrations, sustained in the breathing zone, of unidentified vapors or gases range from 5 ppm above background to 500 ppm above background as measured by direct reading instruments such as the FID or PID or similar instruments, but vapors and gases are not suspected of containing high levels of chemicals toxic to skin.

3. Guidance on Selection Criteria:

Level B equipment provides a reasonable degree of protection against splashes and to lower air contaminant concentrations, but a somewhat lower level of protection to skin than Level A. The chemical-resistant clothing required in Level B is available in a wide variety of styles, materials, construction detail, permeability, etc. Taping joints between the gloves, boots and suit, and between hood and respirator reduces the possibility for splash and vapor or gas penetration. These factors all affect the degree of protection afforded. Therefore, the SO should select the most effective chemical-resistant clothing based on the known or anticipated hazards and/or job function. (It is anticipated that Level B protection will not be required under this contract.)

Level B does provide a high level of protection to the respiratory tract. Generally, if SCBA is required, Level B clothing rather than a

fully encapsulating suit (Level A) is selected based on needing less protection against known or anticipated substances affecting the skin. Level B skin protection is selected by:

a. Comparing the concentrations of known or identified substances in air with skin toxicity data;

b. Determining the presence of substances that are destructive to or readily absorbed through the skin by liquid splashes, unexpected high levels of gases, vapor or particulates, or other means of direct contact; and

c. Assessing the effect of the substance (at its measured air concentrations or splash potential) on the small area of the head and neck left unprotected by chemical-resistant clothing.

For initial site entry at an open site, Level B protection should protect site personnel, providing the conditions described in selecting Level A are known or judged to be absent.

c. Level C Protection

1. PPE

a. Full-face, air-purifying, cartridge- or canister-equipped respirator (MSHA/NIOSH approved) with cartridges appropriate for the respiratory hazards;

b. Chemical-resistant clothing (coveralls, hooded, one-piece or two-piece chemical splash suit; chemical-resistant hood and apron; disposable chemical-resistant coveralls);

c. Coveralls;

d. Cotton long underwear;*

e. Gloves (outer), chemical-resistant;

f. Gloves (inner), chemical-resistant;

g. Boots (inner), leather work shoes with steel toe and shank;

h. Boots (outer), chemical-resistant (disposable);*

i. Hard hat (face shield);*

j. Escape SCBA of at least 5-minute duration;

k. 2-way radio communications (inherently safe);* and

l. Taping between suit and boots, and suit and gloves.

* Optional

2. Criteria for Selection

Meeting all of these criteria permits use of Level C protection:

a. Measured air concentrations of identified substances will be reduced by the respirator to, at or below, the substance's Threshold Limit Value (TLV) or appropriate occupational exposure limit and the concentration is within the service limit of the canister.

b. Atmospheric contaminant concentrations do not exceed IDLH levels.

c. Atmospheric contaminants, liquid splashes, or other direct contact will not adversely affect the small area of the skin left unprotected by chemical-resistant clothing.

d. Job functions do not require SCBA.

e. Total readings register between background and 5 ppm above background as measured by instruments such as the FID or PID.

f. Oxygen concentrations are not less than 19.5% by volume.

g. Air will be monitored continuously.

3. Guidance on Selection Criteria

Level C protection is distinguished from Level B by the equipment used to protect the respiratory system, assuming the same type of chemical-resistant clothing is used. The main selection criterion for Level C is that conditions permit wearing air-purifying devices. The air-purifying device must be a full-face mask (MSHA/NIOSH approved) equipped with a cartridge suspended from the chin or on a harness. Cartridges must be able to remove the substances encountered.

A full-face, air-purifying mask can be used only if:

a. Oxygen content of the atmosphere is at least 19.5% by volume;

b. Substance(s) is identified and its concentrations(s) measured;

c. Substance(s) has adequate warning properties;

d. Individual passes a qualitative fit-test for the mask; and

e. Appropriate cartridge is used, and its service limits concentration is not exceeded.

An air monitoring program is part of all response operations when atmospheric contamination is known or suspected. It is particularly important that the air be monitored thoroughly when personnel are wearing air-purifying respirators (Level C). Continual surveillance using direct-reading instruments and air sampling is needed to detect any changes in air quality necessitating a higher level of respiratory protection. Total unidentified vapor/gas concentrations exceeding 5 ppm above background require Level B.

d. Level D Protection

1. PPE:

   a. Coveralls, chemical resistant;

   b. Gloves (outer), chemical resistant;

   c. Gloves (inner), chemical resistant;*

   d. Boots (inner), leather work shoes with steel toe and shank;

   e. Boots (outer), chemical resistant (disposable);*

   f. Hard hat;

   g. Face shield;*

   h. Safety glasses with side shields or chemical splash goggles;* and

   i. Taping between suit and boots, and suit and gloves.

   * Optional

2. Criteria for Selection:

   a. No atmospheric contaminant is present.

   b. Direct reading instruments do not indicate any readings above background.

   c. Job functions have been determined not to require respirator protection.

3. Guidance on Selection Criteria:

   Level D protection is distinguished from Level C protection in the requirement for respiratory protection. Level D is used for non-intrusive activities or intrusive activities with continuous air monitoring. It can be worn only in areas where there is no possibility of contact with contamination.

e. Anticipated Levels of Protection

1. It is anticipated that most of the work shall be performed in Level D. A respirator shall be immediately available in the event that air monitoring indicates an upgrade to Level C is required. The determination of the proper level of protection for each task shall be the responsibility of the **CONTRACTOR**. These task specific levels of protection shall be stated in the **CONTRACTOR's** HASP.

C. Safety Equipment Specifications

Note: Prior to purchasing any equipment or supplies required by this HASP, the **CONTRACTOR** shall notify the **ENGINEER** of the type, model and manufacturer/supplier of that particular safety equipment he is proposing to use or purchase for use on this project. The specifications for PPE that the **CONTRACTOR** is to supply to the **ENGINEER** and which differ from the minimum requirements shown below are provided at the end of this section.

D. Self-Contained Breathing Apparatus

1. The **CONTRACTOR** shall provide positive-pressure SCBA for possible upgrades in respiratory protection. The **CONTRACTOR** shall further supply all the SCBA for all field personnel for the duration of normal work activities. The units must be a MSHA/NIOSH-approved pressure-demand type with a 30-minute service life, manufactured/supplied by Scott, MSA, or other appropriate manufacturers. The **CONTRACTOR** shall inspect and maintain respirators in accordance with OSHA regulations (29 CFR 1910.13-4) and as recommended by the manufacturer.

E. Disposable Coveralls

1. The **CONTRACTOR** shall provide, as necessary, protective coveralls for all project personnel each day with extra sets provided for authorized visitors. The coveralls shall be of the disposable type made of Tyvek or equivalent material, and shall be manufactured/supplied by Durafab, Koppler, or other appropriate manufacturers. To protect project personnel from exposure to liquids, splash-resistant suits (Saranex suits, from appropriate manufacturers) shall be provided. Ripped suits will be immediately replaced after all necessary decontamination has been completed to the satisfaction of the SO.

F. Hard Hat

1. The **CONTRACTOR** shall provide and maintain one hard hat per person on site (authorized visitors included). The hard hats shall comply with OSHA Health and Safety Standards (29 CFR 1910.135).

G. Face Shields

1. The **CONTRACTOR** shall provide and maintain one face shield per person on site. The face shields shall be of the full face type meeting OSHA Health and Safety Standards (29 CFR 1910.133) and shall have brackets for mounting on hard hats. Hard hats and face shields shall be from the same manufacturer to ensure proper fit and shall be manufactured/supplied by Bullard, Norton, or other appropriate manufacturers.

H. Work Clothing

1. The **CONTRACTOR** shall provide a minimum of two sets of work clothing per personnel to allow for changing if contaminated. The work clothing shall include a minimum of underwear, socks, work shirts, work pants, and other clothing as weather conditions dictate. All work clothes shall be put on clean, before entering the site and shall not be kept in same lockers as the workers street clothes. All project personnel shall shower and change to street clothing prior to leaving the site. All contaminated work clothing shall be laundered on site with wash water drained to the decontamination water holding tank.

I. Escape-Type Respirator

1. The **CONTRACTOR** shall provide and maintain one self-contained breathing escape-type respirator per person working on site. The small self-contained device shall be capable of providing oxygen to the worker while protecting an escaping worker from toxic gases. The respirator shall be made by Scott, MSA, or other appropriate manufacturer. The **CONTRACTOR** shall inspect and ensure all devices are in working order before issuing to personnel. Employees must be trained to use equipment prior to being allowed to work on site and carry the escape-type respirator with them. An escape-type respirator must be provided if positive-pressure SCBA are not part of the ensemble worn by each person on site.

J. Full Face Organic Vapor Respirator

1. The **CONTRACTOR** shall provide and maintain a dedicated air-purifying organic vapor respirator per person working in hazardous work and neutral work zones. The respirator shall be of the full-face canister type with cartridges appropriate for the respiratory hazards. Respirators and cartridges shall be MSHA/NIOSH approved, manufactured/supplied by MSA, Scott, or other appropriate manufacturers. The **CONTRACTOR** shall inspect and maintain respirators and canisters in accordance with OSHA regulations (29 CFR 1910.134) and in accordance with manufacturer's instructions. The **CONTRACTOR** shall ensure that proper fit testing training and medical surveillance of respirator users is in accordance with OSHA regulations (29 CFR 1910.134).

K. Gloves (outer)

1. The **CONTRACTOR** shall supply a minimum of one pair of gloves per workman in areas where skin contact with hazardous material is possible. Work gloves shall consist of nitrile (NCR) or Neoprene material. Other gloves may be selected if required based on the potential chemical present. Cotton liners will be provided by the **CONTRACTOR**
during cold weather.

L. Gloves (inner)

1. The **CONTRACTOR** shall supply Latex or equivalent surgical gloves to be worn inside the outer gloves.

M. Boots (inner)

1. The **CONTRACTOR** shall supply one pair of safety shoes or boots per workman and shall be of the safety-toe type meeting the requirements of 29 CFR 1910.136.

N. Boots (outer)

1. The **CONTRACTOR** shall provide and maintain one pair of overshoes for the on-site person entering a hazardous work area. The overshoes shall be constructed of rubber and shall be 12 inches high minimum.

PERSONAL PROTECTIVE EQUIPMENT SPECIFICATIONS

Description	Manufacturer	Model Number	Size	Comments
Tyvek coveralls	Kappler/Abanda	1427/1428	xl/lg	NA
Saranex coveralls	Kappler/Abanda	77427/77428/77434	xl/lg	NA
Sijal acid suit	Chemtex Bata	91522-G	xl/lg	NA
Surgical gloves	Best	7005	xl/lg	NA
Neoprene gloves	Edmont	8-354	xl/lg	NA
Nitrile gloves	Granet	1711	10	NA
Butyl gloves	North	B-161	10	NA
Viton gloves	North	F-124	10/11	NA
Long gauntlet neoprene	Edmont	19-938	xl	NA
Cotton work gloves	North	Grip-N/K511M	men's	or equal
Latex booties	Rainfair	1250-Y	xl	NA
PAPR pesticide cartridges	Racal	AP-3	NA	NA
PAPR asbestos cartridges	Racal	SP-3	NA	NA
APR organic cartridges	MSA	GMC-H	NA	NA
APR asbestos cartridges	MSA	Type H	NA	NA
APR pesticide cartridges	MSA	GMP	NA	NA

1.13 Personnel Hygiene and Decontamination

A. On-Site Hygiene Facility

1. The **CONTRACTOR** shall provide a hygiene facility on site. The hygiene facility shall include the following:

   - Adequate lighting and heat;

- Shower facilities for project personnel;
- Laundry facilities for washing work clothes and towels;
- Areas for changing into and out of work clothing. Work clothing should be stored separately from street clothing;
- Clean and "dirty" locker facilities; and
- Storage area for work clothing, etc.

a. Portable "Boot Wash" Decontamination Equipment

1. The **CONTRACTOR** shall provide a portable decontamination station, commonly referred to as a "Boot Wash" facility for each hazardous work zone requiring decontamination for project personnel. These facilities shall be constructed to contain spent wash water, contain a reservoir of clean wash water, a power supply to operate a pump for the wash water, a separate entrance and exit to the decontamination platform, with the equipment being mobile, allowing easy transport from one hazardous work zone to the next. All such wash water shall be disposed of at the dewatering facility. An appropriate detergent such as trisodium phosphate shall be used.

b. Personnel Decontamination

1. The **CONTRACTOR** shall provide full decontamination facilities at all hazardous zones. Decontamination facilities must be described in detail in the HASP.

c. Disposal of Spent Clothing and Material

1. Contaminated clothing, used respirator cartridges and other disposable items will be put into drums/containers for transport and proper disposal in accordance with TSCA and RCRA requirements.

2. Containers/55-gallon capacity drums shall conform to the requirements of 40 CFR Part 178 for Transportation of Hazardous Materials. The containers/drums containing excavated and other hazardous material shall be transported by the **CONTRACTOR** to the staging area.

3. The **CONTRACTOR** is responsible for the proper container packaging, labeling, transporting, and disposal.

1.14 Equipment Decontamination

A. General

1. All equipment and material used in this project shall be thoroughly washed down in accordance with established federal and state procedures before it is removed from the project. With the exception of the excavated materials, all other contaminated

debris, clothing, etc. that cannot be decontaminated shall be disposed at the **CONTRACTOR's** expense by a method permitted by appropriate regulatory agencies. The cost for this element of work shall be incorporated in the lump sum bid for mobilization/demobilization the unit prices bid for disposal of decontamination liquids or as otherwise directed on this project. All vehicles and equipment used in the "Dirty Area" will be decontaminated to the satisfaction of the SO in the decontamination area on site prior to leaving the project. The **CONTRACTOR** will certify, in writing, that each piece of equipment has been decontaminated prior to removal from the site.

2. Decontamination shall take place within the designated equipment and materials decontamination area. The decontamination shall consist of degreasing (if required), followed by high-pressure, hot-water cleaning, supplemented by detergents as appropriate. Wash units shall be portable, high-pressure with a self-contained water storage tank and pressurizing system (as required). Each unit shall be capable of heating wash waters to 180 degrees Fahrenheit and providing a nozzle pressure of 150 psi.

3. Personnel engaged in vehicle decontamination will wear protective clothing and equipment as determined in the HASP. If the **CONTRACTOR** cannot or does not satisfactorily decontaminate his tools or equipment at the completion of the project, the **CONTRACTOR** will dispose of any equipment which cannot be decontaminated satisfactorily and will bear the cost of such tools and equipment and its disposal without any liability to the **ENGINEER**. At the completion of the project the **CONTRACTOR** shall completely decontaminate and clean the decontamination area.

B. Decontamination Station

1. The **CONTRACTOR** shall construct a decontamination station as described. The decontamination station shall be located in the Contamination Reduction Zone and shall be used to clean all vehicles leaving the Exclusion Zone prior to entering the Support Zone or leaving the site.

2. Each decontamination pad will be equipped with a drain system and holding tank on a properly graded area that has no deleterious material. The **CONTRACTOR** shall obtain and analyze one soil sample at the area where the decontamination pad is to be built and one soil sample after the pad has been dismantled, as directed by the Engineer. The cost associated with the samples shall be included in the cost of providing health and safety at the site.

3. Shop drawings of the decontamination pad shall be submitted to the **ENGINEER** for approval.

4. The **CONTRACTOR** shall be responsible for the provision of an adequately equipped decontamination pad which shall meet the following requirements:

   a. Adequate dimensions to contain wash water and debris from the largest sized vehicles to be utilized in this contract. All vehicles and construction equipment leaving a contaminated zone shall be decontaminated.

   b. Perimeter to be curbed and provided with splash guards.

c. A 40 mil impervious HDPE membrane is required to prevent seepage into the ground.

d. Sumps, pumping facilities, and temporary storage facilities to be adequate for anticipated use.

e. Temporary storage facility may be mobile tankers or suitable fixed tanks. Fixed tanks shall be located within secondary containment areas capable of containing 100% of the tank capacity, or 110% of the largest tank where the secondary containment area holds more than one tank. The secondary containment area shall have a permeability of not more than 1.0×10^{-7} cm/sec.

f. The decontamination pad is to be located at the exit of each contaminated zone such that previously non-contaminated areas are not contaminated during remedial activities. This may require the construction and use of multiple decontamination pads.

g. The **CONTRACTOR** shall place a minimum of six (6) inches of sand under the decontamination pad.

h. There shall be side wall panels, six (6) feet high minimum on two sides to prevent over spray.

C. The **CONTRACTOR** shall clean the decontamination pad after daily use. No contamination shall be left behind. The **CONTRACTOR** will be required to dismantle, remove and properly dispose of the pad at their own expense.

1.15 Air Monitoring Program

A. General

1. The **CONTRACTOR** shall develop, as part of the HASP, an air monitoring program (AMP). The purpose of the AMP is to determine that the proper level of personnel protective equipment is used, to document that the level of worker protection is adequate, and to assess the migration of contaminants to off-site receptors as a result of site work.

2. The **CONTRACTOR** shall supply all personnel, equipment, facilities, and supplies to develop and implement the air monitoring program described in this section. Equipment shall include at a minimum real-time aerosol monitors, depending on work activities and environmental conditions.

3. The **CONTRACTOR's** AMP shall include both real-time and documentation air monitoring (personal and area sampling as needed). The purpose of real-time monitoring will be to determine if an upgrade (or downgrade) of PPE is required while performing on-site work and to implement engineering controls, protocols, or emergency procedures if **CONTRACTOR**-established action levels are encountered.

4. The **CONTRACTOR** shall also use documentation monitoring to ensure that adequate PPE is being used and to determine if engineering controls are mitigating the migration of contamination to off-site receptors. Documentation monitoring shall include the collection and analysis of samples for total nuisance dust.

5. To protect the public in the neighboring residential neighborhood, the **CONTRACTOR** must include in the AMP provisions for suspending work and implementing engineering controls based upon detectable odors, as well as upon instrument monitoring results.

6. During the progress of active remedial work, the **CONTRACTOR** will monitor the quality of the air in and around each active hazardous operation with real-time instrumentation prior to personnel entering these areas. Sampling at the hazardous work site will be conducted on a continuous basis. Any departures from general background will be reported to the SO prior to entering the area. The SO will determine when and if operations should be shut down.

7. Air monitoring (both real time and documentation monitoring) shall be conducted by a minimum of one dedicated person with communication to the foreman whenever intrusive activities (such as excavation, tank removal, and soil treatment) are performed in an exclusion zone. After completion of intrusive activities involving contaminated materials and removal of the exclusion zone, air monitoring may be discontinued.

8. Air monitoring equipment will be operated by personnel trained in the use of the specific equipment provided and will be under the control of the SO. A log of the location, time, type and value of each reading and/or sampling will be maintained. Copies of log sheets will be provided on a daily basis to the **ENGINEER's** on-site representative.

B. Action Levels

1. 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, particularly if wind direction changes. 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.

a. 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.

b. 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.

c. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

d. All 15-minute readings must be recorded and be available for State (DEPARTMENT and New York State Department of Health (NYSDOH)) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

2. 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.

a. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m3) 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/m3 above the upwind level and provided that no visible dust is migrating from the work area.

b. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m3 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/m3 of the upwind level and in preventing visible dust migration.

c. All readings must be recorded and be available for State (DEPARTMENT and NYSDOH) and County Health personnel to review.

C. Real-Time Monitoring

1. The **CONTRACTOR** shall submit a written copy of the real time air monitoring results for each Workday, by 10:00 a.m. the following Workday, which shall include an appropriately scaled map of the Work area depicting sample locations, wind direction and other pertinent meteorological data: date; time; analytical results; applicable standards and engineering controls implemented (if necessary).

2. Real-time monitoring shall be conducted using the following equipment:

3. Organic vapor photoionizers shall be Photovac TIP, total organic vapor analyzer as manufactured by Photovac International, 739B Park Avenue, Huntington, New York

11743 or equal. The **CONTRACTOR** shall provide one Photovac TIP for each and every hazardous work zone operation.

4. Particulate monitoring must be performed using real-time particulate monitors (MiniRam Model MIEPDM-3, or equal) and shall monitor particulate matter in the range of 0-10 microns diameter (PM_{10}) with the following minimum performance standards:

Object to be measured: Dust, Mists, Aerosols
Measurement Ranges: 0.001 to 400 mg/m^3 (1 to 400,000 $\mu g/m^3$)
Precision (2-sigma) at constant temperature:
+/- 10 $\mu g/m^3$ for one second averaging; +/- 1.5 $\mu g/m^3$ for sixty second averaging
Accuracy:
+/- 5% of reading +/- precision (Referred to gravimetric calibration with SAE fine test dust (mmd= 2 to 3 μm, g= 2.5, as aerosolized)
Resolution: 0.1% of reading or 1 $\mu g/m^3$, whichever is larger
Particle Size Range of Maximum Response: 0.1-10 μ
Total Number of Data Points in Memory: 10,000
Logged Data:
Each Data Point: average concentration, time/date, and data point number
Run Summary:
overall average, maximum concentrations, time/date of maximum, total number of logged points, start time/date, total elapsed time (run duration), STEL concentration and time/date occurrence, averaging (logging) period, calibration factor, and tag number.
Alarm Averaging Time (user selectable):
real-time (1-60 seconds) or STEL (15 minutes)
Operating Time: 48 hours (fully charged NiMH battery); continuously with charger
Operating Temperature: -10 to 50°C (14 to 122°F)

Automatic alarms are suggested.

5. Particulate levels will be monitored and integrated over a period not to exceed 15 minutes. Consequently, instrumentation shall require necessary averaging hardware to accomplish this task. A monitor such as the personal DataRAM, manufactured by Monitoring Instruments for the Environment, Inc., or equivalent, can be used as a real time particulate screening tool. Although the instrument's design does not allow it to make a sharp differentiation of particulates at the PM_{10} standard, the instrument could be used in the passive mode without a pump to provide readings in the 0.1 to 10μ range in the immediate vicinity of construction activities.

6. Monitor the air, using the same equipment, for 10-15 minutes upwind of the work site to establish background level. The background level shall be established before the start of each shift every day. In the event that downwind particulates are detected at levels in excess of 150 ug/m^3 or 2.5 times the established background level at the work site, re-measure the background concentrations upwind of the work zone using the same equipment. If the measured particulate level at the work zone is 100 ug/m^3 above background, monitor the downwind site perimeter and implement additional dust controls in the work zone. Continue to take hourly measurements of the upwind background concentrations and compare such concentrations with the particulate level at the work zone, until the downwind level at the work zone is less than 100 ug/m^3 above the upwind level. If at any time the

measured particulate level at the work zone is more than 150 ug/m^3 over background concentration, the CONTRACTOR shall immediately suspend work at the site, promptly notify the Safety Officer, and implement suitable corrective action or engineering controls before work resumes.

7. Real-time monitoring will be conducted at any excavation of contaminated soil or sediments. Real-time monitoring will also be conducted at perimeter locations including an upwind (background) and three downwind locations. A background reading will be established daily at the beginning of the work shift. If the wind direction changes during the course of the day, a new background reading will be made. Downwind readings at the perimeter will be made when **CONTRACTOR** action levels have been exceeded at the excavation face or at a minimum of twice a day.

8. If action levels are exceeded at the perimeter location for fugitive dust, work must be suspended and engineering controls must be implemented to bring concentrations back down to acceptable levels.

9. Construction activities generate dust which could potentially transport contaminants off site. There may be situations when visible dust is being generated and leaving the site and the monitoring equipment does not measure PM_{10} at or above the action level. Therefore, if dust is observed leaving the working site, additional dust suppression techniques must be employed by the **CONTRACTOR**.

D. Documentation Monitoring

1. Documentation monitoring will be conducted at the perimeter at a minimum of four locations (one upwind and three downwind) for total dust. Documentation monitoring will be conducted only during excavation, consolidation, staging, removal, or decontamination activities (i.e., intrusive activities).

   a. Collect total nuisance dust using PVC collection filter and personnel sampling pump and analyze gravimetrically according to NIOSH 89-127 Method 0500.

   b. Documentation samples will be collected at established perimeter locations. The four locations will be chosen according to site activities and expected wind direction.

   c. The perimeter locations will be established and marked with high visibility paint or flagging at approximately equidistant points around the site. Samples will be collected at a height of 6 feet above ground surface.

   d. Documentation samples will be collected continuously, during the normal work hours when activities are occurring on site. At the end of the week, one days worth of sampling (i.e. three downwind locations and one upwind location) will be selected by the Engineer for analysis by the Contractor.

   e. The documentation samples will be collected over an eight (8) hour work period.

f.. In addition to perimeter monitoring, personnel documentation samples will be collected on site once a week. On-site samples will be collected by choosing "high risk" workers to wear appropriate collection media for pesticides, metals, and particulate. "High risk" workers are those who are most likely to encounter contamination on a particular task. At a minimum, two high risk workers will be chosen to wear collection media for a particular day each week and the media will be analyzed with the documentation air monitoring samples.

g. The **CONTRACTOR** shall submit a written copy of the documentation air monitoring results within 7 days of sampling, which shall include an appropriately scaled map of the Work area depicting sample locations, wind direction and other pertinent meteorological data: date; time; analytical results; applicable standards and engineering controls implemented (if necessary).

h. The documentation sampling submitted shall also identify the "high risk" workers chosen to wear appropriate collection media for contaminants; date media was worn; task involved; analytical results and applicable standards.

i. Payment for air monitoring will not be approved until the above submittals have been received and approved by the **ENGINEER**.

E. Community Air Monitoring

1. Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for 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 DEPARTMENT/NYSDOH staff.

a. **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.

b. **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 Final DER-10 Page 205 of 226 Technical Guidance for Site Investigation and Remediation May 2010 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.

1.16 Emergency Equipment and First Aid Requirements

A. Communications

1. The **CONTRACTOR** shall provide telephone communication at the site field office. Emergency numbers, such as police, sheriff, fire, ambulance, hospital, poison control, DEPARTMENT, EPA, NYSDOH, and utilities, applicable to this site shall be prominently posted near the telephone.

2. The **CONTRACTOR** shall establish a signaling system for emergency purposes.

B. Emergency Shower and Emergency Eye Wash

1. The **CONTRACTOR** shall supply and maintain one portable eyewash/body wash facility per active hazardous work zone. The facility shall have a minimum water capacity of 10 gallons and shall conform to OSHA regulations 29 CFR 1910.151. The portable eyewash/body wash facility shall be manufactured/ supplied by Direct Safety Company, Lab Safety Supply Company, or other appropriate suppliers.

C. Fire Extinguishers

1. The **CONTRACTOR** shall supply and maintain at least one fire extinguisher in the **CONTRACTOR's** office and one at each hazardous work zone. The fire extinguisher shall be a 20-pound Class ABC dry fire extinguisher with UL-approval per OSHA Safety and Health Training Standards 29 CFR 1910.157. The fire extinguisher shall be manufactured/supplied by Direct Safety Company, Lab Safety Supply Company, or other appropriate suppliers.

D. First Aid Kit

1. The **CONTRACTOR** shall supply and locate in his project office and at each and every hazardous work zone one 24-unit (minimum size) "industrial" or "Contractor" first aid kit, required by OSHA requirements 29 CFR 1910.151. The first aid kit shall be manufactured/supplied by Norton, Scott, or other appropriate suppliers.

E. Emergency Inventory

1. In addition to those items specified elsewhere, the SO will maintain the following inventory of equipment and protective clothing for use at the site in the event of emergencies.

    a. Washable coveralls;

    b. Gloves (outer);

    c. Gloves (inner);

    d. SCBA;

    e. Escape SCBA (authorized visitor use);

f. Face shields;

g. Safety glasses;

h. Respirators and appropriate cartridges;

i. Disposable coveralls;

j. Chemical-resistant boots and latex boot covers;

k. Hard hats;

l. Bottled breathing air; and

m. Rain suits.

1.17 Emergency Responses/Contingency Plan and Procedures

A. Daily Work

1. During the progress of work, the **CONTRACTOR** will monitor the quality of the air in and around each active hazardous operation prior to personnel entering these areas. Sampling shall be conducted on a continuous basis. Based on the air monitoring data, the proper level of protection will be chosen by the SO.

B. Emergency Vehicle Access

1. In the event that emergency services vehicles (police, fire, ambulance) need access to a location which is blocked by the working crew operations, those operations (equipment, materials, etc.) will be immediately moved to allow those vehicles access. Emergency crews will be briefed as to site conditions and hazards by the SO. All vehicles and personnel will be decontaminated prior to leaving the site.

2. The **CONTRACTOR** shall schedule a site briefing with the local Fire Department at the completion of mobilization to familiarize emergency response personnel with his operations and site layout.

C. Personal Injury Response Plan

1. In cases of personal injuries, the injured person or the crew personnel in charge will notify the SO. The SO will assess the seriousness of the injury, give first aid treatment if advisable, consult by telephone with a physician if necessary, and arrange for hospitalization if required. The SO will arrange for an ambulance if required.

2. If soiled clothing cannot be removed, the injured person will be wrapped in blankets for transportation to the hospital.

3. Personnel, including unauthorized personnel, having skin contact with chemically contaminated liquids or soils shall be flushed with water after any wet or soiled clothing has been removed.

4. These personnel should be observed by the SO to ascertain whether there are any symptoms resulting from the exposure. If there is any visible manifestation of exposure such as skin irritation, the project personnel will refer to a consulting physician to determine whether the symptoms were the result of a delayed or acute exposure, a secondary response to exposure such as skin infection, or occupational dermatitis. All episodes of obvious chemical contamination will be reviewed by the SO in order to determine whether changes are needed in work procedures.

D. Route to the Hospital

1. The **CONTRACTOR** shall post in conspicuous places in the Support Zone a map with written directions to the nearest hospital or emergency medical treatment facility.

E. Fire Service

1. The **CONTRACTOR** will make arrangements to take immediate fire fighting and fire protection measures with the local Fire Chief. If there is a fire, the crewmen or their person in charge will immediately call the SO. The SO will immediately call the fire personnel.

2. The air downwind from any fire or explosion will be monitored immediately in order to protect workers and the nearby community. If personal injuries result from any fire or explosion, the procedures outlined in the Personal Injury Response Plan are to be followed.

F. Master Telephone List

1. The attached master telephone list will be completed and prominently posted at the field office. The list will have telephone numbers of all project personnel, emergency services including hospital, fire, police, and utilities. In addition, two copies with telephone numbers are to be given to the **DEPARTMENT** for emergency reference purposes.

Emergency Service		Telephone Number
Fire Department		911
Police Department		911
Ambulance		911
Hospital/Emergency Care Facility		To be determined
Poison Control Center		(800) 336-6997
Chemical Emergency Advice (CHEMTREC)		(800) 424-9300
NYSDEC Albany Office	Work Hours	To be determined
	After Hours	To be determined
NYSDEC Regional Office	Work Hours	To be determined

County Dept. of Health	To be determined
New York State Dept. of Health - Albany	To be determined
New York State Dept. of Health - Regional	To be determined

1.18 Heat Stress Monitoring

A. Site personnel who wear protective clothing allow body heat to be accumulated with an elevation of the body temperature. Heat cramps, heat exhaustion, and heat stroke can be experienced, which, if not remedied, can threaten life or health. Therefore, an American Red Cross Standard First Aid book or equivalent will be maintained on site at all times so that the SO and site personnel will be able to recognize symptoms of heat emergencies and be capable of controlling the problem.

B. When protective clothing is worn, especially Levels A and B, the suggested guidelines for ambient temperature and maximum wearing time per excursion are:

Ambient Temperature (°F)	Maximum Wearing Time Per Excursion (Minutes)
Above 90	15
85 to 90	30
80 to 85	60
70 to 80	90
60 to 70	120
50 to 60	180

C. One method of measuring the effectiveness of employees' rest-recovery regime is by monitoring the heart rate. The "Brouha guideline" is one such method:

- During a 3-minute period, count the pulse rate for the last 30 seconds of the first minute, the last 30 seconds of the second minute, and the last 30 seconds of the third minute.
- Double the count.

D. If the recovery pulse rate during the last 30 seconds of the first minute is at 110 beats/minute or less and the deceleration between the first, second, and third minutes is at least 10 beats/minute, the work-recovery regime is acceptable. If the employee's rate is above that specified, a longer rest period is required, accompanied by an increased intake of fluids.

E. In the case of heat cramps or heat exhaustion, "Gatorade" or its equivalent is suggested as part of the treatment regime. The reason for this type of liquid refreshment is that such beverages will return much-needed electrolytes to the system. Without these electrolytes, body systems cannot function properly, thereby increasing the represented health hazard.

F. This liquid refreshment will be stored in a cooler at the edge of the decontamination zone in plastic squeeze bottles. The plastic bottles will be marked with individual's names.

Disposable cups with lids and straws may be used in place of the squeeze bottles. Prior to drinking within the decontamination zone, the project personnel shall follow the following decontamination procedures:

1. Personnel shall wash and rinse their outer gloves and remove them.

2. Personnel shall remove their hard hats and respirators and place on table.

3. Personnel shall remove their inner gloves and place them on table.

4. Personnel shall wash and rinse their face and hands.

5. Personnel shall carefully remove their personal bottle or cup from the cooler to ensure that their outer clothes do not touch any bottles, cups, etc.

6. The used bottle or cups will not be returned to the cooler, but will be placed in a receptacle or container to be cleaned or disposed of.

7. Personnel shall replace their respirators, hard hats, gloves and tape gloves prior to re-entering the hazardous zone.

G. When personnel are working in situations where the ambient temperatures and humidity are high--and especially in situations where protection Levels A, B, and C are required--the SO must:

- Assure that all employees drink plenty of fluids ("Gatorade" or its equivalent);

- Assure that frequent breaks are scheduled so overheating does not occur; and

- Revise work schedules, when necessary, to take advantage of the cooler parts of the day (i.e., 5:00 a.m. to 1:00 p.m., and 6:00 p.m. to nightfall).

1.19 Cold Stress

A. Whole-body protection shall be provided to all site personnel that have prolonged exposure to cold air. The right kind of protective clothing shall be provided to site personnel to prevent cold stress. The following dry clothing shall be provided by the **CONTRACTOR** as deemed necessary by the SO:

- Appropriate underclothing (wool or other);

- Outer coats that repel wind and moisture;

- Face, head, and ear coverings;

- Extra pair of socks;

- Insulated safety boots; and

- Glove liners (wool) or wind- and water-repellant gloves.

B. The SO will use the equivalent chill temperature when determining the combined cooling effect of wind and low temperatures on exposed skin or when determining clothing insulation requirements.

C. Site personnel working continuously in the cold are required to warm themselves on a regular basis in the on-site hygiene facility. Warm, sweet drinks will also be provided to site personnel to prevent dehydration. The SO shall follow the work practices and recommendations for cold stress threshold limit values as stated by the 1991-1992 Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices by the American Conference of Governmental Industrial Hygienists or equivalent cold stress prevention methods.

1.20 Logs, Reports and Record Keeping

A. Security Log

1. A daily log of security incidents and visitors granted access to the site will be maintained, as well as a log of all personnel entering and exiting the site.

2. All approved visitors to the site will be briefed by the SO on safety and security, provided with temporary identification and safety equipment, and escorted throughout their visit. Site visitors will not be permitted to enter a hazardous work zone.

3. Project site shall be posted, "Warning: Hazardous Work Area, Do Not Enter Unless Authorized," and access restricted by the use of a snow fence.

B. Safety Log

1. The **CONTRACTOR's** SO will maintain a bound safety logbook. The log will include all health and safety matters on site and include, but not be limited to, the following information:

   - Date and weather conditions on site;
   - A description of the proposed work for the day;
   - Times when site personnel arrive and depart;
   - Air monitoring data;
   - Heat and/or cold stress monitoring;
   - Decontamination procedures;
   - Type and calibration of air sampling/monitoring equipment used;
   - Safety meeting summaries; and
   - Accidents.

C. Emergency Or Accident Report

1. Any emergency or accident will be reported immediately to the SO. The **ENGINEER** will also be notified. The **CONTRACTOR** will submit a written report immediately, but no later than 24 hours of its concurrence. The report will include, but not be limited to, the nature of the problem, time, location, areas affected, manner and methods used to control the emergency, sampling and/or monitoring data, impact, if any, to the surrounding community, and corrective actions the **CONTRACTOR** will institute to minimize future occurrences. All spills will be treated as emergencies.

D. Daily Work Report

1. The **CONTRACTOR** shall maintain a daily work report that summarizes the following:

   - Work performed,
   - Level of protection,
   - Air monitoring results,
   - Safety-related problems, and
   - Corrective actions implemented.

1.21 Posting Regulations

A. The **CONTRACTOR** will post signs at the perimeter of the Exclusion Zone that state "Warning, Hazardous Work Area, Do Not Enter Unless Authorized." In addition, a notice directing visitors to sign in will be posted at the project site. Also, the **CONTRACTOR** will post a sign stating that any questions about the site should be directed to the New York State Department of Environmental Conservation.

B. Safety regulations and safety reminders will be posted at conspicuous locations throughout the project area. The following safety regulations and safety reminders are at a minimum to be posted around the job site:

SAFETY REGULATIONS

(To be Posted for Project Personnel)

The main safety emphasis is on preventing personal **contact** with gases, soils, sludge and water. Towards that end, the following rules have been established.

Regulations

A. Eating, drinking and smoking on the site is PROHIBITED except in specifically designated areas.

B. All project personnel on the site must wear clean or new gloves daily.

C. If you get wet to the skin, you must wash the affected area with soap and water immediately. If clothes in touch with the skin are wet, these must be changed.

D. You must wash your hands and face before eating, drinking or smoking.

E. Observe regulations on washing and removing boots before entering the dressing room or a clean area and showering before going home.

Recommendations

A. Do not smoke on site with dirty hands; better yet, do not smoke.

B. Check for any personal habit which could get soil or water into your body.

Examples: food off your fingers, wiping your face or nose with a dirty hand or running a dirty hand through your hair.

C. Check that any regularly worn clothing is clean. Examples include dirty watchbands, neck chains and a dirty liner on your safety helmet. Safety practices with poisonous chemicals can be summed up with a few words:

Don't breathe in chemical odors and don't touch the water, soil, and sludge.

If you do get dirty or wet, clean up as soon as possible.

SAFETY REMINDER FOR TOXIC CHEMICALS

(Post for Project Personnel)

Chemicals can't cause problems unless you breathe them, eat them, or put them on your skin.

Chemicals in Gases, Soils, Sludge, and Water

Don't let them go into your mouth, nose, or stay on your skin.

Use common personal hygiene.

A. Don't eat or drink on the site.

B. No smoking in the area of work.

C. Wear protective clothing.

D. Glove liners must be **clean**.

E. Wash your hands whenever practical. Wash before eating, drinking, or smoking.

F. Don't carry chemicals home to your family. (For example, on clothing, mud in the car, dirty hands.)

G. Follow strictly the HASP.

1.22 Community Protection Plan

A. General

1. Develop, as part of this HASP, a Community Protection Plan (CPP). The CPP shall outline those steps to be implemented to protect the health and safety of surrounding human population and the environment.

B. Air Monitoring

1. As part of the Air Monitoring Program, use real-time monitoring and documentation sampling as described in the Subpart "Air Monitoring Program" of this section to determine if off-site emission, as a result of site work, poses a threat to the surrounding community.

2. Provide real-time air monitoring for volatile compounds and particulate levels as the perimeter of the work area as necessary. Include the following:

   a. Volatile organic compounds must be monitored at the downwind perimeter of the work area on a continuous basis. If total organic vapor levels exceed 5 ppm above background, work activities shall be halted and monitoring continued under the provisions of a Vapor Emission Response Plan. All readings shall be recorded and be available for State (DEC & DOH) personnel to review.

   b. Particulates shall be continuously monitored at the 4 documentation sampling stations for a total of 4 dust monitors. If the downwind particulate level is 150 ug/m^3 greater than the upwind particulate level, dust suppression techniques shall be employed. All readings shall be recorded and be available for State (DEC & DOH) personnel to review.

C. Vapor Emission Response Plan

1. If the ambient air concentration of organic vapors exceed 5 ppm above background at the perimter of the work area, activities shall be halted and monitoring continued. If the organic vapor level decreases below 5 ppm above background, work activities may resume. If the organic vapor levels are greater than 5 ppm over background but less than 225 ppm over background at the perimeter of the work area, activities may resume provided the organic vapor level 200 feet downwind of the work area or half the distance to the nearest residential or commercial structure, whichever is less, is below 5 ppm over background.

2. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities shall be shutdown. When work shutdown occurs, downwind air monitoring as directed by the SO shall be implemented to ensure that vapor emission does not impact the nearest residential or commercial structure at levels exceeding those specified in the Major Vapor Emission section.

D. Major Vapor Emission

1. If any organic levels greater than 5 ppm over background are identified 200 fee downwind from the work area or half the distance to the nearest residential or commercial property, whichever is less, all work activities shall be halted.

2. If, following the cessation of the work activities, or as the result of an emergency, organic levels persist above 5 ppm above background 200 feet downwind or half the distance to the nearest residential or commercial property from the work area, the air quality shall be monitored within 20 feet of the perimeter of the nearest residential or commercial structure (20 Foot Zone).

3. If efforts to abate the emission source are unsuccessful and if organic vapor levels are approaching 5 ppm above background and persist for more than 30 minutes in the 20 Foot Zone, the Major Vapor Emission Response Plan shall automatically be placed into effect.

4. However, the Major Vapor Emission Response Plan shall be immediately placed into effect if organic vapor levels are greater than 10 ppm above background levels.

E. Major Vapor Emission Response Plan

1. Upon activation, the following shall be undertaken:

   a. All Emergency Response Contracts as listed in the Subpart titled "Emergency Response and Contingency Plan" paragraph titled "Telephone List."

   b. The local police authorities shall immediately be contacted by the SO and advised of the situation. Coordinate with local officials to arrange for notification and evacuation of the surrounding community.

   c. Frequent air monitoring shall be conducted at 30 minutes intervals within the 20 Foot Zone. If two successive readings below action levels are measured, air monitoring say be halted or modified by the SO.

2. The Air Monitoring Program shall include real-time air monitoring and shall be conducted at the perimeter of the site. Particulates should be continuously monitored upwind, downwind and within the Exclusion Zone at temporary particulate monitoring stations. If the downwind particulate level is more than 2.5 times greater than the upwind particulate level and greater than 150 ug/m^3, then dust suppression techniques shall be employed. This is a general action level. A site-specific action level shall be developed based on available analytical data. All readings shall be recorded and be available for ENGINEER, DEPARTMENT, and NYSDOH personnel to review.

3. Coordinate with local officials to arrange for notification and evacuation of the surrounding community in the event that off-site emissions pose a threat.

F. Odor

1. Foam active work areas to reduce odors if odor complaints are received from nearby residences during site activities. Odor masking agents or other odor control methods may be used subject to **ENGINEER's** review. Continue odor suppression during each day that odor complaints are received.

G. Off-Site Spill Response

1. Produce as part of the HASP a Spill Response Plan, also coordinated with local officials, in case of an off-site spill of either liquid or solid wastes. The plan shall include transportation routes and times, as well as the minimum requirements set forth in the Subpart titled "On-Site Spill Containment Plan." The driver shall be supplied with Material Safety Data Sheets (MSDSs), a 24-hour emergency phone number, and instructions for reporting emergencies to local agencies and the project site.

1.23 Confined Space Work

A. Evaluate the work areas and determine if there are any permit-required confined spaces. If the **CONTRACTOR** determines that personnel will not need to enter a permit-required confined space, appropriate measures to prevent personnel from entering such shall be taken. If the **CONTRACTOR** determines that personnel will need to enter a permit-required confined space, develop and implement a written permit-required confined space program.

B. The written program shall comply with 29 CFR 1910.146 and shall include the following:

1. Implement methods to prevent unauthorized entry;
2. Identify and evaluate the hazards of permit-required confined spaces before personnel entry;
3. Develop and implement procedures for safe permit-required confined space entry;
4. Provide the appropriate equipment to evaluate permit-required confined s spaces;
5. Evaluate permit-required confined spaces when entry operations are conducted;
6. Provide at least one attendant outside the permit-required confined space which will be entered;
7. Designate the personnel who will have active roles in entry operations;
8. Develop and implement procedures for obtaining rescue and emergency services;
9. Develop and implement a system for the preparation, issuance, use, and collection of entry permits;
10. Develop and implement procedures to coordinate entry operations when personnel from more than one employer are working;
11. Develop and implement procedures for concluding the entry;
12. Review and revise entry operations if measures may not protect personnel; and
13. Review the permit-required confined space program to ensure personnel are protected from the hazards present.

C. Copes of the permit-required confined space program and employee training certificates shall be included with the HASP.

2. PRODUCTS

Not Used.

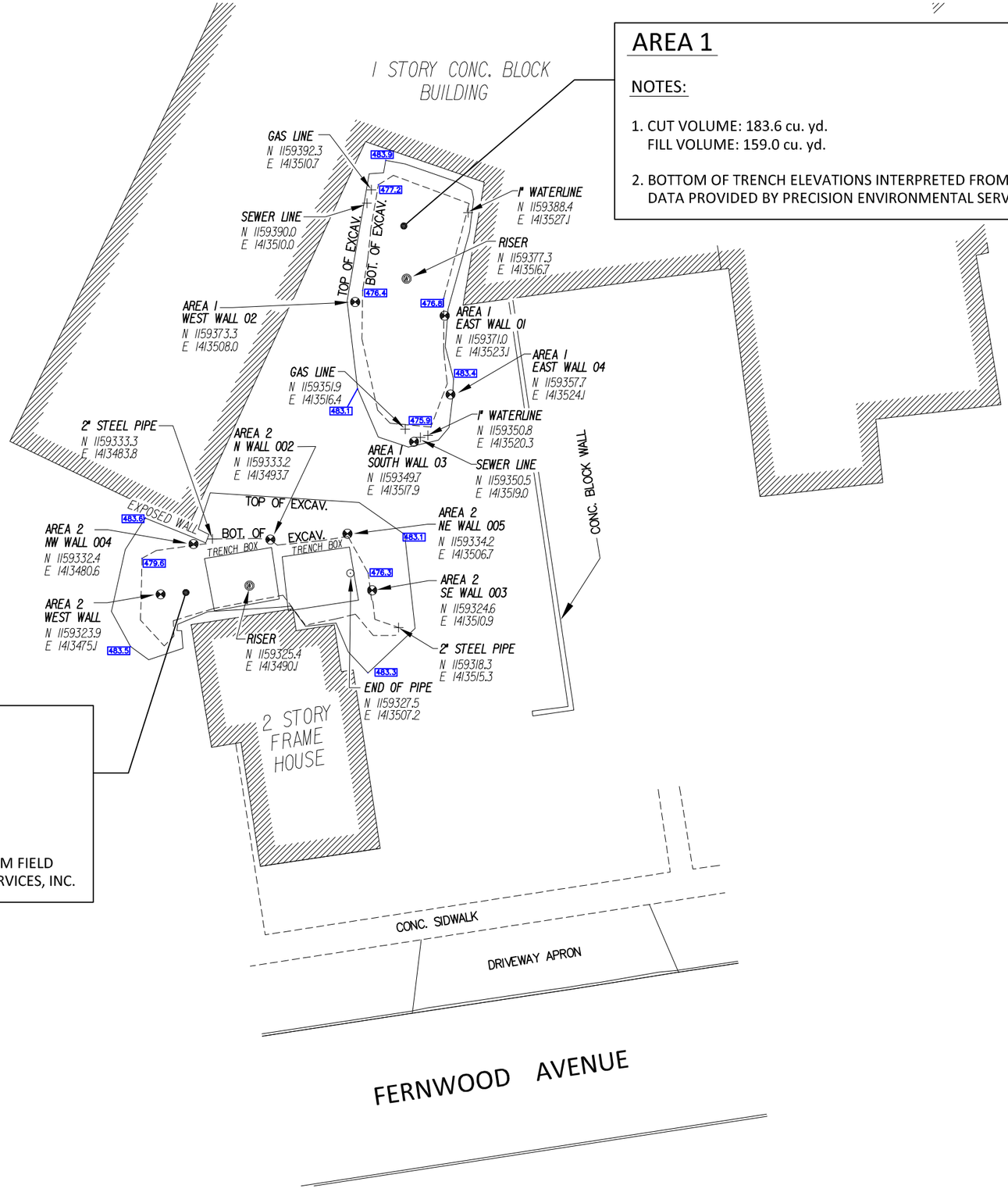
3. EXECUTION

Not Used.

*** END OF SECTION ***

APPENDIX E – AS-BUILT DRAWINGS

APPENDIX E – AS-BUILT DRAWINGS



AREA 1

NOTES:

1. CUT VOLUME: 183.6 cu. yd.
   FILL VOLUME: 159.0 cu. yd.

2. BOTTOM OF TRENCH ELEVATIONS INTERPRETED FROM FIELD DATA PROVIDED BY PRECISION ENVIRONMENTAL SERVICES, INC.

AREA 2

NOTES:

1. CUT VOLUME: 169.2 cu. yd.
   FILL VOLUME: 134.7 cu. yd.

2. BOTTOM OF TRENCH ELEVATIONS INTERPRETED FROM FIELD DATA PROVIDED BY PRECISION ENVIRONMENTAL SERVICES, INC.

GRID NORTH

SCALE: 1" = 20'

20 0 20 40

SURVEY OF EXCAVATIONS AT

AREA 1 & AREA 2

AT THE

PREFERRED ELECTRIC MOTORS SITE

PREPARED FOR:

PRECISION PES ENVIRONMENTAL SERVICES, INC.
Providing consulting, assessment, and remediation services for 20 years

NOTES:

1. ELEVATIONS ARE BASED ON NAVD88.

2. HORIZONTAL DATUM BASED ON NAD 83/96 - NYSPCS, WEST ZONE

PREPARED BY:

POPLI DESIGN GROUP
ARCHITECTURE | ENGINEERING
555 Penbrooke Drive
Penfield NY 14526
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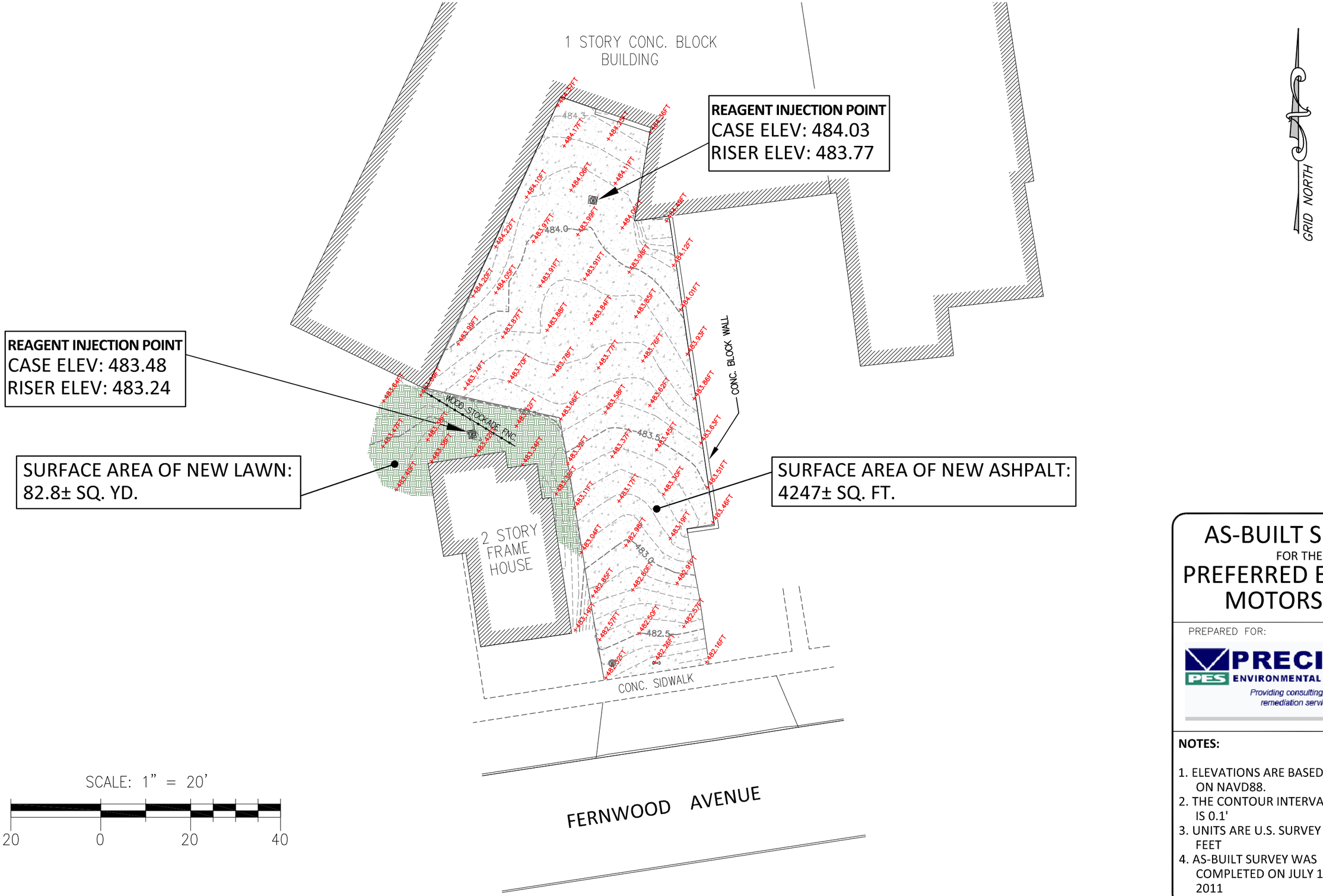

AS-BUILT SURVEY

FOR THE

PREFERRED ELECTRIC MOTORS SITE

PREPARED FOR:

PRECISION ENVIRONMENTAL SERVICES, INC.

Providing consulting, assessment, and remediation services for 20 years

NOTES:

1. ELEVATIONS ARE BASED ON NAVD88.
2. THE CONTOUR INTERVAL IS 0.1'
3. UNITS ARE U.S. SURVEY FEET
4. AS-BUILT SURVEY WAS COMPLETED ON JULY 12, 2011

PREPARED BY:

POPLI DESIGN GROUP
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585 388 2060 [tel]
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